

AN EXPERIMENTAL STUDY OF THE EFFECT OF  
SCALAR AND FUNDAMENTAL BASS AURAL PERCEPTION TECHNIQUES  
ON TEACHING SEVENTH- AND EIGHTH-GRADE GENERAL MUSIC STUDENTS  
TO IDENTIFY PRIMARY HARMONIC FUNCTIONS

by

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## Chapter I

### PURPOSE OF THE STUDY

#### Introduction

Because music is a network of highly organized sound, it is particularly susceptible to human perception. Therefore, it is not surprising that philosophers,<sup>1</sup> music psychologists,<sup>2</sup> music theorists,<sup>3</sup> composers,<sup>4</sup> and music educators<sup>5</sup> attribute musical understanding to perceptual and conceptual processes. If this statement is true, is it not reasonable to expect the development of these processes to be the primary emphasis of music instruction?

Musical understanding depends on aurally comprehending the relationships of melody, harmony, rhythm, timbre, register, and

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"...the forms of direct perception are our first primitive instruments of intelligence." Susanne K. Langer, Philosophy in a New Key. (New York: Mentor Books, 1942), p. 92.

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"Because students infer musical meaning from musical sound by being able to remember, organize, and conceptualize what they perceive, the general purpose of education should be to teach students to understand what they hear." Edwin Gordon, The Psychology of Music Teaching. (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1971), p. 63.

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"The basis of any encounter with music is the act of hearing. Music exists in and for the ear: apart from being heard, it does not exist." Victor Zuckerkandl, Man the Musician. (Princeton, New Jersey: Princeton University Press, 1973), p. 83.

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"What the lay listener needs is not to acquire facts, but to cultivate the senses." Roger Sessions, The Musical Experience of Composer, Performer, Listener. (New York: Athenium, 1950), p. 93.

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"In musical learning, hearing, sight, and kinesthetic feel are all involved. It appears obvious that hearing merits primary emphasis, but much music learning is carried on without significant attention to musical hearing." Charles Leonard and Robert W. House, Foundations and Principles of Music Education, 2d ed. (New York: McGraw-Hill, Inc., 1972), p. 162.

dynamics. Although the importance of any given parameter may vary from one stylistic period to another, the most important parameters of tonal music appear to be melody, harmony, and rhythm.<sup>6</sup> If this statement is true, is it not reasonable to expect these three parameters to be equally represented in music curricula?

Musical parameters may be divided into subparts. Rhythm, for example,<sup>7</sup> consists of tempo beats, meter beats, and melodic rhythm; whereas, melody consists of figures, motives, and phrases. Similarly, harmony consists of vertical phenomena (e.g., consonance or dissonance), horizontal phenomena (e.g., arpeggiation), and syntactical phenomena (e.g., chord progressions). If this statement is true, is it not reasonable to expect all harmonic subparts to be included in music instruction?

Basic music series and state curricular guides--sources one assumes reflect current methodology in music education--tend to emphasize the dissemination of theoretical harmonic information rather than the development of aural skills. Moreover, particularly when contrasted with the presentations of melody and rhythm, harmony appears to be neglected. If, in fact, harmony is considered at all, it tends to be limited to isolated vertical or horizontal phenomena. Instruction in syntactical harmony appears to be reserved for high school music theory programs. Unfortunately, then, most students graduate from secondary schools without training in syntactical harmonic perception.

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Leonard B. Meyer, Explaining Music. (Berkeley, California: University of California Press, 1973), p. 88.

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Edwin E. Gordon, Learning Sequence and Patterns in Music. (Chicago: G.I.A. Publications, Inc., 1977), p. 52.

A composite summary of the harmonic methodology of these  
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sources follows:

1. Affective Method: Harmonic events are described in terms of feelings and moods (e.g., happy or sad).
2. Historical Method: Compositional styles are described in terms of harmonic development (e.g., characteristic intervals of organum).
3. Rules Method: Rules are used to explain musical structures (e.g., leading tones resolve to tonic).
4. Nominal Method: Harmonic events are labeled (e.g., types of cadences).
5. Literacy Method: Harmonic structures are read and written (e.g., tonic triad in the key of G major).
6. Isolated Method: Harmonic structures are aurally identified in non-contextual settings (e.g., consonance or dissonance).

Designers of music curricula, then, seem to believe that the development of harmonic aural perception emerges with maturation. Like Piaget, they ascribe harmonic concept learning to physiological stages. According to this view, pre-high school students do not possess the maturational level to deal with the complexities of syntactical harmonic perception.

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Eunice Boardman and Beth Landis, Exploring Music. (New York: Holt, Rinehart, and Winston, Inc., 1966); Robert Choate, Barbara Kaplan, and James Strandifer, New Dimensions in Music: Sound, Beat, and Feeling. (New York: American Book Company, 1972); William Hughes and Lee Kjelson, General Music: A Comprehensive Approach Zone 4. (Menlo Park, California: Addison-Wesley, 1975); and Music K-6. (Albany, New York: The State Education Department, 1974).

However, recent conceptual learning models imply that all concepts are learned; they do not simply emerge with maturation. Thus, it is suggested that the teaching of syntactical harmonic perception can be incorporated into pre-high school general music curricula.

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Mursell speaks to this issue when he states: "In introducing significant musical concepts, there is no need to wait for supposititious moment when children will be 'ready' to deal with them." Moreover, early attainment of syntactical perception may have positive consequences for later musical development.

#### Purpose and Problem of the Study

The purpose of this study was to determine which aural perception instructional technique is more effective in teaching general music students to identify syntactical harmonic concepts. Three fundamental questions relevant to this study were:

1. Is a scalar or fundamental bass aural perception technique more effective in teaching seventh- and eighth-grade general music students to identify primary harmonic functions (I, IV, V)?
2. Are differences between the effects of instruction associated with music aptitude levels?
3. Do methods of instruction affect performances on different aural perception tests of primary harmonic functions?

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Herbert J. Klausmeier, Elizabeth S. Ghatala, and Dorothy A. Frager, Conceptual Learning and Development. (New York: Academic Press, 1974).

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James Mursell, "Growth Processes in Music Education," in Basic Concepts in Music Education, Nelson B. Henry (ed.). (Chicago: University of Chicago Press, 1958), pp. 158-59.

Limitations of the Study

Limitations may be considered threats to the external validity of an experimental study. <sup>11</sup> External validity refers to the target population to which the effects of the experiment may be applicable. Therefore, by confining the population to seventh- and eighth-grade students from a single school district, the study is limited in that it has generalizability only to those students who exhibit similar interests, abilities, characteristics, and attend a similar type of school. In addition, because both experimental groups were instructed by the investigator, personal biases may have affected the results of the study.

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Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research. (Chicago: Rand-McNally Publishing Company, 1963), pp. 5-6.

## Chapter II

### REVIEW OF RELATED RESEARCH

#### Introduction

A review of existing research is complicated by several factors. First, there is no known research in which harmony is investigated as syntactical phenomena. Furthermore, there are only a few known studies in which harmony is investigated as either isolated vertical or horizontal phenomena. Second, none of the latter studies can be generalized to seventh- and eighth-grade general music students. Consequently, the studies considered by the writer to be the most related to this research will be discussed.

#### Hair Study

1

Hair<sup>1</sup> investigated whether first-grade students could discriminate between two paired chords, associate an isolated tone with a chord, and discriminate more effectively by performing and listening to chords rather than only listening to them. Students were asked to determine whether twelve paired combinations of primary chords were the "same" or "different" and whether isolated tones and following chords "belong together." In addition, one experimental group was taught to operate a chording device placed on an electronic organ. That is, these students performed and listened to chords, while the other experimental group only listened to chords.

Results indicated that first-grade students could discriminate harmonic change. However, erratic reliability coefficients on the

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Harriet I. Hair, "The Effect of Training on the Harmonic Discrimination of First-Grade Children," Journal of Research in Music Education, Vol. 21, no. 1, 1973, pp. 85-90.

association measure prohibited the interpretation of the data as to whether first-grade students could associate an isolated tone with a following chord, or whether students who performed and listened to chords were superior to students who only listened to chords. Hair attributed the high reliability coefficients on the discrimination measure and the low reliability coefficients on the association measure to intervening developmental stages between the two tasks. Nonetheless, she concluded that harmonic concepts can be incorporated into elementary general music curricula.

#### Thackray Study

2

Thackray designed a pilot study to investigate whether students were aware of harmonic elements in music. Thackray developed a battery of tests to measure whether students could discriminate between single tones and chords in a tonal sequence, detect and locate changes within the harmonization of a short melodic fragment, and recognize the appearance of a memorized chord in a harmonic progression.

Each test was administered to 417 students ranging between the ages of eight and twelve. The ability to distinguish between single tones and chords was the only statistically significant finding. However, Thackray discussed several ancillary findings that approached significance. First, the later the "changed" chord is presented in the harmonic progression, the more likely it will be observed. Second, changes in chords involving chromatic or dissonant elements are more likely to be observed. In addition, Thackray suggested that students who play harmonic instruments are more aware of harmonic elements than

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Rupert Thackray, "Tests of Harmonic Perception," Psychology of Music, Vol. 1, no. 2, 1973, pp. 49-57.

those students who do not. Furthermore, mean scores were higher for those students who participated in part singing activities or instrumental ensembles. Thackray concluded that harmonic awareness improves with instruction.

#### Hufstader Study

3

Hufstader investigated whether a learning sequence could be determined for music listening skills. Four subtests were designed to determine whether students could observe alterations in musical examples with regard to timbre, rhythm, melody, and harmony. Alterations to harmony involved changes in chord quality (e.g., i to I), chord function (e.g., I to V), or chord progression (e.g., I-IV-V-I to vi-IV-V-I). Hufstader hypothesized that the rank order of mean scores on these subtests would determine appropriate learning sequence and the grade level that these parameters are attained.

Five hundred ninety six students from grades one, three, five, and seven participated in the study. The data suggested a sequence for music listening skills of timbre, rhythm, melody, and harmony. That is, timbre is the easiest concept to attain; whereas, harmony is the most difficult. Furthermore, achievement in timbre, rhythm, and melody was significantly higher than harmony at all grade levels. Not all students attained the criterion level for harmony by the seventh-grade. Hufstader concluded that not only do harmonic skills develop last, but they also develop after the seventh-grade.

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Ronald A. Hufstader, "An Investigation of a Learning Sequence of Musical Listening Skills," Journal of Research in Music Education, Vol. 25, no. 3, 1977, pp. 184-196.

Comparison of Related Research to the Present Study

The studies of Hair, Thackray, and Hufstader were designed to determine whether young students were aware of, and capable of discriminating between, harmonic events. However, because these events were removed from a contextual situation, only a simple degree of perception was required of the students. That is, students were not required to group harmonic events into meaningful patterns. Consequently, all of the criterion items called for a simple dichotomous response. For these reasons, these studies appeared to be designed primarily to determine harmonic aptitude levels. In addition, the results of these studies were not generalizable to seventh- and eighth-grade general music students.

The purpose of the present study was to determine which aural perception technique is more effective in teaching syntactical harmonic perception. Obviously, this study examined more complex harmonic abilities. That is, students were required to group harmonic events into meaningful patterns according to the harmonic practices of the common practice period. All of the criterion items called for a multiple-choice response. Contrasted to earlier research, the present study was designed primarily to determine harmonic achievement levels. In addition, the results of this study were generalizable to seventh- and eighth-grade general music students. Thus the study had implications and applications that were relevant to junior high school and middle school general music curricula.

## Chapter III

### METHODS AND PROCEDURES

#### Population

One hundred six seventh- and eighth-grade students enrolled in four general music classes of the Grand Island Middle School, Grand Island, New York constituted the population from which the sample for this study was drawn.

#### Power and Sample Size

There are risks that an investigator takes in making decisions concerning hypotheses. In this study, for example, there is the risk that one of the two instructional techniques will be mistakenly considered more effective (Type I or alpha error). Similarly, there is the risk that one of the two instructional techniques will mistakenly not be considered more effective (Type II or beta error). In short, hypotheses decisions require the evaluation of both types of risks.

Traditionally, investigators set a low risk (one or five percent) of mistakenly rejecting a hypothesis. A low risk, however, reduces the probability of finding proof for rejection; consequently, it is a less powerful test.<sup>1</sup> Unfortunately, then, too much emphasis is placed on the level of significance and too little on the power of the test. It seems reasonable that an investigator would want at least a fifty-fifty chance of rejecting a hypothesis when his proposed alternative hypothesis is more effective.

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If the risk of a false rejection is set at the .01 alpha level, and if the power of the test is estimated to be at the .90 beta level, then a false rejection is considered by the researcher to be 90 times more serious than a false acceptance (.90/.01= 90 to 1).