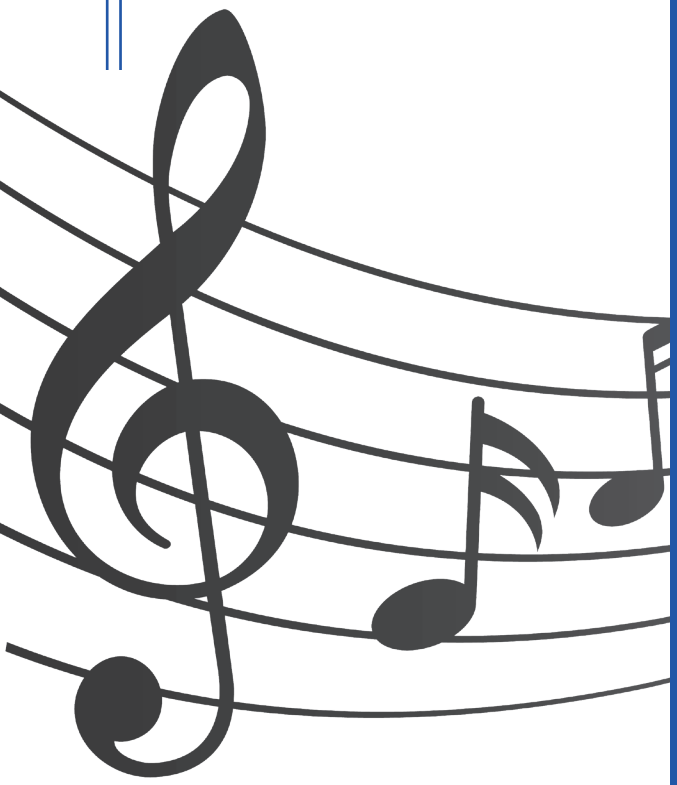

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Melodic Recall: Qualitative Insights on Singers' Strategies for Memorizing Scores of Simple Songs

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Abstract

In a choral setting, memorizing multiple choral scores and maintaining the stability of recall can be a challenge. This study investigates strategies for memorizing scores of simple songs. Music college students with extensive choral experience memorized three unfamiliar songs and recalled them after brief one minute practice. A mixed-methods research design facilitated the integration of multiple types of data, including performance accuracy, self-ratings of sight-singing strategies, and descriptive statistics of eye movements. Results, based on Mishra's (2005) theoretical model of memorization, indicated that students employed Holistic (singing the whole song) and Segmented (singing phrases) memorization approaches more frequently than Additive or Serial approaches. During memorization, students relied on the conceptual, visual, auditory, and kinesthetic components of memory. Good skills in sight-reading, chunking, and the use of structural cues played a key role in facilitating successful melodic recall. The pedagogical implications of the findings and directions for future research are discussed.

Keywords: choral practice, memorization approaches, melodic recall, eye movements, sight-singing

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In choral settings, singing without a score enhances the visual aspects of a performance, allowing for more effective communication with the audience and greater freedom of body movements (e.g., Davidson & Broughton, 2022; Kopiez et al., 2017; Williamon, 1999). Singing from memory is a common practice in certain choral traditions, such as barbershop, gospel, and show choirs, which frequently incorporate choral choreography (e.g., Stone, 2017). In contrast, church choirs, for example, may place a high value on sight-reading skills due to the volume and complexity of the music sung by the choristers in daily services.

In other musical contexts (e.g., instrumental music), the convention of performing from memory is a well-established practice (Boshoff & Odendaal, 2024; Fonte et al., 2022). Professional pianists, in a study by Fonte et al. (2022) reported that performing from memory has become a strong convention for standard repertoire, significantly influencing their decisions and leading many of them to prefer memorized performances. Furthermore, pianists highlighted several benefits of performing from memory, including a deeper understanding of the music, greater interpretive freedom, improved listening and communication skills, and the ability to mentally rehearse and refine the piece. When performing complex contemporary repertoire, however, pianists were motivated by a desire to achieve a "dramatic effect on stage" (Fonte et al., 2022, p. 12).

In Western classical music tradition, memorization became a convention in the 19th century, symbolizing skill and mastery, and has since shaped performance expectations in both classical and some popular music genres (Ginsborg, 2004; Mishra, 2016). However, memorization itself has not been integrated into the model that defines what virtuosity means to musicians (Ginsborg, 2018). Instead, it is often conceptualized as a tool for effective learning and achieving expressive, confident performances (Lisboa et al., 2015). Interestingly, musicians may prioritize different musical elements depending on whether they are performing from memory or rehearsing with a score (Ginsborg & Bennett, 2021). This distinction likely contributes to the enduring interest in the memorization process within music performance research (Snyder, 2000). Although the memorization strategies of instrumentalists have been studied extensively (for a review, see Mishra, 2010), research into the effectiveness of these techniques for vocal music remains an ongoing field of inquiry.

General Principles of Memorization

Music can be memorized without relying on a written score, a method commonly used in genres such as folk music and jazz, where musicians typically learn by ear, vocalizing melodies and internalizing rhythms through physical actions (e.g., Noice et al., 2008). Alternatively, musicians may use a written score to support memorization, a common practice in classical music. This score-based approach involves analytical and conceptual techniques, such as visualizing the notation, identifying structural and performance cues, and even studying the score away from the instrument. Fine et al. (2015) emphasized that during mental practice, the score serves as an orientation guide and a reference for interpretive choices.

Scholars have identified four interdependent types of memory—auditory, visual, conceptual, and kinesthetic—that collectively support music retention (e.g., Chaffin et al., 2016; Ginsborg, 2022), each of which has distinct pedagogical value (e.g., Ginsborg, 2004; Mishra, 2007). In addition, researchers have distinguished between spontaneous (or incidental) and deliberate ways of memorizing music. Spontaneous memorization occurs gradually through extended practice, whereas deliberate memorization involves intentional focus on structural and performance cues (e.g., Aiello, 2001; Ginsborg, 2004; Williamon & Valentine, 2002), which happened to be an essential method for classically trained musicians in the Western art tradition (Chaffin et al., 2016; Mishra, 2010). However, it has also been suggested that incidental versus deliberate memorization may vary depending on task demands, personal learning styles, and the type of repertoire; some instrumentalists reported using a deliberate approach to memorization, while others allow memorization to develop spontaneously, although this particular approach requires considerable time and effort (Fonte et al., 2022).

Memorization Approaches

Associative chaining and content-addressable memory systems for music, described by Chaffin et al. (2016), differ in how they facilitate the retrieval of musical information. Associative chaining operates through sequential linking, where each element cues the next, forming an interconnected chain that facilitates recall. Moreover, associative chaining was described as implicit and risky to rely exclusively on because it allows only a single starting point, usually the beginning. If memory fails and the chain breaks, the performer must start over (Chaffin et al., 2016). Content-addressable memory, on the other hand, allows retrieval based on the musical content itself rather than its sequential order. This form of memory is typically explicit, particularly linked to expertise, and supports a mental framework provided by structural and performance cues (Chaffin et al., 2023).

According to the theoretical model proposed by Mishra (2005), the memorization of a musical score consists of three stages: preview, practice, and overlearning. The practice stage is subdivided, and one of these subdivisions includes four processing strategies: Holistic, Segmented, Serial, and Additive. Mishra's concise definitions of these strategies were as follows: (a) a Holistic processing strategy is when the whole piece is repeatedly performed; (b) a Segmented strategy is when practicing an isolated portion of the piece; (c) an Additive strategy is when a new material is continually added to a learned fragment; and (d) a Serial strategy is when a short fragment is repeated multiple times (Mishra, 2005; 2011).

In a later experimental study, Mishra (2011) investigated the effectiveness of those four memorization strategies. The results showed that instrumentalists who used a Holistic strategy memorized the short piece faster than others who segmented the piece. The author attributed this success to the ability of musicians using the Holistic strategy to form a complete "mental picture" of the piece. However, when considering the time taken for complete memorization, there was no significant difference between the time used for the

Additive and the Holistic strategies. Although the additive strategy demonstrated greater efficiency compared to the Segmented or Serial strategies, it proved to be less efficient than the Holistic strategy.

A series of studies on the memorization strategies of professional singers has been conducted by Ginsborg (2002, 2004), with a particular focus on the relationship between the words and melodies of songs and their recall from memory. Ginsborg and Sloboda (2007) reported that for singers who deliberately memorized songs, words and melodies were remembered in association with each other, facilitating successive recall. The authors suggested that memorizing words and melody together is an effective strategy, but perhaps only for singers with high levels of expertise.

Many empirical studies have examined the memorization process, but most have focused on instrumentalists (e.g., Aiba & Matsui, 2016; Aiello, 2001; Boshoff & Odendaal, 2024; Chaffin & Imreh, 2002; Williamon & Valentine, 2002), leaving the strategies choral singers use to memorize vocal music largely unexplored. A key difference in memorizing vocal music lies in its performance style, which often occurs without instrumental support. This requires choral singers to rely exclusively on their music-reading skill.

Research Objectives

In educational settings, students are typically challenged by the volume of musical repertoire they must learn and perform by heart, often within a limited timeframe. The primary objective of this study was to identify strategies used by music students, particularly those with choral experience, for memorizing scores of simple songs. The research question guiding this inquiry was: What processing and memorization approaches contribute to successful melodic recall? The design and analysis of this study were shaped by Mishra's theoretical model of music memorization (2005). Mishra's concept of four processing strategies served as a framework for evaluating and interpreting the data and guided the exploration of the extent to which these different strategies benefit memory.

While the importance of lyrics in the context of vocal music is acknowledged, the decision to prioritize the examination of melody was guided by several considerations. Focusing on a tonal melody allows for a more controlled investigation, avoiding the complexities introduced by lyrical content, as demonstrated in the study by Huovinen et al. (2021). Even when a melody is accurately performed, errors in reading and producing the text can significantly impact the overall quality of the performance. Furthermore, the focus on melody allows for comparability with previous studies, the majority of which have investigated the memorization approaches of instrumentalists (e.g., Mishra, 2010). In addition, melodic accuracy (which typically includes pitch, interval, and scale degree accuracy) is of great importance in higher musical education and serves as a fundamental aspect of music reading skills and performance evaluation (e.g., Fournier et al., 2019; Pomerleau-Turcotte et al., 2023).

Method

This study followed a mixed-methods approach proposed by Bazeley (2024), who underscores that the core feature of all mixed-methods research is the integration of heterogeneous components. This approach ensured that the study's components, such as the questionnaire, the accuracy of recall, memorization approaches, and eye movements were not viewed in isolation but as interconnected elements contributing to a unified understanding (see Bazeley, 2024). Integrating the eye-tracking method with both quantitative and qualitative methodologies allowed for a more flexible research process, utilizing a wider range of information for the analysis.

It is well-established that eye movements reveal how individuals process information (for reviews, see Perra et al., 2022; Sheridan et al., 2020; Sloboda & Parker, 1985). In the context of this study, the examination of eye movements supported understanding of the distribution of visual attention, gaze patterns, and strategies involved in the memorization of simple melodies. Eye-tracking was chosen as a method to assess learning processes by measuring fixation durations on various musical features, thereby providing objective data on how visual engagement within the score supports memorization (for a review, see Holmqvist et al., 2011; Rayner, 1998). A measure such as the total fixation durations was used to capture the spatial distribution of eye movement data and to track changes in visual attention throughout the practice sessions (e.g., Perra et al., 2022; Rosemann et al., 2016).

Participants

A total of 15 students from a higher education music institution in Sweden participated voluntarily in the study, comprising eight females and seven males, aged between 22 and 30 years ($M = 25$, $SD = 2.8$). The group consisted of nine students engaged in choral conducting, two students in music education, both within the Western classical music tradition, and four students enrolled in jazz program. All participants were proficient in singing, regularly practiced vocal music, and, according to their self-reports, had an average of 15 years ($SD = 5.8$) of formal music training and 13 years ($SD = 5.9$) of choral experience. None of the participants reported having absolute pitch. The sample was multilingual, and since the five English-speaking participants lacked proficiency in Swedish, the accuracy of melodic recall served as a criterion for analysis.

Materials

The stimulus set consisted of three lesser-known songs of Swedish folk tradition, charac-

[1] *Fixation* refers to the state when the eye remains still for a brief period, such as when it momentarily pauses on a word during reading. This stationary period, essential for visual processing, can last from a few tens of milliseconds up to several seconds (Holmqvist et al., 2011, pp. 21–22).

[2] *Total fixation duration* is the cumulative amount of time the eyes remain fixed on a specific area or object during a task, such as reading or viewing an image. This measurement sums the durations of all individual fixations on that target area, providing insights into how long a person engages with or processes specific information (for a review, see Holmqvist et al., 2011, pp. 386–389).

terized by predominantly stepwise melodic motion and non-repetitive phrases and Swedish text. The scores were written in treble clef, modified to ensure visual similarity in layout, with pitch range for all voice types (B3 to D5). The length of each stimulus was 16 bars (32, 36, and 38 notes long), which is comparable to that of Sloboda and Parker (1985). The songs were written in different keys (C minor, D major, and E minor) and had the same time signature (3/4). All songs were diatonic and featured a simplicity reflective of their folk origins (*see Appendix A*). The musical scores were written using the Sibelius music notation program (version 2022.12) and presented on two staves, with eight bars on each staff. When viewed from a distance of 68 centimeters, the stimuli subtended dimensions of 30° in width and 7° in height. Participants were not familiar with the songs prior to the experiment.

Apparatus

For data collection, I used the Tobii 4C (IS4 Large Peripheral, firmware version 2.27) remote binocular eye tracker (Core v.2.13.4) with a sampling frequency of 90 Hz. The remote eye tracker was placed below a computer screen and tracked the students' gaze. The visual stimuli (notated music) were displayed on a 27-inch computer screen with a resolution of 1920 x 1080 pixels (61.0 cm x 34.5 cm). The eye movements were recorded and analyzed by the Tobii Pro Lab 1.207 (x 64) software. Audio data were recorded using a ClearOne Unite 20 web camera (2.0).

Procedure

Prior to the experimental task, participants received detailed information about their rights, the study's methodology, and its objectives in accordance with the ethical guidelines of the Swedish Research Council (2017). Following this, participants provided informed consent by signing a consent form. They then completed a survey capturing relevant demographic information and details about their musical background, including both choral and instrumental experiences.

Students received instructions for the eye-tracking session and were reminded that during the recall phase when no stimulus was on the screen, they should keep their gaze fixed on the blank white background of the computer screen. The primary task consisted of memorizing three songs, with each song practiced for three 1-minute sessions, followed by recalling the melodic material from memory after each practice. The participants were instructed to focus on the melodies and were permitted to disregard the text, using freely chosen syllables such as "lah" for recall. The participants practiced each song three times, resulting in nine recall attempts in total.

To minimize head movements, participants were provided with a sturdy Tobii forehead rest, which was fixed to the table's edge but not attached to the participants' bodies. After calibration, the formal task instruction appeared on the computer screen, stating, "Your task is to memorize three folk songs." The three experimental songs were displayed on the screen in a randomized order.

Before each practice session, loudspeakers positioned on the table played the tonic triad to establish a sense of key. Participants had a total of 3 minutes to memorize each song. The recall from memory, when the stimulus was no longer visible on the computer screen, was self-paced, and the time for the memorized melody performance was not included in the practice time. After attempting to sing the song from memory, participants indicated their readiness for the next practice. The Tobii Pro Lab recorded the students' eye movements and audio throughout the practice sessions.

After completing the memorization task, participants rated eleven declarative statements (*see Appendix B*) to indicate the sight-singing strategies they used, choosing between "Yes" and "No" options. The questionnaire design was inspired by prior studies on sight-singing strategies (Bogunović & Vujović, 2012; Fournier et al., 2019). The declarative statements covered various reading and memorization strategies, such as thinking about scale steps and practicing challenging sections separately. Each data collection session lasted approximately 45–50 minutes.

Analysis

In previous research literature, both sight-singing and memorization have been referred to as "strategies." To distinguish between them, in this study, the term "strategies" will be used solely for sight-singing techniques, while "approaches" denotes four memorization strategies described in Mishras' memorization model.

Accuracy of the Recalls from Memory

I analyzed each of the 135 trials (3 songs × 3 memory recalls × 15 participants). The accuracy of relative pitch and rhythmic elements was subjectively assessed and quantified according to a criterion: "correct" or "incorrect." A sung note was considered an error if it was out of tune (deviating by a semitone or more as assessed by ear). Participants demonstrated proficiency in executing simple rhythmic configurations accurately, indicating no difficulty in this aspect. Consequently, the temporal aspect was excluded from the analysis. To quantify melodic accuracy in the recalls, the proportion of correctly sung notes to the total number of notes in each song was calculated (*see Appendix C*).

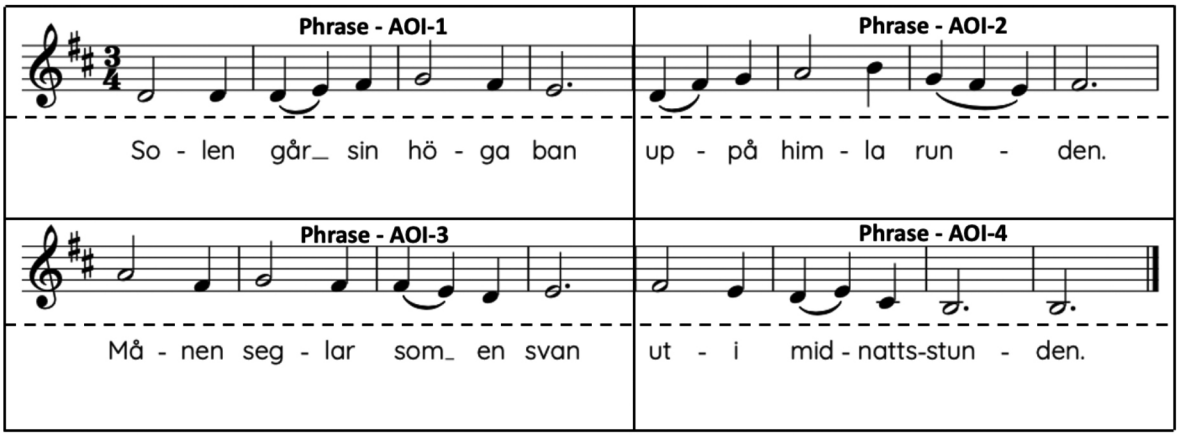
Eye Movements

Prior to data analysis, the accuracy of eye-tracking data collection was evaluated according to guidelines in Appendix D (Niehorster et al., 2020). Initial qualitative examination of the eye movement video recordings (Holmqvist et al., 2011, p. 87) showed that the participants divided each song into four phrases according to the melodic structure and treated each phrase as a separate unit for practice. Based on this observation, the four practice units (i.e., phrases), each consisting of four bars, were defined for further analysis. The Total Fixation Duration (TFD), which is a sum of all fixations within a specified Area

of Interest (see Figure 1), was computed for four melodic phrase-AOIs (as adapted from Holmqvist et al., 2011, pp. 386–89). TFD measurements allowed comparison of the time allocated to each melodic phrase.

Figure 1

An Example of a Song Divided into Four Areas of Interest (Phrase-AOIs)



Note. As can be seen in Figure 1, an Area of Interest (AOI) is a specific region designated within stimulus, to which eye-tracking measures are linked and analyzed. In the current study, each song was divided into four (1–4) phrase AOIs.

Processing and Memorization Approaches

To quantify the processing and memorization approaches, a deductive method with a predetermined categorization system was applied to the data set. Data analysis followed the principle that a phrase consisting of four bars was considered a single unit for practice. The numbers 1-4 were assigned to represent the four units to be visited. In this context, a "phrase visit" indicates that students practiced a particular phrase (4 bars) in its complete form.

For the purposes of this study, the following definitions were used as a basis for analysis: (a) Serial approach: Participants repeatedly sang the same phrase multiple times until the phrase was learned (e.g., 1-1-1); (b) Segmented approach: Participants performed a segment comprising two consecutive phrases (e.g., 2-3); (c) Additive approach: Participants processed larger segments of three phrases (e.g., 2-3-4); (d) Holistic approach: Participants sang through all four phrases in their proper order (e.g., 1-2-3-4). The Additive approach encompasses the expansion of memorized material by one phrase (regardless of whether it is in consecutive order or not), incorporating a new unit either before or after the previously practiced pair of phrases. This slightly modified interpretation of the Additive approach enhanced the flexibility of assessment. Detailed specification of the memorization approaches utilized in the current study is presented in *Appendix E*.

The organization of data into scarf plots was based on scanpaths (obtained from Tobii software) and video recordings. The scarf plots allowed for the assessment of the order and frequency of phrase visits, enabling the estimation of four memorization approaches. Additionally, they provided insights into changes affected by practice. In these scarf plots, multiple phrase visits were condensed into a single line, although specific timing values were not included. Each colored rectangle on the scarf plot corresponded to a unique phrase (*see Appendix F*). The primary goal was to analyze the order of phrases learned during each 60-second practice. The process of analyzing scarf plots can be associated with the "coding" guideline typically used in thematic interview analyses. A color-coding system was employed to quantify the processing and memorization approaches of musical students.

Questionnaire

Participants were asked to reflect on the strategies they employed during task completion. The responses provided information about the sight-reading strategies utilized in the practice sessions. The subsequent analysis focused on the frequency of positive ratings and outlined the similarities between students' strategies used (*see Appendix B*).

Results

Accuracy of Recall from Memory

The accuracy analyses revealed substantial variation in individual performance outcomes (*see Appendix C*). Some participants experienced occasional "blackouts," resulting in an inability to recall, despite demonstrating almost completely accurate performance just before attempting to perform from memory (similar to the study with pianists by Aiba & Matsui, 2016). In contrast, five participants (P1, P2, P3, P4, P7) achieved 100% accuracy at least once as early as in the second practice round, which only involved two minutes of practice. Two-thirds of the sample (10 students) could recall at least one song with 100% accuracy after the third practice.

However, two distinct groups emerged based on the range of scores. High-accuracy performers consistently demonstrated high levels of accuracy across the three practices. For example, P2 recalled the first song three times with accuracies of 81%, 100%, and 100%. The average accuracies for participants in this subgroup were as follows: P2 - 80%, P3 - 86%, and P13 - 93% (M = 86.3%, SD = 5.3). In contrast, the low-accuracy performers exhibited lower levels of accuracy. Participant P8 achieved 22%, 0% (due to "blackout"), and 53% accuracy across the three trials for the first song. On average, P8 demonstrated an accuracy of 28% across all three songs, while participants P10 and P14 achieved average accuracies of 40% and 48%, respectively (M = 38.7%, SD = 8.2).

Participants with an average accuracy level between 50% and 80% performed erratically, lacking consistency and exhibiting unpredictable "fluctuations" in accuracy (e.g., P5, P9). Consequently, the analysis focused on two subgroups: high-accuracy and low-accuracy

performers, each representing 20% of the sample. This targeted approach provided a more nuanced understanding of performance variability, highlighting the diversity within memorization approaches and supporting the description of approaches contributing to successful melodic recall.

According to the self-reported background information, the three high-accuracy performers had studied choral conducting and reported longer durations of music education (M = 15 years, SD = 5) and choral music experience (M = 17 years, SD = 6.08) compared to their counterparts. In contrast, the low-accuracy performers received an average of 11.33 years of music education (SD = 3.51) and 9.67 years of choral music experience (SD = 6.11), and two of the three students in the low-accuracy group had studied jazz.

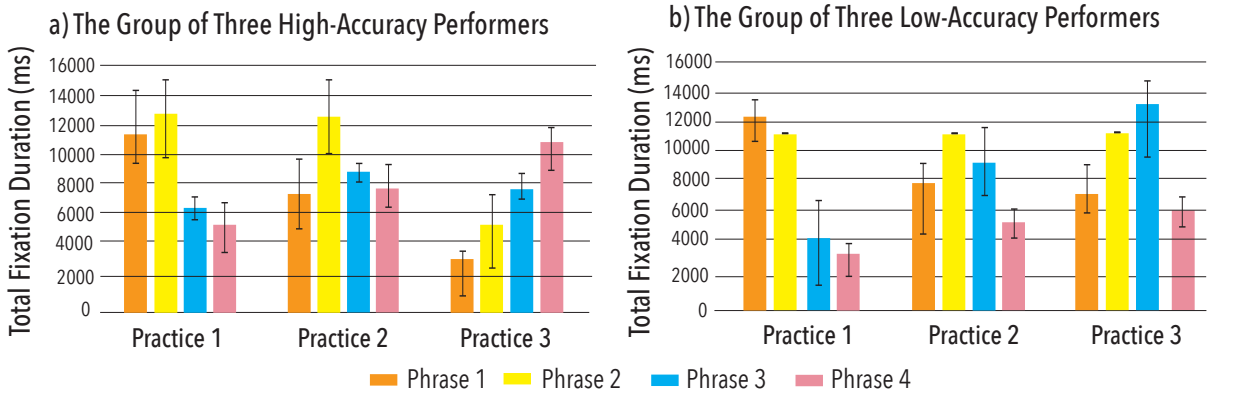
Eye Movements

A comparison of the processing time between both subgroups helped identify differences in the time distribution allocated to each AOI-phrase during the memorization task. The Total Fixation Duration (TFD) not only revealed disparities between individuals and subgroups, but also provided insights into the underlying dynamics of the observed variations across practice (see *Appendix G*).

When comparing the average Total Fixation Duration exhibited by high-accuracy performers during the first and last practices, a decrease of approximately 8 seconds was observed for each of the first two phrases (see Figure 2a). The opposite effect was seen for the third and fourth phrases. The TFD increased in the last practice by approximately 1 second for the third phrase and 5 seconds for the fourth. This suggests that the learning process was generally linear, with students memorizing phrases in the natural order of the music—starting from the first phrase and gradually placing more focused attention on the fourth phrase towards the end of the practice.

Figure 2

Mean Total Fixation Duration Across Practice Sessions Between Two Subgroups

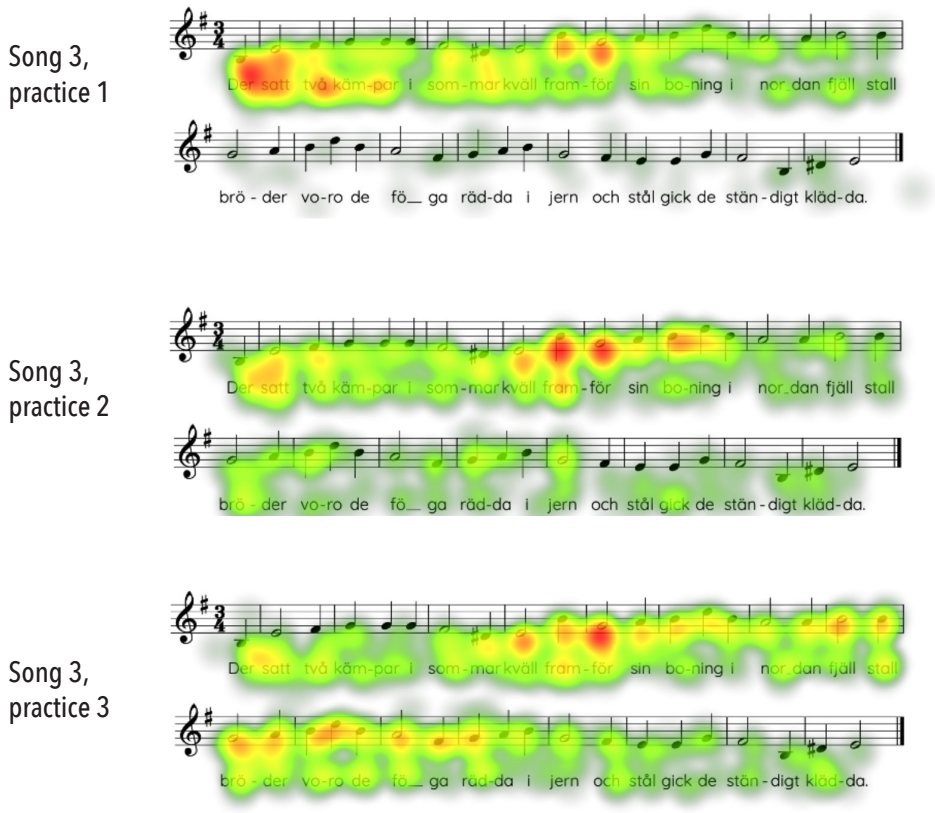


Note. Figure 2 illustrates the average Total Fixation Duration (ms), calculated as the mean across the four music phrases within each of the three songs for every practice session. The data is presented for two subgroups of performers: (a) high-accuracy performers and (b) low-accuracy performers. The error bars represent the standard error of the mean (SE), reflecting the variability in the mean Total Fixation Duration for each subgroup.

In contrast, the average Total Fixation Duration (TFD) for low-accuracy performers (Figure 2b) indicated that their allocation of visual attention was influenced by the musical features itself and the ability to process them. For example, the time spent on phrase two during the final practice session was nearly the same as in the initial session, suggesting ongoing difficulties in processing this phrase. The cumulative heatmaps were a valuable tool for examining the types of elements on which singers fixated their gaze. The warmer colors on the heatmaps in Figure 3 denote the musical features where low-accuracy performers primarily fixated. The melodic intervals as wide as a third and a fourth received higher values of fixation duration, which indicated difficulty in extracting musical information from a stimulus. Interestingly, during the first practice, low-accuracy performers spent more time focusing primarily on the beginning of the song, with minimal attention paid to phrases 3 and 4. At the final practice, however, their visual attention had shifted, still with many fixations (shown with warm colors - red) by the beginning of the second phrase.

Figure 3

Cumulative Heatmaps of Visual Attention Derived from Eye-Tracking Data



Note. Figure 3 is an example of cumulative heatmaps based on eye-tracking data collected from three low-accuracy performers during three one-minute practice sessions for Song No. 3. The heatmaps visually represent variations in fixation duration, with red areas indicating regions of highest fixation and cooler colors (green) representing areas with less fixation. Regions outside the heatmap were not fixated upon. These heatmaps illustrate the spatial distribution of eye movements and highlight changes in visual attention throughout the practice sessions.

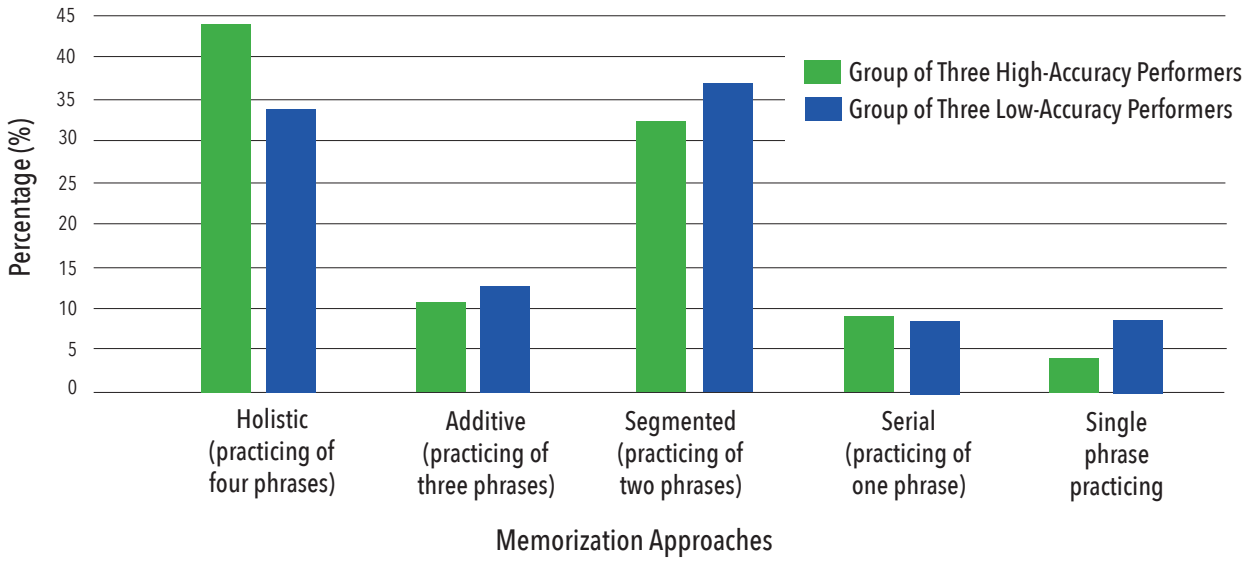
Processing and Memorization Approaches

The high-accuracy performers made a greater number of phrase visits, totaling 453 visits (visits on average P2 – 64, P3 – 46, P13 – 41) due to their faster practice tempo. In contrast, performers with lower accuracy completed only 190 phrase visits (visits on average P8 – 21, P10 – 21, P14 – 21) attributable to their slower processing speed. Additionally, during single 60-second trials, the high-accuracy group visited phrases with a frequency ranging from 9 to 27 times (M = 18, SD = 9), whereas their counterparts visited phrases between 4 and 10 times (M = 7, SD = 3).

The analysis of memorization approaches revealed that students from both subgroups predominantly utilized Holistic and Segmented approaches (see Figure 4). The high-accuracy performers often employed the Holistic approach, while the low-performing group relied slightly more on a Segmented approach. In comparison to the Holistic (44% vs. 34%) and Segmented (32% vs. 37%) approaches, the application of the Additive (11% vs. 13%) and Serial (9% vs. 8%) approaches was relatively sporadic in use by both subgroups. During the analysis, an extra category labeled "single phrase" emerged, which involved practicing a single phrase before the allocated time expired. However, the performances did not offer clear evidence that students relied exclusively on one specific approach throughout their learning. Instead, it appeared that they utilized a variety of approaches interchangeably, adapting memorization to the limited time condition and aiming for the most effective outcomes.

Figure 4

Relative Proportions of Different Memorization Approaches



Note. The Figure 4 displays the relative proportions of four memorization approaches used by high-accuracy and low-accuracy performers during practice sessions. The memorization approaches are arranged on the horizontal (x) axis, ranging from practicing all four phrases together (Holistic) to practicing each phrase separately (Serial). The last two bars on the right represent a category that emerged during analysis, labeled "Single phrase practice," which is not considered a memorization approach. The percentages of memorization approaches employed by each subgroup during practice for recall were calculated relative to the total number of phrases sung by each subgroup (high-accuracy performers = 453; low-accuracy performers = 190).

Interestingly, the students exhibited different tendencies in terms of how they initiated the practice sessions. Specifically, the low-accuracy performers chose to restart each new practice attempt from the beginning (i.e., bar 1) in 92.6% of the cases (in 25 out of 27 trials). In contrast, the high-accuracy performers opted to restart the practice from the beginning in only 55.6% of the cases. This discrepancy indicates that the low-accuracy performers relied more heavily on the initial section of the song, suggesting that they used associative chaining compared to the high-accuracy performers who had developed an ability to target specific parts of the score utilizing the musical content.

An additional illustration of the differences in the processing approaches between the two subgroups was derived from the grand mean of average phrase repetition frequency across all songs. This result highlights the ability of high-accuracy performers to remember the initial segments of the melodies (phrases 1–2) while deliberately focusing on the repetition of less mastered material (phrases 3–4), providing the opportunity to learn. The grand means (M) and standard deviations (SD) for each phrase were as follows: Phrase 1, M = 9.56, SD = 1.03; Phrase 2, M = 11.11, SD = 1.73; Phrase 3, M = 14.11, SD = 1.50; and Phrase 4, M = 15.56, SD = 0.96. The opposite tendency was observed among low-accuracy performers (*see Appendix H*). Perhaps because of their learning style, they did not allow enough repetitions to memorize the last phrase. Consequently, the number of repetitions decreased considerably by the final phrase—dropping by more than half. The grand means (M) and standard deviations (*SD*) for each phrase were as follows: Phrase 1, M = 7.34, SD = 0.47; Phrase 2, M = 6.45, SD = 0.31; Phrase 3, M = 4.55, SD = 0.96; and Phrase 4, M = 2.89, SD = 0.68.

Questionnaire

When comparing the two subgroups, only four of the eleven sight-reading strategies were equally rated: (a) grouping notes together to create melodic motives, (b) comparing with a previously sung note, and (c) practicing challenging sections separately. None of the students reported (d) singing other notes to fill a leap.

During the three 60-second practice periods, students exhibited a spectrum of problem-solving techniques. The students were able to adjust their practice pace, accelerating performance in easy or familiar sections of songs and decelerating when confronted with new or challenging segments. Additionally, they employed a range of kinesthetic approaches, such as counting the pulse through foot stomping, finger tapping on a table or their lap, and occasionally using conducting gestures. Interestingly, during recalls, when confronted with forgotten parts, students exhibited remarkable improvisational skills by humming melodies while maintaining tempo through body movements and later resuming singing from a remembered point further ahead. The self-monitoring technique during practice time, which involved briefly sidetracking the gaze from music notation or even closing the eyes for 1-2 seconds, was widely used. These diverse observations underscore that music students employ problem-solving and self-monitoring techniques (e.g., Lehmann & Kopiez,

2016; Parkes, 2022), wherein they support and evaluate their own memorization of musical material.

Discussion

The objective of this descriptive study was to identify the score memorization strategies that contributed to successful melodic recall. Results indicate that music students employed four distinct memorization approaches while learning simple melodies, adapting these strategies interchangeably. Both subgroups preferred the Holistic and Segmented approaches over the Additive and Serial approaches, with high-accuracy performers particularly relying on the Holistic approach. The following section highlights other factors behind successful melodic recall.

Accuracy

The results demonstrated that high-accuracy performers were fluent in music reading, which may be explained by their developed audiation skills (e.g., Gordon, 1977). In the context of learning, students used musical phrases as structural cues, serving in memorizing task (e.g., Aiello, 2001; Williamon & Valentine, 2002). Moreover, high-accuracy performers exhibited an accelerated processing speed, likely attributable to their advanced chunking abilities or a more extensive internalized vocabulary of melodic elements cultivated through practice (e.g., Ericsson et al., 1993; Gordon, 1977; Pozenatto, 2020). Students' recall accuracy may also be attributed to their active working memory capacity and the automatization of certain skills, which assisted in the retention process (e.g., Pomerleau-Turcotte et al., 2023; Pozenatto, 2020; Shiffrin & Schneider, 1977).

In contrast, low-accuracy performers were less successful despite having the same amount of practice time, suggesting possible gaps in their music reading skills. Since learning by listening to recordings or live demonstrations from a coach was not an option, students with weaker sight-reading skills faced greater challenges, possibly due to a reliance on the jazz tradition of learning by ear (for more on memorization techniques among jazz musicians, see Noice et al., 2008). Thus, true learning could not occur without the ability to sing through the piece and comprehend the pitches and their relationships. Without learning, remembering was also impossible.

Self-reported demographic information showed that high-accuracy performers had more years of music education and greater experience with choral music than their counterparts. Previous research also identified years of choral experience as a significant variable influencing individual performance (e.g., Demorest & May, 1995). This may support the conclusion that a more extensive choral experience was a factor that benefited high-accuracy performers in their mastery of reading and memorizing.

In general, knowledge of musical theory and analysis (e.g., Aiello, 2001; Halpern & Bartlett, 2010) and music reading skills gained through deliberate practice (e.g., Ericsson et al., 1993) facilitate faster encoding and retrieval, thus improve recall accuracy. The three re-

calls from memory, which served as checkpoints for the participants, could also be seen as integral components of the learning process. This perspective aligns with Mishra's (2005) concept of overlearning, or, alternatively, as a form of practice in performing from memory. Such practice allows students to identify areas for improvement—a goal distinct from merely learning to sing the song (for more on self-directed learning strategies, see Parkes, 2022).

Eye Movements

As mentioned in the previous sections, eye-tracking provides objective data on where musicians focus their visual attention on a score, the duration of their gaze, and the sequence of their fixations (for a review, see Holmqvist et al., 2011). This information was helpful for understanding the processes of learning and memorization. For example, by analyzing fixation duration metrics, it was possible to uncover patterns in students' cognitive processing and observe changes in their visual attention over time, providing insight into how their focus evolved during practice sessions.

The increased fixation duration observed in the eye-tracking data for the second phrase suggests challenges in processing bars with melodic intervals, such as major and minor thirds and fourths, both ascending and descending. Such increased fixations were likely due to processing difficulties, as visual gaze is associated with cognitive effort (e.g., Goolsby, 1994; Madell & Hébert, 2008; Sheridan et al., 2020), similar to text reading, where gaze duration increases with word or sentence complexity (e.g., Just & Carpenter, 1980).

Another factor that may have affected eye movements was a system break that immediately followed the second phrase unite. The system break may have initiated long saccades from the right to the left margin, resulting in a comprehension setback. Studies of text reading (e.g., Rayner et al., 1982) suggest that the acquisition of useful information is more efficient to the right of fixation. Consequently, disruptions in the reading comprehension, coupled with challenging melodic intervals, affected processing time (e.g., Sheridan et al., 2020), as evidenced by the increased total fixation duration for the second and third phrases for low-accuracy performers. The cumulative heatmaps provided valuable insights into the students' learning processes (see Duchowski et al., 2012), showing how their visual attention evolved over time in response to the musical features of the score. This suggests that low-accuracy performers, while actively working to improve their fluency with specific intervals, became hindered by those complexities and were ultimately unable to succeed fully in the memorization task.

Memorization Approaches

Awareness of compositional structure and the use of structural cues allowed the students in this study to effectively guide their memorization process (e.g., Halpern & Bower, 1982; Sloboda, 1977; Williamon & Valentine, 2002). Despite engaging in numerous holis-

tic run-throughs suggestive of associative chaining learning, the high-accuracy performers addressed challenging segments separately, consistent with the concept of content-addressable memory (Chaffin et al., 2016). By combining associative chaining and content-addressable learning, the high-accuracy performers demonstrated the benefits of using different approaches. In contrast, the low-accuracy performers tended to restart each practice trial from the beginning. This behavior suggests a heavy reliance on associative chaining memory, which may be less efficient (Chaffin et al., 2016).

Furthermore, high-accuracy performers tended to focus more on practicing the endings of the songs. This observation aligns with the theoretical assumptions that memory retention is generally stronger at the beginning of a musical piece (see Chaffin & Imreh, 2002; Finney & Palmer, 2003). Intuitively applying this concept, high-accuracy performers devoted extra time to sections that required additional reinforcement for memorization. Moreover, the practice frequency of high-accuracy performers likely strengthened their encoding and retrieval processes, often linked to auditory memory (e.g., Pozenatto, 2020). Through repeated singing and listening to these melodies, the performers strengthened their auditory memory—a crucial component of working memory that underpins the accurate reproduction of music (for more on auditory memory, see Ginsborg, 2022).

Based on all these observations, the Holistic approach, favored by high-accuracy performers may be considered effective for memorizing short and technically simple melodies written in a conventional musical style, particularly when the time allotted for the task is limited. Furthermore, the results of this study highlight the dynamic nature of the memorization process, showing that experienced musicians can consciously select from a range of memorization approaches and adapt them to different stages of learning, as also discussed by Mishra (2011) and Chaffin et al. (2016). This flexibility allows skilled musicians to align their strategies with the specific demands of each learning stage. Consistent with previous research, memory strategies appear to vary based on a performer's skill level (e.g., Aiello & Williamon, 2002), with more experienced musicians able to employ particular techniques that optimize retention and recall.

The question remains as to how effective these memorization approaches will be in a real-time choral setting, where each voice part has its own melodic signature—an area that could be explored in future scientific studies. Notably, the three high-accuracy performers were male choral conducting students who sang bass and tenor in their school choir. Their advanced sight-reading and memorization skills likely stemmed from their choral training, which involved the ability to navigate complex harmonies, among others. Unlike soprano lines, bass and tenor vocal lines often contain fewer traditional melodic passages. Memorizing the melodies of simple songs may differ from memorizing choral parts because each vocal line has unique characteristics in four-part harmony. Future research could explore how singers of all vocal parts memorize choral scores together and examine the relationship between text and melody during memorization, as focusing on melody alone provides only a partial view.

Questionnaire Responses and Observations

Responses to the declarative statements identified the sight-reading strategies students used during the memorization task (e.g., Pomerleau-Turcotte et al., 2023), with certain strategies used more regularly (e.g., relating to scale degrees, grouping notes to create melodic motives) than others (e.g., singing other notes to fill a leap) (e.g., Fournier et al., 2019). The ability to chunk (group notes), use audio cues (previously sung material), and practice challenging sections separately were supportive memorization strategies for singers in both subgroups. In general, participants adopted strategies that suited their own needs and task requirements, as also reported in studies by Hallam (1997) and Ginsborg and Sloboda (2007).

Furthermore, several supportive techniques that enhance learning processes and establish a framework for recall accuracy have been observed. These techniques, including (a) repeating the tonic for tonal stability, (b) incorporating body movements for pulse and rhythm steadiness, and (c) self-monitoring through brief memory checks, could be viewed as signs of utilizing visual, auditory, conceptual, and kinesthetic memories, as described in works by Ginsborg (2022), Killian and Henry (2005), and Parkes (2022).

Methodological Consideration

Bazeley's (2024) concept of integrating both qualitative and quantitative approaches provided a more comprehensive view of the memorization processes. The quantitative data was analyzed using qualitative research tools, shedding light on the cognitive mechanisms that guided music students during the memorization task. The utilization of eye-tracking technology allowed for an objective examination of participants' visual processing of music notation. Future studies may involve the use of wearable eye-tracking glasses and traditional printed music sheets as opposed to digital formats to better reflect real-world scenarios.

The limitations become evident when considering statistical support. Statistical analysis necessitates a larger collection of empirical data; therefore, the findings of this study with a small sample size cannot be generalized to the wider population or provide conclusive results. A further limitation is the lack of clarity regarding the prior memorization experience of participants, the level of rigorous sight-singing training they have undergone, and the regularity with which they have sung from memory in their previous choirs. This study did not examine the correlation between past training and current memorization skills. It would be beneficial for future research to include such data, as well as pre-test memorization skills, and control for absolute pitch ability.

Suggestions for Implementation and Future Research Directions

In terms of the memorization process, it would be beneficial for singers to consciously adopt Mishra's (2005) four different approaches to memorization and use them systematically, regularly applying the Holistic approach that is effective for memorizing simple songs.

To foster effective learning and strengthen robust memorization skills, conductors can systematically enhance individual singers' deliberate memorization and sight-singing abilities by integrating structural and performance cues into choral training. Singers may wish to consider actively utilizing four components of memory (visual, conceptual, auditory, and kinesthetic) to enhance memorization, as suggested by previous studies (e.g., Chaffin et al., 2016; Hallam, 1997).

Moreover, the incorporation of metacognitive techniques, such as evaluation, planning, concentration, and self-monitoring, can foster singers' understanding of their own learning processes and prepare them for self-directed learning (e.g., Hallam, 2001; Parkes, 2022). Educators can further develop instructions based on individual student's cognitive abilities, learning styles, and prior musical training, enabling singers to develop their music reading and memorizing skills to function independently as musicians (e.g., Demorest, 1998; Demorest & May, 1995; Henry, 2008). However, future research into effective memorization approaches in choral settings—particularly those that benefit both individual proficiency and collective dynamics within choral ensembles—would be a valuable area of investigation (e.g., Ginsborg, 2022).

Based on this discussion, several recommendations could be made for future research in the field of choral music education. One suggestion is to conduct an additional study on memorization with a larger number of participants, focusing specifically on pedagogical interventions. Additionally, a longitudinal study could be conducted to investigate the effects of the mentioned approaches and strategies on choral singers' memorization abilities over time. This would provide valuable information on the sustained effectiveness of recalling choral music in ensemble situation for performances over an extended period. Examining memorization strategies for songs, particularly by investigating the role of text—which may either complicate memorization or serve as a valuable reference point—could provide insights into the interrelationship between a song's text and melody. Additionally, in choral settings where different voices may articulate distinct text lines and sing varying melodic patterns, exploring this dynamic could yield meaningful results.

In summary, the results demonstrate the effectiveness of both holistic and segmented memorization strategies for recalling simple melodies. Furthermore, the research highlights that specific competencies—such as knowledge of music theory, analytical skills, sight-singing abilities, the use of structural cues, and adaptability in selecting the most effective strategy for each situation—can significantly enhance successful memorization within a limited time frame. These findings provide encouragement for choral teachers, who can regularly incorporate memorization exercises to strengthen individual proficiencies, thereby enhancing overall performance quality and fostering deeper musical engagement of singers. Additionally, these insights may broaden the scope of research on the development of musical memory in the context of choral singing.

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Declaration of Conflicting Interests

The author confirms that there are no conflicts of interest to disclose.

Supplemental Materials

The online supplementary materials are available at http://doi.org/10.6084/m9.figshare.25846438

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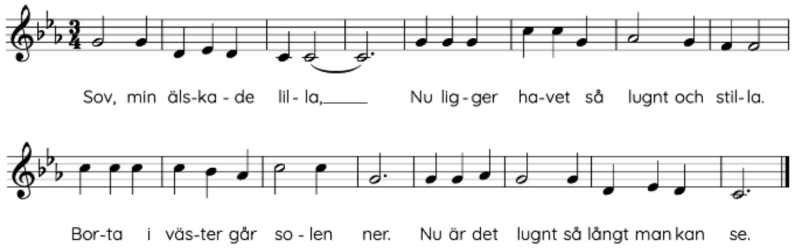
Appendices

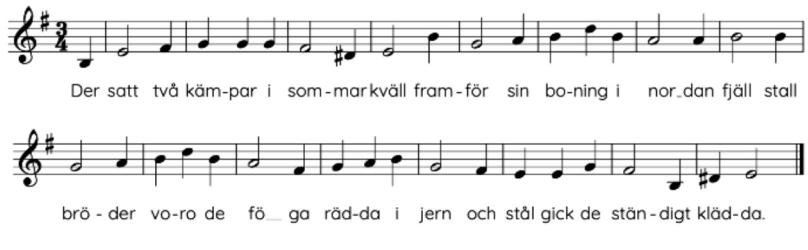
Appendix A

Musical Material Used in the Memorization Task

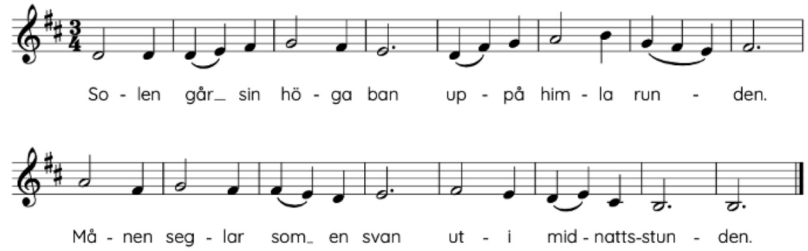
Song 1



Song 2



Song 3



Appendix B

Table

Questionnaire on Sight-Singing Strategies and Summary of Responses

The number of positive responses to statements that begin with "When I sung the songs I …"	All participants ($N = 15$)	The high-accuracy performers ($N = 3$)	The low-accuracy performers ($N = 3$)
1 I related to scale degrees.	13	3	2
2 I related to intervals.	12	2	3
3 I compared with a previously sung note.	13	3*	3*
4 I have sung other notes to fill a leap.	4	0*	0*
5 I grouped notes to create chords or arpeggios.	9	2	0
6 I looked for repetitions and sequences.	13	2	3
7 I looked for common melodic patterns.	9	1	3
8 I looked for scale patterns.	10	2	1
9 I grouped notes to create melodic motives.	13	3*	3*
10 I determined the meter and the key before singing	12	1	3
11 I practiced challenging sections separately	15	3*	3*

Note. Ratings of declarative statements on sight-singing strategies utilized by music students during practice. The numbers in the table represent the ratings of the "Yes" responses. * = strategies marked with an asterisk (*) received equal ratings from participants in both subgroups.

Appendix C

Table

The Accuracy (in %) of the recall from memory after each practice

	Song 1			Song 2			Song 3		
	Practice			Practice			Practice		
Participants	1	2	3	1	2	3	1	2	3
P1	50	100	100	41	56	66	47	47	100
P2	81	100	100	91	100	100	71	74	92
P3	94	100	94	97	100	75	63	95	100
P4	50	92	83	53	100	100	61	55	66
P5	0	78	97	5	68	50	42	29	68
P6	47	94	86	53	97	100	47	76	79
P7	75	100	100	94	100	100	32	29	34
P8	22	0	53	28	59	63	24	47	63
P9	50	64	86	41	84	66	45	24	55
P10	6	28	67	25	31	25	24	24	24
P11	50	92	100	0	66	88	5	45	76
P12	0	44	81	19	88	100	39	68	100
P13	75	53	100	53	94	100	50	95	100
P14	0	50	42	25	53	75	37	53	95
P15	47	81	100	25	84	72	39	66	71

Note. The analyses of recall accuracy, reported as percentages (%), were conducted for fifteen participants (P1–P15). Some participants experienced occasional "blackouts," which resulted in an inability to recall, despite demonstrating almost completely accurate performance just before attempting to perform from memory. These blackouts are indicated as "0" in the accuracy matrix.

Appendix D

Report on Eye-Tracking Data Collection Accuracy

The eye-tracking data collection began with a 5-points calibration routine, followed by a 4-points validation of the calibration, all conducted in a room with consistent lighting conditions. After the data collection, to ensure the quality of the analyzed eye-movement data, several key metrics were computed for whole sample (Niehorster et al., 2020). These metrics include accuracy indicating the closeness of gaze points to targets participants are asked to fixate (M = 0.60 deg., SD = 0.29), *precision*, demonstrating the consistency of measurements (M = 0.08 deg., SD = 0.02), and the *proportion of data loss* (M = 8.8 %, SD = 4.5).

Appendix E

Table

Specification of the Memorization Approaches Utilized in the Current Study

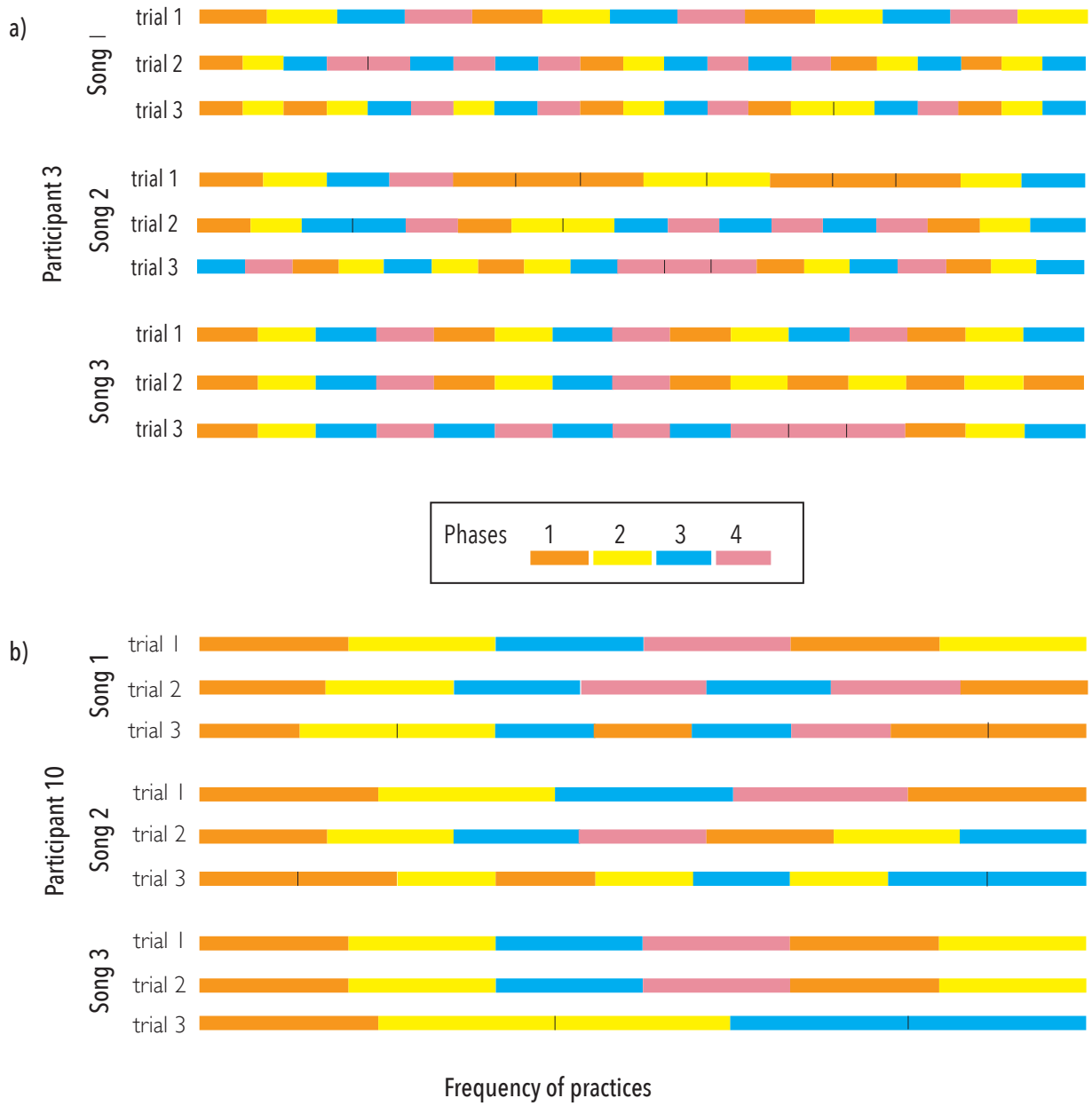
Approach	Progression in the sequence		Total amount of phrases in one practice sequence (bars)
	Starting point	Ending point	
Holistic	Phase 1	Phrase 4	4 phrases (16 bars)
Additive	Phase 1	Phrase 3	3 phrases (12 bars)
	Phase 2	Phrase 4	3 phrases (12 bars)
Segmented	Phase 1	Phrase 2	2 phrases (8 bars)
	Phase 2	Phrase 3	2 phrases (8 bars)
	Phase 3	Phrase 4	2 phrases (8 bars)
Serial	Phase 1	Phrase 1	1 phrase (4 bars)
	Phase 2	Phrase 2	1 phrase (4 bars)
	Phase 3	Phrase 3	1 phrase (4 bars)
	Phase 4	Phrase 4	1 phrase (4 bars)

Note. This overview of memorization approaches indicates the quantity and sequence of phrases practiced before the memory test.

Appendix F

Figure

Frequency of Practices Illustrated in Scarf Plots



Note. This scarf plots illustrate the differences of practice frequencies between two participants: (a) Participant 3, who achieved the highest accuracy rate (M = 93%), and (b) Participant 10, who had the lowest accuracy rate (M = 28%). The scarf plots show the order and frequency of practice for each song over three 60-second trials. For example, Participant 3 visited the four phrase units in Song 1 (Trial 1) thirteen times, while Participant 10 made only six visits. Each musical phrase is represented by a colored rectangle, and the sequence of repetitions is condensed into a single line to preserve order. The scarf plots display the number of repetitions without the explicit time spent on each phrase.

Appendix G

Table

Average Total Fixation Duration (ms) for the First vs. Last Practice Sessions

		First practice			Last practice		
	N	*Mean*	*SE*	*SD*	*Mean*	*SE*	*SD*
High-accuracy performers							
Phrase 1	9	11694	2812	8436	3184	644	1931
Phrase 2	9	12377	1039	3117	4998	441	1322
Phrase 3	9	6235	1793	5380	7741	1683	5048
Phrase 4	9	5005	1473	4419	10453	1723	5169
Low-accuracy performers							
Phrase 1	9	12182	2331	6993	7392	1525	4576
Phrase 2	9	10954	1528	4585	11051	2250	6750
Phrase 3	9	3982	1242	3723	12119	2021	6062
Phrase 4	9	2909	1330	3990	6028	1107	3320

Note. This table presents the average total fixation duration, including standard deviation and standard error, for four phrases across the first and last practice sessions.

Appendix H

Table

The Number of Times on Average Each Single Phrase was Sung Across all Songs

	Song 1	Song 2	Song 3	Grand mean (SD)
	M (SD)	M (SD)	M (SD)	
		High-accuracy performers		
Phrase 1	8.67 (2.05)	11.00 (2.83)	9.00 (3.74)	9.56 (1.03)
Phrase 2	12.33 (1.70)	12.33 (1.25)	8.67 (3.30)	11.11 (1.73)
Phrase 3	14.00 (2.83)	16.00 (2.45)	12.33 (1.25)	14.11 (1.50)
Phrase 4	15.67 (5.19)	16.67 (3.81)	14.33 (4.71)	15.56 (0.96)
		Low-accuracy performers		
Phrase 1	6.67 (1.24)	7.67 (0.94)	7.67 (2.05)	7.34 (0.47)
Phrase 2	6.00 (2.16)	6.67 (1.70)	6.67 (1.70)	6.45 (0.31)
Phrase 3	4.67 (2.05)	5.67 (3.30)	3.33 (2.05)	4.55 (0.96)
Phrase 4	3.66 (1.25)	3.00 (1.63)	2.00 (0.82)	2.89 (0.68)

Note. This table provides an additional illustration of the learning patterns of the two subgroups. The increase in the number of phrase repetitions toward the fourth phrase for the high-accuracy performers highlights their ability to remember the initial segments of the melodies (e.g., phrases 1–2) while deliberately shifting focus to less retained material (e.g., phrases 3–4). The opposite tendency appeared in the learning patterns of low-accuracy performers.

Article

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Sacred Concert and Spirituals Selections in a 2021-2022 School Choral Catalog

Andrew Trites[1]

Abstract

Sacred music from Christian perspectives has been sung in public schools since the inception of music programs, but students would benefit from singing sacred music from a broad spectrum of religious traditions. Music vendors, key stakeholders in marketing and selling music selections to United States music educators and their students, commonly use the term sacred in categorizing music to promote sales. The purpose of this content analysis was to investigate the language editors of a prominent choral-music retailer used to market sacred music selections to school choral educators. Four questions guided my research of the 2021-2022 J. W. Pepper school choral catalog: (1) how did editors use religious language, (2) how did editors describe styles, periods, and the printed language(s) of the text, (3) how did editors indicate educational use, and (4) what might be learned from editors' descriptions? I coded all 356 selections and descriptions categorized by the editors in the subcategory Sacred Concert & Spirituals. Across non-exhaustive categories, editors used religious language in 90 descriptions, specified style in 183, specified a historical period in 46, specified the language(s) of the text in 84, and invoked educational language in 112. Findings reinforced Christianity as a dominant religion in United States public school choral music. Choral educators and music vendors should reflect on whose religious beliefs are reflected in school concerts and published sacred music categories, broadening sacred music to be more inclusive.

Keywords: Choral music education, repertoire selection, dominant religion, music vendors, sacred music, religious music, qualitative content analysis

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In the United States, public school choral educators often facilitate group singing using music purchased from music vendors. Through the process of repertoire selection, educators choose music that ideally motivates and challenges students to grow their musical skills, cultural awareness, and creativity (Brunner, 1992). Repertoire selection may begin when educators attend conferences and choral concerts, visit music stores, peruse promotional materials from music vendors, or search online (Head, 2008). Choral educators consider many factors when choosing a selection for their students, including their students' ages, the voicing of the choir, the sung text (Brunner, 1992), the educator's personal taste (Hamann, 2007), a selection's contexts such as historical periods and styles (Brunner, 1992; Forbes, 2001), and how the selection adds variety to a performance (Forbes, 2001).

Music vendors are key stakeholders in repertoire selection. In the choral music marketplace, music vendors sell music selections to their consumers: choral educators and, by extension, their students. Music vendors sell many new and previously composed selections. Aiming to create satisfying shopping experiences that maximize sales, music vendors organize available selections into categories in seasonal catalogs and websites. Common categories across several music vendors' websites and catalogs included Brunner's (1992) and Forbes's (2001) repertoire selection factors: voicing, skill level, historical periods, and musical styles. Another common category was sacred music.

Religious Music and Public Schools

Since the 1800s, choral educators in United States public schools have selected music with Christian religious texts to use in classrooms (Mark, 2008). Public school programs emerged from singing schools that supported congregational singing in Northeast Christian churches and spread throughout the country (Mark, 2008). Although institutions including schools and churches were segregated by race, both White and Black Christian churches provided music learning opportunities in the singing school tradition (Howe, 2015). United States public school choral students continue to sing Christian religious music in rehearsals and performances (Perrine, 2016; Perrine, 2017, Clark 2023).

Authors (Schwadron, 1970, Bronfman, 2015, Sharp, 2019) and national organizations' position statements (American Choral Directors Association [ACDA], 1982, Music Educators National Conference [MENC], 1984) have suggested that, since music and religion are often overlapping parts of the human experience, sacred music programming in public schools vitally contributes to a rich learning experience for singers. ACDA's position statement recommended that sacred music should include "*all* manner of religious belief and not only to the practices of Judeo-Christian teachings" (1982, p. 3). In practice, performances of sacred music from multiple Christian perspectives seemed to far outpace performances of non-Christian sacred music. Students have been marginalized in school choirs because of their faith (Kasparian, 1997; Drummond, 2014), and court cases have challenged the use of Christian religious music in public schools (see Cranmore and Fossey, 2014). The Supreme Court's decision to protect a coach's right to lead a Christian prayer

immediately following football games on the field's 50-yard-line (Brannon, 2022) magnified the importance of considering whose religious music and texts are reflected and absent in school choral music.

Many choral educators continue to program religious music for public school choirs (Mercado, 2020). Music vendors market music selections categorized as religious or sacred to choral educators. Little research has investigated the choral music marketplace. Disturbed by perceived trends in the choral music marketplace, Deborah Bradley (2010) researched a decade's worth of school choral catalogs from four prominent choral music publishers (i.e., Alfred, Lorenz, Hal Leonard, and Shawnee Press). Her findings, which did not include representations of supporting data beyond the paper's narrative, revealed a strong presence of Christian religious music (30-40% of total selections each year) and harmful trends for minoritized groups—including exoticized language that revealed anti-Arab sentiments and the Whitewashing of Black music selections. Researchers have not examined religious music in the choral music marketplace or the diversity of selections within and across religions.

Mercado (2020) presented a critical framework for music educators and policymakers to more meaningfully include religious music selections from diverse traditions. The framework included four themes: (a) religious experience, ensuring that educators neither promoted nor inhibited any religion, (b) teaching about religion, where music supports curricular, developmentally appropriate learning objectives, (C) references, both knowing case law and understanding the contexts surrounding each case, and (D) developing an intercultural perspective, where choral educators and students explore music from multiple religious perspectives. Although individuals from diverse religious identities in the United States are interacting more frequently, school district policymakers have suggested but not required choral educators to program music from diverse religious perspectives (Mercado, 2020).

Most people in the United States identified as Christian through the late 20th century, including 79.5% of the population in 2010 (Pew Research Center, 2011). Recent polling reveals a downward trend with the percentage of participants identifying as Christian falling to 63% (Pew Research Center, 2022; see also Jones, 2021). Despite this shift, Clark (2023), who investigated atheist choral directors, located patterns that reinforced Christianity as the dominant religion in United States choral music. Factors contributing to Christianity's dominant status have included paid musician jobs in Christian worship services, the large number of Christian church choirs across the country, and the popularity of music with exclusively Christian texts including gospel and spiritual music (Clark, 2023). Furthermore, educators' silence on religious differences and values permits existing narratives and power structures, including those that harm their students, to incubate unchecked (Benedict, 2021). School choral music's roots in supporting congregational singing (Mark, 2008) and the prevalence of Western art music throughout United States choral music education and teacher preparation have also contributed to Christianity's dominance in choral music. In a 2021 qualitative study, Clark's data analysis revealed that all 38 participating high school choral educators programmed religious and secular music for their classes, and every piece

of religious music included Christian texts. No other studies have quantified the prevalence of Christian religious music or music from other belief systems encountered by students in United States school choirs.

Categorizing Music

This study analyzed music vendors' use of language in categorizing music. To meet the needs of their choral educator consumers, music vendors classify their selections according to a range of categories. Choral educator consumers experience these categories through webpages devoted to specific choral contexts, filters, and search options. Ellefsen (2022) described the process of classifying items into categories as *genring*: a dynamic and continuous process of establishing and changing categories. As stakeholders choose to include or exclude music selections, the emerging categories "deconstruct genres while simultaneously participating in them, always challenging their borders, and adding to their meaning" (Ellefsen, 2022, p. 58). On music vendor J. W. Pepper's website, choral music selections are classified first into non-exhaustive categories: School, Community & Collegiate, Church, and Vocal. The first page of results in both School and Church included "God Be in My Head," an original composition by Andrea Ramsey for two-part treble choir set to a Christian text. Although categorized as School, choral educators may work within district policies that prohibit singing music with religious texts (Mercado, 2020). Although categorized as Church, choral educators may recognize Andrea Ramsey as an exemplary composer of selections for developing voices. Choral students encountering the selection might learn that "God Be in My Head" is a School choral selection, and they might associate the selection with additional categories made salient through their learning of the piece (e.g. 21st century, SA voicing, female composer, major tonality, duple meter, religious, Christian text).

For music educators and their students more broadly, National Association for Music Education (NAfME) identified genres, historical periods, and styles as important contexts in supporting documents from the CORE Arts Standards (2014a). While Forbes (2001) did not define these terms, NAfME (2014a) provided overlapping definitions. Genre, with given examples jazz, march, and country, was "characterized by a distinctive style, form, and/or content" (p. 5). Historical periods, including Medieval, Baroque, and Contemporary, were defined as units of time when Western music composers embraced common compositional characteristics (p. 10). Style, defined without examples, described "distinguishing characteristics and often performance practices associated with its historical period, cultural context, and/or genre" (p. 10). In this paper, I use *genre* to describe broad categories of music, such as "school music," which are associated with higher levels of music vendors' headings on websites and in catalogs. *Historical periods* and *styles* refer to smaller music sets that correspond to descriptive codes from my analysis of selection descriptions.

Although a prevalent classification in United States choral music, *sacred music* was not defined in the CORE Arts Standards. Sacred music has eluded consistent definition. In law scholarship, Kasparian (1997) held the terms sacred and secular as opposites. Marini (2003)

outlined three requirements for categorizing a selection as sacred, including musical elements, access to a shared mythic identity, and ritual intent. Since many Western composers have set biblical texts for performance without ritual intent, Marini argued those selections should not be categorized as sacred. Despite acknowledging that many works incorporating biblical texts were never intended for church or ritual performances, Tim Sharp, former executive director of the ACDA, referred to such compositions as sacred (2019). In this study, *sacred music* means "music with religious content" (Kasparian, 1997, p. 1112) and is synonymous with religious music.

The Problem

Despite repeated calls for religious music in public schools to include selections from a broad range of religious identities (ACDA, 1982; Mercado, 2022; Schwadron, 1970), little research has investigated the sacred music available in the music marketplace. Ideally, music vendors might clearly promote music from a broad spectrum of religious identities to support meaningful experiences in learning sacred music and building intercultural perspectives. While Bradley's (2010) important work illuminated troubling trends in the marketplace at that time, additional data was needed to better understand the current state of sacred music in the marketplace.

Purpose and Research Questions

To better understand how music vendors might influence their consumers, the purpose of this content analysis was to investigate the language J. W. Pepper's editors used to market music selections categorized as *Sacred Concert & Spirituals* in the 2021[1] school choral catalog to choral educators. The following questions guided this research:

1. How did editors use religious language in the school choral catalog?

2. How did editors describe styles, periods, and the printed language(s) of the text?

3. How did editors indicate educational use, such as the number of available voicings, the provided difficulty label, and educational discourse within the descriptions?

4. What might choral educators learn from editors' descriptions?

Research Approach

I embraced Krippendorff's (2019) assertion that content analysis is context-bound and

[1] J. W. Pepper named school choral catalogs by the school year of publication. For the sake of clarity, I abbreviated 2021-2022 to 2021 when referring to the catalogs.

therefore qualitative in nature. Since my analysis was context-bound, I invoked a constructivist epistemology (Hinchey, 2010) and assigned meanings to printed text related to my research questions (Schreier, 2014). As qualitative content analysis is context-bound (Krippendorff 2019), the present study may share similar bounds to a single case study, such as the data sources, research method, and the researcher (Stake, 2005). Following Bradley (2010) I analyzed my data source, a publisher's school choral catalog, as an "interpretation of material culture" (p. 5) that both revealed and constructed the collective music teacher identity held by the publishers. This content analysis was bounded by the catalog and scope of J. W. Pepper's retail selection in 2021, the beliefs and choices of the editors who authored the catalog, the limits of analyzing text rather than conducting human-subject research, and my worldview, experiences, and positionality as researcher-as-instrument (Stake, 2005).

Researcher Positionality

At the time of research, I identified as straight, White, male, and Christian, each a privileged position in my society. I previously worked as a musician for 12 years in Lutheran and Methodist churches, in more progressive congregations of the Evangelical Lutheran Church of America and the United Methodist Church. At the time of analysis, I concurrently worked in a Roman Catholic church and school. As a public-school choral educator, I regularly programmed Christian-oriented sacred music as defined for this paper. Like Drummond (2014), I believed students should sing sacred music in schools because it is "an integral part of musical life from cultures all over the world" (p. 31). At the time of publication, I had rarely encountered sacred music from non-Christian sources in choral music spaces. Recognizing my worldview, I worked with a fellow choral music educator who identified as Jewish as a peer debriefer to aid and interrogate my analysis process.

J.W. Pepper

J. W. Pepper is the country's leading choral music retailer. The company was founded in Philadelphia in 1876 and has a long history in music retail due to successful mail and online ordering campaigns (J. W. Pepper, 2023). Today, the company stocks over a million titles and provides resources to musicians and music teachers such as selection descriptions, audio and visual samples of titles, and downloadable sheet music. I chose to study the J. W. Pepper catalog due to the company's longevity and the amount of music the company retails each year.

Before collecting data, I acquired digital copies of J. W. Pepper's annual school choral catalogs from 2012 through 2021 to investigate what labels editors used to feature choral music selections. I also investigated the company's website, discovering that descriptions of music selections online matched the current catalog verbatim. Both online and in the catalog, J. W. Pepper provided information on voicing and difficulty level for each selection, both of which might inform choral educators whether a piece is appropriate for their teaching context. From 2012-2020, editors categorized Sacred Concert separate from Spiritual and

Gospel. In 2021, editors combined these categories under the category Sacred Concert & Spirituals. While new music was featured in each catalog, editors included many selections each year accompanied by unchanging descriptions. I focused on the 2021 catalog because it was the only one available at the time of the study that recognized idiomatic Black music as sacred, and I was confident descriptions would match those from previous catalogs.

In the 2021 catalog, editors included a table of contents with two levels of headings. Level one headings included Christmas & Holiday, Concert, Pop Stage & Screen, Vocal, Handbells, and Director Resources. Subcategories relevant to sacred music included Christmas Sacred & Spirituals and Hanukkah (within Christmas & Holiday) and Sacred Concert & Spirituals (within Concert). In *Stratechuk v. Board of Education* (2009), courts upheld a school district's ban of Christmas carols, including "Silent Night" and "Hark the Herald Angels Sing," after parents complained that holiday-themed performances were religious in nature (Cranmore and Fossey, 2014; Perrine, 2016). The common practice of adding a Hanukkah tune to otherwise Christian-focused holiday concerts can betray an educator's "lack of understanding of the Jewish faith and of the privileged position of the Christian majority as well as a lack of acknowledgment for anyone who does not fall into one of those two categories" (Drummond, 2014, p. 39). In the printed label Christmas & Holiday, editors named a Christian holiday but no holidays from other religions. Subcategories applied the term sacred to one Christmas label (Christmas Sacred & Spirituals) but not to the labels Hanukkah or Holiday Multicultural. Holiday-themed concerts have misrepresented or left out non-Christian religious identities. I questioned the value of analyzing the holiday categories in this catalog because of the prominent placement of Hanukkah as a possible misrepresentation of Jewish faith and the lack of references to any other non-Christian religion or holiday in category titles. Analysis of these categories might have implicitly reinforced the problematic ways these selections have been used in school classrooms. Therefore, I chose to exclude the Christmas & Holiday pages from my analysis. Although subcategories such as Multicultural & World Music, Folksongs, and Major Choral Works may have contained both secular and sacred selections, they were also excluded from this study because editors did not use the term sacred in these categorizations.

Procedure and Data Analysis

I analyzed the printed words in catalog titles and descriptions using qualitative content analysis (Schreier 2014), building a coding frame to systematically reduce the amount of data (the published words in the catalog). My analysis included all 356 available selection titles and descriptions within the catalog subcategory Sacred Concert & Spirituals, maximizing the data points available for analysis. I reduced data into descriptive codes, using words from the catalog in my coding whenever possible and organizing codes into categories and subcategories relevant to my research questions (Schreier, 2014). I developed a priori concept-driven categories based on the literature review and preliminary perusal of the catalogs and data-driven categories that emerged during analysis (Schreier, 2014). Main catego-

ries exhausted all 356 data points, but each subcategory only included relevant selections. A priori concept-driven main categories included (1) use of religious language, (2) descriptions of genre, style, historical period, and languages, and (3) use of educational language, including editors' words in descriptions, available voicings, and difficulty labels. First-layer codes included references to (1) specific religions (e.g., Christian, Jewish), religious texts and individuals (e.g., Bible, Jesus), and religious activities (e.g., liturgy, worship service); (2) specific genres, styles, historical periods, and languages disclosed in selection descriptions; and (3) voicing, difficulty label, references to schools, possible learning objectives, and language suggesting appropriateness for a school ensemble such as "developing voices."

I made multiple data-driven changes to the coding frame using an iterative process (Schreier, 2014). Since many selection descriptions did not disclose information in some of the categories, I created the label "unspecified" to note when a selection description lacked relevant data in that category. When languages of texts were not addressed in the selection description, I captured the language of the title as a possible clue to the printed language of the text. During second-layer coding, I categorized codes to build mutually exclusive and exhaustive subcategories, ensuring each selection was represented only once in each subcategory. For example, I combined codes of publication years (e.g., 1972) into the appropriate subcategory (20th Century) within the main category Historical Period. When a description used multiple terms within a single category, I created a new category that combined terms. The code Spiritual/Gospel emerged because so many selection descriptions included both terms.

I verified data through consistent coding and categorizing (Schreier, 2014) and working independently with experienced researchers to improve trustworthiness (Krippendorff, 2019). In addition to offering guidance throughout the study, a faculty member reviewed both the a priori coding frame and results from the main analysis (Schreier, 2014). In addition, a peer familiar with qualitative research independently coded 36 of the 356 total selections (10.1%), including 18 selected by me to maximize the codes needed for analysis and 18 selected by the peer debriefer. The peer reviewer and I came to full agreement on the coding of each selection description regarding the (1) use of religious language, (2) styles, historical periods, and languages shared, and (3) use of educational language including voicing and difficulty label.

Findings

The purpose of this content analysis was to investigate the language J. W. Pepper's editors used to market music selections categorized as Sacred Concert & Spirituals in the 2021 school choral catalog to choral educators. I coded all 356 selections categorized into the Sacred Concert & Spirituals category. Each selection included a title, a description, voicing information, and a difficulty label. Table 1 on the next page includes aggregated counts for selection descriptions containing codes from across the non-exhaustive main categories: religious language, style, historical period, language(s) of text, and educational language.

Table 1

Aggregated Counts for Main Coding Frame Categories

Main Categories	*n*	%
Religious Language		
Contained	90	25.3
Did not contain	266	74.7
Style		
Contained	183	51.4
Did not contain	173	48.6
Historical Period		
Contained	46	12.9
Did not contain	310	87.1
Languages of Text		
Contained	84	23.6
Did not contain	272	76.4
Educational Language*		
Contained	112	31.5
Did not contain	244	68.5
Religious and Educational Language		
Contained	19	5.3
Contained either	165	46.3
Did not contain	172	48.3

Note: I coded 356 total selections.

*In this context, educational language refers specifically to words in selection descriptions coded as use of educational language. All 356 selections included voicings and difficulty labels.

Editors used both educational and religious language in 19 descriptions (5.3%) and neither in 172 descriptions (48.3%). Page numbers in the findings section refer to the location of titles and descriptions in the 2021 school choral catalog.

Use of Religious Language

I found use of religious language in 90 of 356 selection descriptions. Categories of codes within the selections included choral contexts, sacred stories or persons, sacred song categorizations, quoted text from the selection (e.g., Hallelujah), and amplifying beliefs (e.g., joy of singing to God). Table 2 includes religious language codes and counts related to choral contexts, sacred stories or persons, and sacred song categorizations. Most quoted text and amplifying belief codes were unique to each selection.

Table 2

Religious Language Codes for Choral Contexts, Sacred Stories or Persons, and Sacred Songs

Choral Contexts		Sacred Stories or Persons		Sacred Songs	
Code	*n*	Code	*n*	Code	*n*
church	17	Christmas	8	hymn	21
service	11	Angels	2	benediction	3
worship	7	heaven	2	blessing	3
congregation	3	Corinthians bible verse	1	prayer	3
sacred	2	David and Goliath	1	chant	2
anthem	1	Elijah	1	motet	2
Easter or Christmas	1	II Samuel 23:3	1	Gloria	1
Hanukkah	1	Mary	1	Protestant	1
sanctuary	1	Matthew 18	1	Meditation	1
		Psalm 100	1	revivalist song	1
		The Book of Common Prayer	1	song of adoration	1
		The Book of Divine Works	1		
		Walls of Jericho	1		

Note: 90 of 356 selections included religious language codes.

Choral contexts shared suggested choirs, performance venues, or uses for a work. Editors wrote that one selection was a "wonderful choice for any worship service throughout the church year" (p. 73). Sacred stories or persons included Biblical characters (e.g., Elijah, David, Mary), verses or chapters (e.g., Psalm 100; Corinthians), and non-Biblical works (The Book of Common Prayer)**.** Sacred songs refer to types of songs associated with (Christian) worship: hymn, blessing, et al. In addition, I coded 24 song titles and text quoted in descriptions, such as "alleluia" (p. 70), "This Little Light of Mine" (p. 78), and the phrase, capitalization recopied here, "God gave the world True Light" (p. 80). Of the 356 total selections,

editors connected only one with a non-Christian religious text or source, John Leavitt's original composition *Ose Shalom:*

> This timely text from the Jewish liturgy is brilliantly set in a lovely original work by John Leavitt. Its simple message of peace is enhanced with soaring melodies and lyric instrumental lines, making it a strong choice as a multicultural or a Hanukkah feature (p. 77).

I coded this as a choral context (Hanukkah feature) and sacred song categorization (Jewish liturgy). Notably, although another section in the catalog was called Christmas & Holiday, editors used the term Christmas to describe 8 selections and Hanukkah in 1 selection within the Sacred Concert & Spirituals genre.

I coded amplifying beliefs whenever descriptions seemed to conflate singers' personal beliefs with messages in the selection. Editors sometimes described the selection as a religious act (e.g., prayer) or used the word "our" when discussing the text's messages. Figure 1 includes 10 examples from the catalog, with bold text indicating the words I coded as amplifying beliefs.

Figure 1.
Codes Categorized as Amplifying Beliefs

Buoyant, earthy, ethnic , reverent - in short, this wonderful piece by Paul Basler truly runs the gamut of dynamics, vocal timbres, styles and **covers a multitude of ways of praising God!** (p.67)

Featuring alternating English, Basque, and Latin text, **this thrilling setting proclaims the joy of singing to God!** (p. 68)

From the film "O Brother, Where Art Thou," **this Appalachian flavored spiritual is a genuine, heartfelt plea for prayer … This powerful; work creates a deeply emotional Saturday night revival mood.** (p. 69)

The music is driving and relentless as **the singers are determined to be "ready to go" into the kingdom of God.** The characters in this unique and compelling work are mother, sister… and finally, self, which reminds us that **all of us will all face this journey, so we had best live right and shout "Hallelujah" when our turn comes.** (p. 69)

This unique setting pairs the inconic Latin text with a new, original English test which responds to the question: **Why do we rejoice and shout our praises to God?** (p. 71)

Dedicated to the memory of Jester Hairston, **this original spiritual by Moses Hogan is a reverent prayer of hope.** (p. 72)

Drawing on both traditional and modern choral elements, South African musical influencers, and a touch of the gospel jazz style of Take 6, **this piece paints a portrait of a world that sits in the palm of God's hand.** (P. 72)

Commissioned by the St. Olaf Chor for the 2016 St. Olaf Christmas Festival, this work is a thanksgiving, a song about the gift of a tiny child that suggests that only the nature of love is changeless. **It sings about our renewed hope and how light shines because Christmas is a new and refreshing gift; our hearts are renewed, and our hope is renewed.** (p. 73)

Your more experienced choral group will love to sink their teeth into this drving, sturdy rendition of Antioch, from the Sacred Harp collection… **A rousing statement of faith for the sanctuary or concert stage!** (p. 73)

Composed as a prayer for those in the world who need charity and love the most. May this music amplify the message that **there is a great power in acts of charity and love.** (p. 80)

Note: I bolded text in the figure to emphasize language coded as amplifying beliefs.

Styles, Historical Periods, and Languages of Texts

In the following paragraphs, I detail the analysis of styles, historical periods, and languages of texts (see Table 3 on the next page). As a reminder, I coded all 356 music selections as belonging to the genre of Sacred Concert & Spirituals, one of the categories editors used to organize selections. The term Sacred Concert & Spirituals appeared in both the table of contents and as a running head on each relevant page of the catalog. Within this section, editors used terms that might be considered a genre or a style (e.g. folk song). For the sake of consistency, I coded these words as a style. Where no style or genre was shared, I coded the description as unspecified.

Editors provided descriptions of style in 183 total selections organized into 20 mutually exhaustive categories. Notably, 102 selections were coded as Spiritual/Gospel, and 34 selections were coded as Multiple since more than one style was coded within those selections' descriptions (e.g. "Irish folk" or "gospel rock"). Nine other style categories emerged in multiple selections, including Religious Song, Shape-Note, Contemporary/Modern, Blues/Bluesy, Folk, Chant-Like, Shaker, Soulful, Irish, Neo-Classical, and Southern Harmony. Editors provided too little information in 173 descriptions to categorize these selections by style. For Peter Lutkin's "The Lord Bless You and Keep You," for example, editors wrote, "Excellent as a benediction or closing number, this is a piece you're sure to pick up often. May be done with or without accompaniment" (p. 75).

I coded historical periods or publication dates in 46 selection descriptions. Categories were combined to create mutually exclusive, exhaustive categories and to reflect editors' use of multiple periods within descriptions. Resulting categories included 20th Century (16 selections), Renaissance/Baroque (12 selections), 19th Century (7 selections), 18th Century America (6 selections), Classical (3 selections), and 21st Century (2 selections). The remaining 310 selections were coded as unspecified.

Editors specified the language of the sung text for 84 of 356 selections. English and Latin were the only languages specified in more than two selections. For the 272 selections coded as unspecified, I added a code based on the language of the title. (e.g., Unspecified with English title). Unspecified text with an English title was by far the largest category, including 241 selections. Editors specified Latin most frequently, including 60 selections that were in the Latin category and an additional 16 selections that included Latin with other languages. Editors detailed optional languages for four selections, specifying the printed languages choral students might use to perform the given selections.

Use of Educational Language

While all 356 selections included voicings and difficulty labels, only 112 descriptions contained educational language. Subcategories of codes included school contexts (e.g., developing voices), learning objectives (e.g., teach lyricism), and needs of school ensembles (e.g., limited ranges). Editors occasionally described learning objectives, such as "Reese's a cappella canon, based on a descending D major scale, is fantastic for teaching unison singing,

Table 3

Styles, Historical Periods, and Languages of Texts in Selection Descriptions

Styles			Historical Periods			Languages of Texts		
Categories	*n*	%	Categories	*n*	%	Categories	*n*	%
Unspecified	173	48.6	Unspecified	310	87.1	Unspecified	272	76.4
Spiritual/Gospel	102	28.7	20th Century	16	4.5	with title in	241	67.7
Multiple	34	9.6	Renaissance/ Baroque	12	3.4	English	23	6.5
Religious Song	21	5.9	19th Century	7	2.0	Latin	3	0.8
Shape-Note	4	1.1	18th Century America	6	1.7	English and Latin	1	0.3
Blues/Bluesy	3	0.8	Classical	3	0.8	English and Swahili	1	0.3
Contemporary/Modern	3	0.8	21st Century	2	0.6	German	1	0.3
Folk	3	0.8				Hebrew	1	0.3
Chant-Like	2	0.6				Portuguese	1	0.3
Latin American	2	0.6				Swahili	1	0.3
Multicultural	2	0.6						
Soulful	2	0.6				Specified	84	23.6
Almost Spiritual	1	0.3				Latin	60	16.9
Chant-Like	1	0.3				English and Latin	13	3.7
Country	1	0.3				English	3	0.8
Freedom Song	1	0.3				English or Latin	2	0.6
Historical Feel	1	0.3				French	1	0.3
Jazz/Jazzy	1	0.3				Hebrew	1	0.3
Marching Song	1	0.3				Spanish	1	0.3
Work Song	1	0.3				English, Latin, and Basque	1	0.3
						English or Norwegian	1	0.3
						English, Norwegian, or German	1	0.3

Note: I coded 356 total selections.

reinforcing part singing, and developing choral tone, all within the framework of conservative ranges for the treble choir" (p. 72). Teaching and learning cultural contexts were selling points in the description for *Keep Your Lamps Trimmed and Burning— arr. Kirby Shaw*:

> This traditional Spiritual from the Underground Railroad movement is full of strong rhythmic energy. Full harmonies with well-placed articulation and syncopated interaction make this arrangement particularly fun to sing. Your choir will enjoy exploring the history and context while they learn (p. 74).

In addition to educational language within descriptions, editors provided two labels on each selection: difficulty (e.g., Medium-Easy) and voicings (e.g., SSA, SAB). I coded the labeled difficulty for each selection and counted the number of available voicings for each selection (see Table 4). Editors assigned Medium-Easy or Medium difficulty labels to 314 of 356 selections in the Sacred Concert & Spirituals section. I noticed that 193 of 356 selections (54.2%) were available in multiple voicings. Voicings and difficulty ratings were consistent between the catalog and the website at the time of analysis.

Table 4
Number of Voicings Available and Difficulty Ratings of Selections

Voicings			Difficulty Ratings		
Number Available	*n*	%	Description	*n*	%
One	163	45.8	Medium-Easy	159	44.7
Three or more	105	29.5	Medium	154	43.3
Two	88	24.7	Medium-Advanced	24	6.7
			Easy	18	5.1
			Medium-Easy and Medium*	1	0.3

Note: I coded 356 total selections.
* One selection was coded as Medium-Easy for one voicing and Medium for another.

Discussion

The purpose of this content analysis was to investigate the language J. W. Pepper's editors used to market music selections categorized as *Sacred Concert & Spirituals* in the 2021 school choral catalog to choral educators. Research questions included (1) how did editors use religious language in the school choral catalog; (2) how did editors describe styles, periods, and languages; (3) how did editors indicate educational use, such as the number

of available voicings, the provided difficulty label, and educational discourse within the descriptions; and (4) what might choral educators learn from editors' descriptions? This discussion organizes topics by considering the use of religious language, the use of educational language, the current sacred choral music marketplace, and developing intercultural perspectives, respectively.

Use of Religious Language

Christianity seemed to be a dominant religion in the Sacred Concert & Spirituals category of the 2021 J. W. Pepper school choral catalog, reinforcing findings from Bradley (2010) and Clark (2023). Christianity has been the majority religion of United States citizens (Pew Research Center, 2011) and deeply embedded in Western choral music (Sharp, 2019) and public schools in the United States (Mark, 2008). I could not specify in 266 of the 356 (74.7%) selections how or for whom these selections might be considered sacred beyond my assumptions about the printed title. The prominent absence of religious language in so many descriptions seemed consistent with the way dominant cultural forces operate in ways often unseen by members of dominant groups (Tatum, 2018). While I did not include religious identities in my coding frame, music with ties to Christianity were available on each page. When using religious language, editors consistently referenced specific passages, stories, and characters from the Bible. I found a single reference to a non-Christian faith: *Ose Shalom's* ties to Jewish liturgy.

The emerging code amplifying beliefs suggested to me that descriptions and, perhaps the songs these descriptions marketed, might be interpreted as promoting certain beliefs. When editors wrote that a selection was a "rousing statement of faith" (p. 73), I wondered whose faith was being stated and how singers might feel about that. When I read singers "had best live right and shout 'Hallelujah' when [their] turn comes," (p. 69), I wondered how my students and their families might feel if I included this statement in my concert notes. Choral students and families might experience promoted religious beliefs as an infringement on their First Amendment rights, particularly when multiple religious perspectives are not being voiced (Mercado, 2020). Reflecting on the data, I wonder how my non-Christian students and their families would feel knowing music sacred to them was not categorized as Sacred Concert & Spirituals.

Practically for music vendors and choral educators, specifying religious viewpoints gets thorny. Text and musical setting play an important role in who sees themselves reflected. Individuals from multiple religious identities might see their beliefs reflected when a selection's lyrics quote a religious text important in multiple religions, such as the Torah. Educators and students might draw assumptions based on the language of a selection's text; a setting of Psalm 100 might be interpreted differently when set in English, Latin, or Hebrew. People might also draw assumptions based on the musical setting itself. Within just Christianity, a wide variety of religious beliefs and experiences have resulted in contrasting musical traditions. Not all Christians will perceive Gregorian chant or Black Gospel music as reflective of

their religious identities. Moreover, Marini (2003) cited composers' lack of ritual intent as a reason some might not consider works based on text from the Catholic mass to be sacred.

I did not analyze the entire catalog, and sacred music selections from non-Christian sources may have been categorized elsewhere, such as within the category Multicultural & World Music. I chose to exclude Christmas & Holiday selections, including those categorized as Sacred Christmas & Spirituals and Hannukah, to reflect recommendations from the literature (Drummond, 2014). Flipping through the pages, I noticed some selections appeared under multiple headings, including Christmas & Holiday and Sacred Concert & Spirituals. I wonder why editors did not categorize music selections from non-Christian faiths into the Sacred Concert & Spirituals genre. In future catalogs, editors might help more people, including choral students, see their religious beliefs reflected in school music by including a broader spectrum of religious beliefs within the Sacred Concert & Spirituals category.

Use of Educational Language

When present, editors used educational language to specify schools as an appropriate setting for a selection. While this seemed redundant within in the school choral catalog, these notes may have been useful to online shoppers since catalog and online descriptions matched verbatim. Some selection descriptions claimed educational utility without describing what might be taught. For example, editors wrote of *Jubilate Deo—Michael Praetorius/arr. Doreen Rao*: "Arranged as a canon for two, three or four parts, this Doreen Rao arrangement of this Michael Praetorius work uses only the words 'Jubilate Deo. Alleluia!' A marvelous teaching piece" (p. 74). While infrequent, editors contextualized some possible learning objectives for *I've Been in the Storm So Long—arr. Christi Jones:*

> Emerging treble choirs will love singing this beloved spiritual arranged with their specific ranges and abilities in mind. Teach historical context, tone, and style with this flexible offering that can be performed a cappella or with piano accompaniment, depending on the needs of the ensemble (p. 74).

In this example, editors offered historical context, tone, and style (spiritual) as specific learning objectives, as well as describing an intended choral context: emerging treble choirs. Choral educators might find this description extremely useful when searching for repertoire. In contrast, educational language was often absent in descriptions. Editors' descriptions are provided to promote sales by piquing choral directors' interest. Future research might investigate the correlations between choral directors' purchases and educational language in descriptions.

Of the 356 coded selections, 345 (96.91%) included titles in English or Latin. I would expect a more diverse pool of selections from broader religious sources to include more non-English and non-Latin titles. Editors seemed to either categorize texts in other lan-

guages into different categories in the catalog or leave those languages unspecified. The prevalence of English and Latin texts in the Sacred Concert & Spirituals genre further supported the dominance of Christianity in the data, supporting Bradley's (2010) findings. I was surprised by how few languages were represented in this category. Titles or texts in French, Hebrew, German, Italian, Norwegian, Portuguese, Spanish, and Swahili were specified no more than twice each. Missing languages relevant to choral music and available on the J. W. Pepper website included multiple selections using Afrikaans, Chinese, Japanese, Russian, and Xhosa texts. I suspect these selections are being categorized in Multicultural & World or Folksongs. I wonder whether any of these selections have ties to religion and, if so, how choral students are encountering the sacred contexts of these selections in choral classrooms. Explicating these contexts could help students and teachers build intercultural perspectives across differing religious beliefs (Mercado, 2020), perhaps by investigating shared values or musical elements.

The Current Sacred Choral Music Marketplace

Marketplaces are made of vendors and consumers, and vendors more effectively market their supplies when they strategically speak to their consumers. From editors' descriptions in the post-9/11 era, Bradley (2010) described a constructed choral consumer who craved music selections conflating patriotism with Christian beliefs, exoticized representations of Arab music, and Whitewashed Black American music selections. Based on the abundance of Christian music within the Sacred Concert & Spirituals genre and the lack of music with non-Christian texts, editors seemed to sell selections to choral consumers who conflated sacred and Christian. Although policymakers have suggested teaching intercultural perspectives in school choirs (Mercado, 2020), music vendors did not label music from non-Christian religious perspectives as sacred.

While some types of Christian sacred music are entrenched in United States school choral music (Mark, 2008), everyone's religious beliefs are not freely expressed. Although Schwadron (1970) and ACDA (1982) advocated for sacred music from diverse religious traditions in school choral music, sacred music selections from non-Christian religious traditions are underrepresented or absent from many choral music spaces (Clark, 2021). Knowing that dominant cultural forces often operate subliminally (Tatum, 2018), I wonder how many editors and choral directors would be aware of the omission of non-Christian music from the Sacred Concert & Spirituals genre.

Some evidence exists that music vendors are already changing their practices. The 2021 catalog was the first from J. W. Pepper to genre Sacred Concert and Spiritual and Gospel selections together as Sacred Concert & Spirituals. This genring (Ellefsen, 2022) brought idiomatic Black American music, specifically spirituals and Gospel Music, into the editors' sacred genre. I wondered why the new genre was not simply named Sacred Concert. Would this not have been more inclusive than inferring "spirituals" were somehow separate from other music in the category? As of 2024, I noticed that J. W. Pepper website no longer offers

a School Choral Catalog but a more generically named Choral & Vocal Catalog. Opening the catalog, I discovered evidence that much of my work from 2021 remains relevant. I found Sacred Concert & Spirituals under the heading Concert & Festival in the Table of Contents, just as I found in 2021. Perusing the selections in the Sacred Concert & Spiritual category, I noticed some identical titles and descriptions, including several positive and problematic examples shared in this paper.

While individual educators and music vendors can make meaningful contributions in the lives of students, policy change has the power to move everyone toward more inclusive, enriching choral experiences for people across religious identities. To move forward, policymakers might promote building intercultural perspectives in choral classrooms by mandating choral educators program music from diverse religious beliefs in choral ensembles. Choral educators would then need resources that explicated the religious contexts surrounding sacred music they might program. To meet this need and promote sales, music vendors would explicate religious ties in music selections to help their consumers, choral educators, who were aiming to meet the policy change. Choral students would benefit most from these changes with choral educators following Mercado's (2020) framework.

Developing Intercultural Perspectives

When developing intercultural perspectives, choral educators and students should experience music from multiple religious identities rather than a single perspective (Mercado, 2020). Choral educators might add religious perspective to Forbes's (2001) categories of variety as they select repertoire. Silence is not neutrality (Benedict, 2021); rather, educators programming sacred music should present multiple perspectives to help students more fully understand music and its intersections with culture and faith. Connecting music to its sociopolitical contexts might help students and educators learn more about themselves, their peers, and their communities. To strengthen learning and connection with groups and ideas not represented in the classroom, choral educators might ask individuals from diverse religious identities if they are willing to share their experiences with choral students and how, or whether, music that is sacred to them should be included in school choral music. Building trust and meaningfully connecting with stakeholders from non-Christian perspectives would vitally contribute to better choral programming, rehearsing, and performing. When encountering selections from differing faiths, students should experience "inclusivity and diverse perspectives so that students' expressions of religious or non-religious beliefs are treated equally" (Mercado, 2020, p. 179). Through diverse programming and dialogue, students' diverse religious identities might be affirmed in the non-devotional space of choral classrooms.

Realistically, educators in different situations ought to proceed differently. For some, moving away from programming sacred music in classrooms might be the best path forward. Some choral communities may not be ready to encounter diverse faiths within school choral programs. In other situations, developing intercultural perspectives through learning

music from a wider variety of religious traditions might vitally contribute to students' choral experiences (ACDA, 1982). Echoing Mercado (2020), local policymakers could write clear policies regarding the programming of sacred music in public schools that consider the strengths and needs of their schools and communities for the benefit of educators, students, and families.

Music vendors could help all educators by constructing a more inclusive category of sacred music that spans and names additional faiths. Doing so might provide an important set of selections for choral educators whether they are seeking (a) sacred music from diverse sources or (b) a category of selections to exclude from their repertoire selection processes. Music vendors might craft more useful descriptions for choral educators embracing intercultural perspectives by combining educational and religious language in descriptions. In the catalog, I found this description of *Selig sind die Toten—Heinrich Schutz/ed. Jacob Narverud:*

> This well-known motet by Heinrich Schutz is more accessible than ever in this arrangement for a cappella SSATBB choirs. This edition contains conservative ranges with added dynamics and articulations to enhance the historic early Baroque drama and allow for numerous teaching moments (p. 78).

In this example, editors used religious language (motet), sociopolitical contexts (Baroque), and educational language (accessible, conservative ranges) to describe this selection. Editors might promote sales and aid their consumers, choral educators, by including all these elements in each description.

Conclusion

Choral students deserve the opportunity to develop intercultural perspectives through singing and performing sacred music from a broad spectrum of religious identities. My analysis of the 2021 J. W. Pepper choral catalog revealed an absence of selections from non-Christian religions within the Sacred Concert & Spirituals genre. Within selection descriptions, religious language, educational language, and descriptions of styles, historical periods, and languages of printed texts were often missing. The absence of religious language and the prevalence of Christian religious sources suggest Christianity continues to be a dominant cultural force in United States choral music marketing and public school choral music. Furthermore, consumers and music vendors may conflate sacred music with Christian music which excludes music from non-Christian perspectives in choral classrooms. Choral students from non-Christian religious identities cannot see themselves reflected in sacred music as categorized in this catalog, and choral educators aiming to develop intercultural perspectives cannot effectively select sacred music from non-Christian religious sources. Individuals from diverse religious perspectives should see themselves reflected in

choral music. Just as J. W. Pepper's editors started categorizing idiomatic Black Gospel and Spirituals as sacred in the 2021 catalog, music vendors should more broadly include Christian and non-Christian religious music in sacred music categories. A more inclusive label of sacred would benefit all choral educator consumers, including those needing to avoid sacred music due to local policies. Choral educators should reflect on whose sacred music has been amplified and left out in their repertoire selection processes and connect with culture sharers from diverse religious identities to reevaluate their use of sacred music in public schools. Future researchers should continue investigating how music vendors influence teaching and learning in choral music classrooms.

Ethical Considerations

I received funding from a university grant to complete this analysis, without conflict of interest.

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Online Social Comparison and Impostor Phenomenon Among Choral Music Educators

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Abstract

The purpose of this study was to examine the degree to which selected demographic variables and online social comparison predict Impostor Phenomenon (IP) among choral music educators. Participants (N = 143) provided demographic information and completed an adapted version of the Iowa Netherlands Social Comparison Orientation Measure (INCOM) and the Clance Impostor Scale (CIPS). IP was prevalent among participants with 62.3% experiencing frequent to intense IP symptoms. Participants reported engaging in online social comparison on multiple social media platforms and most frequently experienced upward comparison. Upward and non-directional online social comparison were significant predictors of IP and accounted for 30.8% of the variance in IP scores. There was a significant, negative correlation (r = -.36, p < .001) between downward social comparison and CIPS scores. Implications for music educators are discussed, emphasizing the need for strategies to mitigate the negative impacts of online social comparison and foster supportive, authentic interactions among colleagues.

Keywords: choral, social comparison, Impostor Phenomenon, CIPS, social media

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Online Social Comparison and Impostor Phenomenon Among Choral Music Educators

Psychologists have extensively explored the human inclination towards social comparisons. Early theories posited that the fundamental need for social status (Maslow, 1943) motivated individuals to compare themselves to others when there was no physical measure by which to assess their ability (Festinger, 1954). Scholars have observed that individuals may engage in upward comparison, where they perceive others as superior to themselves (Wheeler, 1966), or downward comparison, where they evaluate themselves against those they perceive as less fortunate (Wills, 1981). Social comparison led individuals to experience improved or deteriorated self-evaluation (Buunk et al., 1990), particularly when they compared themselves to others who shared attributes and skills central to their self-concept, such as colleagues in a similar profession (Lockwood & Kunda, 1997). In professional settings, researchers identified social interactions as a significant source of work-related stress, as individuals strived to establish rapport and status among colleagues through competitive achievement and recognition (Buunk & Yberra, 1997). Powell (2023) noted that within music education "the social tendency to compare and imitate has been morphed into an antagonistic structure" potentially resulting in various adverse outcomes (p. 40). Given the frequency of social comparison in professional contexts and its recognition within the field, further investigation into the prevalence and ramifications of social comparison within the music education profession is warranted.

Online Social Comparison

A substantial amount of contemporary inquiry into social comparison has focused on interactions in online contexts, particularly social media. Since the introduction of social networking sites (SNSs) in the early 2000s, online user identities have grown from approximately 25 million to over 5 billion in 2024, representing 84.2% of the global population for those aged 18 and older (Kemp, 2024). Interactions on SNSs are not limited to one's personal life. Over 20% of social media users reported using SNSs for work-related activities (Kemp, 2024). In a survey conducted by the Pew Research Institute, 78% of Americans who used social media for work-related activities reported that it was useful for networking and finding new job opportunities (Olmstead et al., 2015). The same survey indicated that 17% of workers utilized social media to diminish and enhance their professional perceptions of colleagues. Within music education, professionals commonly engage in online communities for professional development and social interaction (Palmquist & Barnes, 2015; Rickels & Brewer, 2017; Wayman, 2016). Considering these observations, it is plausible that the rise in social media usage will increasingly impact the professional lives of music educators.

Online social interactions may exacerbate social comparison and lead to different outcomes than face-to-face interactions. Facebook has provided a constant window into the lives of others and provided a fertile ground for individuals to compare themselves to others

(Appel et al., 2016). Reinecke and Trepte (2014) reported that comparisons may be compounded by the positive bias that permeates social media. For example, researchers noted that in online environments, individuals tended to post idealistic images of themselves that were not fully representative of their real lives (Schau & Gilly, 2003) which might have magnified the general tendency for individuals to underestimate others negative emotions (Jordan et al., 2011). In the context of one's professional life, individuals have engaged in self-promotion and "humblebragging" to garner attention leading to professional and economic gain (Hietmayer, 2024; Lenardic et al., 2022, Sezer et al., 2018). For some, viewing idealized posts on Facebook led them to perceive that others were happier and living better lives than themselves, particularly when they compared themselves to Facebook friends that they did not know personally in offline contexts (Chou & Edge, 2012). Researchers have investigated the effects of online social comparison using a variety of constructs in populations of both young adults and professionals and observed unfavorable consequences such as depleted self-concept and job satisfaction (Haferkamp & Krämer, 2011), lowered self-esteem and self-concept (Lim & Yang, 2015; Vogel et al., 2014), lowered well-being (Kross et al., 2013), and higher levels of depression and anxiety (Brandenberg et al., 2019; Seabrook et al., 2016; Steers et al., 2014; Tandoc et al., 2015). Collectively, the literature suggests that SNSs serve as a significant catalyst for social comparison, with potential implications for adverse health and well-being outcomes.

More nuanced investigations of social comparison revealed varied consequences for upward, downward, and non-directional social comparison. Researchers have termed the negative feelings from upward comparisons on social media as "Facebook envy" and found that it correlated with decreased life satisfaction (Krasnova et al., 2013) and increased depression (Appel et al., 2015; Tandoc et al., 2015). In contrast, others observed that downward comparison was associated with less depressive symptoms (Lup et al., 2015). Within the context of working professionals on SNSs, upward comparison has led to career frustration and downward comparison decreased frustration (Fukubayashi & Fuji, 2021). For some individuals, a large network of Facebook friends increased their perceptions of social support and lowered their perceived stress, leading to improved psychological well-being and physical health benefits (Nabi et al., 2013). The mixed findings suggest that the outcomes of online social comparison vary depending on the direction of the comparison.

Impostor Phenomenon

Several scholars have investigated the effects of social comparison through the framework of Impostor Phenomenon (IP). First identified by psychologists Clance and Imes (1978), IP describes the experience of highly successful individuals who despite earning accolades, exhibit symptoms of anxiety, lack of self-confidence, and frustration with themselves. Those suffering from IP often feel like frauds, attribute their success to overpreparation or luck, and tend to discount any praise for their achievements (Clance, 1985). Although early studies reported a correlation between gender and IP, subsequent investigations have found that

IP can manifest in anyone (Bravata et al., 2020). Harvey and Katz (1984) noted that certain vocations, particularly those in the arts, may foster IP as they require individuals to constantly take on novel and varied tasks. Elevated levels of IP among professionals have been associated with diminished job satisfaction (Hutchins et al., 2018; Vergauwe et al., 2015) and recognized as a hindrance to career progression (Neureiter & Traut-Mattausch, 2016).

Within music education, researchers have identified the prevalence of IP among university faculty (Ramey, 2022; Sims & Cassidy, 2019), graduate students (Sims & Cassidy, 2020), student teachers (Sorenson, 2022), and undergraduate students (Nápoles et al., 2024; Rinn, 2024; Silvey et al., 2024). Results from these studies indicated that those in the music education profession experienced frequent to intense IP related to research expectations (Sims & Cassidy, 2019; Ramey, 2022), teaching assignments (Sims & Cassidy, 2019; Ramey, 2022), and during student teaching experiences (Sorenson, 2022). Additionally, Nápoles et al. (2024) identified IP as a significant predictor of academic burnout among undergraduate music education majors. Across various demographic variables, individuals in the field of music education reported some level of IP, with most experiencing frequent to intense impostor feelings.

Online Social Comparison and IP

Scholars have observed that those who engage in more frequent social comparisons also report high levels of IP among populations of university students (Fassl et al., 2020; Fraenza, 2016), university faculty members (Hutchins & Rainbolt, 2017), and primary school students (Chayer & Bouffard, 2010). Two recent studies have specifically identified online social comparison as an agitator of IP. In a qualitative examination of early career tenure track college faculty, participants described feelings of fraudulence derived from observing colleagues post about accomplishments on social media and noted that it perpetuated their impostor phenomenon (Guillaume et al., 2019). Among undergraduate music education students, Rinn (2024), found social comparison on Facebook to be a significant predictor of impostor phenomenon. These findings situate IP as a salient psychological construct associated with social comparison in these populations. However, I found no studies that examined this relationship among K–12 teachers.

Given the prevalence of IP within the music education profession, the identification of social comparison as a theoretical construct among music teachers, and the identified links between the two constructs, the purpose of this study was to examine the degree to which selected demographic variables and online comparison predict IP among choral music educators. Specifically, the relationships between upward, downward, and non-directional online comparison and IP were of interest. Research questions included:

1. To what extent do choir teachers experience IP and online social comparison?
2. To what extent do upward, downward, and non-directional social comparison, and years of experience, predict IP among choir teachers?

Method

Development of the Questionnaire

The questionnaire consisted of three sections: demographic questions, questions related to online social comparison (COM-SM), and questions related to IP (CIPS). Demographic variables included those relevant to the teaching context, such as the level taught and years of experience. Participants were asked to indicate the extent to which they engaged in social comparison on various online platforms by reporting their observations of other choir teachers on popular SNSs such as Facebook, Instagram, and LinkedIn.

Participants

I conducted an a priori power analysis using G*Power (Version 3.1.9.6; Faul et al., 2007) with an alpha level of .05, a power level of .80, an effect size of $f^2 = .15$, and four predictor variables. Results indicated a minimum sample size of 85. Because Facebook is the most popular SNSs among adult professionals (Kemp, 2024) and is frequently used by music teachers for professional engagement (Rickels & Brewer, 2017; Rinn, 2024; Wayman, 2016), I recruited participants using snowball sampling on Facebook. Researchers have identified snowball sampling using social media as a viable, efficient, and effective way to recruit study participants (Baltar & Brunet, 2012; Leighton et al., 2021). I made an initial post to two Facebook groups closely aligned with the target population of K–12 choir teachers inviting participants to complete the online questionnaire. Within the first 24 hours of posting, 112 participants responded to the survey. Following the recommendations of Leighton et al. (2021) for social media snowball sampling, I reposted the recruitment ad to the same groups seven days after the initial post, resulting in a second peak of 33 responses. In total, 187 participants responded over a two-week data collection period. Further scrutiny revealed 41 incomplete surveys which I excluded from analysis. Additionally, through examination of box plots, I identified three extreme outliers which I removed resulting in a final sample of $N = 143$.

Participants responded to two race/ethnicity questions which I used to identify race categories as defined by the National Center for Education Statistics (U.S. Department of Education, 2023). Most respondents described their race as White ($n = 110$, 76.92%). Twenty-four indicated they were of Hispanic heritage. Only a few participants identified as Asian ($n = 4$) or two or more races ($n = 4$). One participant identified as Black or African American.

The responding teachers ranged from those in their first year of teaching ($n = 5$) to one veteran teacher with 44 years of experience ($M = 15.72$, SD = 9.49). All participants were employed as choir teachers in the United States. Most indicated that they primarily worked with students in middle school ($n = 39$) or high school ($n = 83$). Six teachers taught children in elementary grades. Nine participants reported teaching a combination of middle school and high school students and three taught students at both the elementary and middle school level. Additionally, three participants indicated they taught at all levels, K–12.

Social Comparison

The Iowa-Netherlands Comparison Orientation Measure (INCOM) contains 11-items that measure general social comparison tendencies and has been shown to be psychometrically valid in varied populations, contexts, and languages since its inception over twenty years ago (Gibbons & Buunk, 1999; Rose et. al, 2024; Schneider & Schupp, 2013). Researchers have used both the full scale and shortened versions to measure online social comparison (e.g. Bergagna & Tartaglia, 2018; Fukubayashi, 2021; Han et al., 2020; Song, et al., 2019; Steers et al., 2014). Steers et al. (2014) developed a 6-item scale to measure upward, downward, and non-directional online social comparison by selecting items with the highest factor loadings from the 11-item INCOM. The scale was administered daily during a 14-day diary study using a 9-point scale and showed excellent test-retest reliability. Fukubayahi and Fuji (2021) adapted the same 6-item scale to measure online social comparison in the context of participants' careers and found that the 6 items were again the highest loading items of the original INCOM, and showed excellent reliability as measured using correlation coefficients (upward $r = .90$; downward, $r = .89$; non-directional $r = .87$). Positive correlation coefficients in all directions of comparison with the frequency of viewing social media provided evidence of validity in accord with the results of existing literature (N. Fukubayashi, personal communication, August 6, 2024). Following the work of Steers et al. (2014) and Fukubayashi and Fuji (2021), I measured upward, downward, and non-directional social comparison using the same scale (COM-SM). I modified the question stems by replacing "Facebook" with "viewing social media" and changed the reference to one's career to "as a choir teacher" (see Appendix Figure A1). To estimate reliability, I used the Spearman-Brown coefficient recommended as the most appropriate reliability statistic for a two-item scale and found reliability to be fair to good (DeVet et al., 2017; Eisinga et al., 2013) for all three subscales (upward $\rho = .70$; downward, $\rho = .79$; non-directional $\rho = .61$). Participants indicated to what extent they agreed with statements such as "When viewing social media, I feel less confident about myself as a choir teacher compared to other people" using a 9-point scale ranging from *strongly disagree* (1) to *strongly agree* (9).

Impostor Phenomenon

With the permission of the scale creator, I measured IP using the Clance Impostor Scale (CIPS; Clance, 1985). The CIPS is the preferred instrument for measuring IP in non-clinical populations and is a valid and reliable instrument in multiple contexts (Holmes et al., 1993). The scale contains 20 statements that participants rate from 1 (*not at all true*) to 5 (*very true*). CIPS scores are calculated by summing the ratings of the items resulting in an overall score of 20–100. Within the field of music education, investigators regularly use the CIPS to measure IP among undergraduate and graduate students and professionals in the field (e.g., Nápoles et al., 2024; Rinn, 2024; Silvey et al., 2024; Sims & Cassidy, 2019, 2020). The internal reliability of the CIPS was excellent in the current study ($\alpha = .93$).

Results

IP was prevalent among participants. According to Clance (1985), individuals with a total score of 40 or less have *few* impostor characteristics. Those scoring between 41 and 60 have *moderate* IP feelings. A score between 61 and 80 indicates frequent IP experiences and those scoring over 80 display *intense* IP symptoms. Scores on the CIPS ranged from 31 to 95 ($M = 64.72$, $SD = 16.29$). Mean IP scores were similar across demographic variables (see Table 1). Only 9.1% ($n = 13$) of participants reported few IP symptoms and 28.7% fell into the moderate category. The biggest group (46.2%, $n = 66$), reported frequent IP experiences and 23 (16.1%) suffered from intense IP.

Table 1
CIPS Scores by Demographic Variables

	CIPS Score	
	M	*SD*
Level Taught		
Elementary	66.50	18.20
Middle School	62.26	18.01
High School	65.33	15.37
Multiple Levels	67.07	16.79
Race/Ethnicity		
Hispanic	67.17	15.26
White	63.75	16.73
Asian	61.00	7.53
Black or African American	82.00	0.00
Two or more	76.25	13.12

As an exploratory question, participants reported how often they observed other choral music educators on various social networking sites (SNSs) using a 5-point scale ranging from *never* (1) to *always* (5). Results indicated that participants most often observed other choral music educators on Facebook ($M = 4.17$, $SD = .65$). Almost all participants, 90.20% indicated that they *often* or *always* observe other choral music educators on Facebook. Other SNSs where participants observed choral educators included Instagram ($M = 2.90$, $SD = 1.20$), YouTube ($M = 2.62$, $SD = 1.05$), and TikTok ($M = 2.13$, $SD = 1.11$). Only two participants indicated that they *often* or *always* observed colleagues using Twitter/X and it was the only SNS with mean scores falling between *never* and *rarely* ($M = 1.48$, $SD = .77$).

Participants indicated the extent to which they agreed with two statements each for upward, downward, and non-directional social comparison (COM-SM) using a 9-point scale ranging from *strongly disagree* (1) to *strongly agree* (9). Respondents most often engaged in upward social comparison when observing other choir teachers online ($M = 12.76$, $SD = 3.62$), followed by non-directional comparison ($M = 11.99$, $SD = 3.64$), and finally by downward comparison ($M = 8.61$, $SD = 3.55$). The statement "When viewing social media, I conclude that I am not as well-known as a choir teacher as other choir teachers" was the statement participants most agreed with ($M = 7.31$, $SD = 2.02$). Scores were similar across all demographic variables (see Table 2).

Table 2

Online Social Comparison Scores by Demographic Variables

	Online Social Comparison					
	Downward		Upward		Non-Directional	
	M	*SD*	*M*	*SD*	*M*	*SD*
Level Taught						
Elementary	9.00	3.29	11.33	3.72	13.00	1.41
Middle School	8.13	3.64	12.38	3.78	11.62	3.98
High School	9.00	3.68	12.83	3.71	12.02	3.73
Multiple Levels	7.53	2.39	13.93	2.46	12.40	2.90
Race/Ethnicity						
Hispanic	7.17	3.58	12.96	4.36	12.04	3.77
White	8.81	3.47	12.75	3.49	11.93	3.72
Asian	9.25	3.20	11.25	3.86	11.75	2.36
Black or African American	11.00	0.00	11.00	0.00	11.00	0.00
Two or more	10.50	4.80	13.75	3.30	14.00	2.16

To explore the relationships between each type of online social comparison and IP, I first examined the correlations between variables (see Table 3). Years of experience showed significant correlations with IP (CIPS), downward, and upward online social comparison but varied in the direction of correlation. Higher scores on the CIPS indicate that an individual is experiencing more frequent feelings of IP. Online upward comparison had a moderate and significant positive relationship with IP (r = .51, p < .001). Non-directional online social comparison had a weaker, but significant positive correlation with CIPS scores (r = .37, p < .001). In contrast, downward comparison had a significant negative correlation with feelings of IP (r = -.36, p < .001). As an individual's tendency to compare to those they deemed as better than themselves increased, they also experienced more symptoms of IP. Those who tended to compare to others they perceived as worse off than themselves experienced fewer impostor feelings.

Table 3

Correlations between CIPS, Online Social Comparison, and Years of Experience

Variable	1	2	3	4	5
1. Years of Experience	—				
2. CIPS	-.20*	—			
3. Downward Comparison	.27**	-.36**	—		
4. Upward Comparison	-.26**	.51**	-.53**	—	
5. Non-Directional Comparison	-.01	.37**	-.01	.31**	—

**p<.05*

***p<.001*

To determine which, if any, variables were useful in predicting IP, I calculated a stepwise multiple regression with the predictor variables of years of experience, upward online comparison, downward online comparison, and non-directional online comparison with CIPS as the dependent variable. To test the assumptions for multiple regression, I examined residual plots and confirmed that the assumptions of normality, linearity, and homoscedasticity were met. Calculation of Mahalanobis distances revealed no multivariate outliers. Both tolerance values and VIF values indicated no violations of multicollinearity. Thus, I proceeded with a stepwise multiple regression using the same predictor variables.

Two variables—online upward social comparison and non-directional social comparison—were significant and entered into the model. The overall model was significant (R^2 =

.308, $F(2, 141) = 48.92$, $p < .001$) and accounted for 30.8% of the variance in CIPS scores (see Table 4). In addition, beta coefficients indicated that upward comparison had almost twice the influence of non-directional comparison on CIPS scores. The fitted regression model was CIPS = 27.072 + 1.959(upward comparison) + 1.054(non-directional comparison). An ANOVA summary table and coefficients table are presented in the appendix Tables A1 and A2.

Table 4

Model Summary Predicting CIPS

Model	*R*	R^2	Adj. R^2	*SE*	ΔR^2	df_1	df_2	ΔSig. *F*
1	.508[a]	.258	.252	14.083	.258	1	141	<.001
2	.555[b]	.308	.298	13.645	.050	1	140	.002

[a]Predictor: online upward social comparison

[b]Predictor: online upward social comparison, online non-directional social comparison

Discussion

The purpose of this study was to examine the degree to which selected demographic variables and upward, downward, and non-directional online social comparison predict IP among choral music educators. Online upward and non-directional social comparison were the only significant predictors of IP. Previous studies have identified a relationship between the general construct of online social comparison and IP in music education undergraduates (Rinn, 2024) and early career tenure track university faculty (Guillaume et al., 2019) but did not differentiate between the directions of social comparison.

As in prior studies within music education, IP was widespread among participants. Among music education undergraduate students, Nápoles et al. (2024), Rinn (2024), and Silvey et al. (2024) found that most participants reported frequent IP. Sims and Cassidy reported similar results among music education graduate students (2019) and early career music education faculty members (2020). In the current study, most participants reported frequent IP and only 9.1% reported few IP experiences. These findings add to the mounting evidence that IP is endemic within the music education profession and adds in-service choir teachers to the groups suffering from IP.

Participants in this study frequently compared themselves to others when using social networking sites. Facebook was the most common SNS on which participants reported engaging in social comparison followed by Instagram. This result is unsurprising when considering the participants were initially recruited from professional Facebook groups. Although the popularity of Facebook has been surpassed by other platforms such as Instagram in recent years (Kemp, 2024), within the context of participants' professional lives,

Facebook continues to be influential in multiple populations. This finding supports reports that Facebook is the most commonly used SNS at work (Olmstead et al., 2015). Additionally, it aligns with Rinn's (2024) findings that music education undergraduates viewed Facebook as a professional networking tool, while other platforms such as Instagram were primarily used for personal purposes. Participants also engaged in social comparison on other SNSs including Instagram, YouTube, and TikTok, which affirmed reports that social media users typically use multiple platforms (Kemp, 2024). The results also support research that identified Facebook groups as online communities in which music educators sought social connectedness with colleagues (Palmquist & Barnes, 2015; Rickels & Brewer, 2017; Wayman, 2016). However, unlike these studies that identified positive outcomes of Facebook use such as professional development and community, the results of this study indicate possible adverse effects including social comparison and heightened IP.

The findings contribute to the literature by elucidating unique relationships between the various types of online social comparison and IP. Non-directional and upward social comparison had significant positive correlations with IP while downward social comparison had a significant negative correlation with IP. Like Buunk and colleagues (1990) observed in early investigations of social comparison, each direction of comparison had varied affective consequences. The current findings are similar to those that linked upward social comparison to adverse outcomes (Appel et al., 2015; Krasnova et al., 2013; Tandoc et al., 2015), and those that identified correlations between downward social comparison and more favorable outcomes (Fukubayashi & Fuji, 2021; Lup et al., 2015; Nabi et al., 2013). For choir teachers, upward, downward, and general online social comparisons have distinctive relationships with IP. More specifically, the general tendency to compare to others online and to compare to choir teacher participants perceived as better off than themselves was associated with higher levels of IP. In contrast, comparing to other choir teachers whom participants viewed as worse off than themselves was associated with lower IP.

For the participants in this study, non-directional and upward social comparison were significant predictors of IP. While other researchers have identified the prevalence of IP among music educators, few have considered possible predictors of IP within this population. Notably, among the variables investigated, upward social comparison was the most influential predictor of IP and had nearly twice the magnitude of non-directional social comparison. Although non-significant in the regression model, the significant negative correlation observed between downward social comparison and IP is of interest. It is plausible that downward social comparison may be a mitigator of IP and should be investigated in future studies.

The findings of this study have several implications for music educators. Although there are documented benefits of engaging in online communities for music educators (e.g. Rickels & Brewer, 2017; Wayman, 2016) it is imperative to recognize the possible risks involved. The positivity bias in self-presentation on an SNS may exacerbate the deleterious consequences of social comparison. Because of the potential social and material rewards asso-

ciated with positive self-presentation (Sezer et al., 2018) music educators may be motivated to use social media to curate an online identity that reaps personal gain. Beyond the individual, institutions within music education have monetized individuals' proclivity for social comparison by creating various contests that require individuals to self-nominate and sometimes pay entry fees to be awarded a prize in which the companies then extensively advertise using SNSs. This trend also extends to ensembles in models where music educators curate recordings and pay entry fees to be ranked against colleagues and subsequently promoted via social media. This kind of self-promotion, particularly when perceived as inauthentic or presented as a "humblebrag", may be ineffective (Sezer et al., 2018) and the results of this study highlight the potential adverse effects on music educators. By engaging in this kind of online self-promotion, music educators may be contributing to the competitive structures of music education that Powell (2023) identified as a threat to both the well-being of music educators and efficacy of school music education. It is also important to recognize that some forms of promotion may be motivated by external pressures such as the need to raise funds for an ensemble or to promote an individual's institution. In such situations, music educators should consider centering the goals of the post around the ensemble rather than themselves and limiting social media posts to professional accounts rather than targeting one's personal social network. For example, a post made via an ensembles social media account may be better received than making the same post on a personal account.

Alternatively, music educators may consider an altruistic lens when considering their professional social media use and engage in uplifting of colleagues rather than self-promotion. Expressions of gratitude and support for colleagues may strengthen social connections and enhance mental health and well-being for both the poster and the viewer (Sciara et al., 2021; Vaingankar et al., 2022). Other strategies such as limiting social media use, actively engaging on social media rather than passively scrolling, and removing "friends" or accounts followed on social media that instigate comparisons may be helpful in reducing the negative effects of online social comparison (Jed Foundation, 2024). Additionally, a critical evaluation of organizations that capitalize on the exploitation of individuals tendency to engage in social comparison is needed. While providing awards and prizes to music educators may ostensibly appear as a supportive gesture, these activities may also be harmful to the psychological well-being of many and serve only to create monetary gain for the organizations.

Those who facilitate professional SNS groups should consider how they encourage interaction within these groups. Because past literature indicates that individuals tend to overestimate others' happiness and underestimate their difficulties (Jordan et al., 2011), Burke et al. (2020) suggest online educational campaigns that remind viewers that others' lives are not as amazing as they may seem. In a professional SNS group, this might be accomplished by group managers personally posting reminders or having well-known practitioners in the field share authentic stories of professional difficulties they may have encountered. Simi-

larly, because they found that viewing negative emotions in friends' posts was associated with decreased social comparison, they suggest that encouraging SNS users to share more difficult moments of their lives on social media may help to mitigate social comparison. Because SNS users with large friend networks may be hesitant to post negative emotions (Wang et al., 2016), organizers of professional social media groups may use SNS tools such as private Facebook groups where the settings can be changed to allow anonymous posting. Supporting authentic sharing that combats the positive bias of SNSs by allowing anonymous posting and establishing communication norms and rules within online groups are possible strategies to mitigate social comparison.

When considering the findings of this study, one should note several limitations. Online snowball sampling does not allow for the calculation of an accurate response rate and limits the ability to generalize findings to a larger population. Additionally, the finding that Facebook was the most popular SNS in which participants engaged in online social comparison could be a result of sample bias as I initially recruited participants from posts on Facebook. However, because the typical SNS user engages on an average of 6.7 SNS each month (Kemp, 2024), it is unlikely that participants in this study did not also use other popular SNSs. Further research is needed to determine how individuals interact differently on various SNSs. Finally, although the regression model predicted 30.8% of the variance in IP, there is a substantial amount of variance still unexplained that warrants further investigation.

In future studies, researchers might use both quantitative and qualitative inquiry to explore what attributes and in what context music educators make online comparisons to colleagues. For example, do written statements regarding competitive success, videos of performances, or pictures invoke particular comparisons? What if any personal attributes predict an individual's tendency to engage in online social comparisons? Additionally, experimental methods that investigate strategies to mitigate comparisons in online environments might provide those who facilitate organized digital communities for music educators with strategies to support the psychological well-being of participants. Because IP has implications for the psychological health, career motivation, and burnout of inservice teachers, it is important that researchers continue to investigate both its causes and consequences. Finally, IP is only one possible outcome of online social comparison. Therefore, continued investigation of how online social comparison affects music educators may provide further insights.

It is important for choral music educators to understand that online social interactions may have consequences for both themselves and their professional colleagues. As digital interactions and professional development continue to proliferate in online contexts it is critical that both practitioners and researchers investigate possible benefits and risks. Ultimately, a better understanding of professional social media use may support the well-being of teachers.

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Appendix

Table A1
ANOVA Summary Table

Model		*SS*	*df*	*MS*	*F*	*p*
1[a]	Regression	9703.263	1	9703.263	48.923	< .001
	Residual	27965.548	141	198.337		
	Total	37668.811	142			
2[b]	Regression	11603.850	2	5801.925	31.163	<.001
	Residual	26064.961	140	186.178		
	Total	37668.811	142			

[a] Predictors: Online upward social comparison

[b] Predictors: Online upward social comparison, online non-directional social comparison

Table A2
Coefficients Table

Model	*B*	*SE*	β	*t*	*p*	Bivariate *r*	Partial *r*
1 (Constant)	35.586	4.329		8.221	< .001		
COM-SMU[a]	2.283	.326	.508	6.995	<.001	.508	.508
2 (Constant)	27.072	4.969		5.449	<.001		
COM-SMU[a]	1.959	.332	.436	5.900	<.001	.446	.415
COM-SMND[b]	1.054	.330	.236	3.195	.002	.261	.225

[a]Online upward social comparison

[b]Online non-directional social comparison

Figure A1
COM-SM

Most people compare themselves from time to time with others. For example, they may compare the way they feel, their opinions, their abilities, and/or their situation with those of other people. There is nothing particularly "good" or "bad" about this type of comparison, and some people do it more than others.

We would like to find out how often you compare yourself ***with other choir teachers when using social media***. To do that, we would like you to indicate how much you agree with each statement below by using the following scale.

Strongly Disagree 1	Disagree 2	Moderately Disagree 3	Mildly Disagree 4	Neither Agree or Disagree 5	Mildly Agree 6	Moderately Agree 7	Agree 8	Strongly Agree 9

1.	When viewing social media, I believe that I have accomplished a better career than other people have. (downward)	1	2	3	4	5	6	7	8	9
2.	When viewing social media, I feel less confident about myself as a choir teacher compared to other people. (upward)	1	2	3	4	5	6	7	8	9
3.	When viewing social media, I pay attention to how I do things as a choir teacher versus how others do things and felt my way was better. (downward)	1	2	3	4	5	6	7	8	9
4.	When viewing social media, I conclude that I am not as well-known as a choir teacher as other choir teachers. (upward)	1	2	3	4	5	6	7	8	9
5.	When viewing social media, I pay a lot of attention to how I do things as a choir teacher compared to how other choir teachers do things. (non-directional)	1	2	3	4	5	6	7	8	9
6.	When viewing social media, if I want to find out how well I have done something as a choir teacher, I compare what I have done with how well others have done. (non-directional)	1	2	3	4	5	6	7	8	9

Article

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Essence of Joy: Empathy in an Afrocentric Collegiate Choral Ensemble at a Predominately White Institution

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Abstract

Researchers (e.g., Watts & Piña, 2023) have demonstrated that World Music Pedagogy might promote students' empathy towards members of other cultures. In choral ensembles, however, researchers have yet to study whether or how transcultural musicking, or engaging with music and/or musicians from cultures other than one's own (Sánchez-Gatt et al., 2025, pp. 56–57), promotes experiences of empathy. The purpose of this phenomenological study (Moustakas, 1994) was to explore the oft-repeated claim in World Music Pedagogy that transcultural musicking supports students' experiences of empathy by examining the experiences of participants in Essence of Joy, an Afrocentric choir at The Pennsylvania State University, a Predominately White Institution (i.e., a post-secondary institution in the U.S. with a majority of white students). Additional goals of this research were to examine how participants' experiences of empathy were mediated by whether they belonged to the cultural or racial group whose music was performed by the ensemble and to examine in what ways experiences of empathy were supported by the choir's repertoire, the conductor's pedagogical choices, or both. Data included eight semi-structured interviews, field notes, and participant-observation. I identified three textural themes, "connections to others," "connections to self," and "multifaceted definitions of empathy." I also developed a structural analysis represented in a graphic model of the participants' experiences and synthesized the textural themes and structural analysis into a phenomenological essence statement. The essence of participants' experiences of empathy in Essence of Joy was transformational connections to others and to themselves. For Black participants, singing in Essence of Joy also provided an opportunity to explore their ethnic identity. Based on the findings, I suggest implications for practice and future research.

Keywords: World music pedagogy, transcultural musicking, African American music, Black music, empathy

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Introduction

The evening sun filters through stained glass windows, painting long strokes of pastel colors on the white wooden walls of a tiny Hawaiian church. Audience members, eager to hear an Afrocentric choir from the northeastern United States, crowd the pews and even stand in the doorway and outside. For just over an hour, Essence of Joy shares choral music from the sacred and secular African American traditions with the audience in Kapa'au on the Big Island. The singers' harmonies reverberate off the wooden church frame, filling the small sanctuary like thick incense. The emotion of the music is inescapable. As audience members and singers alike begin to cry, they feel as if they are on the same wavelength (Participant 3, Interview 1, March 13, 2023), experiencing the same sounds and emotions as they share this singular musical experience.

In this vignette, a multiracial choir from The Pennsylvania State University and a multiracial audience in Hawai'i shared an emotional experience mediated through African American choral music. Although sacred and secular African American choral music are central to the mission of Essence of Joy, Black singers and audience members constituted a minority of its singers and its audience at this concert. Thus, a majority of the singers in Essence of Joy were engaged in *transcultural musicking*. The term *transcultural musicking* combines two concepts that are present in above vignette. First, *transculturalism* describes "the exchange of practices, beliefs, and ideas between different cultures and the results of those exchanges when they come together," (Sánchez-Gatt et al., 2025, p. 56). Second, *musicking*, a concept proposed by Small (1998), suggests that "to music" may be understood to be a verb defined as "tak[ing] part in any capacity, in a musical performance, whether by performing, by listening, by rehearsing, or practicing, by providing material for performance (what is called composing), or by dancing," (p. 9). Thus, transcultural musicking may be understood to include the acts of creating, performing, rehearsing, listening to, or dancing to music from a culture other than one's own. Transcultural musicking may occur individually, within an ensemble that shares a single cultural origin, or it may occur in collaboration with musicians who are members of cultures other than one's own in ways that involve exchanges of musical ideas, practices, or concepts across cultures. In the example that opens this article, the performers and audience were engaged in transcultural musicking as the concert constituted a collaboration between performers and audience members who did and did not share a cultural origin with the music being sung.

Music education scholars have suggested that students may gain empathy for others by learning music from cultures other than their own (Bennett, 2022; Campbell, 1991, 2018; Hess, 2019; Pascale, 2011). The American Choral Directors Association's (ACDA) stated purposes include "to foster and promote choral singing in the pursuit of peace and justice that enhances social and emotional well-being," and "to engage, listen to, and learn from marginalized and historically underrepresented groups in order to create a more inclusive community" (ACDA, 2023, p. 1). Given these purposes, choral conductors and ACDA members may consider how or whether transcultural musicking in choral ensembles can

create empathetic connections amongst choral singers that promote social and emotional well-being while creating inclusion for historically marginalized groups. An exploration of transcultural musicking in a choral ensemble may provide choral directors further insight into whether or how choral musicians experience empathy through performing the music of cultures other than their own.

Additionally, the assumption that transcultural musicking promotes students' empathy ignores students who are members of the underrepresented cultures that choral conductors choose to celebrate in their repertoire. For example, a Black American singer may not need to learn Black American choral music in order to have empathy for other Black people. Bishop (1990) encouraged educators to consider how the literature they select might provide students with mirrors that reflect their own experiences and windows that provide students opportunities to learn about the experiences and perspectives of others. A book that is a mirror for one student may be a window for another. Similarly, choral conductors may wish to consider how the repertoire that they program provides opportunities for choral singers to experience musical windows and mirrors (Bernard & Talbot, 2023). Choral educators may also seek to understand the impact of World Music Pedagogy for singers who experience non-European repertoire as a mirror in addition to its impact for students who experience it as a window.

Review of Literature

Choral singing can be important to the social identity development of young people (Parker, 2014). Through a high school choral experience, singers can experience a desire to work as a team which can lead to a sense of accomplishment, pride, and a desire to give back to the choir (Parker, 2014). Additionally, high school students may experience increased comfort engaging in social situations and increased confidence in their sense of self (Parker, 2014).

Within the African American church, gospel choirs may also contribute to young people's social development while supporting their spiritual or faith journeys as well (Parker, 2017). Gospel choirs in African American churches may support young people by creating a sense of family and allowing young people to take on additional roles within the choir as they age (Parker, 2017). Participants may also experience an increase in development of their sense of self by connecting emotionally and spiritually to the music they sing. This process can lead to a desire to give back to the choir and community (Parker, 2017). Although researchers have explored the experiences of adolescent choral singers and the experiences of Black singers in Afrocentric choral ensembles (e.g., Parker, 2014, 2017; Pinto, 2022; Strayhorn, 2011), few researchers have explored the experiences of choral singers who engage in transcultural musicking.

World Music Pedagogy (WMP), often associated with the work of music educator, researcher, and ethnomusicologist Patricia Shehan Campbell, is one approach that music educators and choral conductors have utilized to engage in transcultural musicking. Ac-

cording to Campbell:

> WMP concerns itself with the role of music within its culture of origin, how it functions, for whom, and for what reasons. It presses on the manner in which music is taught/transmitted and received/learned within cultures, and how best the processes that are included in significant ways within these cultures can be preserved or at least partially retained in classrooms and rehearsal halls. (2016, p. 95)

Although WMP practitioners seek to honor and preserve the cultural practices of the musics they teach in their classrooms and perform in their ensembles, some music education scholars have argued that music educators who program world music without concern for reciprocity and collaboration between cultures may in fact perpetuate harm. Sáchez-Gatt et al. (2025) suggested that music educators may engage in extractive or colonial transculturalism when they engage with World Music Pedagogy while ignoring power differentials inherent between members of different cultures—as well as power differentials between student and teacher or conductor and singer (p. 62).

World Music pedagogues have suggested that transcultural musicking may lead to experiences of empathy for individuals from cultures other than one's own (e.g., Bennett, 2022; Campbell, 1991, 2018; Pascale, 2011). Maibom (2020) summarized various types of empathy, including affective empathy and sympathy. Affective empathy occurs when person A experiences an emotion as the result of person B's emotional experience. The emotion is usually similar to person B's experienced emotion or is a direct cause of it. In affective empathy, the emotion "is experienced partly for the other person and partly for the self" (Maibom, 2020, p. 15). Sympathy, according to Maibom (2020), "is an emotion experienced by a person A for the wellbeing and plight of another person B. This emotion is rarely like the emotion(s) experienced by B, since sympathy is almost uniquely other-directed" (p. 16).

Thus far, scholars have examined music's capacity to foster empathy through philosophical inquiry (Winter, 2013), practical applications (Laird, 2015; Pascale, 2011; Watts & Piña, 2023) and through qualitative study of music educators and activist musicians (Hess, 2019). Winter (2013) argued that participatory music-making might encourage empathy by requiring musicians to focus on the subjectivities of their fellow musicians (p. 111). Similarly, Laird (2015) suggested that general music teachers might support empathetic development through group activities. Pascale (2011) and Watts and Piña (2023) found that World Music Pedagogy may promote general music students' empathy for people from other cultures. Researchers have also addressed how to prepare music educators to be empathetic to English Language Learners (Zhang, 2017) and whether empathetic musical experiences may influence choral singers' views of social justice (de Quadros & Abrahams, 2022). However, little research directly explores how or whether students may experience empathy through transcultural musicking in choral ensembles.

Background and Research Questions

The goal of this phenomenological study (Moustakas, 1994) was to explore the oft-repeated claim in World Music Pedagogy that transcultural musicking supports students' experiences of empathy. To explore this claim, I examined the experiences of Black and non-Black participants in Essence of Joy, an Afrocentric choral ensemble in The Pennsylvania State University (PSU) School of Music, a large public Predominately White Institution (PWI) in the mid-Atlantic United States. (PWIs are post-secondary institutions in the United States whose student enrollment is majority white.) Following Sáchez-Gatt et al.'s (2025) suggestion that music educators engaged in transcultural musicking should be concerned with reciprocity, collaboration, and disrupting the colonial power dynamics involved in musicking across cultures (p. 64), an additional goal of this research was to understand what benefits Black participants might gain from their experiences of empathy in Essence of Joy. Of interest to this research, the majority of students enrolled in Essence of Joy at the time of this study were white, and thus were engaged in transcultural musicking. During the semester that data was collected, there were approximately 35 singers in the ensemble.

Dr. Antony T. Leach founded Essence of Joy as a temporary ensemble to perform at the PSU Forum on Black Affairs' Annual Martin Luther King, Jr. Memorial Banquet in 1991. At the time, Leach was a Ph.D. student in music education at PSU. Interest in the ensemble grew beyond its initial performance, and Leach continued to lead the choir as an extracurricular ensemble. After serving as a sabbatical replacement conductor for other ensembles in The Pennsylvania State School of Music, Dr. Leach accepted a full-time position with the stipulation that Essence of Joy become a credit-bearing ensemble. Since its founding, Essence of Joy has performed sacred and secular choral music from African American and African traditions. Although some have referred to Essence of Joy as "Penn State's gospel choir," Dr. Leach did not embrace this label for two reasons. First, United Soul Ensemble, a student-led group, was already recognized as a gospel ensemble on PSU's campus. Second, Essence of Joy's repertoire included not only gospel music, but also spirituals, original idiomatic and non-idiomatic compositions by Black composers, and other styles, genres, and works from African and African American choral traditions. Dr. Leach later became the first Black tenured professor in the Pennsylvania State School of Music. Under his direction, Essence of Joy has performed throughout the United States, Europe, Africa, Asia, and South America.

I chose to study participants' experiences of empathy in Essence of Joy because of its reputation at the university and in the local community for fostering a family-like atmosphere amongst its members and for giving emotional performances. Based on the success of the student ensemble and on the strong community that it created both among its members and its audience, residents of the local community asked Dr. Leach to found a community choir, Essence of Joy 2, Ltd., and alumni of the choir also encouraged him to found an alumni choir, Essence of Joy Alumni Singers. Furthermore, Dr. Leach's reputation as a choral pedagogue (e.g., Sieck, 2019, pp. 57–66) made it possible to explore whether partic-

ipants experienced empathy based on the ensemble's repertoire, the conductor's pedagogical choices, or a combination of both. Thus, the strong record of community building in Essence of Joy, its dedication to the performance African and African American choral music, its multiracial membership, and Dr. Leach's unique pedagogy made it an ideal setting to study the relationship between empathy and transcultural musicking. Additionally, Dr. Leach's pedagogy may be understood to overlap with the tenets of World Music Pedagogy; during rehearsals, Dr. Leach taught music using the appropriate practices (including both reading and rote learning), vocal timbres, and musical styles from the music's cultures of origin (including gospel, spirituals, and classical works by Black composers, among others).

My exploration of participants' experiences of empathy in Essence of Joy was guided by the following research questions:

1. In what ways, if any, do participants in Essence of Joy experience and engage with empathy?

2. In what ways do Black and non-Black participants have similar or different experiences of empathy based on their experiences in Essence of Joy?

3. In what ways, if any, were participants' experiences of empathy mediated by transcultural musicking in Essence of Joy?

Methodology

I used a phenomenological approach (Moustakas, 1994) because it focuses on elucidating the meanings that participants create from human experiences. In order to faithfully report participants' experiences, the phenomenological researcher must first lay aside their own preconceptions and judgements, a process called *epoché* (Moustakas, 1994, p. 85). The researcher then uses phenomenological reduction to describe the meaning of each piece of the data. Through *horizontalizing* the researcher regards each piece of data as equally weighted to uncover possible meanings (p. 97). During imaginative variation and synthesis, the researcher combines data and themes that are important to the phenomenon being studied to create a description of the experiences of the participants (p. 97–101). In a phenomenological study, findings are presented in textural and structural analyses, followed by an essence statement (Moustakas, 1994, p. 144).

In order to set aside my own presuppositions as a researcher, I chose not to define empathy during the initial stages of data collection and analysis. Instead, based on the data, I searched for psychological literature that addressed the experiences of the participants. Additionally, I discussed my methodology, findings, and analysis with a mentor researcher at my institution who did not participate in the choir, a researcher at my institution who had previously participated in the choir, and a researcher/conductor at a different institution who has experience both conducting and singing in Afrocentric ensembles and researching

the experiences of African American music educators. I chose to discuss initial findings with mentors of varying experiences so that they could each evaluate whether my own experience had affected my findings. Based on these discussions, I edited my interview protocols, revised the model in Figure 1, and chose limit demographic descriptions of participants to help maintain their anonymity.

Participants were four undergraduate students enrolled in Essence of Joy as well as Dr. Antony T. Leach, the conductor. I invited all members of the ensemble to participate in the study. Based on potential participant responses, I used purposeful sampling (Merriam & Tisdell, 2016, p. 96) to select four member participants. As one purpose of this study was to understand how musicking in an Afrocentric ensemble may contribute to the development of empathy for singers who are or are not members of the African diaspora, I chose two participants who were Black or African American (Participants 1 and 4) and two participants who were white (Participants 2 and 3). Due to Essence of Joy's high profile at The Pennsylvania State University and beyond, it was Dr. Leach's desire that I not use a pseudonym for the choir or for him. Given that Essence of Joy was majority white, the risk of losing anonymity was greater for Black participants. Thus, after discussing this issue with a mentor researcher, I chose not to disclose specific demographic information about the undergraduate participants or demographic percentages of the ensemble in order to protect their anonymity.

Data collection included eight semi-structured interviews, field notes, and over 200 hours of participant-observation. During rehearsals, I took field notes as I was able while Dr. Leach worked with other sections. I added to these preliminary field notes after rehearsals and performances. Interview protocols were adapted from those developed by Pinto (2022). Each interview lasted 25–70 minutes. I interviewed each participant one to two times. Thus, each participant's total interview time was 60–120 minutes. After I transcribed interviews, I gave participants the opportunity to read transcripts to ensure their accuracy. No participants had corrections for the transcriptions.

I conducted two rounds of coding. In the first round of coding, I used descriptive and in vivo codes (Saldaña, 2021) to label and equally weight data through phenomenological reduction and *horizontalization* (Moustakas, 1994). In the second round of coding, I combined codes to create relevant themes and parent codes through imaginative variation and synthesis (Moustakas, 1994). For examples of codes and parent codes see Table 1 on the next page. I used field notes to write the opening vignette and to triangulate data from participant interviews. Based on my findings, I developed a phenomenological essence statement and a model to illustrate it (see Figure 1 on page 92).

After my initial analysis, I presented findings to participants as well as to the entire ensemble. Singers asked questions and discussed the findings in relation to their own experiences. To maintain anonymity, ensemble members did not know who the student participants were. Many singers and Dr. Leach expressed that the findings faithfully reflected their experiences in the ensemble. No singers offered corrections. After Dr. Leach read an early draft

Table 1.
Sample Codes

Text	Code	Parent Code
It's easier to experience it. I mean, fundamentally it is a choir. We sing music from African and African American cultures [...] but we're not just a choir. We're a choir that actually cares about each other. I guess that's as far as I can go, but again, like it's easier to just like actually physically be there and see it as opposed to just putting it in words.	A choir that cares about each other	Connection with others
I feel like I've made lasting relationships that I would—they're really special to me.	Lasting relationships	
I would say it's more free. Like you could just be yourself and people don't judge, I guess, like people will just accept you for who you are. And I feel like there's a lot of love and a lot of care that goes into the group as well. A lot of support. It's a family, to be cliché.	A family	

of this article, he wrote to me, "You have captured the 'essence' of the EOJ experience and this cuts across all editions of the choir from the early 90's to the present. Framing the story within the context of qualitative research truly brings out trends and areas of interest that otherwise would be buried beneath the stuff of life" (Dr. Leach, personal communication, October 12, 2023). I also discussed findings with another researcher who is an Essence of Joy alum who helped me to revise the model I developed to illustrate the essence statement (see Figure 1). I chose to speak with an alum of the choir because he could provide insight as to whether my interpretation of the data accurately reflected his experience.

Positionality

As a queer, white, middle class, male-presenting former graduate teaching assistant for Essence of Joy, my relationship to the participants, four of whom were undergraduate students warranted reflection. By reflecting on the unequal power dynamic inherent in my relationship with the participants, my goal was to create an environment where participants felt safe to share their experiences. Additionally, as a white person living in a white supremacist society, my presence within an Afrocentric choral ensemble will always be that of a guest in someone else's house. When I was a high school choir director, I worked for five years in a school where the majority of my students were Black (both African and African American). I often sought to provide musical windows and mirrors for my own students through my repertoire selection. This included programming and teaching folk music from the global African diaspora as well as original pieces by Black composers. However, Essence

of Joy was the first choir that I worked with whose mission was specifically to perform African American music.

As I was a graduate student and a singer in the ensemble during data collection, I was required to be both musically engaged while singing in my section and engaged as a researcher in the field. To accomplished this, I approached rehearsals as if I were a new member of the choir. As Dr. Leach rehearsed the choir, I asked myself how a new member or a non-member might interpret his pedagogical decisions. Similarly, when observing other singers participating in rehearsals and interacting with one another, I sought to observe them how a new member might.

After I submitted a manuscript of this article for review, Dr. Leach sadly passed away in early 2025. Following his passing, I was tasked with conducting Essence of Joy as an interim graduate conductor while the university began a search for a new director of the ensemble. Although I was the interim conductor while the article was under review, data collection, analysis, and submission of the initial manuscript occurred while I was a student member of the ensemble. Although I was still a member of Essence of Joy at the time of this study, the musical traditions it celebrates are not my own. Thus, my participation in Essence of Joy also constitutes transcultural musicking. I address the steps I took to mitigate potential biases from my own experienced in the methodology. Throughout interviews, I discussed issues of ethics and power with participants, and allowed them to ask me questions. Additionally, I discussed ethical concerns with a mentor and peer researchers.

Limitations

A limitation of this study is that it utilized fewer interviews with fewer participants than are often collected during phenomenological research. As a graduate student, my duties within the school of music as a teaching assistant prevented me from conducting further interviews when I returned to an active role as a teaching assistant within the ensemble. Future researchers who seek to study empathy as it relates to transcultural musicking may wish to interview a greater number of participants.

Findings

I identified three textural themes from the data: multifaceted definitions of empathy, connection to others, and connection to self. The first textural theme, "connection with others," arose through rehearsal, performance, and casual time spent with other singers. Connections with other singers, Dr. Leach, the audience, and with the music led participants to experience the second textural theme, "connection to self." The third textural theme, "multifaceted definitions of empathy," describes how participants in Essence of Joy had differing yet related definitions of empathy influenced by the connections they experienced with others and themselves. In the following sections, I describe the participants' experiences of empathy in Essence of Joy as they relate to each textural theme. Then, I

provide a structural description and model (Figure 1) that summarize the participants' experiences followed by an essence statement that synthesizes the textural themes and structural description.

Connections with Others

To join Essence of Joy, students sang for a general audition where they were considered for all choral ensembles at Penn State. During the audition, students identified the ensembles for which they wish to be considered. Students interested in joining Essence of Joy often did so based off the reputation of the ensemble, their connections to teachers, family members, or friends who were alumni of the ensemble, or their interest in African and African American choral music (Dr. Leach, personal communication, March 2, 2023; Participant 3, Interview 1, March 13, 2023). Students who passed the general audition were invited to participate in one of two call back auditions, one for sopranos and altos, and one for tenors and basses. During the call backs, new and returning students sang choral repertoire together and sang vocalises individually so that Dr. Leach could listen for vocal timbre and range.

While singing in front of half of the ensemble as a new member may have been intimidating, the participants described Essence of Joy as a place where they quickly received empathetic support from other ensemble members. This support between singers lead to the first textural theme, "connection to others." All student participants agreed that members of Essence of Joy often offered one another emotional support to a greater degree than other ensembles, which contributed to the family-like community (Participant 1, Interview 1, February 23, 2023; Participant 2, Interview 1, February 24, 2023; Participant 3, Interview 1, March 13, 2023; Participant 4, Interview 2, March 29, 2023). Participant 1 stated that the support amongst members in Essence of Joy allowed singers to feel more at ease and encouraged them to work hard on their music because they felt ownership of the group.

When I asked Participant 1 to describe Essence of Joy to someone who had never been to a performance or rehearsal, they stated:

> I would say it's more free. Like you could be yourself and people don't judge. People will just accept you for who you are. And I feel like there's a lot of love and a lot of care that goes into the group as well. A lot of support. It's a family, to be cliché. Yeah, I mean, it's not stress inducing at all. I mean, if you don't take care of your business, yeah, you could experience stress, but as long as everyone does their part, you're good. But if you don't, I mean, no one's gonna punish you or anything for it. You just want to do well for the group because that's your group, you know. (Participant 1, Interview 1, February 23, 2023)

Participant 1 further explained that the grace that members showed one other while making mistakes during rehearsal could be understood as an act of empathy:

> It's in the learning process, like if one makes a mistake then the other's like, 'LOL. That's so funny.' You know? I can't really explain, but I think there's a lot of grace that goes into Essence of Joy, and I guess that has something to do with empathy. (Participant 1, Interview 1, February 23, 2023)

Thus, for Participant 1, connection to others occurred when other ensemble members gave them grace to make mistakes and allowed them to be themselves during rehearsal.

Other participants often experienced connection to others during Essence of Joy's "debriefs." Debriefs were a weekly or biweekly part of the rehearsal schedule where students were invited to share about their personal experiences in or outside of the choir. Dr. Leach began the debriefs as a way to make students feel important, create "a safe place for people to grow up," and to make sure that no one felt marginalized within Essence of Joy (Dr. Leach, Interview 1, March 28, 2023). Describing the history of the debriefs and providing an example of a particularly poignant debrief, Dr. Leach stated:

> As far as our people moments are concerned, this debrief, this weekly debrief that we do on Thursdays after the evening rehearsal, it's not new. We called it in earlier years, our formative years, 'pass the mic,' whether we were passing an actual mic or not, because everybody—whether we were on a bus, in a hotel, in the church basement or whatever, or in room 110—was invited to share their truth, and sometimes that truth was harsh. Sometimes that truth was on the edge, emotionally. I remember one end of the year dinner here at the house, and as the choir was in the great room, as that final sharing session emerged, one of my tenors just wept, and wept, and wept. Now there were other issues there, but just the fact that he could release his emotion with his peers and be comforted by them—because he didn't say a word, couldn't speak a word—was one of the best—and that's been in recent years—but one of the best indications of the sense of community that this choir has nurtured and still celebrates, especially within our alumni as we move forward. And of course, that all begins in the School of Music. (Dr. Leach, Interview 1, March 28, 2023)

In Dr. Leach's observation, then, the ensemble members' ability to provide their peers with emotional support was based in the "sense of community" that the ensemble developed, in part through repeated debriefs.

The student participants also viewed debriefs as a place to have their voices heard and receive support from other students and from Dr. Leach (Participant 1, Interview 1, February 23, 2023; Participant 3, Interview 1, March 13, 2023; Participant 4, Interview 2, March 29, 2023). Participant 3 stated that debriefs and the connections to others that they promoted were part of what made Essence of Joy different from other ensembles:

> When you're sitting with a group of people that you really love and they all love you

> back, it's just different. You can't—no offense, but you can't get that in a big choir. I like [a different choral ensemble at the university], but it's not the same because it's not that connection that you have in Essence of Joy. I feel like we're all much more vulnerable in Essence of Joy. And we're more straight, open with each other. He makes us do those debriefs, you know? We got those debriefs there. (Participant 3, Interview 1, March 13, 2023)

When I asked Participant 3 to explain what occurred during debriefs, they added:

> Participant 3: The debriefs, we just kind of get more open with each other and share things. And sometimes he'll [Dr. Leach] ask a question like, 'Oh, what did you do this week?' But he'll also just be like, 'What was your week like?' Sometimes he asks questions. Sometimes he doesn't. We just have to debrief everybody and tell them what's going on. You don't have to, but it's an opportunity to share and get support from everybody else in the group or support other people.
>
> Author: What kind of support?
>
> Participant 3: Any support you need, I think just like a person being there, being aware of what's going on in your life, and you're able to rely on them if you need to talk to them because we're all there to do that. I think every single person in this choir would do that. . . Honestly, Dr. Leach does a lot of it. Sometimes if he hears you say something in the debrief, he'll maybe like e-mail you later, like, 'are you doing okay?' Or he'll give you his wise words and be like, 'keep going,' but like, in a much more elaborate way. (Participant 3, Interview 1, March 13, 2023)

In Participant 3 and Dr. Leach's descriptions of debriefs, ensemble members and Dr. Leach used the information learned about others during debriefs to offer support during and outside of rehearsal, which may have contributed to the feelings of love and vulnerability that Participant 3 described.

The participants' experiences of connection to others were not limited to connections with other members of the ensemble. During performances, participants experienced connection to others by connecting with the audience. Dr. Leach encouraged students to memorize their music so that they could look the audience "in the eye" in order to "establish connection" (Dr. Leach, Interview 2, April 11, 2023). Additionally, Dr. Leach experienced a connection to the audience vicariously through the ensemble. As he faced the ensemble during performances, he was able to judge the audience's reaction to the performance based on students' reactions to the audience (Dr. Leach, Interview 1, March 28, 2023). By connecting visually with audience members and noticing how the music affected them, student participants felt as if the audience was singing with them:

> . . . singing to these people, not to them, but with them, even though they're not even moving their voices. If you just make eye contact with someone, there's this mutual interaction that you both are on the same wavelength. And that's going to go with you forever. You're never going to forget that person that you looked at in that way. (Participant 3, Interview 1, March 13, 2023)

The experience of connecting with the audience was one that student participants felt would stay with them "forever." Indeed, one participant described the singers' and audience's shared emotional response to the music as one way to experience empathy (Participant 4, Interview 1, March 14, 2023).

Each participant agreed that "high caliber music making" was central to the Essence of Joy experience (Dr. Leach, Interview 1, March 28, 2023); however, each participant, including Dr. Leach, listed connection with others as something that made Essence of Joy unique. Participants who had experience in instrumental ensembles noted that singing in the choir allowed them more opportunities to connect with and support ensemble members than did playing in bands or orchestras (Participant 1, Interview 1, February 23, 2023; Participant 2, Interview 1, February 24, 2023). One participant who had extensive experience in other choirs noted that Essence of Joy provided more frequent and meaningful opportunities to connect with others than did other choirs.

Connection to Self

Connections to others and connections with Essence of Joy's repertoire supported participants' experience of the second textural theme, "connection to self." All four student participants described experiencing connections to themselves that involved reflecting on their mental and physical health as well as reflecting on their social interactions. Participant 3 mentioned that Essence of Joy helped her through an episode of major depression because she looked forward to the connections she had with others and with the music. The same participant said that Essence of Joy, "keeps me alive. It keeps me going even when I'm not feeling like that. It's still everything I look forward to" (Participant 3, Interview 1, March 13, 2023). One participant mentioned that Essence of Joy helped them to be kinder to themself when their perfectionism led to declines in mental and physical health (Participant 1, Interview 1, February 23, 2023). Another participant credited their experiences in Essence with helping them to identify when their own social anxiety caused them to withdraw from others (Participant 4, Interview 2, March 29, 2023).

While all participants experienced connections to themselves in Essence of Joy, this textural theme took on further meaning for student participants who were Black. Participants 1 and 4 additionally experienced a connection to self through exploration of their identities as Black Americans as they learned more about Black choral music in Essence of Joy. Participant 4 highlighted how African American Spirituals had helped her find where she belongs as a Black woman in a white society before and during her participation in Essence

of Joy. Speaking about her high school choir experience, Participant 4 stated:

> We worked a lot with like African American spirituals. I can't remember if that was [the director's] expertise, but that was the music she wanted us to be exposed to, and I loved it. I loved it so much. One of my favorite songs was *Ain't No Grave* . . . that song influenced my love of African American spirituals. And around that time, you know, high school, I was trying to come to terms with my identity as not really feeling like a Black girl . . . not really connecting to, like, Black culture, white culture . . . and trying to find out where I belong. And so, listening to African American [spirituals], I was like, this makes me feel good. This feels good in my soul. So, when I did look into Essence of Joy, I was specifically like, I want something gospel-esque or spiritual-esque. (Participant 4, Interview 1, March 14, 2023)

During her time in Essence of Joy, Participant 4 expressed that the ensemble's repertoire furthered her exploration of her ethnic identity:

> Whenever I'm singing a spiritual, whatever we're singing, like *Anchored in de Lord* [arr. M. Roger Holland II], or singing, *Bring Me All Your Dreams* [lyrics by Langston Hughes, music by Christopher H. Harris], all I can think about is Black culture and Black Power on an individual and a systematic and institutional level. (Participant 4, Interview 1, March 14, 2023)

Thus, Essence of Joy's visibility as a choir that is dedicated to African and African American choral repertoire encouraged Participant 4's decision to join the ensemble and provided her continued opportunities to experience choral repertoire that explored her identity as a Black woman.

The experience of identity exploration was not entirely positive, however. Participant 1 described feeling ashamed that she did not have a deeper knowledge of Black composers and poets before her participation in Essence of Joy:

> Learning about James Weldon Johnson—I've never—it's so, I feel so shameful to say it, but I'd never heard of the Black national anthem, *Lift Every Voice and Sing*, prior to coming [to Essence of Joy], and hearing that exposed me to so much of the history of Black people in this country, especially learning about—even like Langston Hughes. I mean, I was familiar with Langston Hughes, but not so much with the depths of his poems. I did not understand it as much as I did before coming, you know. (Participant 1, Interview 1, February 23, 2023)

Yet, despite the initial negative experience of feeling shame at not knowing more about Black choral music before participating in Essence of Joy, Participant 1 described feeling deeply connected to the repertoire and enjoying the ensemble more than previous ensem-

bles they had participated in (Participant 1, Interview 1, February 23, 2023).

Additionally, Dr. Leach's praise and compliments allowed one Black participant to feel as if they had a place on campus for their hard work to be validated, appreciated, and celebrated:

> A lot of us really love Dr. Leach. We admire his opinion. We admire his validation. We admire his love, and he has a lot of that for us.… In a lot of places no matter how much effort I make, it will never be validated nor will it ever be appreciated. In EOJ, I feel like that he's given me a place where I feel like a valid and appreciated human being.… When he had given me those props . . . I never heard him say that. And then when he said it, I couldn't keep my tears away like that. It made me feel like years of effort have not gone to waste and made me feel celebrated. Like that's what EOJ can be. It can be a celebration. It can be a mourning. It can be a thank you, a goodbye, a 'how are you?' It is the most simplest emotions for the simplest of kind gestures, the most impactful of patting, the sweetest of hugs. (Participant 4, Interview 2, March 29, 2023)

Although Essence of Joy and Dr. Leach gave Black participants a place to celebrate their achievements, feel seen, and explore their identities, Black singers at The Pennsylvania State University still felt the need for Black-only spaces. Some of the participants, along with other Black singers in the choir, used what Dr. Leach had taught them to form a Black student-led music ensemble. When describing how they ran rehearsals for the ensemble, one participant said, "I'm just like, 'What would Dr. Leach do?' And I would just follow that and copy that" (Participant 1, Interview 1, February 23, 2023).

Multifaceted Definitions of Empathy

In following the phenomenological practice of *epoché*, I set aside my own beliefs about empathy and did not seek out other scholars' definitions of empathy until I concluded data collection. During the interviews, I asked each participant how they defined empathy and to describe how or if the ensemble had affected their experience of empathy (see Appendix A for a list of interview questions). Based on their experiences in Essence of Joy, each participant defined empathy differently, leading to the third textural theme of "multifaceted definitions of empathy." Although participants defined empathy in diverse ways, these definitions were ultimately related to one another as some participants variously conceived of empathy as an emotion, as an action, or as a combination of the two. I refer to these concepts as "the emotion of empathy" and the "action of empathy." Student participants defined empathy in two ways. Two student participants defined empathy only in terms of emotions experienced. One participant stated that empathy was "a shared emotional experience between two or more people" (Participant 1, Interview 1, February 23, 2023). Another participant stated that empathy was "truly understanding what another person has

gone through or goes through" (Participant 2, Interview 1, February 24, 2023). For these participants, empathy was experiencing or understanding the emotions of others, but did not necessarily include taking action based on this shared experience.

In contrast, Dr. Leach defined empathy mostly as an action, rather than as an emotion. Dr. Leach's definition of empathy focused on the actions one person takes for another person, and only briefly hinted at the emotional elements of empathy. According to Dr. Leach, "Empathy implies a need to know, first. And then a willingness to respond to what you know, but especially what you need to know about others, about a context, about aspects of history" (Dr. Leach, Interview 1, March 28, 2023). For Dr. Leach, the emotion of empathy was located within the "need to know" about another person. Empathy as a whole, however, was much more concerned with one's willingness to take action for others based upon the information that has been learned.

Participant 3's and Participant 4's definitions of empathy shared elements of both the other student participants' and Dr. Leach's definition. These participants defined empathy primarily as understanding or even sharing another person's emotions but added that empathy includes an element of support for others through their emotions. One such participant defined empathy as:

> Being happy for people when they're happy and being sad for people when they're not. Just kind of just supporting them, no matter what, even if you don't like them. It's just remembering that they're also humans. And people also have feelings and not just you. (Participant 3, Interview 1, March 13, 2023)

Similarly, an additional student participant stated that empathy was when:

> You understand a person and their emotions. It's not just you support them through it . . . you understand them. You can directly correlate their emotions to a situation, scenario or feeling that you have had before and that you start to relate to them on a deeper level. (Participant 4, Interview 1, March 14, 2023)

For these two student participants, empathy centered on either sharing someone's emotions or understanding their emotions in relation to one's own experience. Both participants, however, acknowledged that empathy included supporting or deeply relating to a person, implying further action on the part of the empathizer.

Structural Description and Model

Dr. Leach described an essential aspect of the Essence of Joy experience as including singers who "allow themselves to undergo aspects of transformation" (Dr. Leach, Interview 1, March 28, 2023). Dr. Leach defined this "transformation" as when singers in Essence of Joy "carry that experience and that level of encounter with them far into life" (Dr. Leach,

Interview 1, March 28, 2023). Participant 4 additionally described a transformational aspect of Essence of Joy through an emotional connection to the music:

> I was able to work through those emotions through that music, and so I became more aware of how certain situations affected my emotions, became more intuitive to how I affected others, and in that sense, I thought more and more about how each of these different experiences and these different emotional experiences change the way in which I learn, and I grow, and I become a different human being. But that's honestly because I think too much about the music. But I think anyone who's been in Essence of Joy and who starts to practice will start to think as we sing it and hear about it, will start to think about the music in that same way. It really does soak in. It starts to soak into who you are, and then you start to become more emotionally aware. (Participant 4, Interview 1, March 14, 2023)

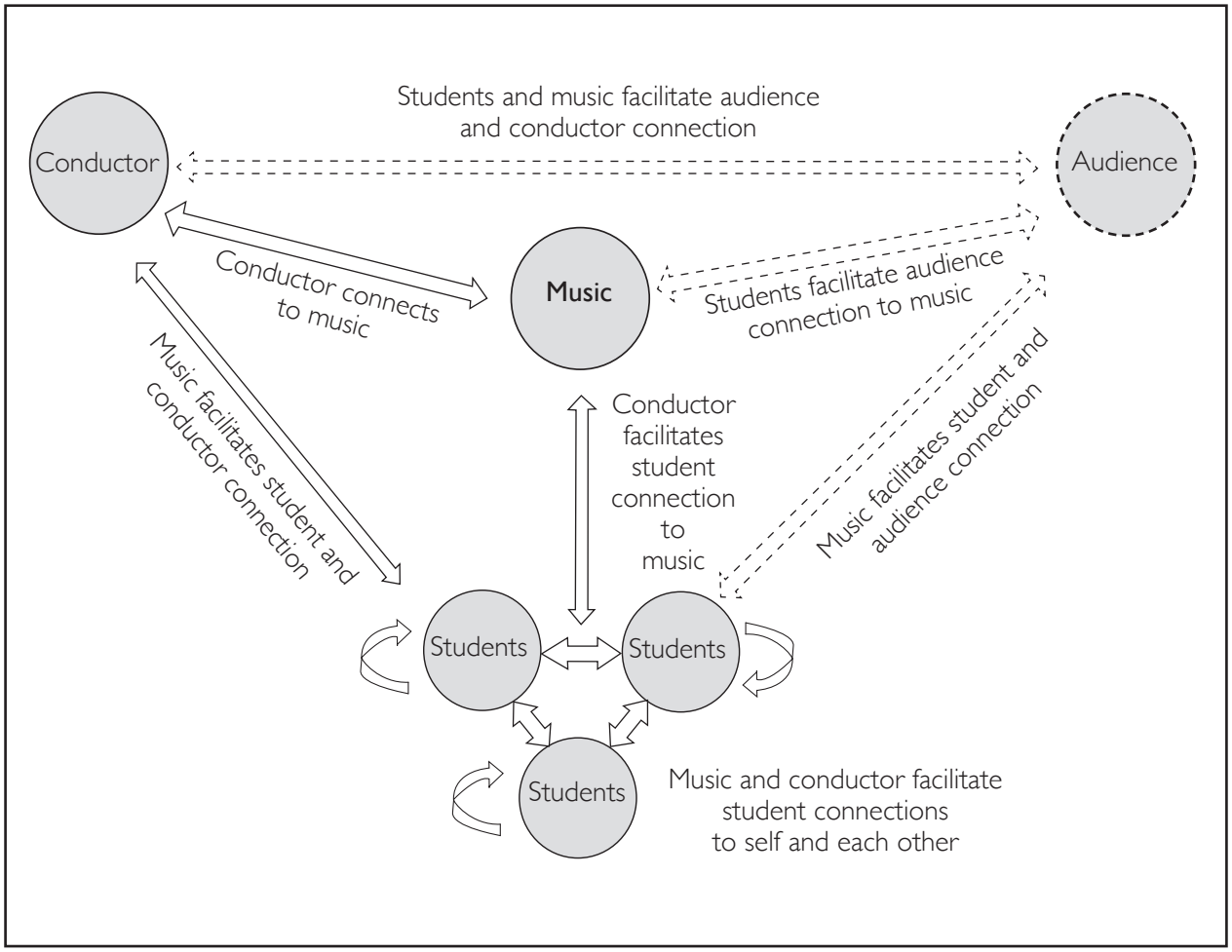
Through participation in Essence of Joy, Participant 4 shared that she felt she had "become a different human being" because of being "more emotionally aware." Thus, Participant 4 carried her transformational experience to other aspects of her life as Dr. Leach had suggested. For other student participants, transformation allowed them to become more extroverted or to recognize when they were excluding themselves from engaging in social connections (Participant 1, Interview 1, February 23, 2023; Participant 4, Interview 2, March 29, 2023). For Black participants in particular, the transformation they experienced through Essence of Joy's dedication to choral music from African American traditions offered them deeper connections to themselves through exploration of their ethnic identities (Participant 1, Interview 1, February 23, 2023; Participant 4, Interview 1, March 14, 2023).

The experiences in Essence of Joy that promoted participants' transformation were mediated through the ensemble's repertoire, connections to others and connections to themselves. Figure 1 displays a model of the participants' experiences of empathy and connections in Essence of Joy. Arrows between circles represent connections. Dotted arrows represent connections that are present only in performance (i.e., connections with the audience). At the center of the model, music represents Essence of Joy's repertoire, African and African American choral music. Connections between the conductor, participants, and the students were facilitated by each group or individual experiencing a connection to the music. Each individual or group also facilitated connections between other groups (i.e., the conductor facilitated connections between audience and students while students facilitated connections between the conductor and the audience). Connections to the music, the audience, the conductor, and one another also facilitated students' connections to themselves, represented by the curved arrows.

Essence Statement

The essence of empathy and connection in Essence of Joy is a shared emotional experience where participants learn about each other, are transformed, and are encouraged by the director and one another to carry this transformation into other areas of their life. These experiences of empathy and connection are mediated through sacred and secular African American choral music, through structured sharing times, and through public performances. For Black participants, Essence of Joy's music provided opportunities to explore their ethnic identity.

Figure 1.
Empathy and Connection in Essence of Joy



Discussion

Although the performance of African American and African choral music in a multicultural ensemble was central to both student participants' and Dr. Leach's experiences in Essence of Joy, transcultural musicking alone did not lead to empathy and connection but were supported by Dr. Leach's pedagogical choices. In the following section, I discuss the findings as related to each of my research questions and to the research literature.

Research Question 1

The first research question was: *In what ways, if any, do participants in Essence of Joy experience and engage with empathy?* Although the participants' definitions of and engagements with empathy were multifaceted and differed from one another, each participants' definitions of empathy aligned with definitions found in psychological literature. Maibom's concept of affective empathy, or experiencing an emotion because of another's emotion that is often similar to the other's emotion (2020, p. 15), is most closely aligned with Participant 1's definition of empathy as "a shared emotional experience between two or more people" (Participant 1, Interview 1, February 23, 2023). Participant 2 drew upon Maibom's perspective taking, or imagining oneself in another's situation (2020, p. 16), when they defined empathy as understand someone else's experience (Participant 2, Interview 1, February 24, 2023). Participants 3 and 4 combined elements of both affective empathy and perspective taking by acknowledging that empathy required them to share in others' emotional experiences, but also relate other people's situations and experiences back to their own (Participant 3, Interview 1, March 13, 2023; Participant 4, Interview 1, March 14, 2023).

Maibom's definition of sympathy, or "an emotion experienced by a person A for the well-being and plight of another person B," (2020, p. 16) is similar to Golemon's concept of empathic concern, except that empathic concern goes further than sympathy by requiring person A to not only experience emotional concern for person B, but to take action to support person B based upon that concern (Emotional Intelligence Clips, 2022). Dr. Leach and Participant 4 both described elements of empathic concern. For Dr. Leach this was the "willingness to respond" to what you learned about others, which Participant 4 described as "supporting" others through their experiences (Dr. Leach, Interview 1, March 28, 2023; Participant 4, Interview 1, March 14, 2023).

Research Question 2

Research Question 2 asked: *In what ways do Black and non-Black participants have similar or different experiences of empathy based on their experiences in Essence of Joy?* While race did not appear to be a contributing factor to participants' experiences of empathy, one way that Black and non-Black participants' experiences diverged was through their experience of the third textural theme, "connection to self." Participants 1 and 4, who were Black, and thus experienced musical mirrors rather than windows with Essence of Joy's repertoire, both described experiencing self-connection by gaining awareness of themselves (Klussman et al., 2022, p. 121) through exploration of their ethnic identities as Black Americans during their participation in Essence of Joy. Ethnic identity is "the identity that develops as a function of one's ethnic group membership" (Umaña-Taylor, 2011, p. 792). The development of one's ethnic identity is related to culture—including choral music—because one's ethnic group is defined as one's culture of origin (Umaña-Taylor, 2011, p. 791). The formation of ethnic identity is a complex phenomenon, but researchers have identified exploration as one of the many processes that contribute to ethnic identity forma-

tion (p. 793). Exploration of one's ethnic identity "involves increasing one's understanding and exposure to one's group by doing things such as reading about one's ethnic background, talking to others about one's ethnic group, or searching the Internet for information about one's ethnic group" (p. 793). Thus, ethnic identity formation can be understood to consist of exploring one's own cultural heritage, including the music of one's own culture.

Research Question 3

Research question three was: *In what ways, if any, were participants' experiences of empathy mediated by transcultural musicking?* Stated another way, this research question addressed whether transcultural musicking alone contributed to participants' experiences of empathy or if the conductor's pedagogical choices also influenced participants' experiences of empathy. All student participants mentioned ways in which the repertoire allowed them to experience empathetic connections to themselves or others, either through performance (Participant 1 and 3) or through exploration of ethnic identity (Participant 2 and 4). Yet, student participants also recognized other aspects of their experience in Essence of Joy that promoted empathetic experiences, such as debriefs.

As I described earlier, Dr. Leach intentionally used debriefs to promote students' empathetic connections with one another. However, for Dr. Leach, connection began with purposefully selecting repertoire that would speak to him and to students. Then, throughout the rehearsal and performance process, Dr. Leach sought to create "repeated encounters" for students to connect with the music, each other, and the audience (Dr. Leach, Interview 2, April 11, 2023). When asked to describe Essence of Joy to someone who had never attended a rehearsal or a performance, Dr. Leach responded:

> You're going to experience high caliber music making, choral music, with singers who allow themselves to undergo aspects of transformation every time they gather to experience the music, to connect with each other, and then ultimately to share their musical offering with audiences wherever we're invited to perform. That's the goal here. (Dr. Leach, Interview 1, March 28, 2023)

Thus, opportunities to make meaningful connections to others did not occur by happenstance; promoting student connections to each other and to the music was central to Dr. Leach's pedagogical design.

Implications

In the context of Essence of Joy, transcultural musicking and World Music Pedagogy were not the sole factors that contributed to participants' experiences of empathy. Based on the data collected during the present study, the empathetic connections participants made in Essence of Joy were the result of intentional planning from Dr. Leach in addition to being mediated by the music he selected for performance. Dr. Leach created opportunities

for "repeated encounters" with others both during and outside of music making. Choral conductors may consider that for the participants in this study, the development of empathy was a long-term goal that Dr. Leach repeatedly and intentionally incorporated into his rehearsals that included pedagogical choices beyond the selection of African and African American choral repertoire. Additionally, conductors who wish to provide students opportunities to experience empathy may consider how they balance their musical product, the rehearsal process, and the relational needs of their students (Bennett, 2022). This balance may include incorporating a version of debriefs with singers, conductors analyzing their own connections to repertoire before teaching it, singing from memory in order to connect with audiences, or otherwise providing structured space and time for singers to connect with one another and with audience members. Thus, conductors who wish to support the development of empathy amongst their singers may find that it is not a skill that can be taught in one lesson or even in one performance season.

Additionally, when choral conductors program music outside the Western canon, they may consider what impact the rehearsal and performance of so-called world music repertoire may have for singers for whom the repertoire is a mirror, rather than a window. For Participants 1 and 4 in the present study, the performance of African and African American choral music led to both positive connections to self, and a negative feeling of shame. Both participants experienced a sense of pride and an opportunity to explore their ethnic identities, yet Participant 1 also experienced shame at their prior ignorance of certain aspects of Black choral music. To mitigate such negative experiences, choral conductors who work with singers with cultural backgrounds different from their own may seek to collaborate with singers before programming musical mirrors for such singers (Bernard & Talbot, 2023; Sánchez-Gatt et al., 2025).

As schools of music seek to offer musicking experiences outside of the Western classical tradition for preservice choral music educators, they may consider how they have historically engaged in musical gatekeeping. Although Dr. Leach held a Ph.D. in music education from The Pennsylvania State University, at the time he founded Essence of Joy, he was only a graduate student. When Dr. Leach was hired as a faculty member, one of his stipulations for accepting the appointment was that Essence of Joy would become a credit-bearing ensemble. If Dr. Leach had not accepted the appointment or if his request had been denied, Essence of Joy may not have continued to exist (Dr. Leach, Interview 1, March 28, 2023). Since university schools of music in the United States focus nearly exclusively on Western art music, it can be difficult for musicians with expertise in other musical traditions to earn terminal degrees (D.M.A. or Ph.D.) at those institutions. Universities often strive to only hire individuals with doctoral-level degrees, especially for tenure-track positions. Dr. Leach already had the musical experience and knowledge needed to found Essence of Joy before he completed his doctorate. His life-long experiences as a pianist, organist, and conductor in Black churches and Black choral ensembles made him uniquely qualified to lead such an ensemble, regardless of academic titles. If schools of music truly wish to expand their

ensemble offerings to include traditions outside of Western Europe and promote the voices of underrepresented groups, as affirmed by ACDA's purpose statements (ACDA, 2023, p. 1), they may wish to consider candidates whose background and credentials lie outside of traditional Western classical music.

The findings presented in this study provide multiple implications for future research. For example, future researchers may seek to analyze how gender might affect participants' experiences of empathy in the context of transcultural musicking. In future studies, scholars may also seek to understand whether or how repertoire, structured sharing, and performance contribute to empathy and if any of these three experiences contribute to empathy more or less than others. If employing a longitudinal design, future researchers may explore whether or how participants' experiences of empathy develop or change over time as they engage in transcultural musicking. Importantly, future scholars may seek to understand if or how singers experience empathy through musicking alone, or when performing music from their own culture(s).

Conclusion

In the context of Essence of Joy, the oft-repeated claim that students gain empathy and understanding through World Music Pedagogy and transcultural musicking (Bennett, 2022; Campbell, 1991, 2018; Hess, 2019; Pascale, 2011) requires two corollaries. First, when choral educators include and even center the musics of underrepresented cultures, they may choose to consider how their presentation of the repertoire might impact students who are and are not members of the underrepresented culture. Second, transcultural musicking may contribute to experiences of empathy when music educators thoughtfully and intentionally create both musical and extra-musical opportunities to meaningfully develop interpersonal connections. Choral directors who seek to provide empathetic experiences may consider that by centering African and African American choral music through pedagogy intentionally designed to promote empathy and connection, Essence of Joy is both a "high caliber musical experience" and "the sweetest of hugs" (Dr. Leach, Interview 1, March 28, 2023; Participant 4, Interview 2, March 29, 2023).

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Appendix A: Interview Protocols

Interview protocol for student participants, adapted from Pinto (2022):

1. Tell me about yourself. Where are you from? What's your major? How long have you been at Penn State? How do you describe your race or ethnicity? What are your pronouns?

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 EOJ?

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 EOJ to somebody who has never been to a rehearsal or concert?

9. How does EOJ compare to other choirs you have participated in?

10. What is the purpose of the group?

11. I am interested in learning about how people might gain empathy and understanding through singing in an Afrocentric choir. How do you define empathy? Can you describe any ways that EOJ has helped you gain empathy or understanding for others? For Black culture or Black people?

12. How do you relate to other singers in the choir?

13. What's your favorite part about EOJ?

14. Are there any challenges?

15. Is there anything about your experience in this choir that I didn't ask but you would like to talk about?

Interview protocol for Dr. Leach:

1. Can you tell me about your musical journey before you founded EOJ?

2. What made you found the group? What made you keep the group going?

3. How has conducing EOJ affected you?

4. What do you enjoy about it?

5. Are there any challenges?

6. How would you describe EOJ to somebody who has never been to a rehearsal or concert?

7. How does EOJ compare to other choirs you have conducted?

8. What is the purpose of EOJ?

9. What is the Mission of the EOJ?

10. What does EOJ mean to the community?

11. I am interested in learning about how people might gain empathy and understanding through singing in an Afrocentric choir. How do you define empathy? Can you describe any ways that EOJ has helped you gain empathy or understanding for others? Have you observed students gaining empathy or understanding?

12. Do you think that Black and non-Black students' experiences of EOJ differ in any ways? How so?

13. What do you want students to gain or develop from their experience in EOJ? Are these goals the same or different for Black and non-Black singers?

14. How do you select repertoire?

15. How do you teach students about the history and culture of the repertoire?

16. What role does travel play in building the community of EOJ?

17. How do you relate to the singers in the choir?

18. What's your favorite part about EOJ?

19. What can other ensembles learn from EOJ?

20. Is there anything about your experience in this choir that I didn't ask but you would like to talk about?

Article

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The Effects of Computerized Feedback on Sight-Singing Achievement

Adam G. White[1]

Abstract

The purpose of this quantitative study was to examine the effects of computerized visual feedback provided by the *SmartMusic* interface on the sight-singing achievement of choristers (n = 77) from two suburban high schools. Using a matched group design, participants were assigned one of three groups: those who viewed feedback following their initial attempt, those who viewed feedback following their follow-up attempt, and those who did not view any feedback. Over a period of five weeks, choristers engaged in weekly sight-singing assessment sessions where they sight-sang a melody, reviewed that melody for 90 seconds, then sang that melody again. Results determined that while students made significant improvements on a melody following a sight-singing attempt, those improvements were not affected by feedback condition. 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 were unable to transfer learning from practice with a click-track and note indicator to performance without these features so teachers should design summative assessments to match the task presented during formative assessments. This technology may be best utilized to supplement sight-singing instruction but is unlikely to supplant the work of a quality teacher.

Keywords: *sight-singing, vocal sight-reading, assessment, visual feedback*

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The Effects of Computerized Feedback on Sight-Singing Achievement

The ability to sing a written melody at sight without the help of an external pitch reference is an elusive task for novice and experienced musicians alike (Demorest & May, 1995; Killian & Henry, 2005; McLung, 2008; Petty & Henry, 2014). Chorus teachers value sight-singing skill development among their choristers and feel sight-singing instruction is an important component in the rehearsal process, though more directors believe in the efficacy of sight-singing instruction than actually teach it (Farenga, 2013; Myers, 2008; Potter, 2015; Von Kampen, 2003). Some choir directors believe the process of learning sight-reading skills improves their choir's overall intonation (Floyd & Bradley, 2006). Schools of music have used sight-singing as a component for program admissions and proficiency as a requirement for graduation (Hime et al., 2014), though it is unknown how many schools have had sight-singing standards and how stringent these standards may be. In addition, adjudicated sight singing has also been a part of festivals and honor ensemble auditions in the United States. Norris (2004) found that 24 states (48%) included a formal sight-singing requirement in state-level high school choral ensemble adjudications. Several studies (Brendell, 1996; Demorest, 2001; Snider, 2007) have shown that the existence of sight-singing at festivals tended to have a positive correlation with time teachers spent on sight-singing instruction.

Researchers studied the effectiveness of different strategies for teaching and learning sight-singing, including pedagogy (Benton, 2002; Boisen, 1982; Killian, 1991; Kostka, 2000), systems (Brown, 2001; Demorest & May, 1995; Henry & Demorest, 1994; McClung, 2008), and the need for individual assessment (Demorest, 1998; Nolker, 2006). Though research on the use of various methods and solmization systems is mixed, individual assessment was found to be an effective way to improve chorister sight-singing achievement.

Researchers have been interested in the efficacy of technology as an assessment tool for several decades (Lorek, 1991; Ozeas, 1991; Platte, 1981) and advances have led to increased use of computerized assessment in choral classrooms (Hawkins, 2018; Neilsen, 2013). Researchers have also investigated the *SmartMusic* proprietary technology, including smart accompaniment and assessment features, as the focus of several instrumental music studies, investigating such topics as motivation (Gurly, 2012; Perry, 2014), attitudes toward use (Owen, 2015; Walls et al., 2013), assessment (Buck, 2008; Karas, 2005), and achievement (Flanigan, 2008). Petty and Henry, (2014) found that the use of technology for sight-singing assessment was found to be as effective as traditional methods and suggested, "While it was beyond the scope of the current study, research should be conducted to determine whether the feedback provided through the software during individual practice can impact aural skill acquisition and error detection skills" (p. 27).

Feedback

According to Kulhavy and Wager (1993), feedback "designates any information that follows a response and allows a student to evaluate the adequacy of the response itself" (p. 3).

The study of feedback has its roots in the work of Thorndike (1927; 1933), who studied how simple "right" and "wrong" feedback to student responses could affect those responses in subsequent trials. The psychologist Skinner and his study of behaviorism built on the work of Thorndike. Skinner (1965) believed that environmental stimuli either reinforced behavior or acted as punishment to diminish that behavior. Behaviorism was followed by the study of cognitivism (Gagné et al., 1981; Kulhavy & Wagner, 1993) and constructivism (Jonassen, 1990; Karagiorgi & Symeou, 2005). Each of these learning theories offered different perspectives but have all addressed the influence of feedback on learning.

Education researchers also studied the timing of feedback on learning outcomes and retention. In many cases, the timing of feedback studied was either immediate or delayed by as much as 24 hours (Clariana, 2000; Nakata, 2015). In many cases, delayed feedback contributed significantly to memory retention over immediate feedback, though students preferred immediate over delayed feedback. When offered the option of viewing delayed feedback, only 47% of participants chose to do so (Mullet et al., 2014). Researchers have not studied the timing of feedback within the context of improving a sung melody after an initial attempt.

Within music education research, the effects of learner knowledge of results (KR) has been studied (a) within teaching sequential patterns (Price, 1992), (b) during piano performance (Coffman, 1990; Banton, 1995), (c) on elementary voice development (Rutkowski & Miller, 2003; Welch, 1985), (d) while learning foreign language diction, (Steinhauer & Grayhack, 2000), (e) on success and failure attribution (Schmidt, 1995; Vispoel, & Austin, 1993), and (f) on interval identification (Jeffries, 1967). The development of pitch-recognition software makes an investigation into the efficacy of computerized KR possible within a choral music context.

Real-time computerized visual feedback was used to study singing accuracy with varying results. Welch (1985) used real-time visual feedback and KR to assist elementary children in learning an echo singing task. Groups that reviewed feedback showed greater improvement than control groups. Wilson et al. (2008) and Leong and Cheng (2014) found participants who were presented concurrent visual feedback significantly improved their singing accuracy following a training period compared to participants who did not receive feedback. Paney and Tharp (2019) found no differences among groups in a similar study. Howard (2005) found visual feedback useful during a private voice lesson setting but cautioned against displays becoming over-complicated or ambiguous. Wilson et al. (2008) suggested using a hybrid mode of instruction where teachers supplemented technology-based visual feedback with traditional methods. None of these studies used visual feedback within a sight-singing context.

A meta-analysis investigated 1,609 studies on the effects of feedback within a technology-based learning environment (Van der Kleij et al., 2015). Of primary interest in this analysis was a comparison of different feedback types, including (a) knowledge of results (KR) (correct or incorrect response indicated), (b) knowledge of correct response (KCR)

(correct response indicated), and (c) elaborated feedback (EF) (explanation provided). The effect sizes of KR and KCR feedback varied based on the complexity of the learning task, with the higher-level outcomes having less effect. The effects of EF were found to be much more substantial but the variety of forms of EF varied among studies. Despite feedback being considered an essential tool in education, results on the efficacy of feedback have been mixed. When used solely to reinforce a correct response, feedback has not been found to affect achievement. Additionally, immediate feedback was effective with simple tasks but less effective in complex learning tasks (Kulhavy & Wagner, 1993). At the time of this study, no literature was found examining either the role of feedback as either KR or KCR in sight-singing achievement or the accuracy of the sight-singing feedback provided by computerized technology.

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. I also sought to compare the accuracy of the feedback available through the *SmartMusic* assessment feature when compared to that of 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 abilities to correct errors following a sight-singing attempt?

2. Does the presence or timing of feedback provided by the *SmartMusic* interface affect student sight-singing achievement following a five-week treatment period?

3. What is the reliability of the feedback provided by the *SmartMusic* interface when compared to human expert ratings?

Method

To isolate the effects of computerized visual feedback on sight-singing achievement, this study utilized a matched-group, repeated-measure design to analyze within-session improvement and a matched pretest, posttest design to compare differences in sight-singing abilities following the treatment period. I manipulated the presence and order of the feedback provided by SmartMusic. Within each session of the treatment period (weeks 3-7), all participants attempted identical melodies twice. The within-session feedback group received feedback indicating correct and incorrect responses following the first attempt while the post-session feedback group received visual feedback following the second attempt. The control group received no visual feedback from the *SmartMusic* interface. Melody singing attempts were recorded twelve times from each participant over a period of nine weeks. See Figure 1 on the next page for a model of the research design.

The intervention in this study was the visual feedback provided by the *SmartMusic* Classic computer application loaded on an iPad Pro (10.5-inch), iOS version 12.2 (16E227) with the

Figure 1

Design. Matched group repeated measures with control

Group	*Week 1*	*Week 3*	*Week 4*	*Week 5*	*Week 6*	*Week 7*	*Week 9*
Within-session feedback	O_1	$O_2 \times O_3$	$O_4 \times O_5$	$O_6 \times O_7$	$O_8 \times O_9$	$O_{10} \times O_{11}$	O_{12}
Post-session Feedback	O_1	$O_2\ O_3 \times$	$O_4\ O_5 \times$	$O_6\ O_7 \times$	$O_8\ O_9 \times$	$O_{10}\ O_{11} \times$	O_{12}
Control	O_1	$O_2\ O_3$	$O_4\ O_5$	$O_6\ O_7$	$O_8\ O_9$	$O_{10}\ O_{11}$	O_{12}

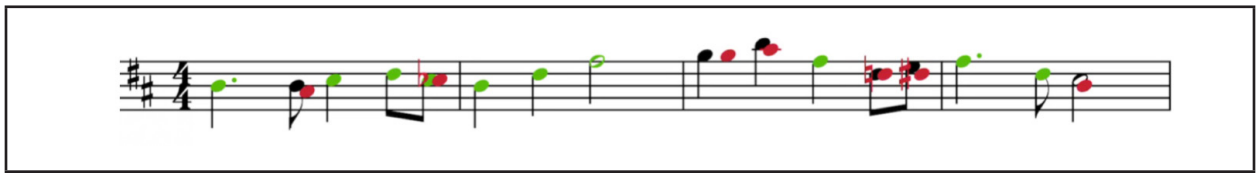
O - Melody attempt

X – Feedback provided by the *SmartMusic* interface.

sight-singing instructional text, 90 Days to Sight Reading Success: A Singer's Resource for Competitive Sight-singing by McGill and Stevens (2003). All melodies were eight bars in length in 4/4 time and included the notes of the following durations: eighth, quarter, dotted quarter, and half (see Appendix A). All exercises began and ended on tonic and were in the following keys: G major, E-flat major, F major, and D major. Following a sight-singing attempt, participants in the within-session feedback (WSF) and post-session feedback (PSF) groups received visual feedback from the *SmartMusic* assessment feature (see Figure 2) that used a proprietary voice pitch-tracking algorithm. Participants in the no-feedback/control group (NFC) sang identical excerpts with the iPad microphone turned off, negating the *SmartMusic* feedback feature. Except for the presence of feedback, the *SmartMusic* interface looked identical for all participants. I used a GoPro HERO Session equipped with a 64GB ScanDisk Micro SD card as an audio and screen capture device for data analysis. An additional audio capture device, Zoom H4n, Handy Recorder was attempted for redundancy but was discontinued due to technical issues. No video recording made that included a participant's likeness, and audio recordings did not include participant names.

Figure 2

SmartMusic interface indicating correct pitches in green and incorrect in red



I established approval from the Institutional Review Board (IRB) at Northwestern University and obtained permission to conduct this study from participating schools at both the district and building levels. I made modifications to parental consent and student assent forms as needed until all parties granted approval.

Participants

Participants (n = 77) for this study were a convenience sample of choral students I recruited from two high schools in my professional network. Both sites were suburban high schools (grades 9-12) from a midwestern public school district. Enrollment was around 1,550 students for School A and 1,650 students for School B. Twenty-five percent of the 308 choral students recruited completed the study. Both schools had identical choral music course offerings and both used a modified block schedule. Each school had non-auditioned choirs including a tenor/bass ensemble and a treble choir. The remaining choirs were all selected by individual audition with the choir teacher. Auditioned ensembles included a select treble choir, a large mixed choir, and a small select choir, listed in order of increasing selectivity.

Procedures

Pretest/Posttest

Participants sang one of two randomly assigned melodies, A or B, during the pretest and the opposite melody during the posttest. Each test was administered by playing a screen-capture video of the SmartMusic interface that included a tonic triad (*d m s m d s, d*), thirty seconds of participant self-guided practice, another tonic triad (*d m s m d s, d*), a four-beat count off, and 50 seconds to complete the melody. The entire pretest stimulus ran for approximately one minute and 50 seconds. A click-track, quarter note indicator, and visual feedback, common features of the *SmartMusic* interface, were disabled during the pretest and posttest sessions.

Weekly Sight-Singing Sessions

A series of five, once-weekly assessment sessions began on the third week of the study. As students entered the assessment room, I verbally reviewed the assessment procedures that were as follows: (a) when I exit the room, press the microphone icon on the *SmartMusic* interface, (b) this will begin a 30 second practice period that will be preceded and followed by the tonic triad (*d m s m d s, d*), (c) sing the melody while keeping up with the click-track and quarter note indicator, (d) after completing the melody, take 60 seconds to review the melody and try to correct any errors, (e) I will re-enter the room and reset the apparatus for a second attempt, (f) when I exit the room press the microphone icon on the *SmartMusic* interface, (g) sing the melody a second time and try to improve upon your initial attempt, and (h) exit the room. When I entered the room following the first attempt and 60 seconds of practice, I enabled the microphone feature for participants in the post-session feedback group and disabled it for those in the within-session feedback group, and left it disabled for those in the NFC group. Each session took approximately four minutes and 35 seconds.

Scoring

I scored all pretest and posttest melody attempts (n = 154) using the following procedures:

Each eight-measure sight-singing sample was divided into two, two-count chunks (counts 1-2 and counts 3-4) for a total of 16 chunks. Each chunk was then awarded one point for the correct notes and one point for the correct rhythm for a total of 32 possible points per sample. If any error was made within a chunk, the entire chunk was awarded a zero. All scores for both pitch and melody were converted into a proportion of correct chunks per attempt. A random sample of approximately 20% ($n = 30$) pretest and posttest melodies were scored by an additional expert rater to establish reliability. A proportion of agreements divided by agreements plus disagreements (Madsen & Madsen, 1970), yielded a proportion of agreement of (.925) for pitch and (.856) for rhythm.

I also scored all weekly assessment session attempts ($n = 770$). In order to account for the unique nature of the *SmartMusic* interface, I used a different scoring method than I used for the pretest. I awarded a single point for each correct pitch and a point for each correct rhythm, similar to other studies (Henry 2004; 2011). Unique to this study, however, participants were required to stay within a quarter step, sharp or flat, of the written pitch and rhythms to be aligned with the click track and quarter note indicator to be marked correct. See Appendix A for a complete list of scoring guidelines. In order to ascertain reliability, an additional expert rater scored 30% ($n = 235$) of the sight-singing attempts, selected at random. Using a formula of agreements divided by agreements plus disagreements, I was able to determine a proportion of agreement for pitch (.908) and rhythm (.852) for the melodies in weeks one through five.

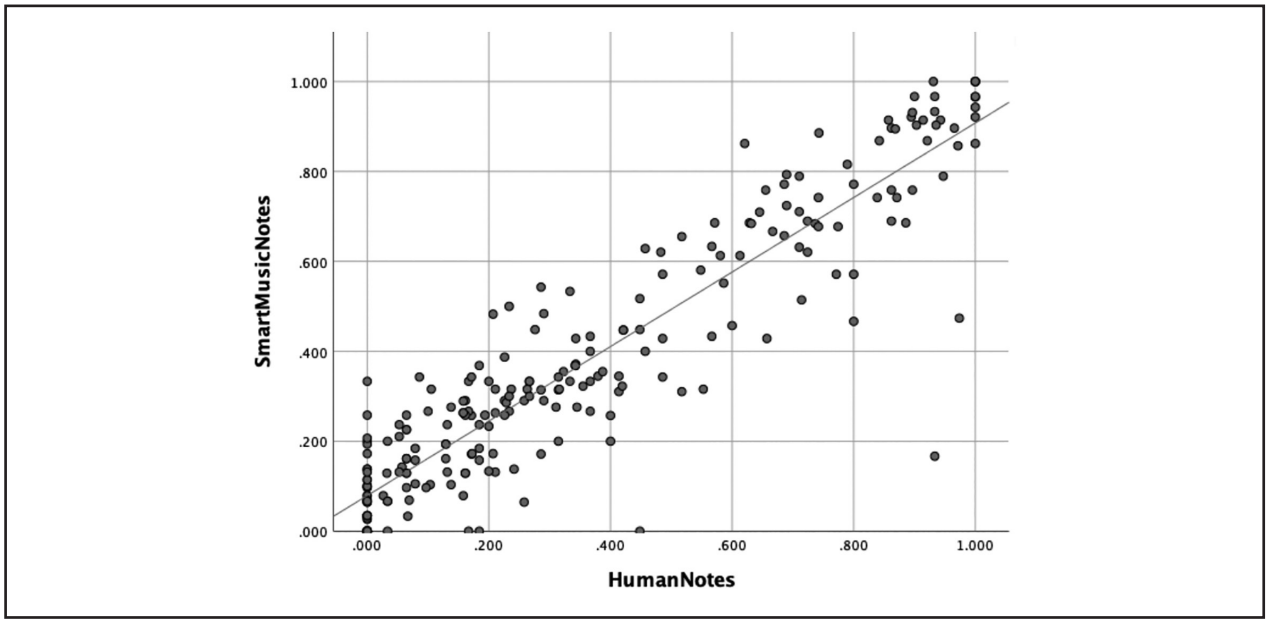
In order to determine the reliability of my pitch and rhythm proportion scoring, I ran a Type A (absolute agreement) intraclass correlation coefficient (ICC), comparing my scores to the additional rater's scores, revealing a high degree of reliability. The single measures ICC for pitch scores was .939 with a 95% confidence interval from .923 to .953, $F(244, 244) = 32.337$, $p < .001$. The single measures ICC for rhythm was .904 with a 95% confidence interval from .569 to .959, $F(244, 244) = 33.349$, $p < .001$. As the ICC for both pitch and rhythm fell within the "*excellent reliability*" range (Koo & Li, 2016), I proceeded to use my full set of scores without modification.

SmartMusic Reliability

In order to address the reliability of the SmartMusic interface compared to human raters, I compared the visual feedback captured by the video apparatus to my scores. Because the apparatus did not account for the possibility of separate pitch and rhythm scores, I considered a note correct when I scored both the pitch and rhythm as correct. I considered the note correct from the *SmartMusic* interface when the notehead was green instead of black or red. I ignored all other extraneous marks on the feedback. See Figure 3 on the next page for a comparison of human and computerized scoring.

Figure 3

Scatterplot comparison of SmartMusic and human raters scoring proportions



Results

Question 1: Does the presence or timing of feedback provided by the *SmartMusic* interface affect student abilities to correct errors following a sight-singing attempt?

I endeavored to discover if the presence or timing of feedback affected participants' ability to improve accuracy on the performance of a melody following an initial sight-singing attempt by developing the following three-level panel data regression model, regressing several independent variables on the follow-up attempt composite score. The first level model included follow-up attempt composite scores as the outcome variable and the initial attempt composite scores as a predictor variable:

$$FollowupAttemptComp_i = \alpha + \beta_1 InitialAttemptComp_i + \varepsilon$$

The second model added dummy variables for the within-session feedback group and the post-session feedback group:

$$FollowupAttemptComp_i = \alpha + \beta_1 InitialAttemptComp_i + \beta_2 WSF_i + \beta_3 PSF_i + \varepsilon$$

The final model added other dichotomous predictor variables, including choir selection, school, and voice range:

$$FollowupAttemptComp_i = \alpha + \beta_1 InitialAttemptComp_i + \beta_2 WSF_i + \beta_3 PSF_i + \beta_4 STC_i + \beta_5 LMC_i + \beta_6 SMC_i + \beta_7 School_i + \beta_8 Voice_i + \varepsilon$$

In all three models, the initial attempt was the strongest significant predictor of success on the follow-up attempt. Other factors were also significant, including choir selection and school attendance. Research condition and voice range were not significant predictors of the outcome. See Table 1 for the regression analysis.

Table 1

Summary of Hierarchical Regression Analysis for Variables Predicting Follow-up Melody Accuracy (n = 384)

	Model 1			Model 2			Model 3		
Variable	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Constant	.121	.014		.132	.017		.132	.023	
Initial attempt	.891	.026	.871**	.895	.026	.874**	.815	.031	.796**
WSF[a]				-.030	.019	-.044	-.028	.019	-.042
PSF[b]				-.012	.019	-.018	-.010	.019	-.014
Select Treble Choir[c]							.027	.027	.084*
Large Mixed Choir[d]							.080	.021	.108**
Small Mixed Choir[e]							.088	.024	.120**
School[f]							-.041	.016	-.064*
Treble Voice[g]							.006	.017	.010
R^2		.757			0.760			.777	
F for change in R^2					1.411			5.97*	

Note:

[a]Within-session feedback condition = 1, Post-session feedback and control = 0.

[b]Post-session feedback condition = 1, Within-session feedback and control = 0.

[a, b]Control group is constant = 0

[c, d, e]Non-auditioned choir is constant = 0

[c]Treble Choir = 1, dLarge Mixed Choir = 1, eSmall Mixed Choir = 1

[f]School A = 1, School B = 0

[g]Treble Voice = 1, Tenor/Bass Voice = 0

*$p < .05$. **$p < .001$.

I created the following two-level regression model to determine any effect of variables on possible gains between attempts. See Table 2 for the regression results.

Table 2

Summary of Hierarchical Regression Analysis for Variables Predicting Gains in Composite Scores Between Initial and Follow-up Attempts (n = 384)

	Model 1			Model 2		
Variable	*B*	*SE B*	β	*B*	*SE B*	β
Constant	.087	.013		.083	.022	
WSF[a]	-.038	.019	-.115*	-.040	.020	-.118*
PSF[b]	-.005	.020	-.015	-.007	.020	-.019
Select Treble Choir[c]				.030	.027	.063
Large Mixed Choir[d]				.042	.021	.0112*
Small Mixed Choir[e]				.010	.021	.027
School[f]				-.031	.016	-.099
Treble Voice[g]				.007	.018	.021
R^2		.012			.035	
F for change in R^2					0.133	

Note:

[a]Within-session feedback condition = 1, Post-session feedback and control = 0.

[b]Post-session feedback condition = 1, Within-session feedback and control = 0.

[c, d, e]Non-auditioned choir is constant = 0

[c]Treble Choir = 1, [d]Large Mixed Choir = 1, [e]Small Mixed Choir = 1

[f]School A = 1, School B = 0

[g]Treble Voice = 1, Tenor/Bass Voice = 0

$^{*}p < .05$. $^{**}p < .001$.

The first model included composite gain scores as the outcome variable with dummy variables representing within-session feedback and post-session feedback groups:

$$GainScoreComp_i = \beta_1 WSF_i + \beta_2 PSF_i + \varepsilon$$

The second model added the remaining dichotomous predictor variables, including choir selection, school, and voice range:

$$GainScoreComp_i = \beta_1 WSF_i + \beta_2 PSF_i + \beta_3 STC_i + \beta_4 LMC_i + \beta_5 SMC_i + \beta_6 School_i + \beta 7\, Voice_i + \varepsilon$$

I applied a Pearson's *r* correlation between mean initial composite scores and mean composite gains to determine if a relationship existed between how well participants scored on their first attempt and how much they improved during their second attempt. A weak, non-significant positive relationship was found $r = .130$, $p = .258$. When I applied a cubic line-of-fit to a scatterplot, Figure 4, comparing average initial attempts and average gains among all participants, an inverted-U shaped line was revealed ($R^2 = .255$) that better accounted for variance in the data than a linear line ($R^2 = .017$).

To determine if differences in gains changed by group over time, I compared scores from each week using a two-way repeated measures ANOVA. During week one, participants scored significantly higher on the follow-up (M = .416, SD = .035) attempt than they did during the initial (M = 293, SD = .030) attempt $F(1.00, 75.000) = 51.618$, $p < .001$, $\eta_p^2 = .408$ using Greenhouse-Geisser corrected degrees of freedom. Differences among groups were non-significant and showed nearly parallel improvement. Week 2 showed significant gains for each group, though less pronounced than Week 1, with initial attempt scores significantly higher than the Week 1 initial scores. As with Week 1, pitch and rhythm scores were significantly higher during the follow-up attempt $F(1.00, 72.000) = 26.477$, $p < .000$, $\eta_p^2 = .269$. Pairwise post-hoc analysis found no significant differences between initial and follow-up attempts by condition. A two-way repeated measures ANOVA was used to compare Week 3 initial pitch and rhythm scores to follow-up attempts. Unlike weeks 1, 2, 4, and 5, I found no main effect between the initial and follow-up attempt $F(1.000, 75.000) = 2.861$, $p = .095$, $\eta_p^2 = .037$. The ANOVA analysis from Week 4 determined that follow-up scores were significantly higher than those during the initial attempt $F(1.000, 74.000) = 16.665$, $p < .001$, $\eta_p^2 = .184$. A post-hoc pairwise comparison found no differences among groups, however. The Week 5 ANOVA revealed significant differences between initial pitch and rhythm scores and follow-up scores, $F(1.000, 74.000) = 12.389$, $p = .001$, $\eta_p^2 = .143$, with no significant differences by condition.

Question 2: Does the presence or timing of feedback provided by the *SmartMusic* interface affect student sight-singing achievement following a five-week treatment period?

To compare possible student growth in sight-singing scores among groups, I performed a two-by-two repeated measures ANOVA of pretest and posttest pitch and rhythm scores with condition as a between-subjects factor. As the assumption of sphericity could not be met, a Greenhouse-Geisser correction was applied, revealing no significant differences be-

tween pretest and posttest composite scores F(1.000, 71.000) = 2.106, p = .151, η_p^2 = .029. Additionally, between-subjects comparisons revealed no significant differences between groups F(2, 71) = 2.492, p = .090, η_p^2 = .066. See Table 3 for a comparison of pretest and posttest means by group and melody. A comparison of composite gains from pre- to posttest by condition revealed positive gains in the within-session feedback group (ΔM = .046) and no-feedback group (ΔM = .094) but negative gains in the post-session feedback group (ΔM = -.036). None of these differences were statistically significant.

Table 3

Pretest/posttest composite score comparison by melody and condition

Composite score	Pretest		Posttest	
	M	*SD*	*M*	*SD*
Within-session Feedback				
Melody A	.264	.085	.385	.089
Melody B	.385	.089	.341	.089
Post-session Feedback				
Melody A	.277	.085	.216	.102
Melody B	.362	.097	.351	.089
No feedback/control				
Melody A	.214	.082	.259	.086
Melody B	.308	.082	.451	.086

Note: Composite scores are reported as proportion correct notes and rhythms

Question 3: What is the reliability of the feedback provided by the SmartMusic interface when compared to human expert ratings?

I sought to examine the reliability of the feedback provided by the SmartMusic computer application when compared with human expert scoring. Visual feedback was presented once weekly to participants in the within-session feedback and post-session feedback groups. Approximately one-third (n = 237) of all attempts received feedback. Each note was considered accurate on the visual feedback when the notehead was colored green. I disregarded all other markings provided by the feedback. Notes were considered accurate by the human rater when both the pitch and rhythm were judged to be correct.

I analyzed reliability using a proportion of agreements divided by agreements plus disagreements (C. K. Madsen & C. H. Madsen, 1970). The proportion of agreement between *SmartMusic* and my scores (n = 237) had a mean of 0.841 (SD = .124). Scores ranged be-

tween full agreement (1.0) and low agreement (0.167). The 95% confidence interval was between 0.825 and 0.857. Figure 3 provides a scatterplot of this relationship.

Summary

High school chorister volunteers (n = 77) from two suburban public schools completed a five-week sight-singing assessment session that was preceded by a pretest and followed by a posttest. A comparison of pretest and posttest scores revealed a slight, non-significant improvement among participants from pretest to posttest but found no significant differences by condition. Analysis of sight-singing scores on initial attempts during each weekly session revealed significant improvement between weeks one and three and weeks two, four, and five. A comparison of each initial attempt to follow-up attempts revealed significant gains for weeks one, two, four, and five. Participant gains during week three were not significant. A non-significant, negative relationship was found among singing scores with participants in the WSF group and the PSF group when compared to those in the NFC group. Voice part was not a significant predictor of accuracy, but school and choir placement predicted higher achievement. A comparison of *SmartMusic* feedback and human scoring revealed a very strong positive correlation when comparing the proportion of correct notes $r(235) = .923$, $p < .001$. Analysis of agreements divided by possible agreements between human and *SmartMusic scoring* revealed 84.1% consistency of scores.

Discussion

With question one, I sought to ascertain if the presence or timing of feedback affected participants' ability to improve accuracy on the performance of a melody following an initial sight-singing attempt. The three-model regression analysis listed in Table 1 compared the scores of the follow-up attempt for every melody during the five-week treatment period to a series of predictor variables. Not surprisingly, the results revealed that the greatest predictor of sight-singing achievement on the second attempt was the score of the initial attempt. This model revealed no significant differences by group assignment, suggesting feedback had no discernible effect in overall sight-singing achievement. Significant predictors were found among the choir enrollment; participants who were enrolled in more select choirs were more likely to have higher sight-singing scores on the follow-up attempt. This suggests that students placed in more select choirs were more likely to demonstrate sight-singing acumen, corroborating the findings of Demorest and May (1995).

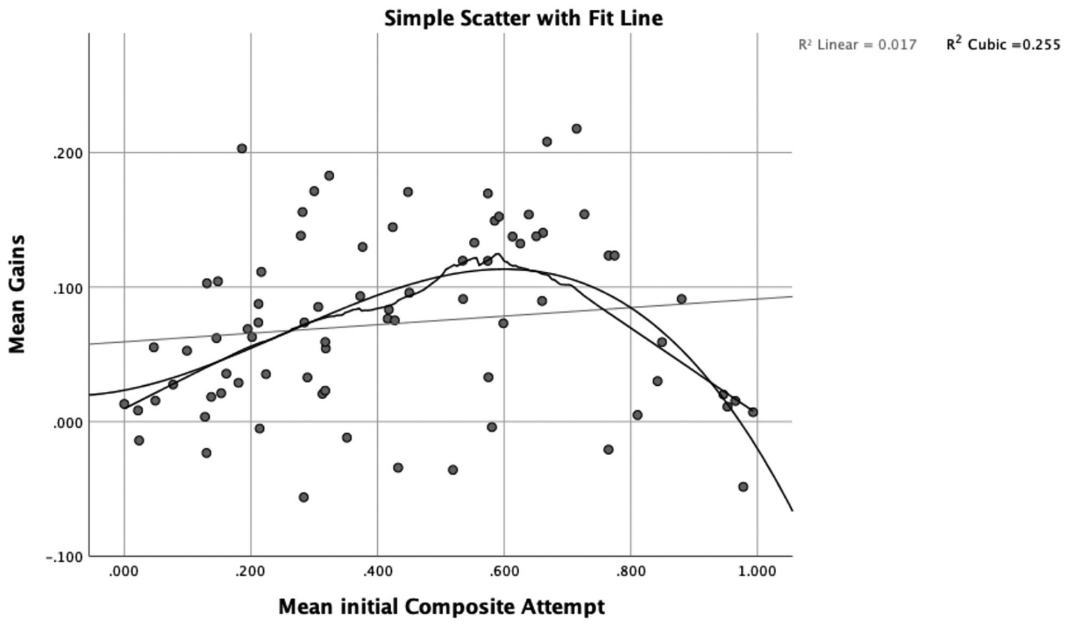
An additional regression model (Table 2) compares participants' gains made during each session of the five-week treatment period to determine if group assignment and other variables predicted differences. The first model compared group assignment and a small but significant negative relationship ($\beta = -.115$, $p < .05$) among participants in the WSF group when compared to the control group. Participants in the PSF group did not show any significant differences in gains when compared to the control. These findings reveal that students

who were not given feedback prior to a second attempt showed significantly greater gains than those who received feedback, though it should be noted that participants in the within-feedback group scored consistently higher on the initial attempt, possibly limiting their potential growth when compared to the other groups.

A comparison of gains between the initial and follow-up attempts revealed significant improvement with a large effect size for each group every week except Week 3. Differences among groups were non-significant and followed mostly parallel gains each of the five weeks of the study. The scatterplot (Figure 4) displaying the cubic relationship between average initial composite scores and average gains for all participants during weeks 1-5 further displays the need for level-appropriate melodies. Participants who averaged below 20% during their initial attempts were less likely to show as much improvement as those who scored between 20% and 80%, despite having the greatest opportunity for gains, corroborating the findings of Killian and Henry (2005). Those who averaged above 80% likely reached a ceiling effect as they approached 100% correct. Additionally, the feedback provided by *SmartMusic* was of no benefit to participants in the WSF group when compared with the other groups, even among those participants who scored below 20%.

Figure 4

Scatterplot of Average Initial Attempt Score and Average Gains



Note: Composite and gain scores are reported in proportion of correct notes and rhythms

With the second research question, I attempted to determine whether the presence or timing of computerized feedback affected sight-singing achievement following a five-week treatment period. Prior research has established the efficacy of individual assessment in improving sight-singing achievement (Demorest, 1998; Henry, 2014; Henry & Petty, 2014).

However, under these conditions, significant improvements in sight-singing achievement were not found when comparing pretest and posttest scores. Furthermore, group assignment had no significant effect on sight-singing scores. Several factors may have contributed to this lack of improvement. The pretest and posttest procedures differed from those experienced by the participants during the weekly sight-singing sessions. While the interface and initial practice time were identical, the click-track and quarter note indicator were disabled. It may be reasonable to assume that after 10 melody attempts with these features that some participants became accustomed to, if not reliant upon, these features when attempting a melody.

It remains unclear if either the frequency of sight-singing sessions, whether daily, weekly, or monthly, or duration of the treatment period, longer than five weeks, would have changed these findings. It should also be noted that though participants in the within-session feedback group scored the highest during the initial attempt each of the five weeks of the study, differences between groups maintained a parallel motion, suggesting that differences in scores were more likely the result of differences between groups that existed at assignment rather than the result of the research condition.

With research question three, I explored the reliability of *SmartMusic* feedback in comparison to manual scoring. Agreement on note accuracy was notably high, especially considering the complexities of the human voice. Alignment with an additional human rater reached 91.5%, while agreement with the *SmartMusic* system was 84.1%. These results suggest that choir teachers can reasonably view the feedback as a useful indicator of choristers' sight-singing abilities. However, caution is warranted when considering the assessment feature for formal grading, particularly in high-stakes contexts. The software demonstrated sensitivity to ambient noise from nearby rehearsal spaces and had difficulty evaluating quieter singers.

Feedback

Sight-singing is a complex task. As a result, if one of the component skills of sight-singing is missing, the singer is unlikely to be successful. As the ability to read, understand, and audiate written notation is a key sight-singing skill (Fournier et al., 2017; Vujović & Bogunović, 2012), it is logical to assume that if a student lacks a basic understanding of written notation, feedback using that notation is likely meaningless. Additionally, students who struggle to sing accurately, so called "poor-pitch singers," (Pfordresher & Brown, 2007) may understand the notation, but not sing with enough accuracy to produce a response from the visual feedback apparatus. Though not common, some participants in this study sang the correct solfege syllables in rhythm but failed to sing the pitches accurately.

Additionally, this study used a single, one-model approach as all participants sang the same melodies regardless of ability level and as a result, neglected the use of feedback to provide information informing future instruction (Fautley, 2010). Participants who struggled to maintain key, for example, received feedback that may not have presented useful

information. A more effective use of this feedback may be to assign shorter melodies with a narrower range until the participant finds some success. Furthermore, participants who were able to perform the melody correctly on the first attempt could not make any improvements so the feedback, though confirming accuracy, did not provide assistance. A failure to use the feedback to alter the assessment may have narrowed its possible effectiveness to a small range of participants.

The timing of the feedback for this study, though varied by condition, was provided immediately following a melody singing attempt. Research has suggested that delayed feedback can reinforce learning and retention (Clariana, 2000; Nakata, 2015). It is possible that had the visual feedback been delayed 24 hours, it may have been more useful. Demorest (1998) utilized delayed feedback as participants in that study were given general comments and approximate scores after the attempts had been scored. It is possible that presenting students with that information after a period of time could have enhanced learning.

Additionally, this study's design did not allow for a fourth group, one where participants received feedback twice, once following the initial attempt and once after the follow-up attempt, or a fifth group where students were allowed to practice sight-singing without being recorded, thus eliminating the assessment piece. Another possibility is that the feedback was too overwhelming and failed to present a clear path to improvement. Figure 5 displays feedback from a sight-singing attempt by a student who was very close to being accurate but was either late, in the wrong key, or a combination of both. In this case, the feedback failed to provide a clear description of what went wrong or how the melody attempt could be improved.

Figure 5

Computerized feedback may not offer useful information

Limitations

Due to the quasi-experimental nature of this study and limited scope of the participants, findings of this study cannot be generalized to the population as a whole. As with many sight-singing studies that ask for volunteers (Demorest, 2001), there is a high likelihood of selection bias among these participants. Findings are also specific to the procedures detailed above and any change in those procedures would have the potential of producing different results. It is also possible that five weeks was simply too brief a timeline to achieve significant results from pre- to posttest. Findings of this study relating to feedback were specific to the visual feedback provided by the stimulus. It should not be assumed that because the feed-

back used in this study did not produce differences among groups that student access to feedback is not still an important part of the learning process, though the limitations of this feedback offers teachers and researchers the opportunity to keep looking for effective ways of giving students useful information that leads to musical growth.

Future research

It is possible that discernible differences would have been found among groups in this study if participants had been assigned sight-singing melodies that presented an appropriate level of challenge for their abilities. In such a situation, the feedback may have become more beneficial to a greater number of participants. Researchers have also suggested that self-efficacy and the belief that time-on-task will be productive play an important role in how research participants engage with feedback (Madsen & Duke, 1985; Timmers et al., 2013). Future researchers could design and test sight-singing methods that track student self-efficacy for sight-singing and explore different feedback models that highlight improvement.

During this study, participants were only allowed to use the *SmartMusic* interface during weekly in-class assessment sessions. It is unknown if students given free access to the software would engage with it outside of rehearsal. It is possible that students who were motivated to learn sight-singing skills would practice on their own. Future researchers might examine how students self-regulate during sight-singing practice when using technology. Additionally, researchers have yet to quantify what level of sight-singing skill allows for chorister independence and under what conditions they are indeed independent.

This study is the first among the extant research literature I reviewed that allowed participants to attempt a melody again following an initial sight-singing attempt. It was encouraging that many students, regardless of feedback condition, diagnosed errors and corrected them in a subsequent attempt. The design of this study did not provide any insight into the processes with which the students undertook, either with or without feedback, to correct mistakes. Researchers could design a study where participants talk aloud while reflecting on a sight-singing attempt or while preparing a follow-up attempt. Eye-tracking technology may also offer insight into student interactions with feedback.

The pitch recognition software used by *SmartMusic* likely demonstrated enough reliability that the potential for building an interactive platform exists. This technology might be useful for building a scaffolded interface that adjusts difficulty as participants improve using targeted pitch skills (Henry, 2004) and would be worthy of future study. The potential exists to create sight-singing software that is more appealing to choristers. Software developers and researchers could use an interactive video game model that balances challenge with the user's skill level.

Implications

Student scores found in the weekly sight-singing assessment sessions suggest that individ-

ual assessment did improve sight-singing achievement, corroborating earlier research (Demorest, 1998; Henry, 2015; Petty & Henry, 2014). This study provides evidence of the importance of adapting assessment difficulty to meet student abilities appropriately. Feedback should not be unidirectional as was the case in this study. Teachers who use technology like this should continually monitor and respond to student performance by altering instruction and future assessments. This technology may be best utilized as a supplement to sight-singing instruction, but will not replace a quality teacher.

Students need to be assessed in the same manner in which they practiced sight-singing. One possible reason for students' lack of improvement from the pretest to the posttest is that the posttest procedures did not match the assessment session procedures, or, worded differently, the summative assessment procedures did not match the formative assessment practice. Students should not be expected to sight-sing individually when their only practice was in a group setting. Furthermore, they should not perform without a metronome and quarter-note indicator if they were a regular part of their instruction. The potential exists for teachers to use technology like SmartMusic to facilitate individual assessment and curate individual sight-singing attempts electronically, making individual assessment more efficient. The need for teachers to be able to engage students in asynchronous instruction and assessment has become very pertinent (Chrysostomo & Triantafyllaki, 2020) so teachers should continue to explore the opportunities for students to engage with technology as a means of individual assessment.

As long as choirs continue to perform music written in traditional Western notation, sight-singing will be an important skill in the development of choristers' musical independence. The visual feedback used in this study emerged as a potentially viable tool to supplement chorus directors' ability to teach sight-singing. The voice-pitch recognition software used for this study has potential benefits, but it is incumbent upon software developers and teachers to use it in a manner that promotes student learning. As we continue to make individual assessment more effective, choir directors will be able to give choristers the best tools possible to make music independently and enjoy a lifetime of reading choral music.

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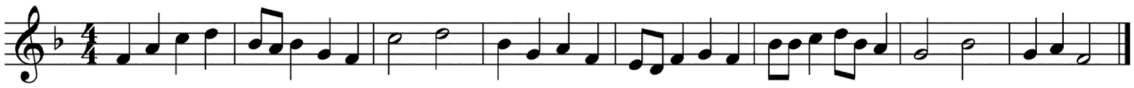
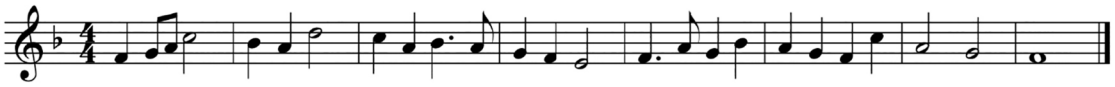
Appendix A

Pre/posttest melodies

Melody A

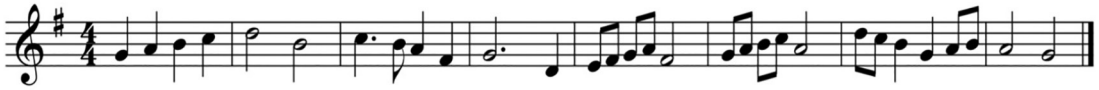


Melody B

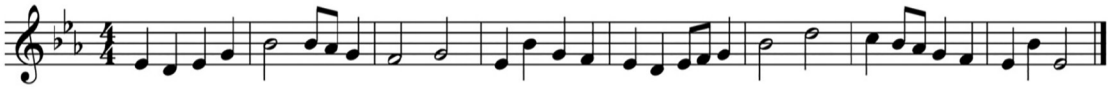


Session melodies

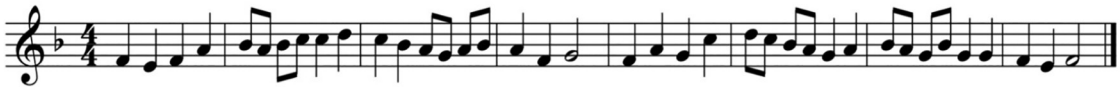
Week 1



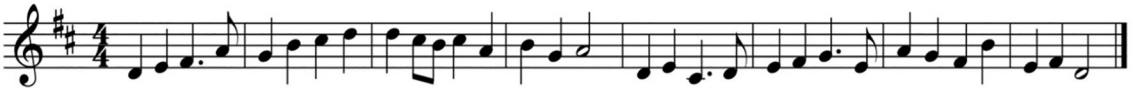
Week 2



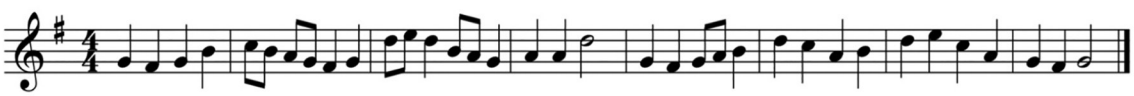
Week 3



Week 4



Week 5



All melodies were selected from McGill, S., & Stevens Jr., H. M. (2003). 90 days to sight reading success: A singer's resource for competitive sightsinging. Houston, TX: AMC Publications.

Appendix B, Sight-singing Scoring

For the purposes of this study, every pitch and every rhythm will be scored separately. Therefore, every note will be worth two points.

Notes/Pitches

1 The melody be sung in the original key.
2. Participants may choose which octave they prefer.
3. Pitches may be within 50 cents of a half-step in either direction to be considered accurate.
4. Use of a solmization system is not scored- only pitch accuracy.
5. Pitches do not need to align with the click track to be considered accurate.
6. Participants may correct a single pitch by changing notes, sliding, or scooping, but may not go back once a subsequent pitch is attempted.
7. You may use clues to ascertain the participant's intended pitch including the click track, prior and following notes, and solfege syllables.
8. Accurate pitches are given a 1 (per note).
9. Inaccurate or omitted pitches are given a 0.

Rhythms

1. Rhythms must align with the click track and the quarter note indicator.
2. The pitch of a given note does not need to be accurate for the rhythm to be considered correct.
3. These are high school students and you are trying to score their ability, not their precision. Some leeway is appropriate.
4. Notes do not have to be performed for their full duration, but another note cannot be started before the current note duration is competed. Note pairs (two eighth-notes or a dotted quarter -eighth note pair) will likely need to be performed correctly to mark either correct in most situations.
5. The rhythm is considered incorrect if they change pitch or syllable during the note
6. Accurate rhythms are given a 1 (per note)
7. Inaccurate or omitted rhythms are given a 0

Other comments

1. In order for both pitches and rhythms to both be scored as accurate, the note and rhythm must be accurate.
2. When there is a discrepancy between pitches and rhythms, give preference to scoring the pitch as correct and mark the rhythm wrong.

Article

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Singers' Responses to Congruent and Incongruent Verbal and Nonverbal Instructions

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Abstract

The purpose of this study was to examine collegiate singers' sung responses to and perceptions of congruent and incongruent verbal and nonverbal instructions. Research questions included: (1) To what extent do singers perform dynamics differently when provided with verbal instructions or conducting gestures?, (2) When presented with incongruent messages, will singers respond better to verbal instructions or conducting gestures?, and (3) What do participant comments reveal about their perceptions of the task? Four choirs sang while watching a stimulus video of a conductor showing two different conducting gestures (crescendo for the first four measures followed by a decrescendo for the last four measures, or the reverse) while singing a familiar tune ("Long, Long Ago"). In one condition, videos included written/spoken instructions for singers to crescendo then decrescendo at the same time as the conductor (a congruent message). In the other condition, written/spoken instructions were the opposite (an incongruent message). We subsequently analyzed the sound pressure level (dB SPL) at the beginning, in the middle, and at the end of the sung excerpt. Results indicated that the choirs tended to follow the verbal instructions, getting louder when instructed to crescendo and getting quieter when instructed to decrescendo. Additionally, the average dynamic contrast was significantly greater during the congruent conditions compared to the incongruent conditions (7.32 dB SPL and 4.71 dB SPL, respectively). This finding provides evidence that when nonverbal cues (conducting gestures) are aligned with verbal instructions, choirs show more of the requested dynamic level.

Keywords: *choir, conducting, verbal and nonverbal instructions, congruent, gestures*

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Music teachers utilize both verbal and nonverbal communication in the classroom. Nonverbal behaviors include elements such as facial expression, body movements, and use of proximity (Mehrabian, 2017). Specific to music, conducting gestures provide musicians with a shared vocabulary to convey intention and meaning. At most music institutions of higher learning, conducting instruction is compulsory (National Association of Schools of Music, 2025). Music education majors begin to use this nonverbal language as they progress through the curriculum. Verbal communication is perhaps more pervasive and well understood, especially because teachers in all content areas use words to express themselves. When students know the language (conducting or words), there is a greater likelihood for understanding to occur.

Researchers have explored the role of verbal communication, sometimes referred to as teacher talk, in the music classroom. Systematic observations have revealed that teachers spend approximately 35%–45% of their time in verbal instruction and directions (Blocher et al., 1997; Caldwell, 1980; Pontious, 1982; Sherrill, 1986) and that experienced teachers spend considerably less time in teacher talk compared to student teachers and novice teachers (Goolsby, 1996, 1999; Warnet, 2020). Teacher talk has often been linked to off-task behavior (Brendell, 1996; Dunn, 1997; Forsythe, 1977; Yarbrough & Price, 1981) and reduced student attentiveness (Madsen & Geringer, 1983; Nápoles, 2007; Spradling, 1985; Whitaker, 2011). Grechesky (1985) documented a strong relationship between a high quantity of talking and less effective teachers. Pearsall (2023) juxtaposed functions of teacher talk between formal and informal choral teaching settings. Willard (1986), a pedagogue, posited that effective conducting was a good alternative to teacher talk, solving problems in rehearsal more quickly and efficiently. Few researchers examined the validity of this pedagogical advice.

As early as the 1980s, researchers have endeavored to identify conducting gestures that are commonly understood by musicians. Sousa (1988) and Mayne (1992), for example, defined "conducting emblems" as specific gestures for articulation and dynamics that could be recognized by musicians with 70% accuracy. Examples included crescendo, decrescendo, ritardando, and accelerando. Cofer (1998) taught these conducting emblems to 7th-grade students and found that this instruction helped participants both comprehend the gestures and perform the music better. Subsequent researchers also taught conducting to elementary band students (Kelly, 1997) and high school string students (Thompson, 2012) with similar success. Conducting gestures continue to be the primary means of nonverbal communication between ensemble directors and musicians.

Researchers have documented that musicians respond to music differentially depending on presentation mode. When music was presented aurally, visually, or in combination, ratings for aesthetic responses (Geringer et al., 1996, 1997) of vocal performance (Wapnick et al., 1997), and marching bands (Johnson, 1991) varied. In the same way, perceptions of expressive performance have differed based on presentation mode (Hamann, 2003; Lucas et al., 1996; Lucas & Teachout, 1998; Madsen, 2009; Nápoles, 2013). When examining modes of instruction, Skadsem (1997) found that high school singers performed dynamic mark-

ings better when they followed verbal instructions, compared to following written dynamic levels, a conductor's gestures, or singing with a pre-recorded choral ensemble. In every instance, the messages singers received were coinciding/congruent. They recommended further research with conflicting messages, to further elucidate which communication method was most effective. Taken together, these studies reveal that modes of presentation greatly impact how musicians perceive, evaluate, and perform music.

More recently, Nápoles conducted two studies to explore how singers responded to incongruent messages, when verbal instructions and conducting gestures were in opposition. In the first study (Nápoles, 2014a), high school choral students sang a short except in response to varied instructions on a video. These videos included either a conductor providing gestural information, printed instructions only, or a combination of gestures and printed instructions. For half of the videos, the gestures and printed instructions were congruent. For the other half of the videos, the gestures and printed instructions were incongruent. Experienced choral teachers' ratings revealed more expressive elements (staccato articulation and word stress) were present when singers responded to verbal instructions alone. Further, when verbal instructions and conducting gestures were congruent, there was more presence of the requested musical element. In the second study, Nápoles (2014b) utilized *Praat* (a software for analysis of speech sound including pitch, formants, intensity, and quality) to measure intensity/volume and showed that collegiate singers as a group responded best to verbal instructions and executed dynamics best when congruent messages were delivered between pianist, conductor, and printed instructions.

In both studies (Nápoles, 2014a, 2014b), singers responded best when verbal and nonverbal messages were congruent. However, measurements were taken of a single ensemble. Further, Nápoles noted the possibility that leaders within the ensemble impacted the overall sound, thereby confounding the research results. Varied choirs could help provide more meaningful data with respect to overall response patterns.

The purpose of this study was to examine singers' responses to verbal and nonverbal instructions. Research questions included:

1. To what extent do singers perform dynamics differently when provided with verbal instructions or when viewing conducting gestures?

2. When presented with incongruent messages, will singers respond better to verbal instructions or conducting gestures?

3. What do participant responses reveal about their perceptions of following the stimulus videos?

Method

Participants

Singer participants (N = 102) were members of four established choirs at a large midwestern university. Participant choirs included one large chorus and three small ensembles. Three of the four choirs had a majority of non-music majors, and one choir comprised all music majors. Two choirs had a mean of 0.3 years of conducting lessons or classes and two choirs had a mean of more than one year of conducting. See Table 1 for choir voicing, basic demographics, participant major, choir experience, conducted ensemble experience, and conducting lesson information of the participants included in this investigation.

Table 1.
Choir Voicing, Demographics of Singer Participants, Major, Years of Choir Experience, Years of Conducted Ensemble Experience, and Years of Conducting Lessons/ Class Experience

	Choir A	Choir B	Choir C	Choir D
Choir Voicing	SSAA	SATB	SATB	TTBB
Singers	*N* = 50 Female = 48 Non-Binary = 2	*N* = 20 Female = 12 Male = 7 Non-Binary = 1	*N* = 20 Female = 12 Male = 8	N = 12 Male = 12
Age	*M* = 19.70	*M* = 20.12	*M* = 19.60	*M* = 18.67
Major	Music, *n* = 17 Non, *n* = 33	Music, *n* = 20 Non, *n* = 0	Music, *n* = 8 Non, *n* = 12	Music, *n* = 3 Non, *n* = 9
Years Singing in Choir	*M* = 6.2	*M* = 4.8	*M* = 7.3	*M* = 6.3
Years in Conducted Ensemble	*M* = 7.8	*M* = 9.2	*M* = 7.7	*M* = 8.0
Years Conducting Lessons/Class	*M* = 0.3	*M* = 1.2	*M* = 1.2	*M* = 0.3

Conducting Videos

We created two conducting videos for this investigation with opposing dynamics. The stimulus conductor (a white male, dressed in all black) was the same for all recordings and was unknown to the singer participants. In one stimulus video, the conductor displayed a conducting gesture with four measures of crescendo followed by four measures of decrescendo. In the other video, the conductor showed a four-measure decrescendo followed by

a four-measure crescendo. Dynamic changes were shown through pattern size changes, becoming larger or smaller, as well as a raising or lowering of the left hand. Experienced choral conductors (n = 4) validated that all videos contained similar facial affect, pattern size, pattern shape, and hand gestures and that the requested experimental condition was executed. Videos were played for choir recording sessions without sound.

Written directions included in the video prior to the conductor video comprised either "Please crescendo for the first four measures and decrescendo for the second four measures" or the opposite, "Please decrescendo for the first four measures and crescendo for the second four measures." The researcher in the rehearsal room read the written directions aloud before the choir sang while watching the stimulus conductor. Video conducting and written/spoken directions were either congruent or incongruent in terms of dynamic changes, asking participants to engage in the same or opposite activities. To ensure a fair comparison of variables, we used a Latin Square design to determine video presentation order for each choir. See Table 2.

Table 2.
Order of Congruent or Incongruent Written/Verbal Instructions and Conductor Gestures for Each Choir's Video

	Stimulus 1	Stimulus 2	Stimulus 3	Stimulus 4
Choir A	CCD	ICD	CDC	IDC
Choir B	IDC	CDC	ICD	CCD
Choir C	ICD	CCD	IDC	CDC
Choir D	CDC	IDC	CCD	ICD

Note. CCD = Congruent, Crescendo then Decrescendo; ICD = Incongruent, Crescendo then Decrescendo; CDC = Congruent, Decrescendo then Crescendo; IDC = Incongruent, Decrescendo then Crescendo.

Choir Recording Session Procedures

Choirs entered the rehearsal space and stood in their regular rehearsal arrangement, in two rows on a flat floor. For each recording session, the front row of all choirs remained at the same distance from digital audio recording equipment (15 ft) and a screen with a projected conductor video (20 ft). Singer participants scanned a QR code that was connected to an online survey via Qualtrics. Participants first signed an electronic consent form and were instructed to place their electronic devices on their chair. Choir singers sang a previously learned folk song "Long, Long Ago" four times while following a videorecorded

conductor. We recorded the choirs with a Roland R-05 digital recorder. After each iteration of the folk song, singers were instructed to pick up their electronic devices and respond to a single Likert-type question, "how easy was this to follow?" The Likert scale was from 1-10, with 1 being "not easy to follow" and 10 being "easy to follow." After singing all four times, singer participants returned to the survey and answered an open-ended question about what they noticed about the videos. After the protocol was complete, they completed demographic information. In total, the procedure lasted 12-15 minutes.

Data Analysis

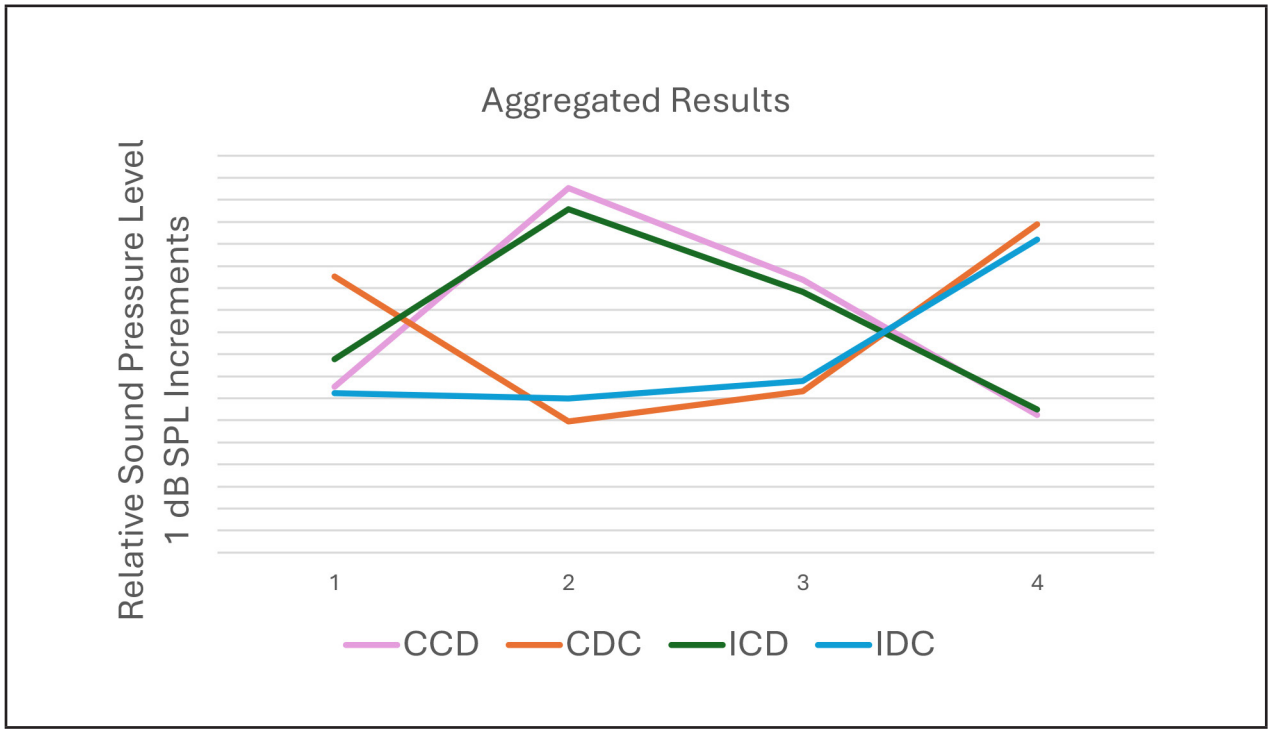
We used *Praat* (v. 6.1.55) to measure the sound pressure level of a steady-state .33 seconds on the first note ("tell"), the last note of the 4th measure (/o/ of "ago"), the first note of the 5th measure ("sing"), and the last note of the melody (/o/ of "ago"). We then averaged the dB from the first and last notes and the dB of the middle notes and calculated the difference between them for each choir in order to obtain an overall dynamic range for the melody.

Results

Dynamic Changes

Figure 1 displays the average sound pressure level (dB SPL) for the four data points during each condition. Based on the trendlines, singers followed the verbal instructions, increasing or decreasing dynamics in accordance with what they were asked to do.

Figure 1.
Mean Relative Sound Pressure Level for Each Condition Across Four Points in the Melody.



However, there was some indication of differences between the congruent and incongruent conditions. The IDC condition, in particular, diverged somewhat. The choirs sang initially much more quietly when the gesture was incongruent and did not decrescendo according to the written/verbal directions as the gesture got progressively larger.

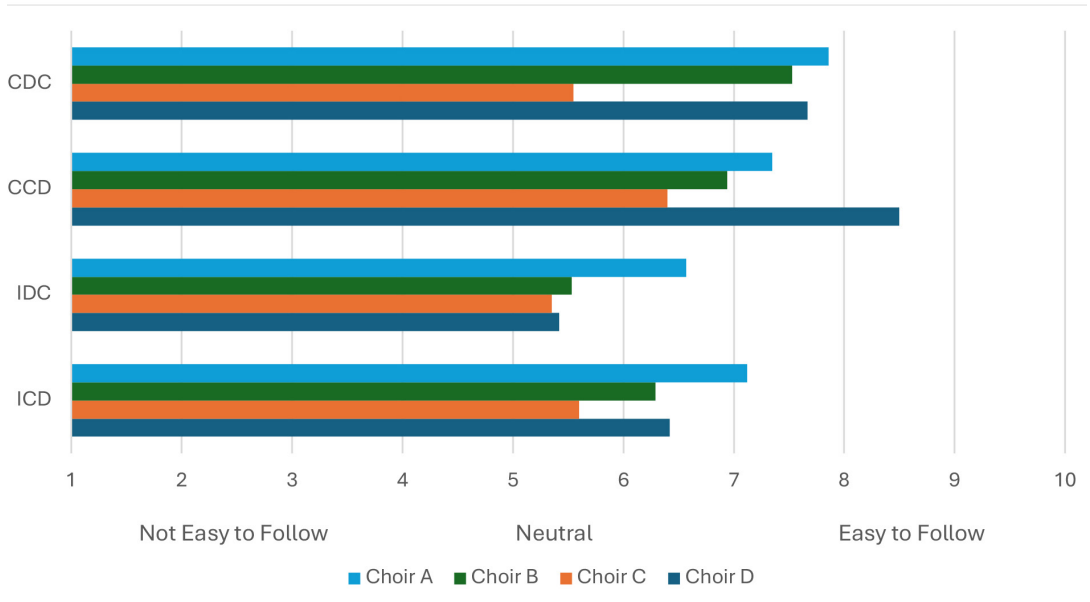
We tested the overall effects by averaging the sound pressure level of the first and final notes and of the middle two notes to measure the magnitude of the dynamic contrast during each condition. In all but one instance (Choir C, IDC), the choirs followed the verbal instructions, getting louder when instructed to crescendo and getting softer when instructed to decrescendo. However, the dynamic contrast was significantly larger during the congruent conditions, 7.32 dB (SD = 1.82) (i.e., when the conductor gesture aligned with the instructions) compared to the incongruent conditions, 4.71 dB (SD = 2.92), t (7) =3.34, p = .01, d = 1.07.

Singer Participant Perceptions

We asked singer participants about their perceptions of ease in following the written/verbal and conducting gesture directions for each of the four stimuli. The question "How easy was this to follow?" was attached to a 10-point Likert-type scale that was anchored by *Not easy to follow* and *Easy to follow*. See Figure 2 for singer participant responses sorted by stimuli and choir.

Figure 2.

Participant Responses to Ease of Following According to Stimuli and Choir.



Note. CDC = Congruent, Decrescendo then Crescendo; CCD = Congruent, Crescendo then Decrescendo; IDC = Incongruent, Decrescendo then Crescendo; ICD = Incongruent, Crescendo then Decrescendo.

Grand means of participant perceptions by stimuli were rated in this order: Congruent, Crescendo then Decrescendo (M = 7.30, SD = 0.89); Congruent, Decrescendo then Crescendo (M = 7.15, SD = 1.08); Incongruent, Crescendo then Decrescendo (M = 6.36, SD = 0.62), and Incongruent, Decrescendo then Crescendo (M = 5.72, SD = 0.57). Participants perceived both congruent conditions as easier to follow than the incongruent conditions. Results of a one-way repeated-measures analysis of variance (ANOVA) were not significant, $F(1, 15) = 2.59$, $p < .135$.

After singing under the four different stimuli, participants answered an open-ended question concerning what they noticed about the video. We counted discrete comments (N = 116) and disaggregated the comments into categories. A few singer participants commented that the conductor was "easy to follow" (n = 3) and the opposite "hard to follow" (n = 2), while some mentioned that "he had no expression" (n = 5). Many participants (n = 19) commented that all four videos were different and three commented that all four videos were the same. Nine participants correctly noted the pairings of the four videos that were the same. Although consistent throughout the videos, there were comments about cues (n = 4), cutoffs (n = 8), and tempo changes (n = 2). There were 10 comments about dynamics and 17 comments about gestural pattern size differences. A few comments (n = 5) referred to the ease of singing the crescendo first then the decrescendo. Finally, 29 comments referenced that the conducting gestures were sometimes the opposite of the written/spoken directions.

Discussion

The purpose of this study was to examine singers' sung responses and perceptions of congruent and incongruent verbal and nonverbal instructions. Three research questions guided this investigation: (1) To what extent do singers perform dynamics differently when provided with verbal instructions or conducting gestures?, (2) When presented with incongruent messages, will singers respond more often to verbal instructions or conducting gestures?, and (3) What do participant comments reveal about their perceptions of the tasks?

Major perceptual findings indicate that these choristers perceived that congruent messages are easier to follow [CDC (M = 7.15), CCD (M = 7.30)] compared with the incongruent messages [IDC (M = 5.17), ICD (M = 6.36)]. Findings show that the instructional messages impacted singers' perceptions of clarity. These results are similar to previous research (Nápoles, 2014a, 2014b) in which congruent messages led to increased prevalence of musical elements and increased understanding in singers. This investigation utilized acoustic and perceptual measures; however, these are limited in scope. Future research into a wider variety of measures as well as application to individual singers or instruments would offer further insights into the phenomenon, as would richer qualitative data from participants via interviews and focus groups.

In this investigation, all participant choirs usually sang under the direction of both experienced choral faculty and graduate students. We wondered whether the unknown stimulus conductor provided a novel experience or whether the participant responses would differ

if their regular conductor was inconsistent in gesture and directions. Future investigations could utilize the usual conductor for the stimulus videos to eliminate this possibly confounding variable.

We sorted stimulus videos used in this investigation by a Latin Square yet unintentionally retained video pairings of incongruent and congruent directions/gestures. None of the four choirs responded to back-to-back congruent or incongruent videos. With a possible pattern of videos made aware to the singer participants, some participants may have predicted the congruence/incongruence of the fourth video before they responded to it. Future investigations could consider fully integrating the stimulus videos to avoid order effect.

Singer participant perceptions were statistically insignificant when comparing responses from members of four choirs and four stimuli. The culprit of insignificance could come from two possible realms: the 10-point Likert scale on a small task and/or the large difference in the size of the ensembles. Future investigators could prevent these concerns with a smaller point set for the Likert scale and better-balanced sizes of ensembles.

It is interesting to note that choirs B and C (those with members having more conducting experience) responded somewhat differently than singers in choirs A and D (singers with fewer years of conducting experience). It is possible that singers with more conducting experience attended to the conducting gesture whereas singers with fewer years of conducting experience focused more on the written or spoken instructions. Skadsem (1997) found that high school singers performed dynamic markings better when they followed verbal instructions. Less-experienced collegiate choral singers are likely similar in experience to high school students and therefore, these similar results are not surprising.

Like the current investigation, past researchers have documented that musicians respond to music differentially depending on presentation mode (Geringer et al., 1996, 1997). This line of research is of interest to conductors and music educators in a variety of contexts, given that music is both a visual and an aural experience. Future research is encouraged to further elucidate the impact of presentation mode on performance and responses of musicians.

The acoustical results mirror the perceptual findings. In all cases but one, singers adhered to the verbal instructions rather than the conducting gestures. This finding is similar to Nápoles' (2014a, 2014b) research documenting that when participants receive conflicting information, they will follow verbal instructions rather than nonverbal instructions via conducting gestures. It may be that participants are making decisions at some level to simply do what they are asked to do, ignoring the information they are receiving nonverbally. Alternatively, participants may simply have more experience following verbal instructions in contexts outside of music. Three of the choirs were comprised of more non-music majors than music majors. More research is needed to better understand whether music majors and non-music majors respond differently, and whether years of singing experience impacts response patterns.

Participants responded with a greater dynamic range when presented with congruent

messages, compared to incongruent messages. This large significant difference was true irrespective of the direction of the dynamic change. Figure 1 shows the general trend for singers' execution of dynamics. It can also be seen that for the IDC condition, participants experienced a bit of confusion at first. In responding to a small preparatory gesture and initial pattern, they sang much more softly and subsequently were unable to get softer. They then were able to recall the verbal instructions and crescendo for the second half, even though the conductor was showing a decrescendo during those four measures.

In addition to the incongruent preparatory gesture providing confusion, we believe the contour of the melody was also a factor. It seems unnatural to begin a song loudly only to grow softer, especially as the melody rises in pitch. And, without any context for whether the conductor's gesture was initially large or small, the decay in the rest of the phrase allowed for a reassessment. Future investigators should consider music and dynamic markings that follow the natural flow of the phrasing to prevent singer misunderstanding. Also, a practice video that demonstrates the stimuli video conductor's size-range of dynamic gestures could assist in transparency for the singer participants.

Findings from this study carry important implications for music teaching and learning. Music teachers utilize both verbal and nonverbal communication in the classroom. Though conducting gestures provide musicians with a shared vocabulary to convey intention and meaning, verbal communication is utilized in most teaching content areas. Based on four choirs' responses to the four conditions of this investigation, we recommend that conductors send congruent verbal and nonverbal messages as much as possible. In order for musicians to effectively perform desired dynamics, verbal instructions should align with the conducting gesture. The congruent messages might also reduce confusion and positively impact performer expressivity. In the music rehearsal context, teacher/conductors should not follow the old adage of "do what I say, not as I do" but instead have their performers "do what I say and I do" in terms of verbal directions and conducting gestures.

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