

# Effects of Two Listening Strategies for Melodic Dictation

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**Nathan O. Buonviri<sup>1</sup>**

## Abstract

The purpose of this research was to examine effects of two listening strategies on melodic dictation scores. Fifty-four undergraduate music majors completed short tonal melodic dictations in a within-subjects design with three conditions: (a) no specified strategy in the instructions, (b) required listening before writing, and (c) required writing while listening. The purpose of the first condition was to determine subjects' preference for listening before writing or writing while listening prior to requiring each. Two repeated measures *t* tests revealed no significant difference in test scores between the second and third conditions and no significant difference in test scores between subjects' demonstrated preferred strategy and nonpreferred strategy. Results corroborate prior research suggesting that both may be viable strategies for melodic dictation, each offering unique benefits to aural memory and musical comprehension. Implications for high school and college aural skills instructors include the need to offer students options for dictation strategies and help them choose when and how to use them. Students who have tried multiple strategies in practice and considered their relative benefits might be better prepared to make wise decisions during dictation.

## Keywords

aural skills, dictation, listening, notation, strategies

Listening may be the most common and most important of musical tasks. Researchers have found that student musicians' listening skills help them to improve instrumental performance (Duke & Simmons, 2006; Hewitt, 2001; Morrison, Treviño, & Sielert,

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<sup>1</sup>Temple University, Philadelphia, PA, USA

## Corresponding Author:

Nathan O. Buonviri, Boyer College of Music and Dance, Temple University, Presser Hall,  
2001 North 13th Street, Philadelphia, PA 19122, USA.

Email: [buonviri@temple.edu](mailto:buonviri@temple.edu)

2008), match pitch accurately (e.g., Demorest & Clements, 2007), take dictation efficiently (Buonviri, 2014; Potter, 1990), conduct effectively (e.g., Waggoner, 2011), compose original tunes (e.g., Kennedy, 2002), and learn to improvise (e.g., Hickey, 2009). Therefore, the ways students acquire and use listening skills may strongly influence their overall development as musicians.

In the classroom, learning and practicing listening strategies may help students determine how to listen in specific circumstances. However, instructors' imposition of a single listening strategy for a given task may actually detract from students' engagement and success. In his study of college students' emotional responses and attention to music, Diaz (2015) concluded that by "being too prescriptive, educators might get in the way of more naturally engaging methods of listening" (p. 6). Teachers' decisions to encourage or require a listening strategy may have important implications for students' short-term success and long-term growth.

Research has shown that seemingly complementary musical tasks may detract from focused listening. Waggoner (2011) discovered that undergraduate music majors were less adept at error detection when conducting a piece than when listening to a recording of it. She concluded that their attention to conducting may have inhibited their attention to listening. Pembrook (1986) found that requiring undergraduate theory majors to sing back a melody before dictating it lowered their accuracy in transcription of what they had heard. Buonviri (2015b) found that undergraduates also took dictation of melodies less accurately when they sang an orienting solfège pattern prior to hearing the target; like Pembrook, he concluded that singing may have introduced a distraction into the dictation process.

Researchers have even found that some guided listening activities as a goal in and of themselves may not be helpful in improving students' listening engagement. Cassidy (2001) described non-music majors' difficulty in trying to follow listening maps during their preparation for elementary teaching; their lack of experience may have inhibited their success. Diaz (2015) reported no significant differences in either attention or emotional response for music majors during guided and unguided listening experiences. He concluded that a final goal may help keep listeners engaged but that specific, prescribed tasks during listening may detract from natural engagement. Gromko and Russell's (2002) findings from a study of second- and third-grade students corroborate results of both of these studies; their subjects encountered difficulty following listening maps due to lack of experience, and they exhibited no significant differences in ability to trace musical form based on unstructured and structured listening conditions. Preschool students likewise do not appear to maintain listening engagement longer when completing a visual identification task than when listening freely (Sims, 2005).

Factors such as familiarity, aural memory, and musical complexity influence *how* students listen during focused aural skills tasks like error detection and dictation. Students' familiarity with a particular musical medium appears to improve listening acuity. Stambaugh (2016), for example, reported that undergraduate students detected errors significantly better when they listened to ensemble recordings of their own emphasis area (choral or instrumental). Aural memory is a key challenge in focused listening during dictation. Pembrook (1986) found that students can typically

remember only 7 to 11 notes accurately—similar but slightly higher than Miller’s (1956) estimate—but they may be able to use a chunking strategy to lump multiple notes into larger chunks as a memory aid during transcription (Madsen & Staum, 1983; Potter, 1990). Pembrook found that students performed better on melodic dictations when given a second listening. In contrast, Sheldon (2004) found that multiple listenings did not increase students’ error detection accuracy when listening to excerpts with multiple parts and timbres. These results suggest that aural skills accuracy decreases as musical complexity increases, confirming findings by Byo (1997).

### *Listening and Writing*

One aspect of dictation for which students must choose a strategy is the timing relationship between listening and writing. Pembrook (1986) found that undergraduate theory majors scored equally well on melodic dictations whether they listened before writing or wrote while listening. He also noted that prior to hearing the target melodies, a majority (71%) of subjects had demonstrated their preference for writing while listening. Pembrook questioned what he found to be the general consensus among authors of dictation texts at that time, that listening before writing was the better approach. Based on his results, he suggested that the “progressive method,” that is, writing while listening, was also a viable strategy.

One might assume that writing while listening implies writing from the beginning in chronological order without stopping or skipping material (Pembrook, 1986). In contrast, researchers have reported the efficacy of marking the staff with “protonotation,” quickly sketched symbols representing general pitch and rhythmic information (Karpinski, 2000), and notating “landmarks” while working on a dictation from a combination of the beginning, middle, and end sections (Buonviri, 2014). Students may need to be flexible in their approach to notation if they choose to write while listening.

Textbook authors have approached the relationship between listening and writing during dictation in a variety of ways. Some recommend writing while listening, through note-by-note transcription (Gorow, 2000), or rhythm sketching (Mayfield, 2012), while others emphasize listening fully prior to notation (Benward & Kolosick, 2010; Kraft, 1999; Phillips, Murphy, Marvin, & Clendenning, 2011; Trubitt & Hines, 1979). Some authors advocate practicing both strategies, either explicitly through separate exercises (Buonviri, 2015a) or implicitly through varied descriptions of approaches (Karpinski, 2007; Marcozzi, 2009).

In a recent nationwide survey of AP Music Theory teachers, 58% recommended to students that they listen before writing during dictation, and 42% recommended writing while listening (Buonviri & Paney, 2015). Based on this relatively even split, the researchers recommended further investigation of the efficacy of these two strategies. In a related study, Paney and Buonviri (2017) found that 82% of college instructors of freshman music theory recommended listening before writing, and only 18% recommended writing while listening. College instructor survey participants appear to be more fully in agreement with each other, but the contrast to results of the AP Music

Theory teachers is puzzling. Empirical research examining the effects of these strategies is needed to offer instructors evidence to support their pedagogical decisions.

Understanding how students take melodic dictations may have implications for aural skills development beyond the isolated task (Larson, 1977; Norris, 2003). Successful dictation requires students to hear accurately, comprehend what was heard according to music theory principles, and illustrate what was heard through standard notation. Each of these component skills can be practiced and assessed individually (e.g., through a hearing test, written theory quiz, and notation exercise), but the combination of components into the overarching task is what makes dictation such a useful learning tool. Students demonstrate their ability to bridge the aural and visual aspects of music fluently and accurately, which also serves them in tasks such as sight-reading, identifying performance errors, and composing and arranging music. Listening is the aural component of dictation, and writing is the visual component; studying the relationship between these two skills might yield greater information helpful to students and instructors across multiple musical activities.

## **Rationale for the Current Study**

Pembrook's (1986) study explored a host of musical factors affecting dictation scores, including varying melody lengths, tonal and atonal melodies, and single and multiple playings of those melodies. His between-subjects design focused on music theory majors and consisted of three conditions (listening before writing, writing while listening, and listening, singing, and then writing). The findings of the two surveys by Buonviri and Paney (2015) and Paney and Buonviri (2017) suggest a need for research focused specifically on the efficacy of two dictation strategies: listening before writing and writing while listening. High school and early college students typically take dictation of tonal melodies, and a comparison of the two strategies for this particular task could provide more specific information to both high school and college instructors and students. Based on Pembrook's study, the purpose of the current within-subjects research was to examine effects of two listening strategies on tonal melodic dictation scores of undergraduate music majors. The two research questions were (1) Do dictation students perform better when required to listen before writing or to write while listening? and (2) Do dictation students perform better with their preferred of the two strategies as compared to the other?

## **Method**

### **Subjects**

Fifty-four undergraduate music education majors from a large university in the northeastern United States participated in this study. All subjects had completed at least the first two semesters of music theory in the university where the research was conducted, and all of them had substantial experience taking melodic dictations through their course work. The university they attended offers multiple course sections of

Theory I and II taught by multiple instructors. Students take Theory II from a different instructor than Theory I, so subjects represented a variety of educational experiences in aural skills training within the university. Students who possessed absolute pitch were not included in this research as their use of this skill could have skewed test results. All subjects completed the standard informed consent process approved by the researcher's institutional review board.

### *Experimental Design*

To address the two research questions in this study, two paired comparisons were developed in a within-subjects design. All subjects took melodic dictations under three conditions: no listening instructions, required listening before writing, and required writing while listening. The sole purpose of the first condition was to empirically determine each subject's natural tendency toward the strategy of either the second or the third condition prior to being presented with those conditions.

### *Dictation Tests*

The melodies for the dictation tests were taken directly from Buonviri's (2015b) study; validity and reliability measures for these melodies were described in his report. All melodies were tonal, in major keys, in 4/4 meter, in the treble clef, and played at MM = 90 beats per minute. These consistent parameters helped maintain both internal validity through parallel materials and external validity through typical features of dictation targets in high school and introductory college courses. The audio for each melody consisted of a basic chord progression (I–V<sup>7</sup>–I) in the corresponding key and tempo, followed by the two-measure target. Subjects saw the chord progression in standard notation on their answer sheet followed by two blank measures on the staff.

Pembrook (1986) reported that generally humans appear to be capable of maintaining 7 to 11 musical notes in short-term memory. All melodies in the current study clustered around the top of that range, increasing the likelihood that subjects would have to make a clear choice whether to listen fully first or to write while listening. In other words, the melodies were not so short that they could be easily memorized in full and then transcribed, nor were they so long that some amount of simultaneous sketching would be highly likely. Specifically, the three target melodies in each of the three conditions contained 10, 11, and 12 notes total.

### *Procedures*

Subjects completed the dictations in all three conditions in one sitting, a process that lasted approximately 17 minutes. Aural instructions and melodies, through a grand piano patch, were arranged in GarageBand to play as a single track for each of the three conditions. Subjects listened to the tracks on Sony MDR-NC7 noise-cancelling headphones directly from a MacBook Pro laptop computer. They could read the instructions for each condition on their answer sheets as they heard them.

Subjects took a total of 12 dictations—4 in each of the 3 conditions. They heard each dictation only once, to avoid the potential confounding factor of fatigue. In all conditions, the first of the four melodies was for practice and did not count toward test scores. In the first condition, subjects read and heard these instructions:

In each example, you will hear the chord progression shown in measures one and two, followed by a two-measure dictation melody, which you will write in the blank measures of the example. You will have one listening to each example and 45 seconds to work before the next example begins.

The purpose of the first condition was to determine whether each student typically listened to the full melody before writing or wrote while listening. The researcher noted which strategy was used for each of the three target melodies in that condition. If the subject wrote anything at all during playback, it was considered writing while listening. Since there were three target melodies in the first condition, the strategy a subject used for two or more of the melodies was marked as the preferred strategy.

In the second condition, subjects heard and read the same instructions, followed by “You must NOT begin writing until the melody has finished on the recording.” In the third condition, subjects again heard and read the same instructions, followed by “You MUST begin writing before the melody has finished on the recording.” All subjects complied with all instructions for the three conditions. In Conditions 1 and 3, subjects demonstrated a range of writing behaviors during listening, from sketching only a couple of noteheads to writing out most of the target. Specific data describing their sketching were not recorded, but any amount of writing was considered “writing while listening.” In Condition 2, all subjects waited until each target had finished before notating.

The melodies were the same for all subjects in Condition 1. In Conditions 2 and 3, both the target melodies and testing order were counterbalanced to maintain internal validity by avoiding potential testing effects of practice, fatigue, and melody difficulty. Subjects wrote their dictations on standard notation staves in a packet containing three pages corresponding to the three conditions. Each packet contained a subject number on the back to match subjects’ scores with their Condition 1 preference after they had anonymously submitted their finished packet.

### *Pilot Testing*

The study was piloted with 10 subjects to determine feasibility of Condition 1 as a clear indicator of their preferred dictation strategy, test the clarity of all procedures and instructions, confirm the functionality of the testing equipment, and check scoring and analysis protocols. All of these components were found to be fully functional, prompting the onset of formal data collection.

### *Analysis*

Melodies from Condition 1 were not scored as they were used only to determine empirically subjects’ preferred listening strategy. Melodies from Conditions 2 and 3 were

scored per beat, with 1 point given for correct pitch and 1 point for correct rhythm. This scoring method was employed by Buonviri (2015b), and its derivation was described in his study. Since each melody was two measures in length, in 4/4 meter, a total score of 16 points was possible per melody and 48 points per condition.

Subjects' scores from Conditions 2 and 3 were analyzed two ways: (a) listening before writing (Condition 2) compared to writing while listening (Condition 3) and (b) preferred strategy (Condition 2 or Condition 3) compared to nonpreferred strategy (Condition 2 or Condition 3), according to the preference they had demonstrated in Condition 1. Shapiro-Wilk tests showed that all four of these distributions were normal, and data were analyzed with two repeated measures *t* tests.

## Results

The first repeated measures *t* test revealed no significant difference in subjects' melodic dictation scores based on testing conditions of listening before writing ( $M = 29.72$ ;  $SD = 9.81$ ) or writing while listening ( $M = 31.02$ ;  $SD = 9.94$ ),  $t(53) = -1.15$ ,  $p = .254$ . This result means that subjects did not score significantly higher when instructed to listen to the melody fully before beginning to write or to begin writing while listening.

In Condition 1, 63% of subjects had demonstrated listening before writing as their preferred strategy; 37% had demonstrated writing while listening. The second repeated measures *t* test revealed no significant difference in subjects' melodic dictation scores from Conditions 2 and 3 based on their preferred strategy ( $M = 30.44$ ;  $SD = 10.69$ ) or their nonpreferred strategy ( $M = 30.35$ ;  $SD = 9.04$ ),  $t(53) = 0.08$ ,  $p = .935$ . This result means that subjects did not score significantly higher when they listened to the melody before beginning to write or wrote while listening even when their scores were grouped according to their demonstrated preferred strategy.

## Discussion and Implications

### *Listening and Writing*

One common reason for requiring dictation students to listen fully first is to help them avoid the distractions of identifying and writing and instead focus on the "big picture" of the melody (Paney & Buonviri, 2013). This strategy presumably helps students invest their time and attention in improving their melodic memory skills and recognizing relationships within the target. The opposite argument could be made, however, that listening all the way through without making any marks on the paper may be undermining this process; students may not benefit fully from listening for overall perspective because their memory cannot hold the various bits they have correctly identified along the way (Pembroke, 1986). Perhaps those who advocate for writing while listening are aiming at the same goal by a different approach: helping students grasp the "big picture" by noting salient details of the overall structure as they proceed.

The instructions for the writing while listening condition in the current study purposefully did not specify what, where, or how subjects had to write while the melody

played. Although specific data were not recorded of what they wrote while listening, subjects exhibited a variety of writing behaviors. Therefore, results suggest not only that writing while listening is a viable strategy for dictation but that teachers could help students discover which ways of writing work best for them.

### *Focusing Attention*

Researchers have demonstrated the important balance between focus and distractions during musical listening (Abril & Flowers, 2007; Flowers, 2001; Flowers & O'Neill, 2005) and the potential benefits of internal “mindfulness” for increased musical sensitivity (Anderson, 2016). The first and fundamental step of Madsen and Geringer’s (2000–2001, 2008) model of listening is a “focus of attention” on the music. Their model targeted longer listening activities that probed aesthetic responses, but their initial step seems directly applicable to short tasks like that of the current study. Subjects were forced by the target melody length, single listening, and condition instructions to alter and monitor their focus of attention while listening and writing.

Researchers have found that simultaneously attending to multiple musical tasks can detract from accuracy on those tasks (Buonviri, 2015b; Pembroke, 1986; Waggoner, 2011). In the current study, it seems that simultaneously writing on the staff would detract from the attention needed to listen fully and perceive the targets accurately. However, the results suggest that this was not the case. Perhaps writing or sketching bits of the melody as it played ultimately aided subjects’ memory. Since dictation requires accurate transcription of all pitches and rhythms, both understanding the “big picture” and noticing the details are important skills. High school and college dictation students would benefit from guided practice in realizing how these two ways of focusing attention fit together in their own approach. Instructors could help them by introducing each strategy, noting its particular strengths, and offering multiple examples to help students determine when to employ each. Henry (2008) suggested that some strategies used by high schoolers preparing for sight-singing actually may have distracted them, ultimately hindering their efforts. Likewise, students taking dictation need to learn multiple strategies and, more important, when and when not to use them.

### *Choosing Strategies*

The length of the targets in this study was chosen purposefully to hover close to the typical listener’s memory limits (Pembroke, 1986), thus eliminating a bias toward longer melodies—where writing while listening may be more helpful—or shorter melodies, where listening before writing may be more feasible. Although subjects listened to each melody only once in this study, the first listening of a dictation may be the most important (Buonviri, 2014) and is typically the time when instructors encourage one or the other of the strategies examined.

The lack of a significant difference in test scores from the first paired comparison suggests that instructors might help students by introducing both strategies and discussing their utility in specific contrasting situations according to characteristics such



as melody length, melody complexity, and number of repetitions. For example, longer melodies might necessitate some amount of writing while listening to aid short-term memory; simple, stepwise melodies might be processed easily without simultaneous writing, while examples containing large pitch leaps and complicated rhythms may require some sketching; and melodies that will be heard many times may free students to listen the first time without writing anything, while few repetitions of the melody may require some immediate notation.

Many of the subjects in this study expressed informally that they found both the second and third conditions to be conducive to successful dictation in different ways. I asked each of them which of the two strategies their instructors had encouraged them to use, going all the way back to when they first began dictation. Some of them had already tried both strategies at various points during their studies, either with different instructors or within the same class with the same instructor. Many of them confirmed through their descriptions that neither of the two strategies is the uniform approach of the professors at the university where the study took place. Others described having been trained to do mostly one or the other but found the “new” strategy of the two to be very helpful to them.

Some subjects seemed quite surprised at how well the unfamiliar strategy worked and how easily they were guided into it by a single phrase of recorded instruction prior to the task. Many also described how their preferred strategy had been formed prior to college, in high school music theory classes. Since both strategies worked equally well according to the results of this study, theory instructors at both levels should evaluate their rationale for encouraging one or the other and consider offering students both.

### *Subjects' Preferred Strategy*

In both pilot testing and formal data collection, subjects demonstrated their preferred strategy in the first condition remarkably clearly. Their choice actually may have reflected preference, influence of training, or both, but because they were given no instructions in Condition 1, it was assumed to be their preferred strategy at the time of data collection.

Since there were three target melodies, the strategy subjects used for two or more of the melodies was marked as their preferred strategy. This odd number of melodies eliminated the possibility of subjects' approaching the targets with the two strategies equally. However, 40 subjects (71%) used the same strategy all the way through the first condition, and they generally displayed quite obviously which strategy they would use even before the practice melody began. For example, a “writer while listening” would physically track the tonic and dominant pitches of the opening chords on his paper and leave his pencil on the tonic for the melody to begin. A “listener before writing” would close her eyes with her pencil in her lap or on the desk for the entire playing. This contrast among subjects was quite striking, showing that students engage musical tasks as short, defined, and precise as two-measure dictations with widely different approaches (Buonviri, 2014).

I conducted a secondary exploratory analysis of the scores of the 40 subjects who had used the same strategy for all examples in Condition 1. Their scores from the preferred and nonpreferred data sets also yielded no significant difference, strengthening the conclusion that neither strategy appears to be clearly better than the other. Even when a student demonstrated a consistently clear choice of one strategy over another, that strategy did not yield higher scores. Future research might examine the factors affecting students' decisions to use a given strategy.

High school and college dictation students might benefit from watching each other in informal configurations during class. Dictation is a time-consuming activity, typically requiring multiple listenings and extra time for students to work between each. High school teachers have lamented the lack of time to teach dictation well and practice it thoroughly with students (Buonviri & Paney, 2015). Although requiring all students in a class to take all dictations maximizes their time on task, teachers might consider offering occasional opportunities for small groups of students to observe each other. They could gain insights into other students' unique process as observed during the task and discuss implications such as choice of listening strategy and rationale for that choice.

In this study, 63% of subjects listened before writing, and 37% wrote while listening in the first condition. In Pembroke's (1986) study, 25% of subjects demonstrated a preference for listening before writing and 71% for writing while listening (with the remaining subjects categorized as "singing while listening"). This contrast in preference between the study samples may be due to training; some subjects may have been encouraged or required to use one strategy or the other more during their classes. The difference could also be attributed to target melody length; in Pembroke's study, melodies were longer (up to six measures), perhaps triggering a tendency toward writing while listening to aid aural memory. Finally, the samples from Pembroke's study and the current study were not drawn from the same population, making them difficult to compare but also adding strength to the conclusion that both strategies worked equally well in both studies.

### *Strategies in Combination*

A limitation of the current study was that subjects heard each melody only once. This parameter was necessary to ensure that subjects were able to complete all dictations in one sitting, protecting internal validity in this within-subjects design. However, typically dictations are played more than once, offering students the opportunity to reevaluate their strategies from one playing to the next. Some dictation students make fairly obvious shifts from "big picture" listening to detailed identification of discrete items as they proceed through multiple playings (Buonviri, 2014).

The results of this study seem to support the option of combining and shifting strategies according to the demands of a particular melody in testing situations with multiple listenings. Instructors would do well to address these procedural considerations openly with students through examples, helping them develop and evaluate their own dictation process (Buonviri, 2014). Better understanding of their personal process

through guided examples could help students apply their skills effectively not only to other dictations but also to other musical tasks requiring skilled listening.

## Recommendations for Further Research

Future research might focus on similar tests of listening strategies with other types of dictation such as harmonic progressions or rhythm. Results of these studies could reveal additional information about the relationship between listening and writing according to the unique challenges of those tasks. Researchers might also investigate connections between instructors' recommendations of strategies for dictation and students' choice of strategies when tested. Greater understanding of this relationship could inform teachers when helping students understand their options and make wise decisions during aural skills tasks.

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## References

- Abril, C., & Flowers, P. (2007). Attention, preference, and identity in music listening by middle school students of different linguistic backgrounds. *Journal of Research in Music Education*, 55, 204–215. doi:10.1177/002242940705500303
- Anderson, W. T. (2016). Mindful music listening instruction increases listening sensitivity and enjoyment. *Update: Applications of Research in Music Education*, 34(3), 48–55. doi:10.1177/8755123314567905
- Benward, B., & Kolosick, J. T. (2010). *Ear training: A technique for listening*. New York, NY: McGraw-Hill.
- Buonviri, N. O. (2014). An exploration of undergraduate music majors' melodic dictation strategies. *Update: Applications of Research in Music Education*, 33(1), 21–30. doi:10.1177/8755123314521036
- Buonviri, N. O. (2015a). *Building better dictation skills*. Lanham, MD: Rowman & Littlefield.
- Buonviri, N. O. (2015b). Effects of a preparatory singing pattern on melodic dictation success. *Journal of Research in Music Education*, 63, 102–113. doi:10.1177/0022429415570754
- Buonviri, N. O., & Paney, A. S. (2015). Melodic dictation instruction: A survey of AP music theory teachers. *Journal of Research in Music Education*, 63, 224–237. doi:10.1177/0022429415584141
- Byo, J. L. (1997). The effects of texture and number of parts on the ability of music majors to detect performance errors. *Journal of Research in Music Education*, 45, 51–66. doi:10.2307/3345465
- Cassidy, J. W. (2001). Listening maps: Undergraduate students' ability to interpret various iconic representations. *Update: Applications of Research in Music Education*, 19(2), 15–19. doi:10.1177/87551233010190020104

- Demorest, S. M., & Clements, A. (2007). Factors influencing the pitch-matching of junior high boys. *Journal of Research in Music Education*, 55, 190–203. doi:10.1177/002242940705500302
- Diaz, F. M. (2015). Listening and musical engagement: An exploration of the effects of different listening strategies on attention, emotion, and peak affective experiences. *Update: Applications of Research in Music Education*, 33(2), 27–33. doi:10.1177/8755123314540665
- Duke, R. A., & Simmons, A. L. (2006). The nature of expertise: Narrative descriptions of 19 common elements observed in the lessons of three renowned artist-teachers. *Bulletin of the Council for Research in Music Education*, 170, 7–19. Retrieved from [https://www.jstor.org/stable/40319345?seq=1#page\\_scan\\_tab\\_contents](https://www.jstor.org/stable/40319345?seq=1#page_scan_tab_contents)
- Flowers, P. (2001). Patterns of attention in music listening. *Bulletin of the Council for Research in Music Education*, 148, 48–59. Retrieved from [https://www.jstor.org/stable/40319077?seq=1#page\\_scan\\_tab\\_contents](https://www.jstor.org/stable/40319077?seq=1#page_scan_tab_contents)
- Flowers, P., & O'Neill, A. M. (2005). Self-reported distractions of middle school students in listening to music and prose. *Journal of Research in Music Education*, 53, 308–321. doi:10.1177/002242940505300403
- Gorow, R. (2000). *Hearing and writing music*. Studio City, CA: September Publishing.
- Gromko, J. E., & Russell, C. (2002). Relationships among young children's aural perception, listening condition, and accurate reading of graphic listening maps. *Journal of Research in Music Education*, 50, 333–342. doi:10.2307/3345359
- Henry, M. (2008). The use of specific practice and performance strategies in sight-singing instruction. *Update: Applications of Research in Music Education*, 26(1), 11–16. doi:10.1177/8755123308317675
- Hewitt, M. P. (2001). The effects of self-evaluation, self-listening, and modeling on junior high instrumentalists' music performance and practice attitude. *Journal of Research in Music Education*, 49, 307–322. doi:10.2307/3345614
- Hickey, M. (2009). Can improvisation be "taught"? A call for free improvisation in our schools. *International Journal of Music Education*, 27, 285–299. doi:10.1177/0255761409345442
- Karpinski, G. S. (2000). *Aural skills acquisition: The development of listening, reading, and performing skills in college-level musicians*. Oxford, England: Oxford University Press.
- Karpinski, G. S. (2007). *Manual for ear training and sight singing*. New York, NY: Norton.
- Kennedy, M. A. (2002). Listening to the music: Compositional processes of high school composers. *Journal of Research in Music Education*, 50, 94–110. doi:10.2307/3345815
- Kraft, L. (1999). *A new approach to ear training*. New York, NY: Norton.
- Larson, R. C. (1977). Relationships between melodic error detection, melodic dictation, and melodic sightsinging. *Journal of Research in Music Education*, 25, 264–271. doi:10.2307/3345267
- Madsen, C. K., & Geringer, J. M. (2000–2001). Meaningful listening and focus of attention: A model. *Bulletin of the Council for Research in Music Education*, 147, 103–108. Retrieved from [https://www.jstor.org/stable/40319396?seq=1#page\\_scan\\_tab\\_contents](https://www.jstor.org/stable/40319396?seq=1#page_scan_tab_contents)
- Madsen, C. K., & Geringer, J. M. (2008). Reflections on Puccini's *La Boheme*: Investigating a model for listening. *Journal of Research in Music Education*, 56, 33–42. doi:10.1177/0022429408323072
- Madsen, C. K., & Staum, M. J. (1983). Discrimination and interference in the recall of melodic stimuli. *Journal of Research in Music Education*, 31, 15–31. doi:10.2307/3345107
- Marcozzi, R. (2009). *Strategies and patterns for ear training*. Upper Saddle River, NJ: Prentice Hall.
- Mayfield, C. E. (2012). *Theory essentials*. Boston, MA: Schirmer.

- Miller, G. A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, 63, 81–97. doi:10.1037/h0043158
- Morrison, S. J., Treviño, A. M., & Sielert, V. (2008). Jazz expertise and its relationship to pitch and rhythm placement among trumpet players. *Bulletin of the Council for Research in Music Education*, 175, 31–41. Retrieved from [https://www.jstor.org/stable/40319411?seq=1#page\\_scan\\_tab\\_contents](https://www.jstor.org/stable/40319411?seq=1#page_scan_tab_contents)
- Norris, C. E. (2003). The relationship between sight singing achievement and melodic dictation achievement. *Contributions to Music Education*, 30(1), 39–53. Retrieved from <https://search.proquest.com/openview/eac67c886e9edb47/1?pq-origsite=gscholar&cbl=9785>
- Paney, A. S., & Buonviri, N. O. (2013). Teaching melodic dictation in AP music theory. *Journal of Research in Music Education*, 61, 396–414. doi:10.1177/0022429413508411
- Paney, A. S., & Buonviri, N. O. (2017). Developing melodic dictation pedagogy: A survey of college theory instructors. *Update: Applications of Research in Music Education*, 36(1), 51–58. doi:10.1177/8755123316686815
- Pembroke, R. G. (1986). Interference of the transcription process and other selected variables on perception and memory during melodic dictation. *Journal of Research in Music Education*, 34, 238–261. doi:10.2307/3345259
- Phillips, J., Murphy, P., Marvin, E. W., & Clendenning, J. P. (2011). *The musician's guide to aural skills: Ear training and composition*. New York, NY: Norton.
- Potter, G. (1990). Identifying successful dictation strategies. *Journal of Music Theory Pedagogy*, 4(1), 63–71. Retrieved from <https://music.appstate.edu/about/jmtp/jmtp-volume-4>
- Sheldon, D. A. (2004). Effects of multiple listenings on error-detection acuity in multivoice, multitimbral musical examples. *Journal of Research in Music Education*, 52, 102–115. doi:10.2307/3345433
- Sims, W. L. (2005). Effects of free versus directed listening on duration of individual music listening by prekindergarten children. *Journal of Research in Music Education*, 53, 78–86. doi:10.1177/002242940505300107
- Stambaugh, L. A. (2016). Differences in error detection skills by band and choral preservice teachers. *Journal of Music Teacher Education*, 25(2), 25–36. doi:10.1177/1057083714558421
- Trubitt, A., & Hines, S. (1979). *Ear training and sight singing: An integrated approach*. Boston, MA: Schirmer.
- Waggoner, D. T. (2011). Effects of listening conditions, error types, and ensemble textures on error detection skills. *Journal of Research in Music Education*, 59, 56–71. doi:10.1177/0022429410396094

## Author Biography

**Nathan O. Buonviri** is an associate professor of music education at Temple University. His research interests include music perception and cognition, aural skills pedagogy, and instrumental pedagogy.

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