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Charles E. Norris
Grand Valley State University

The Relationship Between Sight Singing Achievement and Melodic Dictation Achievement

In this investigation, the relationship between performances on one sight singing assessment and one melodic dictation assessment was examined. Administered to university music students as pretests and posttests during a first semester aural perception course, both assessments were similarly comprised of diatonic steps and skips from the tonic and dominant triads in the key of G major and were presented in common meter with no rhythmic value smaller than an eighth note. Moderate to moderately strong relationships ($\underline{r}$ = .57 - .68) among pretests and posttests were observed, as was a predictive relationship between pretest and posttest sight singing ($\underline{R}$ = .68, $\underline{R}^2$ = .47). The following were recommended: 1) further study of the relationships with more control of prior musical experiences, 2) study of sight singing instruction and achievement as affected by parallel work in melodic dictation, 3) study of limits innate ability may impose on sight singing achievement.

Few music education professionals would deny that sight singing is commonly considered to be an important part of choral music curricula. Not only do various methods texts advocate the teaching of sight singing (i.e., Garrettson, 1998; Hoffer, 2001), but also the fifth National Standard (MENC, 1994) supports this element of music instruction. Although studies indicate that choral music educators include sight singing in their daily routines to some degree (Johnson, 1988; May, 1993; Smith, 1998), there is evidence that choral students may not be meeting the specific achievement expectations

of the fifth National Standard (Demorest, 1998; Henry and Demorest, 1994; Scott, 1996). Smith (1998) noted that teachers of all experience levels use a variety of materials to facilitate sight singing instruction. However, she found teacher perception of undergraduate preparation in the pedagogy of sight singing to be inadequate. This finding should not be surprising, given the limited amount of research conducted with regard to sight singing instruction and achievement.

Systematic inquiry has determined non-instructional factors that may contribute to success in sight singing. Among the variables linked to enhanced group sight singing achievement are ethnic make-up of school, teacher attitude toward the teaching of sight singing, number of pianos in homes, and number of students playing musical instruments (Daniels, 1986). Variables found to influence individual achievement positively include years of piano instruction (Henry and Demorest, 1994; Demorest and May, 1995) and years of instrumental instruction (Demorest and May, 1995). Some studies linked choral experience to sight singing achievement (Henry and Demorest, 1994; Scott, 1996) contradicting findings by Tucker (1969) who identified instrumental instruction as a significant predictor of sight singing achievement. Another study (Killian, 1991) identified a link between sight singing accuracy and error detection in junior high students.

Analysis of sight singing methods employed by choral music educators indicated that a variety of music reading systems are used in various regions of the United States, such as the interval method, fixed do, numbers, and moveable do. (Johnson, 1988; May, 1983). There is no evidence to date that supports the supremacy of any one method of instruction with the exception of one study (Demorest and May, 1995). In this investigation, students with limited experience in a fixed do system scored significantly lower on a sight singing test than students with more extensive experience in a moveable do system. A related study (White, 1983) found that use of a moveable number system improved the aural perception and sight singing performance of non-tonal music of college juniors and seniors.

Other studies examined the effects of certain instructional conditions on sight singing achievement. Boyle and Lucas (1990) observed that college students sight sing at a significantly higher level in a harmonic context, while dependency on the harmonic context

lessened with progression through sight singing courses. A later study of middle school choral students (Lucas, 1994) demonstrated that both a melody-only sight singing instructional treatment and melody-only testing context yielded stronger sight singing performances than those in piano-harmony and vocal-harmony instructional treatments and testing contexts. Prasso (1997) found evidence that melody writing, in combination with the instant aural and visual feedback of technology, facilitated high school students' learning of sight singing skills to a larger degree than students who did not write melodies. Formal sight singing assessment has also been shown to positively influence sight singing achievement (Demorest, 1998).

Three studies (Karl, 1971; Tatting, 1975; Thostenson, 1966) specifically dealt with relationships between sight singing and various aural perception tasks. Thostenson identified strong relationships ($r = .76$ - .91) between college music major (first year through graduate) performances on multiple choice rhythmic and melodic perception/notation tests (subjects matched one of four notated examples to an aural stimulus) and a series of rhythmic and melodic sight-singing tests. The items contained in both the dictation and sight singing tests were generally very complex with little or no reference to meter or tonality.

Over the course of one semester's instruction, Karl's 189 collegiate non-music majors completed a series of two sight singing and three melodic dictation tests (Karl, 1971). Sight singing tests were given at two equal intervals and the dictation tests were given at three different but equal intervals. Modest relationships between the two skills ($r =$. 29 -. 33) were noted. Karl also concluded that a variety of teaching strategies (sight singing only, dictation only, dictation followed by sight singing, and sight singing followed by dictation) had no significant impact on music reading achievement.

Tatting's (1975) study of the music reading achievement of 146 fifth grade students sought to determine whether method of music reading instruction (traditional sight singing instruction, dictation-only instruction, or no instruction at all) would result in significantly different scores on a sight singing assessment after 15 weekly music classes. Those in the traditional and dictation-only groups received music reading instruction at the beginning of each of their 30-minute music classes. Music reading instructional content consisted of tonal

relationships, steps and skips of the major scale, and accidentals. Sample-wide there were no differences in performances among groups who had traditional sight singing instruction, dictation-only instruction, or no instruction at all. However, boys in the dictation-only treatment condition did score significantly higher than boys in the other two groups. While is it clear that instruction in sight singing is deemed valuable by music educators at all educational levels, empirical study of sight singing instruction and sight singing achievement is scant and limited. Moreover, no particular strand of research has been developed at this time. Spotty research has yielded contradictory information regarding the influence of prior instruction (instrumental, piano, vocal), and although there is some information about sight singing methods in use, there is little information on the efficacy of any one method. Also lacking is extensive study of instructional factors, such as the use of melodic and harmonic contexts, assessment, and melodic dictation - the concern of the present investigation.

Additional cumulative observations about the studies of Karl (1971), Tatting (1975) and Thostenson (1966) provide the impetus for further study. First, it seems that Tatting's brief once per week treatments (with traditional sight singing or dictation-only instruction) would have been similar to no treatment at all (the control group in his study), given the age and experience of the subjects. Next, Thostenson's dictation assessments were more like sight singing assessments in that subjects were required to match notated excerpts to aural stimuli. Additionally, observations by Long (1977) and Pembrook (1983) suggest that the lack of tonality and meter in Thostenson's examples would make remembering the aural dictation items problematic. Finally, Karl's sight singing assessments and melodic dictation assessments were administered at different times during the course of instruction, with differing tonal and rhythmic materials; therefore, it seems as though a true view of the relationships may have been compromised.

Taking into account the limits of the three aforementioned studies, it seems that assessing the relationship between melodic dictation and sight singing achievement simultaneously, in combination with the employment of parallel (nearly identical) tonal and rhythmic content, could better examine the link between the two skills.

Purpose

The purpose of this study, directly related to the above comments, is most concisely stated in the following research questions:

1) What is the relationship between performance on a single sight singing task and performance on a single melodic dictation task, both of which utilize similar musical material?

2) Does said relationship change after a certain period of instruction in both sight singing and melodic dictation instruction? A secondary question arose from the first two questions: 3) Can preliminary performances on sight singing and/or melodic dictation tasks predict future sight-singing performances?

METHOD

Design and Selection of Subjects

Employed was a pretest/posttest design to evaluate the relationships between performances on sight singing and melodic dictation tasks at the beginning and ending of a collegiate semester. Because collegiate aural perception courses traditionally focus on the development of both sight singing and dictation skills, 41 freshman aural perception students (music majors and minors) in an intact aural perception class from a medium-sized midwestern university served as subjects.

Data Collection

The data collected were scored performances on one 10-measure sight singing exercise and one 8-measure melodic dictation exercise. Both the sight singing and melodic dictation exercises served as pretests and posttests. The two examples (Figure 1), both written in the key of G and common meter, were very similar in rhythmic make-up (smallest value as an eighth note) and pitch material (scale-wise motion mixed with intervals from the tonic and dominant triads). Pitch and rhythm were simultaneously assessed due to the interdependent nature of both (Boisen, 1981; Sink, 1983). The melodic dictation example was made slightly shorter in consideration of findings suggesting that extended music passages might be more difficult to remember (Long, 1977; Pembrook, 1983).

The content of the pretest/posttest exercises reflected the out-

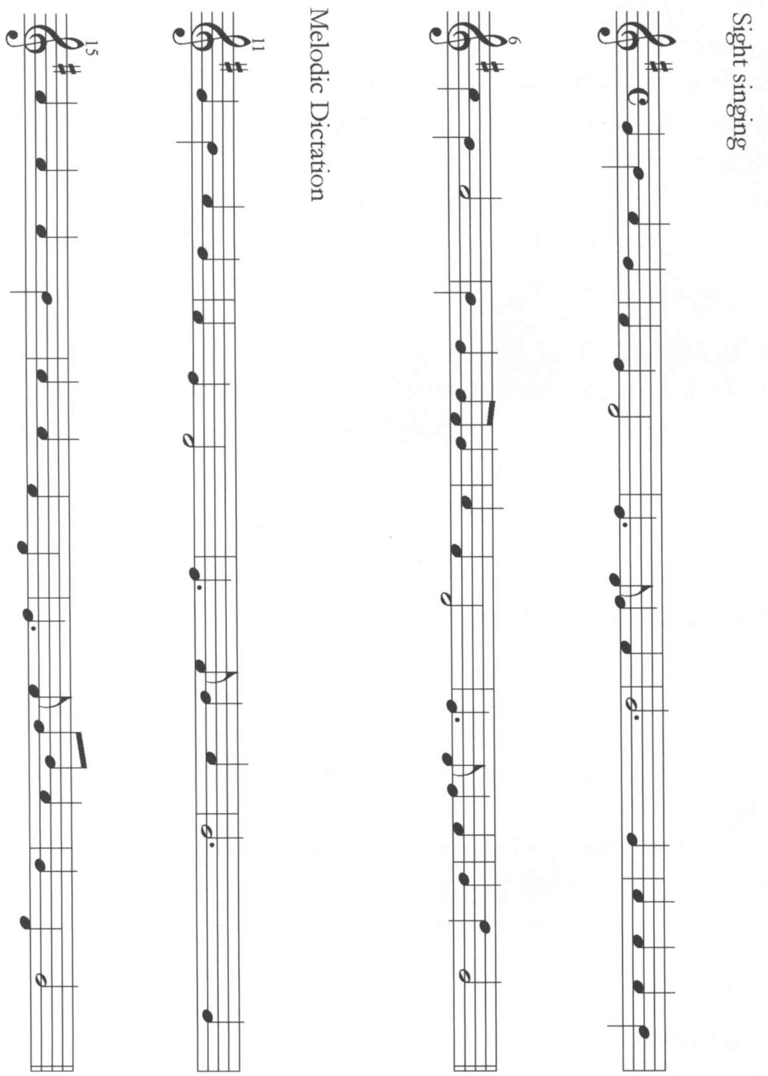

Figure 1. *Sight singing pretest/posttest and melodic dictation pretest/posttest.*

comes of the first semester aural perception course at the school where this investigation transpired. Instruction involved the integration of pitch and rhythm within both tonal and metrical contexts. Students were simultaneously engaged in the processes of sight singing and dictation.

The melodic dictation task was administered during the first and second to last classes of the semester. Students were given pre-printed staff paper with key and meter signatures and starting pitch. The example was presented live on a Yamaha grand piano in the following sequence: I-IV-V-I played in G major, starting pitch given, count of four, played entire example twice, played first four measures twice, played second four measures twice, entire example played twice. Thirty seconds elapsed between each full or partial playing of the dictation material.

The sight singing exercise was completed individually on the second and last days of class (two days following the completion of the melodic dictation tasks). After presented with the sight singing exercise the following sequence occurred: tonality was given (I-IV-V-I) and starting pitch, thirty-second period for students' silent study of exercise, tonality and starting pitch re-introduced, students sang the exercise. Students were encouraged to use any reading system (i.e., numbers, solfegge, plain "la") on both the pretest and posttest, although the moveable do system was used as the principal means of pitch instruction over the course of the semester. Student performances were audiotaped with a Sony portable stereo system and Shure omni-directional microphone.

A simple and objective means of scoring the performances was designed. For each measure two points were assigned - one point for rhythm and one point for pitch. No partial credit was given for instances of near accuracy. This system, employed by the Michigan School Vocal Music Association (2000), yielded a maximum score of 20 for the sight singing exercise (10 measures) and 16 for the melodic dictation exercise (eight measures). The author and another music teacher with numerous years experience in sight singing instruction scored the tests, resulting in inter-rater reliabilities (via correlation) of .97 for sight singing and .99 for melodic dictation. Both judges' scores were added to create a total of 40 points maximum for the sight singing exercise and 32 points maximum for the melodic

dictation exercise.

RESULTS

Basic statistics (means and standard deviations) were generated for scores on the tests (Table 1), indicating substantial increases in mean scores on sight singing and melodic dictation from pretest to posttest. Simple t-tests confirmed pretest/posttest significance for both sight singing ($t = 7.61$, $p < .001$) and melodic dictation ($t = 7.81$, $p < .001$). Variance of sight singing scores and melodic dictation scores decreased from pretest to posttest (as a result of aural skills training).

Table 1
Means and standard deviations of scores on pretest sight singing, pretest melodic dictation, posttest sight singing, and posttest melodic dictation.

Variable (maximum score)	n	Mean	Standard Deviation
pretest sight singing (40)	41	23.12	11.98
pretest melodic dictation (32)	41	18.49	9.44
posttest sight singing (40)	41	32.95	5.43
posttest melodic dictation (32)	41	26.95	6.77

In consideration of research question one, moderately strong relationships were observed not only between pretest sight singing and pretest melodic dictation ($r = .62$) but also between posttest sight singing and posttest melodic dictation ($r = .57$) (Table 2). Also of interest are the correlations between pretest sight singing and posttest melodic dictation ($r = .64$) as well as pretest melodic dictation and posttest sight singing ($r = .58$).

With regards to research question two, it is clear that pretest sight singing and melodic dictation ($r = .62$) and posttest sight singing and melodic dictation ($r = .57$) share similar statistical relationships. Therefore, little if any change in the relationship between the two tests was indicated from the semester's beginning to its end.

The strongest relationships were found between pre-and posttest

sight singing (r = .68) and pre-and posttest melodic dictation (r = .68). In consideration of the third research question, stepwise multiple regression (Table 3) was employed to determine which of three variables (pretest sight singing, pretest melodic dictation, posttest melodic dictation) or combination thereof could most effectively predict posttest sight singing. Pretest sight singing alone was found to have the greatest predictive relationship (R = .68, R^2 = .47) with posttest sight singing.

Table 2

Correlations between pretest sight singing, pretest melodic dictation, posttest sight singing, and posttest melodic dictation.

Variable	1	2	3	4
1. pretest sight singing	—	.62*	.68*	.64*
2. pretest melodic dictation		—	.58*	.68*
3. post test sight singing			—	.57*
4. posttest melodic dictation				—

*significant at p < .001

Table 3

Summary of Stepwise Multiple Regression Analysis for Pretest Melodic Dictation, Posttest Sight Singing, and Posttest Melodic Dictation Predicting Performance on the Posttest Sight Singing.

Variable	B	SE B	fl*
Step 1			
(Constant)	25.13	1.48	
Pretest Sight Singing	.34	.06	.68

Note. R = .68, R^2 = .47 for Step 1.

*Represents the standardized coefficient

DISCUSSION

A significant increase in accuracy in both sight singing and me-

lodic dictation logically occurred as a result of a semester-long course of instruction. As might be expected, entering variance in scores was reduced by semester's end, the result of an entering heterogeneous group of students becoming a more homogeneous group of students (in an aural skills sense) by semester's end. Revisiting the pretest and posttest scores (Figure 2) in terms of mean percentage-58% for both sight singing and melodic dictation pretests; 82% and 84%, respectively for sight singing and melodic dictation posttests-reveals nearly identical starting and ending points. Similar gains in each skill over the course of the semester suggest a statistically strong relationship.

Revisiting research question one, relationships (Table 2) between sight singing and melodic dictation (.62 and .57, pre- and posttest, respectively) are not as large as might be expected, but their moderate strengths and significance support the likelihood that sight singing and melodic dictation skills are related.

The relationships of this study are different than those observed in previously cited studies by Thostenson (1966) whose correlations were much higher (.76- .91) and Karl (1971) whose correlations were much lower (.29 - .33). The higher correlations of Thostenson might be attributed to the similarity in tasks. His dictation exercise required subjects to match notated examples to aural stimuli, a task much like sight singing. The lower correlations observed by Karl may be attributed to a lack of similarity in content found between sight singing and dictation tasks, a result of the different intervals of time at which subjects were tested in sight singing and melodic dictation.

Other factors such as varying musical backgrounds, musical strengths, instructional backgrounds, ensemble experiences, previous sight singing and melodic dictation experience, and choice of major instruments are also likely to have contributed to the overall strengths of the observed relationships of the present study. The relationship between sight singing and melodic dictation might be more clearly observed in a more homogeneous group of subjects, such as found in a school music program with limited or no turnover of music specialists.

In light of the current findings, it is feasible that well-structured sight singing experiences that incorporate the use of melodic dicta-

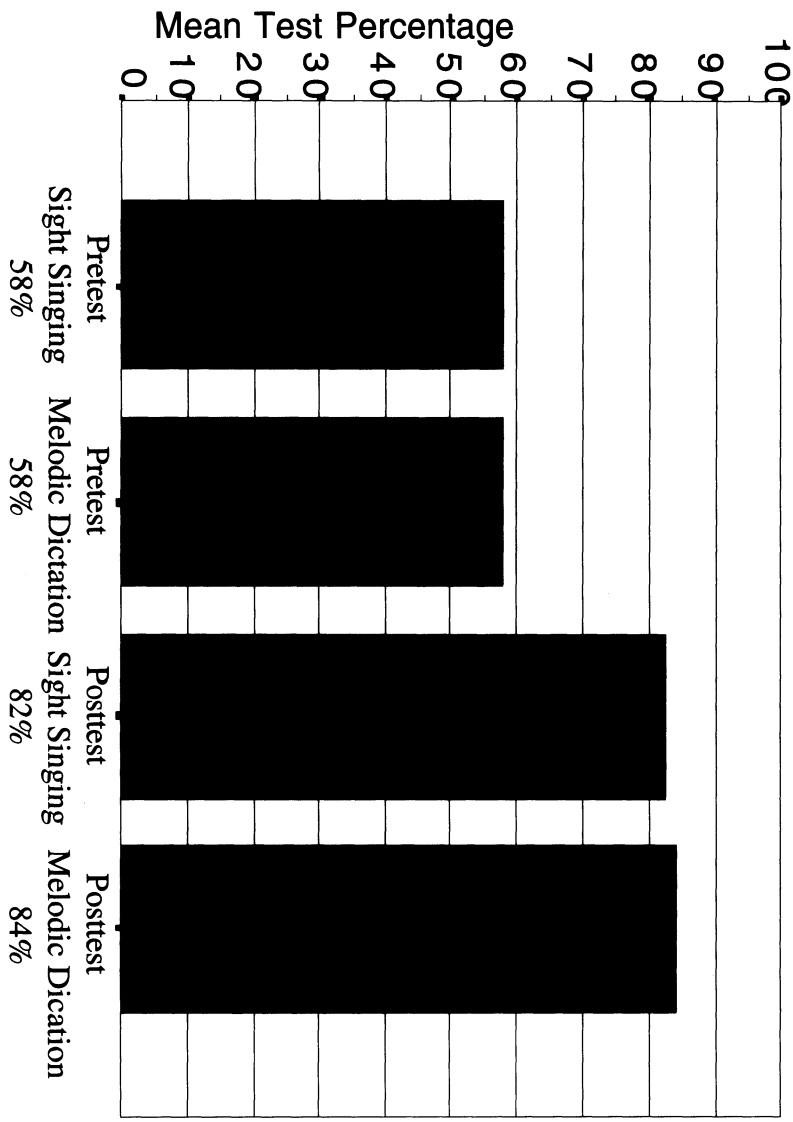

Figure 2. *Mean percentages for pretest sight singing, prestest melodic dictation, posttest sight singing, and posttest melodic dication.*

tion could yield improved achievement; therefore, experimental study is suggested. Comparing the effects of various instructional strategies (i.e., a traditional instructional method, a method incorporating melodic dictation, no instruction at all) could clarify the value of melodic dictation in enhancing sight singing achievement. Based on the information gleaned from this study as it compares to similar studies (Thostenson, 1966; Karl, 1966), it seems prudent to also consider the presentation of sight singing and melodic dictation tasks in similar rhythmic and tonal contexts.

The answer to research question two found little change in the relationship between sight singing and melodic dictation over the course of the semester (.62 at pretest, .57 at posttest). One semester is probably not a sufficient period of time to equalize the effects of the variety of prior musical experiences. The heterogeneity of the sample is likely to be at work, allowing for the interaction of a number of variables to influence performances on and therefore relationships between either of the skills in both the pretests and posttests. In an experimental setting (working with groups of subjects who have had the same instructor and method for an extended period of time), the relationship between sight singing and melodic dictation might be more clearly seen.

Research question three considered the degree to which initial sight singing and/or melodic dictation performances could predict the final sight singing performance (Table 3). The moderately strong relationship ($R = .68$, $R^2 = .47$) between pre-and posttest sight singing coupled with the fact that the subjects significantly improved over the course of the semester may indicate that a certain degree of aptitude may be involved in achievement. Another way of looking at the data is that students improved significantly to the degrees that their native abilities would allow. Frankly put, there is or may be a limit to how well students will be able to sight sing, regardless of how much instruction is given. This would be consistent with theories such as Gordon's (1997) that suggest musical aptitude plateaus during childhood. Native ability or aptitude is an important consideration for instructors in their attitudes toward and methods of designing instruction and assessment.

Considering the importance the music education profession has placed on sight singing instruction and achievement, it is necessary

to continue the search for more effective instructional strategies and contexts. While the present study provides interesting, helpful information, further study (both descriptive and experimental) with larger and more homogeneous samples may yield more definitive answers to similar research questions. As is the case in most experimental research, a large challenge will be securing groups of subjects having similar baseline skills and backgrounds (musical, socio-economic, etc.) with whom comparisons of instructional strategies may be studied. Continued attempts to observe both the impact of melodic dictation skills on sight singing achievement and the relationship between aptitude and sight singing achievement can only enhance the effectiveness of sight singing instruction.

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