

AN EXPERIMENTAL ANALYSIS OF THE DEVELOPMENT
OF TONAL CAPABILITIES OF FIRST GRADE CHILDREN

by

Philip Hall Miller

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Thesis supervisor: Professor Edwin Gordon
Thesis co-supervisor: Professor Leonard Feldt

ABSTRACT

Purpose of the Study

The purpose of the study was to determine if different types and amount of instruction in learning to sing major, minor, Dorian, Phrygian, Lydian, Mixolydian, and nontonal songs affects children's comparative performances of these songs.

Design of the Study

Five hundred eighty-eight first grade children participated in the study. These children constituted thirty-eight separate classes in the Iowa City Community School District. All children received special (experimental) music instruction as a part of their regular three twenty-minute periods each week.

Children were randomly designated to serve in one of six experimental groups. Instruction in each experimental group differed on the basis of the types and amount of songs the children were taught. After one and one-half years of instruction, children's tape recorded performances of each of seven criterion songs (major, minor, Dorian, Phrygian, Lydian, Mixolydian, and nontonal) were evaluated by two judges through the use of a seven-point rating scale. The composite of the two judges' ratings was used as an overall rating of each child's performance of each of the criterion songs.

To evaluate children's comparative ability to sing the different criterion songs, a simple randomized design was used. Analysis of variance techniques were employed to investigate the significance of the mean differences among the seven criterion measures for the experimental groups.

Results of the Study

The only significant main effect found in the study was for the criterion song in the minor mode. A significant simple effect was found between the mean scores which favored the children who received regular instruction in learning to sing major and minor songs as compared to the children who received regular instruction in learning to sing major, minor, and nontonal songs. Also, a significant simple effect was found between the mean scores which favored the children who received regular instruction in learning to sing major, minor, Lydian, and Mixolydian songs as compared to the children who received regular instruction in learning to sing major, minor, and nontonal songs. That is, when as much as one-third of instructional time was devoted to nontonal instruction as opposed to one-seventh or none at all, this additional exposure to nontonal music hindered children's ability to perform songs in the minor mode.

The analyses for the remaining six criterion songs did not reveal any significant differences. As a result, it cannot be assumed that when instructional time is devoted to singing songs in many modes, children are hindered in their ability to sing a

song in any one mode. Further, neither do the data support the assumption that when instructional time is limited to learning to sing songs only in a few modes, that children's ability to sing songs in selected modes is greater than that for children who learned to sing songs in many modes.

The largest observed mean differences (though they were not significant) in the remaining analyses rather consistently suggested that limited exposure to nontonal music may inhibit children's overall ability to perform songs in the major, minor, and other modes. Further, the observed mean differences tended to imply that excessive exposure to nontonal songs may also hinder children's ability to perform nontonal songs.

Conclusions of the Study

On the basis of the results of this study, it may be concluded that young children are generally able to profit from instruction which includes the singing of songs in the Dorian, Phrygian, Lydian, and Mixolydian modes in addition to songs which are in the major and minor modes. Also, although further research is needed for substantiation, it may be tentatively concluded that excessive exposure to nontonal music (as much as one-third of instructional time) may inhibit children's ability to sing nontonal songs.

However, limited exposure (as little as one-seventh of instructional time) to nontonal music might aid children in learning to sing nontonal songs.

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Prof. of Music Ed. Title and Department
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Chapter I
PURPOSE OF THE STUDY

Introduction

In The Study of Music in the Elementary School: A Conceptual Approach,¹ a 1967 publication of the Music Educators National Conference, it is stated that various types of tonal concepts should constitute elementary general music curriculums. In "Concepts about Melody," it is suggested that, in general, children should be exposed to music written in usual modes² and unusual modes³ and to nontonal music.⁴ Therefore, it would seem that the music educator's role, in part, is to teach children to understand broad aspects of tonal characteristics of music.

The appropriate sequence of presenting tonal concepts to children is probably as important as the nature of the content of tonal concepts in elementary music curriculums. However, little objective evidence is available regarding the grade level, age, or

¹Music Educators National Conference, The Study of Music in the Elementary School: A Conceptual Approach (Washington D. C.: Music Educators National Conference, 1967), 51-66.

²An explanation of this term may be found in the Glossary.

³Ibid.

⁴Ibid.

stage of musical development at which children might most appropriately receive instruction in singing nontonal songs and songs in usual and unusual modes. House states that although concept development is cyclical, "...the experiences themselves do occur in a natural sequence which can establish an effective working pattern."⁵ It is unfortunate that no sequence for the provision of such musical experiences is offered by House. Meyer also stresses the importance of early musical experiences but neither is he specific about the types of sequence of experiences that should be offered.

The habits and dispositions which facilitate (musical) perception and make communication possible are acquired not with one, two, or perhaps even a hundred encounters with a particular (musical) style, or style-class but become part of our very being through countless experiences that begin in infancy.

Because our most firmly rooted habits of thought and discrimination are learned in infancy and early childhood, the musical style system we first experience is the one that tends to dominate our perception and cognition of music throughout our lives.⁶

In that basic music series reflect current philosophy in music education, it is interesting to observe the musical content and

⁵Robert House, "Curriculum Construction in Music Education," *Basic Concepts in Music Education*, ed. Nelson B. Henry (Chicago: University of Chicago Press, 1958), 248.

⁶Leonard B. Meyer, *Music, The Arts, and Ideas: Patterns and Predictions in Twentieth-Century Culture* (Chicago: The University of Chicago Press, 1967), 274.

sequence which they comprise. The tonal content of songs found in kindergarten and first grade music books is limited primarily to songs in the major mode. For example, Beginning Music Experiences, published by American Book Company in 1970, is representative of recent trends in music textbooks. Edited by four prominent elementary music specialists, with the assistance of a number of consultants, this book contains approximately 100 songs. Only 12 of these are in the minor mode and three are pentatonic songs; the remaining 85 songs are in the major mode. There are no songs in unusual modes or nontonal songs.

Analysis of the song content of other leading music textbooks reveals a similar emphasis on songs in the major mode. Exploring Music I, published by Holt, Rinehart and Winston, Inc. in 1966, includes 170 songs, of which only 9 percent are in the minor mode. This book does not include any songs in unusual modes or nontonal songs. An analysis of all music series designed for grades two through six indicates that proportions of songs in usual and unusual modes and nontonal songs are similar to those found for lower grade books.

It is interesting to speculate just why there is such a paucity of songs in the music series in the minor and unusual modes and practically no nontonal songs. Regarding sequence in the presentation of tonal concepts, it is possible that music educators support the notion that children should first learn to perform songs in the

major mode before they learn to perform songs in the minor and unusual modes, and nontonal songs. Or, it may be that music educators assume that songs in the minor and unusual modes and nontonal songs are too difficult for young children to learn. However, the following statements by Meyer and Pfeiffer, respectively, challenge both of these assumptions.

The human mind is capable of maintaining many different and even contradictory behavior systems simultaneously and of bringing these into play at appropriate times.⁷

Between two and six the cortex completes the major part of its growth, a fact that jibes nicely with theories concerning the importance of early childhood experiences.⁸

Meyer continues:

...insofar as serial music is perceptually highly complex and irregular, it is difficult for children, and perhaps even adults, to bring relevant sensor-motor behavior into play. On the other hand, since it is also clear that the human mind is capable of astonishing feats of learning, the point at which complexity and irregularity inhibit or thwart learning must be left open.⁹

It is important to remember that early learning is critical, not merely because it is first, but because in childhood the connections and pathways of the nervous system are still largely unspecified.¹⁰

⁷Ibid., 176.

⁸John Pfeiffer, The Human Brain (New York: Pyramid Publications, 1962), 42-43.

⁹Meyer, loc. cit.

¹⁰Ibid., 175.

Perhaps music educators, themselves, find it difficult to perform songs written in unusual modes and nontonal songs because they initially learned to perform songs written in usual modes in their early childhood. Meyer somewhat substantiates this point of view when he writes:

The formation later in life of new channels and pathways in the brain deep and clear enough to insure new modes of perception and cognition is not an impossible task, but certainly is a formidable one.¹¹

Although music psychologists tend to believe that young children should learn to understand broad aspects of tonality in music, they provide only little insight into how or when children best develop these understandings. For example, Mursell explains:

Musical growth turns upon a progressive and continuously developing realization of what music actually is. Therefore at least a dawning realization should come from the earliest years.¹²

The need for objective information which is pertinent to appropriate sequential instructional procedures through experimental research becomes clearly evident when Mursell continues:

In introducing significant musical concepts, there is not any need to wait for a supposititious moment when children will be "ready" to deal with them. They can occur in immature form very early indeed. For instance, it has been claimed that the teaching of the minor tonality should come quite late in the

¹¹Ibid., 275.

¹²James L. Mursell, "Growth Processes in Music Education," Basic Concepts in Music Education, ed. Nelson B. Henry (Chicago: University of Chicago Press, 1958), 157.

sequence. But an authentic feeling for the difference between major and minor can be established almost from the beginning. ...Instead of teaching the minor tonality at some one predetermined point, it is, so to speak, spread out through a number of years. So also with all other musical concepts.¹³

DeYarman extensively investigated young children's performance and understanding of rhythmic concepts in his study, An Experimental Analysis of the Development of Rhythmic and Tonal Capabilities of Kindergarten and First Grade Children.¹⁴ However, an aspect of this study did bear on the tonal capabilities of young children. Regarding tonal understanding, DeYarman found that children who receive regular instruction, as outlined in the Iowa City Community School District's Music Curriculum Guide,¹⁵ in tonal and nontonal music perform songs in major and minor tonalities better than their peers who receive regular instruction in only tonal music. These results seem to indicate that exposure to broad aspects of melodic characteristics of music reinforces children's performance and understanding of the more familiar tonal music.

¹³Ibid., 158-9.

¹⁴Robert Michael DeYarman, An Experimental Analysis of the Development of Rhythmic and Tonal Capabilities of Kindergarten and First Grade Children (Doctor of Philosophy thesis, to be published in Studies in the Psychology of Music: Volume VIII, Iowa City: University of Iowa, 1972).

¹⁵Iowa City Community School District, Music Curriculum Guide (Iowa City: Iowa City Community School District, 1971).

Purpose of the Study

The primary purpose of this study was to extend the research initiated by DeYarman. The major objective was to gather additional objective information pertaining to the nature and, particularly, the sequence of presentation of tonal content appropriate for teaching music to young children.

Problems of the Study

The specific questions that were considered in the present study were as follows:

1. Do children who receive regular instruction in learning to sing songs in usual modes perform usual mode songs better than children who receive regular instruction in learning to sing songs in unusual modes and/or nontonal songs in addition to songs in usual modes?
2. Do children who receive regular instruction in learning to sing songs in usual and unusual modes perform usual and unusual mode songs better than children who receive regular instruction in learning to sing nontonal songs in addition to songs in usual and unusual modes?
3. Do children who receive regular instruction in learning to sing songs only in usual modes and nontonal songs perform nontonal songs better than children who receive regular instruction in learning to sing nontonal songs and songs in usual modes in addition to songs in unusual modes?

Chapter II
REVIEW OF RELATED STUDIES

Introduction

In this chapter, investigations that specifically bear on the problem of the present study will be reviewed. Investigations conducted by Moorhead and Pond,¹ Andrews and Deihl,² and Pflederer and Sechrest,³ have some relationship to the present study in that they are concerned with the overall development of musical capabilities of elementary school children. However, because Dittmore⁴

¹Gladys Evelyn Moorhead and Donald Pond, Music of Young Children, 3 vols. (Santa Barbara: Pillsbury Foundation for Advancement of Music Education, 1941-1944).

²Frances M. Andrews and Ned C. Deihl, Development of Technique for Identifying Elementary School Children's Musical Concepts (University Park, Pennsylvania: Pennsylvania State University, 1967).

³Marilyn Pflederer and Lee Sechrest, How Children Conceptually Organize Musical Sounds (Evanston, Illinois: Northwestern University, 1967).

⁴Edgar E. Dittmore, "An Investigation of Some Musical Capabilities of Elementary School Students," Studies in the Psychology of Music: Volume VI, ed. Edwin Gordon (Iowa City: University of Iowa, 1970), 1-44.

and DeYarman⁵ specifically investigated children's tonal capabilities in more depth, only their studies will be reviewed in detail.

The Dittmore Study

During the 1967-1968 school year, one hundred seventy-four children were utilized by Dittmore to investigate the melodic, rhythmic, and harmonic capabilities of elementary school children. The children were enrolled in grades one through six at the University School of the University of Iowa. The problems of Dittmore's study were: (1) to determine whether children's musical capabilities developed sequentially, (2) to determine if there was significant growth from grade to grade in children's melodic and rhythmic capabilities, and (3) to evaluate the degree of relationship between their musical capabilities and musical aptitude.

Twelve songs were used to investigate each of twelve musical capabilities. The musical capabilities were: (1) melodic - the ability to sing in the major mode, minor mode, and in the Dorian mode,⁶ and to sing nontonal music; (2) rhythmic - the ability to

⁵Robert Michael DeYarman, An Experimental Analysis of the Development of Rhythmic and Tonal Capabilities of Kindergarten and First Grade Children (Doctor of Philosophy thesis, to be published in Studies in the Psychology of Music: Volume VIII, Iowa City: University of Iowa, 1972).

⁶An explanation of this term may be found in the Glossary.

chant rhythm in duple meter,⁷ triple meter,⁸ unusual meter,⁹ and in mixed meter;¹⁰ and (3) harmonic - the ability to sing a round, a counter-melody, two-part music, and three-part music.

During the regular music period on four consecutive days, Dittmore taught a song which was representative of one of these musical capabilities. On the fifth day of each week the children's individual performances of each of twelve criterion songs were tape recorded.

Further, in order to investigate the relationship between children's musical capabilities and their musical aptitude, Dittmore administered a musical aptitude test. The regular version of the Musical Aptitude Profile was administered to children in grades four, five, and six according to the directions provided in the test manual.¹¹ A primary version of the Musical Aptitude Profile, as adapted by Harrington,¹² was administered to children in grades

⁷Ibid.

⁸Ibid.

⁹Ibid.

¹⁰Ibid.

¹¹Edwin Gordon, Manual: Musical Aptitude Profile (Boston: Houghton Mifflin Company, 1965), 261-26x.

¹²Charles J. Harrington, An Investigation of the Experimental Version Primary Level Musical Aptitude (Doctor of Philosophy thesis, Iowa City: University of Iowa, 1967).