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VERBAL DESCRIPTION OF AURAL MUSICAL
STIMULI: A PILOT STUDY OF HIGH SCHOOL
STUDENTS' LISTENING ATTAINMENT.

The Ohio State University, Ph.D., 1969
Music

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VERBAL DESCRIPTION OF AURAL MUSICAL STIMULI: A PILOT STUDY
OF HIGH SCHOOL STUDENTS' LISTENING ATTAINMENT

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Woodford Walton Zimmerman, B.S., M.A.

The Ohio State University
1969

Approved by

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ACKNOWLEDGMENTS

The writer wishes to express his gratitude to all those persons who assisted in this study. The research would not have been possible without the cooperation of several hundred high school students and their teachers. The assistance of the dissertation committee and the chairman, Dr. Erwin H. Schneider, is especially recognized.
VITA

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**PUBLICATIONS**


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CHAPTER I

INTRODUCTION AND PROBLEM

Introduction

Listening is the most important ingredient of all musical behaviors. Success in any musical activity is dependent, in large part, upon competence in listening. Experience in music listening and instruction in the development of various types of listening skills is (and has been) a central concern of music education in the public schools.\(^1\),\(^2\)

In spite of the apparent importance given to the development of listening skills, some doubt exists in the music education profession in regard to the status of student attainment in certain types of music listening skills.\(^3\),\(^4\)


In short, there appears to be a discrepancy between some of the verbalized, general principles of music education and the realities of practice in the schools. The possible existence of such a philosophical-operational dilemma is substantiated in separate reviews of the pertinent literature conducted by Deihl⁵ and Fluke.⁶ To their rather sizeable lists, the names of such authors as Britton,⁷ Broudy,⁸ Colwell,⁹ Fowler,¹⁰ Gaston,¹¹ and Hoffer¹² may be added. The most common criticism of the prevailing practice is that many students learn to perform music but do not "understand" music. Although several different definitions of "musical

⁵Deihl, op. cit., pp. 1-11.


understanding" might be offered, it seems likely that to understand music, one must have formed concepts about music and its elements.

It appears that music educators in their instruction generally do not seem to emphasize concepts pertaining to what is heard, and the verbal-descriptive skills which give such concepts utility for the so-called "intelligent consumer" of music--the listener. This observation would appear to be especially valid in the instruction programs of music performance groups. Generally, teachers in performance group activities emphasize pitch, harmonic, and rhythmic perception and performance response, but little attention, if any, seems to be given to concept development and the verbal-descriptive behaviors which would permit students to appropriately describe aurally presented musical stimuli. For example, a student might be able to play his part well and still not be cognizant of the ways in which a composer has manipulated the musical material in a particular composition. Similarly, a student might sing his note perfectly in tune and not realize that the harmony is complex, as opposed to another composition or section of the same composition in which the harmony is more simple.

The development of appropriate verbal-descriptive skills would appear necessary if the student is to (a) have a greater understanding of his listening experience, (b) be able to communicate about such things as melodic movement
or harmonic and rhythmic configurations, or (c) if he is to demonstrate ability to discriminate in such matters as timbre, texture, and dynamic aspects of musical stimuli. These listening skills—which depend upon aural perception, concept formation, and verbal description—usually are introduced, if at all, in "general music" or music appreciation type classes. Yet, in terms of the generally stated objectives of music education, these types of listening skills would seem to be among the most important for every student to develop and those that should be emphasized by every music educator in most, if not all, instructional activities.

An assumption on the part of many music educators appears to be that the development of such skills occurs indirectly, incidentally, and independently of the specific type of music instruction offered. In other words, it is assumed that students will acquire these kinds of learnings in any kind of music course even though these particular kinds of musical skills are not expressed as a part of formal instructional objectives for a specific course. No evidence seems to exist to warrant this assumption.

**The Problem**

The problem of this study was concerned basically with the validity of the above assumption—that in relation to aurally presented musical stimuli, verbal-descriptive

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skills develop indirectly, incidentally, and independently, regardless of the type of music instruction provided in the schools. The study sought specifically to determine the extent of attainment in such skills by a selected population of high school students, and the relationships of such skill development to the amount and type of music instruction in their school years.

This study sought answers to the following specific questions:

1. What is the status of high school students' attainment with respect to verbally describing an aurally presented musical stimulus?

2. What relationships, if any, seem to exist between this particular aspect of students' musical attainment and the existence or nonexistence of various types of music instruction experienced in the students' school years?

3. What relationships, if any, seem to exist between this particular aspect of the students' musical attainment and their year in school?

4. What relationships, if any, seem to exist between this particular aspect of the students' musical attainment and their number of years of instruction in the various school music performance groups?

Objectives

The objectives of this study were of three types: the development of a test, the determination of student
achievement, and the investigation of possible relationships between attainment on the test to various factors of educational level and music instruction experience.

1. A specific objective of this study, therefore, was to develop a test to measure high school students' verbal-descriptive attainment (in relation to aurally perceived musical stimuli) which was:

a. acceptable in terms of reliability,
b. valid insofar as it represented skills and understandings appropriate for high school students in music listening perception and the verbalization of these perceptions, and
c. able to meet recommended technical standards in terms of item difficulty and item discrimination.14,15

2. A second objective was to determine the status of high school students' ability to select verbal descriptors which appropriately describe the melodic, rhythmic, harmonic, timbre, texture, and dynamic aspects of aurally perceived musical stimuli.


3. The final objective was to determine if there was a relationship between:

a. the students' educational level and performance on the test,

b. the various types of school music instructional experiences and performance on the test, and

c. the number of years of experience in the various music offerings and performance on the test.

Since no test for high school students could be found which purported to measure the particular type of musical attainment identified in this study, it was determined that an instrument needed to be developed to answer the questions raised initially. Specifically, no test existed which consisted solely of the presentation of aural musical stimuli for which students were to select the most appropriate verbal descriptors. It was further necessary that such a test be appropriate for administration to both music performance group participants and to students who had not participated in high school music performance groups.

The specific behavior to be measured by such a test was the students' ability to match appropriate verbal descriptors with aurally presented musical stimuli—behavior from which it was assumed that one could infer aspects of the students' awareness of and sensitivity to the elements of music. The descriptors, of a relative non-technical nature, were those generally used by authors of music
listening or music appreciation textbooks—words and con-
cepts such as smooth or jagged melody, vigorous or slow
tempo, mellow or harsh tone, and rich or thin harmony. The
elements which were perceived and described were melody,
rhythm, timbre, harmony, texture, and dynamics. The stimuli
for the test items were short excerpts of music written in
the various periods of music history from the Middle-Ages
through the first half of the twentieth century. In addition,
stimuli were selected from compositions written for a variety
of performance media.

The second principal objective of this study—the
determination of the students' verbal-descriptive attain-
ment—was such that no meaningful use could be made of
sophisticated statistical procedures. Since the music educa-
tion profession has yet to develop clear and specific state-
ments of instructional objectives in the area under consid-
eration, and since no criterion measure of validity was
employed with the test, it was determined that the second
principal objective of the study could most appropriately be
achieved simply by making observations of the students' performance on the final test. It further was determined
that special attention would be directed toward items or
item types which the students found quite easy or those they
found to be especially difficult.
Assumption

For the purpose of this study, the musical attainment measured by the test was assumed to be a more global competency—one which consisted both of musical perception and verbal-descriptive ability. Since it had not been established that all students could verbally define all verbal symbols used, missing a test item did not necessarily mean that there was a problem of perceiving the music.

Values of the Study

One of the objectives of this study was the development of an instrument to reliably measure one aspect of what many persons believe to be the single most important musical behavior—listening. In doing so, it was hoped that data could be generated that would have some value in helping music educators to develop clearer instructional objectives for this one aspect of music listening; namely, student attainment in selecting appropriate verbal descriptors for the melodic, rhythmic, harmonic, timbre, textural and dynamic aspects of aurally presented musical stimuli.

Such attainment in the perceiving of musical stimuli and the development of verbal-descriptive behaviors would seem to be a necessary achievement if music education is to develop the so-called "intelligent consumer of music"—a person who can understand his perceptions and can communicate with others about his perceptions. The music education profession appears to need, among other things, clear
statements of instructional objectives in music listening and objective measures of student achievement which are both valid and reliable.

In addition to the obvious use of the test for this study, there is the reality that tests often exert an impact upon instruction in the schools. A test which is accepted as having a valid foundation could lead to a greater emphasis upon the skills studied in this project--skills which some persons believe can assist one to more fully understand aural musical stimuli.

Both the formulation of instructional objectives in music listening and the development of a valid and reliable evaluative instrument might be the first step toward instructional and curricular research of the following types:

1. Investigations into methods of integrating listening experiences with performance aspects of high school music groups.

2. Investigations into individualized listening experiences for high school students utilizing the "hardware" available as a result of recent technological developments in electronic and optical devices for use in the schools.

3. Investigations into methods of structuring and instructing in music listening and music appreciation intended for the non-performer at both the high school and college levels.
4. Investigations into the effect of instruction in verbal description of aurally presented musical stimuli upon other types of musical behaviors, e.g., performance, non-cognitive types of listening responses, or instruction in the historical aspects of music.

5. Investigations into the possible interrelationships which might exist among student achievement on this test, and their performance on tests of verbal achievement and musicality.
CHAPTER II

REVIEW OF LITERATURE AND RATIONALE

Within the music education profession there is little doubt, if any, that listening is a musical phenomenon of great importance. Yet, in spite of the recognized worth of this activity, uncertainty and controversy surround the subject. One of the principal reasons for this situation results from the fact that listening is a highly personal phenomenon which cannot be directly observed—only inferred from observable behavior.

Types of Listening

It is generally agreed that music listening, both for a given individual and among several persons, may be of several types. Some writers observe that listening occurs at various levels. Copland\(^1\) identifies these as "planes" of listening, while Ortmann\(^2\) chooses to speak of "response types."

The three planes of listening which Copland cites and further defines are: the sensuous plane, the expressive


plane, and the shearly musical plane.\footnote{Copland, op. cit., pp. 9-10.} Listening for the "sheer pleasure of the musical sound" is referred to as the "sensuous plane."\footnote{Ibid., pp. 9-10.} The "expressive plane," as described by Copland, is identified as the most controversial in that it deals with the question of meaning in music. For Copland, this refers to a general feeling evoked in the perceiver—a certain intangible, emotional type of reaction. Finally, Copland suggests that the highest level of music listening—"the shearly musical plane"—exists when the listener is aware of the specific musical materials and their manipulation.

In writing about music listening, Ortman suggests that differences in reaction-types result from the psychological level at which the reaction occurs; namely, "sensation, perception, and imagination."\footnote{Ortmann, op. cit., p. 75.} Changes in reaction-types within a given individual may result either from a change in the stimulus or from a change in training or attitude. Ortman points out that the sensorial response contains little else than the pleasant-unpleasant distribution. On the other hand, the perceptual response is concerned with such auditory things as "progression, sequence, motive, phrase, form, outline, contrast, ascent, descent, movement..."
and many other things." Finally, reactions might occur on
the imagination level—a reaction-type which creates aes-
thetic and measurement problems similar to those posed by
Copland's "expressive plane" of music listening.

Neither the sensuous type of listening nor the
sensorial-response to music were considered in this study for
several reasons. First, it has not been demonstrated that
such investigations can lead to an objectification of such
response types. Second, the objective data which may be
obtained, in terms of physiological changes in the human
organism (when one listens to music), have little relevance
in the context of this study. Third, listening on this level
seemingly does not necessitate any sort of formal music
education.

Similarly, neither listening on the "expressive plane"
nor the imagery response-type were investigated in this
study. It has been suggested that these categories deal with
highly ambiguous and controversial aspects of music listen-
ing. These types of listening or response-types were, there-
fore, delimited from further consideration; although, these
areas might prove viable in terms of future research.

The type of listening or listening response consid-
ered in this study could be contained in Copland's "sheerly
musical" and Ortmann's "perceptual-type" categories, yet

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6Ibid., p. 52.
this was not an investigation of all aspects of either of these categories. For example, listening attainment might be inferred from behavior which demonstrates the listener's capacity to hear minute differences in pitch, tempo, or loudness—competencies such as those assessed by the Seashore Measures of Musical Talents. Such competencies do logically fit Copland's "sheerly musical plane" level or Ortmann's "perceptual response-type." Yet, it would seem highly unlikely that these competencies would be of vital concern to the general listener—the so-called "intelligent consumer" of music. Similarly, the "intelligent consumer" of music does not need to possess the technical, verbal-descriptive behavior usually expected of students in music theory class.

The type of listening behavior investigated in this study was, therefore, neither the non-cognitive, sensuous type nor the sensory acuity, in the Seashore sense. Rather, it was believed that the type of listening-related behavior which is more appropriate for the "general consumer" of music lies between these extreme types. Specifically, consideration was given to selected aspects of what Copland refers to as the "sheerly musical plane" and to what Ortmann identifies as the "perceptual-type" of listening responses.

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Listening attainment was judged to be most appropriately inferred from verbal-descriptive behavior. The verbal-descriptive signs (words) were selected based upon two criteria: (1) common use by knowledgeable persons in the field (authors of textbooks in music listening and/or music appreciation), and (2) the relative non-technical nature of the terms. For example, it was judged that it is appropriate for the general listener to be aware that a complex harmonic progression is being heard. But, it was judged that it is of less importance for the general listener to perceive that he is hearing a series of chords which consist of eleventh chords altered in a particular way or that a specific chord consists entirely of minor thirds.

It has been suggested by Mueller\(^8\) that the type of human behavior considered in this study is dependent upon a four-step perceptive process. This process consists of (1) perceiving details of basic musical elements, (2) giving names to these perceptions, (3) building the perceptions into concepts, and (4) using these concepts as the framework for comprehending new musical experiences. The cognitive and verbal aspects of this type of listening are inescapable.

Communication and Listening

The type of listening of concern in this study introduces a crucial issue in music listening and appreciation; namely, the importance of verbal communication. In this respect, Mueller suggests that it is doubtful that a person has had a precise, vivid, or clear perceptual experience if the proper words are lacking as symbols to manipulate and communicate about the experience.9

Although this study was based upon the premise offered by Mueller, it is recognized that there are means other than the verbal for manipulating, understanding, and communicating what has been perceived aurally. One such example of communicating occurs when one can faithfully reproduce or logically alter (vocally or instrumentally) a musical stimulus which has been perceived. In a similar manner, the dancer chooses to demonstrate "understanding" and can communicate about an aurally perceived musical stimulus through interpretative, non-verbal movement. Even though these behaviors are cited as some from which listening attainment may be inferred and assessed, they were not considered in this study since they present serious problems in validity as well as in testing efficiency. The inference of music listening attainment from observable verbal behavior presents far fewer problems than does that of measuring such

9Ibid., pp. 6-7.
attainment in the non-verbal realm, whether it consists of the observation of interpretative dance or some other apparently non-verbal musical behavior.

The validity of inferring music listening attainment from verbal-descriptive skills is based upon the fact that man's most common means of communication exists through the use of words. This particular reality of human existence, it has been suggested, poses significant problems in dealing with questions in the non-verbal realm. Since verbal symbols are the most common means of communication, Mueller observes that most individuals acquire facility in manipulating musical concepts not in purely auditory, visual, or kinesthetic categories. Rather, they employ words to manipulate concepts and to communicate about their perceptions.10 This would appear to be especially true for the "general consumer" of music—the listener.

Pedagogically an alternative to the use of verbal symbols has been, and continues to be employed in the schools. The so-called "exposure method" of music appreciation relies simply upon the aural presentation of music with little, if any, verbalization with respect to aspects of the music itself. The music is left "to speak for itself." When such an approach is employed, evaluation of teaching and learning effectiveness can only be assessed by determining

10Ibid., pp. 6-7.
the students' enjoyment of the music presented, or some related method of evaluation. In practice, however, the exponents of the "exposure method" far too often do not evaluate listening attainment nor do they have clearly formed instructional objectives—a concept of crucial importance in evaluation.

This study, therefore, was not concerned with evaluating students' listening attainment through means other than making inferences from their ability to select appropriate verbal descriptors for aurally presented musical stimuli. Words were assumed to be a valid link in the perception of, thinking about, and communicating about an aurally presented musical stimulus.

Not only do words appear to form a vital link in the music listening process, there also seems to be a degree of common terminology employed by persons when they refer to a given aspect of a particular musical stimulus. Farnsworth observes that ample research evidence exists which demonstrates that whenever listeners are drawn from roughly the same subculture, they tend to employ synonymous words to describe the character of most music. Similarly, Gatewood reports both agreement among subjects and individual


consistency in her study of similes used to describe music. 13 In a more recent study, Brown, Leiter, and Hilum report similar findings in a study of metaphores from music criticism. 14 It would appear, therefore, that man frequently, and with some consistency, communicates about music in verbal terms. Whether or not this is the best possible means of handling musical materials is a question in the aesthetic and philosophical realm—a question beyond the scope of this study. Or, as Mueller observes:

Even though it might have been better for the race, in the beginnings of history to have developed a system of direct symbolization for musical sensations and perceptions, the fact is that all our long centuries have not given us such a system. 15

The importance of the cognitive and verbal aspects of the music listening experience also has been recognized by many leaders in the music education profession. Some authorities observe that a "genuine understanding of music [a prime objective of the school's music program] is dependent to a considerable extent on intellectual effort." 16 The


14 R. W. Brown, R. A. Leiter, and D. C. Hilum, "Meta-


16 Music Educators National Conference and American Association of School Administrators, "Music in the School
recognition of the cognitive aspects of musical understanding are evidenced also by the suggestion that students in high school music performance groups should "study significant musical literature . . . in an appropriate intellectual setting."17 Or, as Gaston suggests, music education must offer more than sensory gratification to student members of performance groups---"to find profound values in music, one must sometimes listen and think, as well as play and sing."18

In summary, it may be said that the type of music listening of concern in this study exists in the cognitive domain.19 Second, this type of listening involves verbal behavior on the part of the perceiver. Third, it is believed that one type or aspect of music listening attainment may be inferred from observing an individual's facility at selecting words which best describe a musical stimulus—words and concepts such as complex or simple harmony, smooth or jagged melody, mellow or metallic tone, detached or

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connected articulation, etc. Finally, such attainment by students appears to be consistent with some of the more general aims of music education, at least at the philosophical level.

**Measurement of Verbal-Descriptive Skills**

Although the music education profession, through some of its spokesmen, appears to value the development of verbal-descriptive skills for the "intelligent consumer" of music, relatively little research has been devoted to measuring student accomplishment in this area. For example, no music achievement test for high school students presently exists which purports to measure the particular type of verbal-descriptive musical skills discussed herein. The lack of achievement tests, however, is not unique to the area of aural perception and the verbalization of these perceptions. In general, researchers have exhibited less interest in measuring student achievement in music than in measuring musical aptitude.20

Measures of achievement in music listening that do exist do not include items or test sections related directly or entirely to the verbal skills considered in this study.

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For example, the Beach Music Test,\textsuperscript{21}--identified by Whybrew\textsuperscript{22} as the earliest standardized measure of musical achievement--does include sections which are related to this study, e.g., metrical classification and melodic direction. Yet, the Beach test was determined an inappropriate test for use in the study insofar as relatively few descriptors were employed. Further, a large portion of the test provides data not directly relevant to this study, since the determination of student achievement in knowledge of key signatures, note names, musical symbols, syllable names, etc., was not a purpose of the study.

Similarly, the measures of music listening achievement by Strouse\textsuperscript{23} do not adequately meet the needs of this study. The Strouse Music Test consists of nine parts, five of which are related to this study; namely, the parts which deal with (1) selecting the highest tone from each group of three tones heard, (2) selecting the longest tones in a similar manner, (3) metrical classification, (4) major and minor mode discrimination, and (5) retention. The Strouse test was determined inappropriate for this study since it included so

\begin{itemize}
\item \textsuperscript{21}Frank A. Beach, Beach Music Test (Emporia, Kansas: Kansas State Teachers College, Bureau of Educational Measurements, 1930).
\item \textsuperscript{22}Whybrew, \textit{op. cit.}, p. 9.
\item \textsuperscript{23}Catherine E. Strouse, Strouse Music Test (Emporia, Kansas: Kansas State Teachers College, Bureau of Educational Measurements, 1937).
\end{itemize}
few verbal descriptors and since Parts IV, VI, VIII, and IX were totally irrelevant to this study. These latter parts measure student achievement in such areas as singing tonic arpeggii, taking melodic dictation, comparing aurally presented music with that in notation, and filling in missing bar lines in musical notation.

Fisher's unpublished "Measurement of Musical Appreciation" consistently consists of sub-tests of mood, imagery and association, rhythm, instrumental timbre, and factual knowledge. The test is intended for use in grades seven through twelve. Fisher's structuring of the test into its first four sub-tests—mood, imagery and association, rhythm, and instrumental timbre—is based upon the investigations of Weld, Dickinson, and Murse1 into the nature of music appreciation. The Fisher test was determined inappropriate for use in this study since it, for the most part, deals with levels of listening or response-types not studied in this project—Copland's "expressive plane," and Ortmann's "imagery-type response." The sub-test on timbre was judged inappropriate insofar as the verbal symbols employed were the


26Copland, op. cit., pp. 9-10.

27Ortmann, op. cit., p. 75.
actual names of instruments. In order to maintain consistency in assessing student verbal-descriptive attainment in the several basic element areas (melody, rhythm, harmony, etc.), it was determined that timbre descriptors such as penetrating, muffled, rich, etc., were more consistent with verbal symbols and concepts such as complex harmony, jagged melody, and elastic tempo than were instrument names. For these reasons, therefore, the Fisher "Measurement of Music Appreciation" was determined inappropriate for use in this study.

Routch developed a test with which he purported to measure college students' achievement in music appreciation. The test consists of seventy multiple-choice items. It contains sub-sections on timbre, fundamentals, periods and styles, vocal forms, instrumental forms, and miscellaneous items (American composers, contemporary performers, and twentieth century composers). The Routch test was considered inappropriate for several reasons: (1) the population for which it was intended (college level), (2) the rather noticeable non-linear character of the sub-sections, and (3) the inappropriateness of some sub-sections—especially the miscellaneous category.

More recently, Fluke developed a test to ascertain the music perception of high school students who were members of music performance groups. The perceptions measured were in the areas of rhythm, melody, and harmony. Basic rhythmic, melodic, and harmonic concepts were extracted from the writings of various authorities in music history, theory, and appreciation. The final version of the test consists of sixty multiple-choice items—twenty in each of the three concept areas cited above. Fluke's test more nearly meets the needs of this study than does any other measuring instrument reviewed, but it too was unacceptable in terms of one specific aspect. Since the test was intended for administration to performers of music, it was assumed that the students possess some degree of technical knowledge in music. For example, students are expected to compare aurally presented rhythmic patterns with notated patterns. Similarly, they are expected to be able to use specific interval names (seconds, thirds, fourths, etc.), specific note values (e.g., dotted eighth notes), and specific time signatures (4, 6, 9, etc.) to describe aurally perceived musical stimuli. The Fluke test, therefore, was considered inappropriate for use in this study for two specific reasons—(1) the use of technical terms, and (2) the use of non-verbal symbols as descriptors.

Deihl\textsuperscript{30} conducted a study in which he investigated certain relationships among music concept development, listening achievement, musicality, and music performance experience in a selected population of college students. The Routch\textsuperscript{31} test was employed to measure listening achievement, while the Gaston, \textit{A Test of Musicality},\textsuperscript{32} was used as a measure of musicality. Music concept development was measured by an instrument developed by Deihl for the study. Although certain aspects of this measure were relevant to this study, it was judged not appropriate since it was a totally verbal instrument in which students were asked to select answers to such questions as, "Melody, a fundamental, must contain what other fundamental?"\textsuperscript{33} Deihl's "Concepts of Performance Quality" sub-test does employ aural stimuli, but this too was determined inappropriate for use in this study in that the quality of a musical performance was not directly relevant to the purposes of this study.


\textsuperscript{31}Routch, \textit{op. cit.}


\textsuperscript{33}Deihl, \textit{op. cit.}, p. 140.
Doctoral studies by Boekelheide\textsuperscript{34} and Rasmussen\textsuperscript{35} also were somewhat related to this study, even though their research was conducted at the elementary school level. Boekelheide sought to assess certain basic music listening skills of eight and nine-year-old children. The instrument developed by her consisted of the following sub-tests: rhythmic response, melodic contour, phrase discrimination, and mood response. Considerable use was made of non-verbal descriptors, with stick-figures "running," "skipping," etc., for the rhythmic section, graphic representation of melodic contours, and stick-figures indication "high," "middle," and "low" for the pitch discrimination test.

Rasmussen,\textsuperscript{36} in his study of basic listening skills at the fourth grade level, relied upon two sources for the evaluation of instructional effectiveness. The EDEX, a device for systems instruction, was programmed to keep a lesson-by-lesson record of individual and class achievement. Second, written descriptions of the music heard at the last lesson were used to evaluate the effectiveness of the investigator's experiment in programmed instruction.


\textsuperscript{36}ibid.
means of evaluation employed both by Boekelheide and Rasmussen were considered unsuitable for this study since their research was performed at the elementary school level. The instruments used by Rasmussen also were uniquely suited to his experiment in programmed instruction.

Finally, Haack37 studied two approaches to the development of music listening skills within the context of the music appreciation class for secondary school students. His study of inductive versus deductive instructional procedures was limited solely to one aspect of music composition and music listening skills, namely, thematic development. The instrument developed by Haack, therefore, was considered inappropriate insofar as his study was delimited to only one aspect of composition.

In summary, the various achievement type music tests which have been developed were found to be inappropriate for the purposes of this project. Instruments which were available, published or unpublished, were found to be unsuitable for several reasons. First, some were not appropriate for both the performer and non-performer in that the frequent use of rather technical terms would probably place the

performers at a distinct advantage.\textsuperscript{38,39,40} Second, some measures of listening attainment include aspects other than those in the cognitive realm.\textsuperscript{41,42} Third, other measures necessitate familiarity with non-verbal musical symbols.\textsuperscript{43,44,45} Fourth, some measures were judged inappropriate insofar as they are intended for students at an educational level other than that of grades nine through twelve.\textsuperscript{46,47,48,49} Finally, one study was found to be an investigation in the cognitive realm, but it was delimited to include only one aspect of music listening competence.\textsuperscript{50}

\begin{itemize}
\item \textsuperscript{38}Beach, op. cit.
\item \textsuperscript{39}Strouse, op. cit.
\item \textsuperscript{40}Fluke, op. cit.
\item \textsuperscript{41}Fisher, op. cit.
\item \textsuperscript{42}Boekelheide, op. cit.
\item \textsuperscript{43}Beach, op. cit.
\item \textsuperscript{44}Strouse, op. cit.
\item \textsuperscript{45}Fluke, op. cit.
\item \textsuperscript{46}Deihl, op. cit.
\item \textsuperscript{47}Routch, op. cit.
\item \textsuperscript{48}Boekelheide, op. cit.
\item \textsuperscript{49}Rasmussen, op. cit.
\item \textsuperscript{50}Haack, op. cit.
\end{itemize}
CHAPTER III

PROCEDURES

Initial Activities

The initial activities of this project included:

(1) the identification and selection of verbal-descriptive skills believed to be appropriate for the general "consumer of music," (2) the development of a catalogue of verbal-descriptors, (3) a feasibility study, (4) the development of pilot tests, and (5) the development of the final test.

The initial activities undertaken in this study are described in detail in the sections which follow.

Identification of verbal-descriptive skills

It is not simple to determine the most appropriate kinds of musical skills for the "consumer of music"—the listener. Since no experimental research on this fundamental issue exists, other means must be employed to identify skills believed to be of value for the "general listener." One such "other means" of selecting appropriate skills is to consult authorities in the field. This method of determining appropriate skills is consistent with Bruner's

suggestion that a logical source for data concerning the structure of a discipline is among those persons who are expert in the field.

One such authority group in the area of music listening are authors of textbooks in music listening or music appreciation which are used in high school, and in college courses for non-music majors. (See Appendix A for a bibliography of sources used in this aspect of the study.) A quick perusal of this literature reveals that textbook authors approach music listening or appreciation through many organizational schemes or structures. Although many structures are employed for the development of listening skills, e.g., historical periods, genre or compositional type, societal function, etc., the most elemental, and yet commonly employed organizational scheme, is that of "basic elements" (melody, rhythm, harmony, timbre, texture, and dynamics). In short, most of these textbook authors present their material with the intention that the students form verbal concepts so that he may better understand his perceptions and so that he may communicate with others by verbally describing certain melodic, rhythmic, harmonic, timbre, texture, and dynamic aspects of an aural musical stimulus.

Music educators whose concern is the development of instructional objectives are a second logical authority group. A recent publication of the Music Educators
National Conference\(^2\) has particular relevance with respect to instructional objectives in music listening. Not only is instruction in listening emphasized in this publication, but special attention is given to listening skills as they relate to the development of verbal concepts within the organizational framework of the "basic elements."

The use of the "basic elements" structure as a means of developing music listening skills and concomitant verbal-descriptive behavior is valid for yet another reason. Recent curricular reforms recognize the importance of getting to fundamental concepts in any discipline.\(^3\) The importance of the fundamental aspect of a discipline is based, in part, upon psychological investigations into the generalization of knowledge and its transfer.\(^4\)

The verbal-descriptive skills selected for this study not only needed to be appropriate for the "general consumer of music," but they also needed to be appropriate for high school students. These skills were identified and inferred from listening skills and objectives found in specific textbooks in music listening and/or music appreciation (see


Appendix A) and from the volume, *Music in General Education* ⁵ (see Appendix B).

In some cases, statements of instructional objectives or skills deemed to be desirable were expressed in such sources. In most cases, however, desired skills had to be inferred from statements of instructional activities. For example, it is stated that all high school students should "experience the underlying pulsation in music."⁶ From this instructional activity the following objective with specific verbal-descriptive skills could be inferred:

All high school students should be sensitive to the underlying pulsations in music so that they can make these kinds of judgments upon hearing a particular musical stimulus:

1. Are the pulsations relatively strong, or are they relatively weak?
2. Do the pulsations appear to be accented in any pattern?
3. If so, do the more heavily accented pulsations appear to be heard every two, three, or four beats (pulsations)?

While the development of comprehensive instructional objectives in music listening was beyond the scope of this

⁵Ernst and Gary, *op. cit.*
study, a general objective, operationally derived, was
developed for identifying appropriate verbal-descriptive
skills for use in the study. This objective was stated as
follows:

All high school students should be capable of
demonstrating an aspect of their sensitivity to
aural musical stimuli by verbally describing
melodic, rhythmic, harmonic, timbre, texture, and
dynamic aspects of the stimuli. The students
ought to have at their command concepts and commonly
used terms such as those found in the Catalogue of
Verbal-Descriptors developed for this study (see
Appendix C).

It was possible, through use of the above general
objective, to identify specific verbal-descriptive skills
which certain authorities in music instruction recognize as
being appropriate and desirable for the "general consumer
of music."7 8 Such skills were organized according to their
basic element classification, and pilot test items were
written for measurement of each of the skills identified.
Not all of the pilot test items, however, were found to be
acceptable for inclusion in the final test. The verbal-
descriptive skills represented are given in the sections
which follow.

7See Appendix C.
Verbal-descriptive skills for timbre.—It was determined that all high school students need to possess certain verbal-descriptive skills with respect to the timbre or tone quality aspects of aurally perceived musical stimuli. So that they may more fully understand their perceptions and so that they may communicate about these perceptions, high school students ought:

1. To be able to employ such commonly used words as shrill, harsh, mellow, penetrating, and muffled to describe the timbre of an aurally perceived musical stimulus—human voice or instrument. (Music Description Test: items 1, 4, 16, 26, and 29.)

2. To be able to employ such descriptive terms (above) to differentiate aurally perceived musical stimuli, even when such stimuli are presented simultaneously. (Music Description Test: item 16.)

3. To understand the concept, vibrato, and be able to recognize the same when aurally perceived. (Music Description Test: item 4.)

4. To understand concepts such as brass, woodwind, string, and percussion as they refer to families of instruments, and they should be able to demonstrate such understanding by the ability so to classify aurally perceived instrumental musical stimuli. (Music Description Test: items 14 and 20.)
5. to understand concepts such as low, middle, or high register, and be able to demonstrate such understanding by the ability to use such terminology to describe an aurally perceived musical stimulus. (Music Description Test: items 2, 20, and 21.)

Verbal-descriptive skills for rhythm.—With respect to rhythm and related time aspects of music, it was determined that high school students ought:

1. to be able to employ such commonly used words as vigorous, weak, strong, complex, and simple to describe the rhythmic characteristics of an aurally perceived musical stimulus. (Music Description Test: items 6 and 14.)

2. to be cognizant of the tempo of an aurally perceived musical stimulus, and be able to demonstrate such awareness by using terms such as quick, moderate, slow, accelerating, and elastic to describe a tempo or a change in tempo. (Music Description Test: items 6, 7, 10, and 27.)

3. to understand the concept, syncopation, and be able to demonstrate such understanding by correctly using the term to appropriately describe musical stimuli which contains a syncopated passage. (Music Description Test: items 7 and 18.)

4. to understand the concept, beat or pulsation, and be able to describe the recurrent pattern of such
underlying beats or pulsations in an aurally perceived
musical stimuli, or use such descriptors as strong and
weak to describe pulsations. (Not represented on final
test—see description of final test item selection under
head, Development of Final Test.)

5. to understand the concept meter, and use such
descriptors as triple or duple to correctly describe an
aurally perceived musical stimulus. (Not represented
on final test—see description of final test item selec-
tion under head, Development of Final Test.)

Verbal-descriptive skills for melody.—The melody
category creates some problems in that a discrete category
cannot be found. Since melody occurs in time and since all
melodies possess rhythm, some rather arbitrary decisions in
categorization are made, especially with respect to the
time aspects of melody.

It was determined that students ought to be able to
verbally describe certain aspects of an aurally perceived
melody. Specifically, students should:

1. be able to describe the progression of melodic
tones in an aurally perceived musical stimulus by means
of such words as step, scale-wise, skip, leap, ascending,
descending, broken chord, and chromatic. (Music
Description Test: items 9, 17, and 28.)

2. understand the concept, articulation, and should
be able to describe the articulation of an aurally
perceived musical stimulus by means of such words as detached, smooth, and connected. (Music Description Test: items 6, 15, and 24.)

3. be able to describe melodic contours of aurally perceived musical stimuli through the use of such terms as jagged, smooth, descending, and soaring. (Music Description Test: items 2, 9, and 28).

4. be able to employ terms such as ponderous, lilting, passive, serene, awkward, and flowing to describe general melodic characteristics. (Music Description Test: items 6, 24, 26, and 31.)

5. understand the concept, range, and be able to describe this vertical dimension of an aurally perceived melody by means of such terms as large, small, narrow, and wide. (Music Description Test: item 19.)

6. understand the concept, phrase, and demonstrate such understanding by employing verbal signs such as short or long to describe phrase length, and clear or obscure to describe phrase endings. (This skill and the three which follow are not represented on the final test—see description of final test item selection under head, Development of Final Test.)

7. understand the term, motive, and should demonstrate such understanding by describing the number of tones in a short motive.
8. understand such concepts as major, minor and chromatic, and demonstrate such understanding by using these terms to correctly describe an aurally perceived musical stimulus.

9. understand such concepts as pitch or pitch level, and demonstrate such conceptual understanding by employing words such as higher or lower to correctly describe an aurally perceived musical stimulus.

Verbal-descriptive skills for harmony.—Students should have certain verbal-descriptive skills to enable them to understand their harmonic perceptions and to make possible communication with others regarding the perceptions. It was determined that high school students should:

1. understand the concept, harmony, and have the capacity to describe the harmonic aspects of an aurally perceived musical stimulus as being simple, complex, dissonant, consonant, active, reposeful, static, rich, stable, and tonally obscure. (Music Description Test: items 8, 16, 22, 30, and 32.)

2. understand the concepts, changing key and tonal center, and should be able to use such verbal symbols to describe an aurally perceived musical stimulus which does so. (Music Description Test: items 19 and 20.)

3. understand the concepts, cadence and cadence point, and be able to employ such descriptive words as surprising, clear, obscure, and unclear as they relate
to cadences in an aurally perceived musical stimulus.

(Music Description Test: Item 12.)

**Verbal-descriptive skills for texture.**—Many descriptive skills in texture are simply an extension of melodic descriptors. Some descriptive skills are identified, however, which are truly texture descriptors. It was determined that high school students should:

1. be aware of the existence of more than one melodic part sounding simultaneously (as many as three parts, at least), and should demonstrate such cognizance by means of verbally identifying the number of parts.

(Music Description Test: Items 3 and 13.)

2. be able to appropriately describe the texture of an aurally perceived musical stimulus with such rather technical terms as monophonic, homophonic, and polyphonic. (Music Description Test: Item 35.)

3. to understand concepts such as accompaniment, and should be able to use such terminology to correctly describe the same in an aurally perceived musical stimulus. (Music Description Test: Items 13 and 16.)

**Verbal-descriptive skills in dynamics.**—Most authorities choose to subsume dynamics under rhythm or melody. Again it is acknowledged that discrete categories are not always possible when dealing with basic musical elements. In terms of using verbal descriptors to communicate about the dynamic aspects of an aurally
perceived musical stimulus, it was determined that students ought to understand the concept, dynamics, and should be able to use such related descriptive terminology as volume, intensity, change, loud, accented, full- and thin-scoring. (Music Description Test-Form F, items 6, 16, 19, 20, and 25.)

Development of the Catalogue of Verbal-Descriptors

The Catalogue of Verbal-Descriptors developed for this study (Appendix C) was compiled from a total of fourteen sources. Descriptors used are those terms employed by writers in the areas of music listening and/or music appreciation instruction to describe a musical stimulus. For example, writers say the harmony in a particular composition is complex or simple, in a relative sense. They describe melodies as being smooth or jagged, conjunct or disjunct. It might be noticed that some of the descriptors are nouns or adverbs, as well as adjectives, since they too may serve as signs to describe a musical stimulus. For the most part, descriptors of two classes were excluded from the catalogue: (1) highly technical terms, and (2) terms believed to be highly affective or of the "imagery-type." For example, neither terms such as diminished seventh nor

9See Appendix A.

10Ernst and Gary, op. cit.
statements such as "the harp lifts its beautiful head"\textsuperscript{11} are found in the catalogue. When some doubt existed, descrip-
tors were included in the catalogue; although, some authorities might classify them as logically belonging in the two excluded classes of descriptors.

Feasibility study

Since research was found to be limited in the area of musical competency under consideration, a feasibility study was conducted to determine the general appropriateness of measuring the competency identified. Ninety high school students and seventy first quarter college students participated in the study. A copy of the thirty-item test used in the feasibility study is presented in Appendix D.

The test consisted of two presentations each of thirteen musical stimuli. The presence of two to four items in a single box in the test booklet indicated that these particular items shared a musical stimulus.

In addition to the multiple items for a single musical stimulus, one other major difference will be noted in comparing the feasibility study test with the pilot and final tests (Appendices E through I). Several items in the feasibility study test necessitated that students be able to identify the sound of instruments and

\textsuperscript{11}Charles Burr, "Commentary on Benjamin Britten's 'Young Person's Guide to the Orchestra'," Columbia Phonodisk, No. MS-6027, [1959].
to select the name of the specific instrument being heard. The justification for using verbal symbols such as dark, piercing, metallic, etc., rather than instrument names, was presented in Chapter II.

The findings of the feasibility study may be summarized as follows:

1. The students found the items and the test to be very interesting, but rather difficult.

2. It was concluded that it would not be advisable to have more than one item for each musical stimulus.
   a. The students reported that they had difficulty in giving their attention to so many details—this point being substantiated in the item analysis.
   b. It was realized that if one item of a set sharing the same stimulus was deemed not acceptable after the pilot testing, real problems could result in its exclusion from the final test since an abnormally difficult item could have a significant effect upon the other items which shared the aural stimulus.

3. It was concluded that pursuing the general idea of testing such musical competence would be a viable research project.

**Development of pilot tests**

Four different pilot tests were developed, each of which contained thirty verbal-descriptive items. Four pilot
tests were developed because it was believed that a corpus of some 120 items would be necessary to provide a sufficient number of items for the final test (thirty to forty). The musical stimuli were recorded on magnetic tape, each stimulus being presented twice. These stimuli were short excerpts--five seconds to seventy-five seconds in length--which probably had not been studied by the students tested, since it was intended that the test be a measure of the students' ability to "comprehend new musical experiences." Compositions were avoided which were cited frequently in music listening or music appreciation textbooks, and of which there were more than two recorded versions available from phonograph record manufacturers in the United States.

The attempt to provide "new music experiences," was determined successful, at least for the pilot testing. Not one of the more than 800 students tested in the pilot testing could name a single composition heard. In addition, only one music teacher who cooperated in the pilot testing could name a composition, and in this case only one composition was known.

The determination of balance in items among the basic musical elements areas resulted from an application

\[\begin{align*}
12 & \text{Mueller, op. cit., p. 7.} \\
13 & \text{See Appendix A.} \\
14 & \text{Mueller, op. cit., p. 7.}
\end{align*}\]
of the "Cattell Space Method." Thirteen textbooks were analyzed to determine the relative space given to the basic element areas. A summary of this analysis is given in Table 1.

**TABLE 1**

PERCENTAGE OF PAGE SPACE GIVEN TO THE BASIC ELEMENTS IN SELECTED TEXTBOOKS

<table>
<thead>
<tr>
<th>Textbook</th>
<th>Melody</th>
<th>Rhythm</th>
<th>Harmony</th>
<th>Timbre</th>
<th>Texture</th>
<th>Dynamics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>24.5</td>
<td>16.7</td>
<td>18.4</td>
<td>32.3</td>
<td>6.7</td>
<td>1.4</td>
</tr>
<tr>
<td>B</td>
<td>8.8</td>
<td>13.1</td>
<td>18.5</td>
<td>46.2</td>
<td>10.3</td>
<td>3.0</td>
</tr>
<tr>
<td>C</td>
<td>18.5</td>
<td>11.3</td>
<td>8.6</td>
<td>55.0</td>
<td>6.6</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>16.0</td>
<td>20.6</td>
<td>20.9</td>
<td>27.2</td>
<td>15.2</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>16.9</td>
<td>31.2</td>
<td>26.9</td>
<td>16.9</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>10.5</td>
<td>21.0</td>
<td>25.0</td>
<td>20.7</td>
<td>15.2</td>
<td>7.6</td>
</tr>
<tr>
<td>G</td>
<td>8.3</td>
<td>17.5</td>
<td>8.3</td>
<td>48.6</td>
<td>10.2</td>
<td>7.1</td>
</tr>
<tr>
<td>H</td>
<td>23.0</td>
<td>27.0</td>
<td>30.1</td>
<td>7.9</td>
<td>10.5</td>
<td>1.3</td>
</tr>
<tr>
<td>I</td>
<td>18.5</td>
<td>18.8</td>
<td>34.0</td>
<td>12.0</td>
<td>13.3</td>
<td>3.5</td>
</tr>
<tr>
<td>J</td>
<td>30.6</td>
<td>16.6</td>
<td>17.6</td>
<td>33.6</td>
<td></td>
<td>1.6</td>
</tr>
<tr>
<td>K</td>
<td>2.4</td>
<td>12.9</td>
<td>12.3</td>
<td></td>
<td>72.4</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>21.1</td>
<td>11.5</td>
<td>20.6</td>
<td>32.1</td>
<td>14.5</td>
<td></td>
</tr>
<tr>
<td>M</td>
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<td>24.5</td>
<td>20.5</td>
<td>28.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>18.5</td>
<td>17.5</td>
<td>20.5</td>
<td>32.1</td>
<td>10.4</td>
<td>3.0</td>
</tr>
</tbody>
</table>


16See Appendix A.
Students who participated in the pilot testing were selected from high schools in and near a metropolitan area of Ohio whose central city had a population of approximately 60,000. A total of ten schools (city, suburban, and rural) were represented in the sample. The Ohio Department of Education's classification system\(^1\) was employed to produce a sample of schools which was somewhat representative of the state of Ohio. It was determined that public high school students (grades nine through twelve) attend the schools in the state in the following percentages: city—62 percent, county—33 percent, exempted village—5 percent. On this one variable, at least, the pilot testing samples were representative of the state in that 56 percent of the students attended city schools, while county and exempted village schools were 36 percent and 5 percent, respectively.

The samples selected within the participating schools were stratified, random samples. Stratification was employed to assure the presence of approximately an equal number of students who currently were performers and non-performers, and to insure that both vocal and instrumental performers were represented.

Within a given school half of the students taking a test were randomly selected from the vocal and instrumental

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\(^{1}\)State of Ohio, Department of Education, *Educational Directory (School Year 1968-1969)* (Columbus, Ohio: The Department, 1968).
performance groups, with each of these sub-classifications containing one-fourth of the school's sample. Non-performers were randomly selected from study hall(s). When music performers were included on the initial random "draw," subsequent random selections were employed until one-half of the school's sample was secured. No more than thirty students were selected from any one school for the administration of a pilot test—an attempt to produce a less biased student sample.

In order that the sample selection and test administration be consistently favorable, samples were selected by the investigator, who also supervised the administration of the tests. In addition, the experience also produced some insight into pragmatic problems which might be faced in the final testing, e.g., testing directions, timing, sample selection, and fatigue.

The pilot tests (Appendices A through H) were graded manually and the investigator performed all item analyses. After all student responses were plotted for each item—(1) total number for the correct response as well as for each distractor, (2) responses of upper and lower 27 percent (in terms of total test scores), and (3) responses of upper and lower 50 percent (in terms of total test scores)—item difficulties were computed. The final analysis consisted of a comparison of the upper and lower 27 percent groups for
each test. The following chi formula\(^{18}\) was employed to assess the item-test correlation for each of the 120 pilot test items:

\[
\text{Chi} = \frac{R_h - R_l - 1}{R_t (1 - \frac{R_t}{N_t-NR_t})}
\]

when: 
- \(R_h\) = the number of examinees in the high-scoring group who mark the item correctly
- \(R_l\) = the number of examinees in the low-scoring group who mark the item correctly
- \(R_t\) = \(R_h + R_l\)
- \(N_t\) = the number of examinees in the high- and low-scoring groups
- \(NR_t\) = the number of examinees in the high- and low-scoring groups who did not reach the item in time limit

Results of the difficulty and discrimination computations on the Pilot Test, Form A are given in Table 2. The difficulty level, columns two and five, simply represent the percentage of students who marked the item correctly. For the purpose of developing the final test, a range of from thirty to eighty was believed appropriate.\(^{19}\) Only items which a chi value which was significant at the .01 level of


## TABLE 2
PILOT TEST-FORM A ITEM ANALYSIS

<table>
<thead>
<tr>
<th>Item</th>
<th>Diff. Level</th>
<th>Discrim. Chi Value</th>
<th>Item</th>
<th>Diff. Level</th>
<th>Discrim. Chi Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>39</td>
<td>4.4*</td>
<td>16</td>
<td>37</td>
<td>3.6*</td>
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<td>2.8*</td>
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<tr>
<td>3</td>
<td>41</td>
<td>5.7*</td>
<td>18</td>
<td>79</td>
<td>4.6*</td>
</tr>
<tr>
<td>4</td>
<td>36</td>
<td>3.7*</td>
<td>19</td>
<td>56</td>
<td>6.0*</td>
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<td>5</td>
<td>31</td>
<td>5.0*</td>
<td>20</td>
<td>65</td>
<td>2.2</td>
</tr>
<tr>
<td>6</td>
<td>50</td>
<td>7.5*</td>
<td>21</td>
<td>25</td>
<td>3.8*</td>
</tr>
<tr>
<td>7</td>
<td>27</td>
<td>1.7</td>
<td>22</td>
<td>35</td>
<td>3.0*</td>
</tr>
<tr>
<td>8</td>
<td>45</td>
<td>3.3*</td>
<td>23</td>
<td>73</td>
<td>5.4*</td>
</tr>
<tr>
<td>9</td>
<td>32</td>
<td>5.1*</td>
<td>24</td>
<td>28</td>
<td>3.9*</td>
</tr>
<tr>
<td>10</td>
<td>41</td>
<td>6.2*</td>
<td>25</td>
<td>60</td>
<td>5.6*</td>
</tr>
<tr>
<td>11</td>
<td>32</td>
<td>4.0*</td>
<td>26</td>
<td>81</td>
<td>3.3*</td>
</tr>
<tr>
<td>12</td>
<td>69</td>
<td>7.1*</td>
<td>27</td>
<td>58</td>
<td>3.5*</td>
</tr>
<tr>
<td>13</td>
<td>43</td>
<td>5.8*</td>
<td>28</td>
<td>35</td>
<td>2.6*</td>
</tr>
<tr>
<td>14</td>
<td>35</td>
<td>0.8</td>
<td>29</td>
<td>81</td>
<td>4.6*</td>
</tr>
<tr>
<td>15</td>
<td>29</td>
<td>4.4*</td>
<td>30</td>
<td>65</td>
<td>5.6*</td>
</tr>
</tbody>
</table>

*Significant at .01 level.
significance, using the Davis formula,\textsuperscript{20} were considered for use in the final test. Employing these criteria, twenty-five of the thirty items on the Pilot Test, Form A, were considered usable on the final test.

A total of 208 students took the Form A test, with the scores being rather normally distributed. The scores ranged from three items correct to twenty-eight items correct. The median score on the thirty-item test was 15.56, with the scores distributed as found in Table 3.

\begin{table}
\centering
\caption{DISTRIBUTION OF SCORES PILOT TEST-FORM A}
\begin{tabular}{|l|l|}
\hline
Scores & Frequency \\
\hline
30-28 & 1 \\
27-25 & 3 \\
24-22 & 14 \\
21-19 & 23 \\
18-16 & 48 \\
15-13 & 48 \\
12-10 & 36 \\
9-7 & 20 \\
6-4 & 11 \\
3-1 & 1 \\
\hline
\end{tabular}
\end{table}

\textsuperscript{20}Davis, \textit{op. cit.}, pp. 289-290.
Results of the computations on Pilot Test, Form B, are given in Table 4. Twenty-two of the thirty items in the test were considered usable in the final test.

### TABLE 4
PILOT TEST-FORM B, ITEM ANALYSIS

<table>
<thead>
<tr>
<th>Item</th>
<th>Diff. Level</th>
<th>Discrim. Chi Value</th>
<th>Item</th>
<th>Diff. Level</th>
<th>Discrim. Chi Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40</td>
<td>5.4*</td>
<td>16</td>
<td>54</td>
<td>6.3*</td>
</tr>
<tr>
<td>2</td>
<td>49</td>
<td>2.3</td>
<td>17</td>
<td>30</td>
<td>1.3</td>
</tr>
<tr>
<td>3</td>
<td>55</td>
<td>4.6*</td>
<td>18</td>
<td>65</td>
<td>3.7*</td>
</tr>
<tr>
<td>4</td>
<td>32</td>
<td>5.0*</td>
<td>19</td>
<td>40</td>
<td>4.2*</td>
</tr>
<tr>
<td>5</td>
<td>57</td>
<td>4.6*</td>
<td>20</td>
<td>48</td>
<td>6.7*</td>
</tr>
<tr>
<td>6</td>
<td>55</td>
<td>2.1</td>
<td>21</td>
<td>51</td>
<td>4.4*</td>
</tr>
<tr>
<td>7</td>
<td>46</td>
<td>4.2*</td>
<td>22</td>
<td>49</td>
<td>2.1</td>
</tr>
<tr>
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<td>60</td>
<td>2.0</td>
<td>23</td>
<td>53</td>
<td>5.2*</td>
</tr>
<tr>
<td>9</td>
<td>39</td>
<td>3.8*</td>
<td>24</td>
<td>57</td>
<td>3.7*</td>
</tr>
<tr>
<td>10</td>
<td>19</td>
<td>1.6</td>
<td>25</td>
<td>54</td>
<td>3.5*</td>
</tr>
<tr>
<td>11</td>
<td>30</td>
<td>3.3*</td>
<td>26</td>
<td>73</td>
<td>3.2*</td>
</tr>
<tr>
<td>12</td>
<td>25</td>
<td>4.3*</td>
<td>27</td>
<td>44</td>
<td>3.1*</td>
</tr>
<tr>
<td>13</td>
<td>54</td>
<td>5.8*</td>
<td>28</td>
<td>92</td>
<td>2.3*</td>
</tr>
<tr>
<td>14</td>
<td>78</td>
<td>3.0*</td>
<td>28</td>
<td>68</td>
<td>6.2*</td>
</tr>
<tr>
<td>15</td>
<td>56</td>
<td>0.2</td>
<td>30</td>
<td>68</td>
<td>4.4*</td>
</tr>
</tbody>
</table>

*Significant at .01 level.
A total of 202 students took the Form B test. The curve was somewhat platykurtic, with a median score of 16.06. Scores on the Pilot Test, Form B, ranged from five items correct to twenty-six items correct. Data on the Form B test are presented in Table 5.

TABLE 5
DISTRIBUTION OF SCORES, PILOT TEST-FORM B

<table>
<thead>
<tr>
<th>Scores</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-25</td>
<td>3</td>
</tr>
<tr>
<td>24-22</td>
<td>15</td>
</tr>
<tr>
<td>21-19</td>
<td>42</td>
</tr>
<tr>
<td>18-16</td>
<td>42</td>
</tr>
<tr>
<td>15-13</td>
<td>46</td>
</tr>
<tr>
<td>12-10</td>
<td>33</td>
</tr>
<tr>
<td>9-7</td>
<td>19</td>
</tr>
<tr>
<td>6-4</td>
<td>2</td>
</tr>
</tbody>
</table>

Results of computations on Pilot Test, Form C, are reported in Table 6. Twenty-two of the thirty items on the pilot test were determined to be suitable for use in a final test.
TABLE 6
PILOT TEST-FORM C, ITEM ANALYSIS

<table>
<thead>
<tr>
<th>Item</th>
<th>Diff. Level</th>
<th>Discrim. Chi Value</th>
<th>Item</th>
<th>Diff. Level</th>
<th>Discrim. Chi Value</th>
</tr>
</thead>
<tbody>
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<td>28</td>
<td>3.0*</td>
<td>16</td>
<td>70</td>
<td>3.5*</td>
</tr>
<tr>
<td>2</td>
<td>56</td>
<td>3.6*</td>
<td>17</td>
<td>32</td>
<td>2.1</td>
</tr>
<tr>
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<td>29</td>
<td>-1.3</td>
<td>18</td>
<td>13</td>
<td>0.5</td>
</tr>
<tr>
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<td>55</td>
<td>2.2</td>
</tr>
<tr>
<td>5</td>
<td>26</td>
<td>2.7*</td>
<td>20</td>
<td>20</td>
<td>4.8*</td>
</tr>
<tr>
<td>6</td>
<td>30</td>
<td>3.1*</td>
<td>21</td>
<td>27</td>
<td>0.9</td>
</tr>
<tr>
<td>7</td>
<td>40</td>
<td>2.8*</td>
<td>22</td>
<td>48</td>
<td>4.2*</td>
</tr>
<tr>
<td>8</td>
<td>55</td>
<td>4.2*</td>
<td>23</td>
<td>18</td>
<td>1.2</td>
</tr>
<tr>
<td>9</td>
<td>52</td>
<td>4.0*</td>
<td>24</td>
<td>35</td>
<td>3.3*</td>
</tr>
<tr>
<td>10</td>
<td>26</td>
<td>4.1*</td>
<td>25</td>
<td>64</td>
<td>3.4*</td>
</tr>
<tr>
<td>11</td>
<td>57</td>
<td>4.7*</td>
<td>26</td>
<td>43</td>
<td>5.1*</td>
</tr>
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<td>5.3*</td>
<td>27</td>
<td>35</td>
<td>5.4*</td>
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<td>33</td>
<td>4.0*</td>
<td>28</td>
<td>76</td>
<td>4.0*</td>
</tr>
<tr>
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<td>44</td>
<td>7.1*</td>
<td>29</td>
<td>25</td>
<td>6.5*</td>
</tr>
<tr>
<td>15</td>
<td>18</td>
<td>.0</td>
<td>30</td>
<td>23</td>
<td>2.5</td>
</tr>
</tbody>
</table>

*Significant at .01 level.
A total of 203 students participated in the Form C pilot testing. The median test score was 11.20—the Form C test apparently being more difficult than forms A and B. The slightly skewed distribution of scores is presented in Table 7.

TABLE 7

<table>
<thead>
<tr>
<th>Scores</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-25</td>
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<tr>
<td>24-22</td>
<td>-</td>
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<tr>
<td>21-19</td>
<td>6</td>
</tr>
<tr>
<td>18-16</td>
<td>23</td>
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<tr>
<td>15-13</td>
<td>52</td>
</tr>
<tr>
<td>12-10</td>
<td>64</td>
</tr>
<tr>
<td>9-7</td>
<td>1</td>
</tr>
<tr>
<td>6-4</td>
<td>15</td>
</tr>
<tr>
<td>3-1</td>
<td>1</td>
</tr>
</tbody>
</table>

Results of computations on results from the Form D pilot test are found in Table 8. The test, administered to 201 students, produced twenty-three items believed to be usable in a final test.
**TABLE 8**

PILOT TEST FORM D, ITEM ANALYSIS

<table>
<thead>
<tr>
<th>Item</th>
<th>Diff. Level</th>
<th>Discrim. Chi Value</th>
<th>Item</th>
<th>Diff. Level</th>
<th>Discrim. Chi Value</th>
</tr>
</thead>
<tbody>
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<td>39</td>
<td>2.5</td>
</tr>
<tr>
<td>2</td>
<td>63</td>
<td>5.0*</td>
<td>17</td>
<td>45</td>
<td>0.8</td>
</tr>
<tr>
<td>3</td>
<td>33</td>
<td>3.9*</td>
<td>18</td>
<td>35</td>
<td>4.2*</td>
</tr>
<tr>
<td>4</td>
<td>59</td>
<td>3.9*</td>
<td>19</td>
<td>37</td>
<td>4.1*</td>
</tr>
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<td>47</td>
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<td>20</td>
<td>41</td>
<td>4.5*</td>
</tr>
<tr>
<td>6</td>
<td>29</td>
<td>1.0</td>
<td>21</td>
<td>49</td>
<td>3.3*</td>
</tr>
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<td>7</td>
<td>60</td>
<td>2.9*</td>
<td>22</td>
<td>37</td>
<td>3.7*</td>
</tr>
<tr>
<td>8</td>
<td>47</td>
<td>5.2*</td>
<td>23</td>
<td>51</td>
<td>6.2*</td>
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<td>34</td>
<td>3.5*</td>
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<td>39</td>
<td>6.3*</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>1.0</td>
<td>25</td>
<td>65</td>
<td>4.5*</td>
</tr>
<tr>
<td>11</td>
<td>14</td>
<td>1.9</td>
<td>26</td>
<td>60</td>
<td>6.0*</td>
</tr>
<tr>
<td>12</td>
<td>48</td>
<td>6.2*</td>
<td>27</td>
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<td>51</td>
<td>1.8</td>
<td>28</td>
<td>69</td>
<td>5.5*</td>
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<tr>
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<td>34</td>
<td>3.2*</td>
<td>29</td>
<td>74</td>
<td>2.5</td>
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<tr>
<td>15</td>
<td>49</td>
<td>4.2*</td>
<td>30</td>
<td>78</td>
<td>3.4*</td>
</tr>
</tbody>
</table>

*Significant at .01 level.
The median score for the Pilot Test, Form D, was 14.16, indicating that it appeared to be somewhat easier than the Form C test. The rather normally distributed scores are observable in Table 9.

TABLE 9
DISTRIBUTION OF SCORES PILOT TEST FORM D

<table>
<thead>
<tr>
<th>Scores</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-23</td>
<td>9</td>
</tr>
<tr>
<td>22-20</td>
<td>22</td>
</tr>
<tr>
<td>19-17</td>
<td>38</td>
</tr>
<tr>
<td>16-14</td>
<td>60</td>
</tr>
<tr>
<td>13-11</td>
<td>43</td>
</tr>
<tr>
<td>10-8</td>
<td>22</td>
</tr>
<tr>
<td>7-5</td>
<td>7</td>
</tr>
</tbody>
</table>

Development of the final test

Items for the final test (Appendix I) were selected from the pool of 120 items which had appeared on the pilot tests. They were selected upon the following criteria:

1. Were they the most appropriate items in terms of
   a. difficulty level, and
   b. discrimination?

2. Did they represent the basic element areas in the proportions found by means of the "Cattell Space Method"?\(^{21}\)

With respect to item difficulty, no item was considered for inclusion in the final test which was not marked correctly by at least 30 percent of the students in a given pilot test population. Likewise, no item was considered which was marked correctly by more than 80 percent of the subjects. In the first case, chance marking (guessing) alone gives the student a 20 percent chance of marking an item correctly. In the second case, an item would have little discriminating power if more than 80 percent of the subjects are able to select the correct response. With respect to item discrimination, an item must have produced a chi value which was at least at the .01 level of confidence to be considered for inclusion in the final test.

Although some ninety-two items were considered suitable for inclusion in the final test (based upon item difficulty level and item discrimination power), it was not possible to use all of these items. First, it was determined that the administration of the final test should take approximately forty-five minutes, thus limiting the final test to thirty-two items. Second, although there were ninety-two items determined to be usable, they were not distributed into the basic element categories in the appropriate proportions. The pilot test analyses produced an abundance of melodic and rhythmic items, but no "surplus" harmonic items. The distribution of final test items, their
pilot test origins, and their basic element classification are presented in Table 10.

**TABLE 10**

ITEMS SELECTED FOR FINAL TEST

<table>
<thead>
<tr>
<th>Item</th>
<th>Pilot Test Item No.</th>
<th>Basic Elem. Class</th>
<th>Item</th>
<th>Pilot Test Item No.</th>
<th>Basic Elem. Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>D-27</td>
<td>Timbre</td>
<td>17</td>
<td>D-12</td>
<td>Melody</td>
</tr>
<tr>
<td>2</td>
<td>C-28</td>
<td>Melody</td>
<td>18</td>
<td>B-20</td>
<td>Rhythm</td>
</tr>
<tr>
<td>3</td>
<td>B-05</td>
<td>Texture</td>
<td>19</td>
<td>A-09</td>
<td>Harmony</td>
</tr>
<tr>
<td>4</td>
<td>A-27</td>
<td>Timbre</td>
<td>20</td>
<td>A-11</td>
<td>Harmony</td>
</tr>
<tr>
<td>5</td>
<td>C-26</td>
<td>Timbre</td>
<td>21</td>
<td>D-02</td>
<td>Timbre</td>
</tr>
<tr>
<td>6</td>
<td>C-14</td>
<td>Rhythm</td>
<td>22</td>
<td>D-25</td>
<td>Harmony</td>
</tr>
<tr>
<td>7</td>
<td>B-14</td>
<td>Rhythm</td>
<td>23</td>
<td>D-04</td>
<td>Dynamics</td>
</tr>
<tr>
<td>8</td>
<td>B-24</td>
<td>Harmony</td>
<td>24</td>
<td>D-26</td>
<td>Melody</td>
</tr>
<tr>
<td>9</td>
<td>A-19</td>
<td>Melody</td>
<td>25</td>
<td>D-23</td>
<td>Texture</td>
</tr>
<tr>
<td>10</td>
<td>A-12</td>
<td>Rhythm</td>
<td>26</td>
<td>C-08</td>
<td>Timbre</td>
</tr>
<tr>
<td>11</td>
<td>D-08</td>
<td>Harmony</td>
<td>27</td>
<td>A-10</td>
<td>Rhythm</td>
</tr>
<tr>
<td>12</td>
<td>C-22</td>
<td>Harmony</td>
<td>28</td>
<td>A-13</td>
<td>Melody</td>
</tr>
<tr>
<td>13</td>
<td>B-18</td>
<td>Texture</td>
<td>29</td>
<td>C-27</td>
<td>Timbre</td>
</tr>
<tr>
<td>14</td>
<td>A-30</td>
<td>Timbre</td>
<td>30</td>
<td>A-04</td>
<td>Harmony</td>
</tr>
<tr>
<td>15</td>
<td>B-13</td>
<td>Melody</td>
<td>31</td>
<td>D-24</td>
<td>Melody</td>
</tr>
<tr>
<td>16</td>
<td>B-16</td>
<td>Timbre</td>
<td>32</td>
<td>D-14</td>
<td>Harmony</td>
</tr>
</tbody>
</table>
It will be noted in Table 11 that the final distribution of items on the final test approximated the median percentage assigned to each basic element area in the sources investigated (Appendix A).

TABLE 11

COMPARISON OF DESIRED BASIC ELEMENT DISTRIBUTION AND DISTRIBUTION ON FINAL TEST

<table>
<thead>
<tr>
<th></th>
<th>Melody</th>
<th>Rhythm</th>
<th>Harmony</th>
<th>Timbre</th>
<th>Texture</th>
<th>Dynamics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Percentage*</td>
<td>18.5</td>
<td>17.5</td>
<td>20.5</td>
<td>32.0</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Final Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of items</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Percentage</td>
<td>21.9</td>
<td>15.6</td>
<td>21.9</td>
<td>28.1</td>
<td>9.4</td>
<td>3.1</td>
</tr>
</tbody>
</table>

* See Table 1, p. 46.

It was also desired that all usable difficulty levels be represented in the final test. This distribution is presented in Table 12.

TABLE 12

FINAL TEST ITEMS: DIFFICULTY LEVELS

<table>
<thead>
<tr>
<th>Difficulty Level</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>78-70</td>
<td>3</td>
</tr>
<tr>
<td>69-60</td>
<td>6</td>
</tr>
<tr>
<td>59-50</td>
<td>8</td>
</tr>
<tr>
<td>49-40</td>
<td>8</td>
</tr>
<tr>
<td>39-32</td>
<td>7</td>
</tr>
</tbody>
</table>
Similarly, it was stated that several performance media would be represented in the final test. The distribution found in Table 13 is noticeably lacking in areas such as vocal solos and band. Items employing such media were included in the pilot tests, but they were not chosen for the thirty-two item final test since they exhibited less item discrimination power than did the items chosen.

**TABLE 13**

**ITEM DISTRIBUTION FINAL TEST: PERFORMANCE MEDIA**

<table>
<thead>
<tr>
<th>Performance Media</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chamber Ensemble (Instrumental)</td>
<td>9</td>
</tr>
<tr>
<td>Choral</td>
<td>4</td>
</tr>
<tr>
<td>Keyboard</td>
<td>7</td>
</tr>
<tr>
<td>Orchestral</td>
<td>12</td>
</tr>
</tbody>
</table>

A degree of historical balance also was desired for the final test. The objective that all major historical periods (from the Middle-Ages through the twentieth century) be represented was achieved. The distribution of the thirty-two items into these major historical periods may be observed in Table 14. Excerpts from twenty-two works by twenty-one different composers were presented as the aural stimuli on the final test (*Music Description Test*).
TABLE 14

ITEM DISTRIBUTION FINAL TEST
HISTORICAL PERIODS

<table>
<thead>
<tr>
<th>Historical Period</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle-Ages</td>
<td>1</td>
</tr>
<tr>
<td>Renaissance</td>
<td>3</td>
</tr>
<tr>
<td>Baroque</td>
<td>5</td>
</tr>
<tr>
<td>Classic</td>
<td>4</td>
</tr>
<tr>
<td>Romantic</td>
<td>10</td>
</tr>
<tr>
<td>Twentieth Century</td>
<td>7</td>
</tr>
</tbody>
</table>

Questionnaire.--Since a major concern of this study had to do with determining the possible existence of relationships between success on the final test and other factors, it was necessary to design a questionnaire. Student responses to the questionnaire provided data on grade level, sex, type and extent of music instruction experience. The questionnaire made up the first three pages on the final test, Music Description Test, and may be found in Appendix I.

Assessment of validity.--Copies of the final test, magnetic tape recordings of the musical stimuli, and statements of premises upon which the study and test were based were presented to a group of twelve music educators. This procedure had two basic purposes: (1) to secure the judgment of other persons in the profession with respect
to the basic premises upon which the study was based, and (2) to determine the face or content validity of the test.

The group of music educators, all graduate students, exhibited a considerable variety of music teaching experience. The level of their instruction experience ranged from elementary school to college. The years of experience ranged from as little as one quarter of student teaching to seven years of full-time music teaching in public schools.

A questionnaire (Appendix B) was constructed and attached to a copy of the final test (Appendix I). On the questionnaire, the music educators were asked to respond to several statements by marking one of five positions which ranged from "strongly agree" to "strongly disagree." For the purpose of averaging the responses, the following numerical values were assigned to the five positions:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th></th>
<th></th>
<th></th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>+2</td>
<td>-1</td>
<td>0</td>
<td>-1</td>
<td>-2</td>
</tr>
</tbody>
</table>

Three basic premises were presented to the group for their reaction. The range of possible values was from positive two (+2) to negative two (-2). The mean value for each statement is displayed in Table 15. There was general agreement with the statements, with statement number two, by Mueller, receiving the lowest rating. For the most part, it was concluded that the responses by this group of music
educators were supportive of the basic premises upon which the study was based.

TABLE 15
VALIDITY ANALYSIS OF SOME BASIC PREMISES

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Listening is the most important of all musical behaviors.(^a)</td>
<td>1.17</td>
</tr>
<tr>
<td>2. &quot;When we lack the proper words to use as symbols for manipulating and communicating our experience, it is doubtful if the experience is precise or vivid or clear to us.&quot;(^b)</td>
<td>0.50</td>
</tr>
<tr>
<td>7. &quot;A genuine understanding of music is dependent to a considerable extent on intellectual effort.&quot;(^c)</td>
<td>1.08</td>
</tr>
</tbody>
</table>

\(^a\) See Chapter I, p. 1.


Table 16 is concerned with the content or face validity of the test, and again there was general agreement. It was concluded, therefore, that it was appropriate and reasonable to proceed with assessing student musical achievement with the test developed for that purpose.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Do you believe that one is able to infer a particular type of music achievement from student performance on this test?</td>
<td>.67</td>
</tr>
<tr>
<td>4. The development of verbal-descriptive skills, such as those being measured by the enclosed test is necessary if a student (high school or college) is to fully understand his perceptions and if he is to be able to communicate about melodic movement, harmonic and rhythmic configuration, or if he is to discriminate in terms of timbre, texture, and dynamics aspects of musical stimuli.</td>
<td>.92</td>
</tr>
<tr>
<td>5. In your judgment, are these verbal-descriptive skills worthwhile instructional goals in music education?</td>
<td>1.00</td>
</tr>
<tr>
<td>6. Is such achievement likely to make a student a &quot;more perceptive&quot; listener?</td>
<td>1.08</td>
</tr>
<tr>
<td>9. These verbal-descriptive skills are important in increasing ones &quot;genuine understanding&quot; of music.</td>
<td>.50</td>
</tr>
<tr>
<td>10. These verbal-descriptive skills are important in increasing one's ability or capacity of finding &quot;profound values&quot; in music.</td>
<td>.67</td>
</tr>
<tr>
<td>11. The items contained on this test validly measure a student's ability to verbally describe melodic, rhythmic, harmonic, timbre, texture, and dynamics aspects of aurally perceived musical stimuli.</td>
<td>1.08</td>
</tr>
<tr>
<td>12. Is this test a logical outgrowth of instructional experiences recommended in the M.E.N.C. publication, Music in General Education?</td>
<td>.92</td>
</tr>
</tbody>
</table>
Final Activities

In order to fulfill the purposes of the study, the final procedures consisted of (1) the administration of the final test to a sample of high school students in the state of Ohio, and (2) the analysis of the data so that the questions initially raised might be answered.

Administration of the final test

Letters of invitation to participate in the study were sent to 130 randomly selected Ohio public high schools in three categories—city, county, and exempted village. A minimum of thirty schools was desired to participate in the study, with no more than forty students being selected from any one school.

The thirty-two item final test, Music Description Test, was administered to more than 1,300 high school students. A minimum population of 1,200 was considered necessary to minimize the effects of sampling errors. The students were selected from grades nine through twelve in thirty-three Ohio schools. Of these schools, twenty-one (64 percent) were in city school systems, while ten (30 percent) were in county school systems, and two (6 percent) were exempted village high schools. The percentages in the state, it will be recalled, were city—62 percent, county—33 percent, and exempted village—5 percent. In addition,
the thirty-three participating schools were dispersed throughout the state.

Data from the final testing was believed to be generalizable to the entire state. Based upon the size of the sample, the sampling procedure, and the "typicalness" of Ohio public schools and their students, it might be argued that the results of the final testing are representative of public high school students' achievement nationally; although, there was no specific intent of developing national norms for the test at the present time.

The selection of the student sample and the administration of the final test was conducted in a manner similar to that employed for the pilot testing. Instruction for the selection of students within the participating schools were sent along with test booklets, answer sheets, and magnetic tape recordings of the musical stimuli. The person in charge of testing in each participating school was asked to randomly select twenty students from a performing group. (Those participating had indicated the performance groups which could be tested when they answered the letter of invitation to participate in the study.) and to randomly selected students from a study hall. In the latter case, random selections proceeded until twenty students were secured who were not active participants in one of the
school's music performance groups. A series of random numbers was provided in the letter for the sample selection.

The selection procedures described above produced a total usable sample of 1,297. The Music Description Test was administered to more than 1,300 students, but a small number of answer sheets had to be discarded because of student misunderstanding of the directions or obvious guessing. The sample was well balanced between males (N=656) and females (N=641), but less so among the four grade levels. The distribution of the student population with respect to sex and grade level is shown in Table 17.

### TABLE 17

**DISTRIBUTION OF STUDENTS IN FINAL TEST POPULATION ACCORDING TO SEX AND GRADE LEVEL**

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>12th grade</td>
<td>151</td>
<td>162</td>
<td>313</td>
</tr>
<tr>
<td>11th grade</td>
<td>173</td>
<td>162</td>
<td>335</td>
</tr>
<tr>
<td>10th grade</td>
<td>121</td>
<td>135</td>
<td>256</td>
</tr>
<tr>
<td>9th grade</td>
<td>211</td>
<td>182</td>
<td>393</td>
</tr>
<tr>
<td>Total</td>
<td>656</td>
<td>641</td>
<td>1297</td>
</tr>
</tbody>
</table>

**Final test data**

The services of The Ohio State University Test Development Center were employed to grade the answer sheets for the Music Description Test and to transform student
responses on the answer sheet to a form usable by The Ohio State University Computer Center. Answer sheets were graded by the IBM 1230 Optical Mark Scoring Reader. Both item responses and experiential data were automatically transferred to standard IBM punched cards by means of the scoring machine which was interconnected to an IBM 534 key punch.

The O.S.U. Item Analysis Program (Appendix K) was then employed to analyze the test. The program was used to provide data on the total group as well as the following sub-groups:

1. performers (from total group)
2. non-performers (from total group)
3. ninth grade (all)
   a. performers
   b. non-performers
   c. males
   d. females
5. eleventh grade (all)
   a. performers
   b. non-performers
   c. males
   d. females
6. twelfth grade (all)
   a. performers
   b. non-performers
c. males
d. females

Since the development of a reliable test was an important aspect of this study, considerable attention was given to reliability coefficients of correlation provided by the O.S.U. Item Analysis Program. A total of sixty-nine separate coefficients were computed—three for each of the twenty-three groups or sub-groups analyzed. The coefficients produced by the program were secured by means of:

1. Kuder-Richardson formula No. 20, expressed by the formula

\[ r_{tt} = \frac{k}{k-1} \left( \frac{S^2 - \sum p \cdot q}{S^2} \right) \]

when: \( r_{tt} \) is the estimate of reliability
\( k \) is the number of items on the test
\( S \) is the standard deviation
\( p \) is the proportion passing a particular item
\( q \) is the proportion failing a particular item.

2. Kuder-Richardson formula No. 21, expressed by the formula

\[ r_{tt} = \frac{k}{k-1} \left[ 1 - \frac{\bar{x} (1 - \frac{\bar{x}}{k})}{S^2} \right] \]

when: \( r_{tt} \) is the estimate of reliability
\( k \) is the number of items on the test
\( S \) is the standard deviation
\( \bar{x} \) is the mean score of the group.

3. Odd-Even split, expressed by the formula

\[
\rho_{tt} = \frac{N \sum (O - E) - (\sum O)(\sum E)}{\sqrt{[N \sum O^2 - (\sum O)^2][N \sum E^2 - (\sum E)^2]}}
\]

when:
- \( O \) is the odd-number score
- \( E \) is the even-number score
- \( N \) is the number of pairs of scores

The Odd-Even split correlation yields a relationship between two tests of one-half the length of the true test and is corrected for attenuation by the Spearman-Brown Prophecy formula:

\[
r = \frac{2 \rho_{tt}}{1 + \rho_{tt}}
\]

The O.S.U. Item Analysis Program yielded measures of standard error for each of the three types of correlations, this being achieved by the following formula:

\[
E_{rr} = s \sqrt{1-r}
\]

when:
- \( s \) is the standard deviation, and
- \( r \) is the appropriate reliability coefficient

Other analyses performed by the O.S.U. Item Analysis Program investigate: (1) the difficulty level of each test item—the percentage of students getting an item correct, and (2) the following measures of item-test discrimination:
1. Phi Coefficient, expressed by the formula

\[ \phi = \frac{a \cdot \hat{\phi} - \beta \cdot \hat{e}}{\sqrt{p \cdot q \cdot p' \cdot q'}} \]

when: \( a \) is the ratio of the upper group answering the item correctly to the total number in the two groups
\( \beta \) is the ratio of the lower group answering the item correctly to the total number in the two groups,
and \( \hat{\phi} \) is the ratio of the upper group answering the item incorrectly to the total number in the two groups
\( \hat{e} \) is the ratio of the lower group answering the item incorrectly to the total number in the two groups

\[ p = a + \beta \]
\[ q = \hat{\phi} + \hat{e} \]
\[ p' = a + \hat{e} \]
\[ q' = \beta + \hat{e} \]

2. Point Biserial \( r \) Coefficient, expressed by the formula:

\[ \rho_{\text{bis}} = \frac{M_p - M_t}{s}. \sqrt{p/q} \]

when: \( M_p \) is the mean test score of those getting the item correct
\( M_t \) is the mean test score of the total group
\[ p \text{ is the number of students getting the item correct} \]
\[ q \text{ is the number of students getting the item wrong} \]
\[ s \text{ is the standard deviation} \]

3. D coefficient, expressed by the formula:

\[ D = u - l \]

when: \( u \) is the ratio of subjects in the upper group answering the item correctly to the total number of subjects in the upper group, and

\( l \) is the ratio of subjects in the lower group answering the item correctly to the total number of subjects in the lower group.

Finally, the O.S.U. Item Analysis Program yielded a score analysis (distribution, frequency, cumulative frequency, and percentile rank), two measures of central tendency (mean and median), standard deviation and a t-score for each individual subject taking the test. Formulae for these computations and other details on the computer program are found in Appendix K.
CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

This study, it will be recalled, had three principle objectives. First, it was determined that it would be necessary to develop a test to reliably measure high school students' verbal-descriptive attainment in relation to aurally perceived musical stimuli. Second, it was believed that the development of the test would make possible the assessment of the general status of attainment in selecting verbal descriptors to appropriately describe the melodic, rhythmic, harmonic, timbre, and dynamics aspects of aurally perceived musical stimuli by a selected population of high school students. Third, the study had as an objective the investigation of possible relationships between success on the test and other variables such as type and amount of music instruction experience, and educational level. The organization of this chapter is based upon the above cited objectives of the study—the sections being: (1) reliability of the test, (2) assessment of student attainment, and (3) background factors and attainment.
Reliability of the Music Description Test

The O.S.U. Item Analysis Program (Appendix K) produced three separate measures of reliability. In addition to the analysis of the total group to whom the final test was administered, separate analyses were performed on twenty-two sub-groups--producing sixty-nine reliability coefficients.

The sixty-nine reliability coefficients ranged from .47 to .85. The low reliability was for the separate analysis of ninth grade non-performers, which partially can be explained in terms of the largest extent of guessing. The high correlation of .85 was produced in the separate analysis of tests administered to eleventh grade females. No logical explanation could be found for this particular situation, except that this group had a rather large range of scores (three to thirty-two), which could be a factor in producing a higher coefficient.

Total group

Reliability coefficients, along with standard error measurements, are found in Table 18. In the total group analysis, reliability coefficients of .77, .75, and .79 (with standard errors of 2.59, 2.70, and 2.49, respectively) compare favorably with similar efforts in the field, especially for a test of so few items (thirty-two).
TABLE 18

MUSIC DESCRIPTION TEST: RELIABILITY COEFFICIENTS AND STANDARD ERRORS FOR TOTAL GROUP, PERFORMERS, AND NON-PERFORMERS

<table>
<thead>
<tr>
<th>Reliability Coefficients</th>
<th>Total Group (N=1,298)</th>
<th>Performers (N=905)</th>
<th>Non-Performers (N=392)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-R No. 20</td>
<td>.77</td>
<td>.74</td>
<td>.63</td>
</tr>
<tr>
<td>S.E.</td>
<td>2.59</td>
<td>2.58</td>
<td>2.58</td>
</tr>
<tr>
<td>K-R No. 21</td>
<td>.75</td>
<td>.72</td>
<td>.59</td>
</tr>
<tr>
<td>S.E.</td>
<td>2.70</td>
<td>2.69</td>
<td>2.73</td>
</tr>
<tr>
<td>Odd-Even</td>
<td>.79</td>
<td>.76</td>
<td>.65</td>
</tr>
<tr>
<td>S.E.</td>
<td>2.49</td>
<td>2.48</td>
<td>2.52</td>
</tr>
</tbody>
</table>

Performers and non-performers

Students were asked to indicate the number of years (0-9) of music performance experience in band, orchestra, and chorus, as well as years of private study. The maximum number of total annual units was thirty-six. The population tested came close to representing the entire continuum, in that the range of annual units was from zero years to thirty-two. For the purposes of the study, it was necessary to define "performer." It rather arbitrarily was decided that anyone with less than two years of total performance experience would be considered a non-performer. The application of this criterion produced 905 performers and 392 non-performers.

An analysis of the reliability data contained in Table 18 leads to the conclusion that the Music Description
Test was better suited for performers than for non-performers, based upon all three estimates of reliability. Yet, in terms of these same measures, the test appeared to be a better evaluative instrument for the more heterogeneous, total group than for either of the two sub-groups under consideration.

Grade level

A separate analysis was performed for each grade level. The twelve reliability coefficients produced by these analyses are found in Table 19. In these cases, reliability coefficients compared favorably with those computed for the total group. Only for the ninth grade, where more guessing is expected, did the test appear to be less reliable.

TABLE 19

MUSIC DESCRIPTION TEST: RELIABILITY COEFFICIENTS AND STANDARD ERRORS FOR EACH GRADE LEVEL

<table>
<thead>
<tr>
<th>Reliability Coefficients</th>
<th>9th Grade (N=393)</th>
<th>10th Grade (N=256)</th>
<th>11th Grade (N=335)</th>
<th>12th Grade (N=313)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-R No. 20</td>
<td>.70</td>
<td>.78</td>
<td>.80</td>
<td>.75</td>
</tr>
<tr>
<td>S.E.</td>
<td>2.60</td>
<td>2.59</td>
<td>2.59</td>
<td>2.57</td>
</tr>
<tr>
<td>K-R No. 21</td>
<td>.66</td>
<td>.76</td>
<td>.79</td>
<td>.73</td>
</tr>
<tr>
<td>S.E.</td>
<td>2.74</td>
<td>2.70</td>
<td>2.67</td>
<td>2.68</td>
</tr>
<tr>
<td>Odd-Even</td>
<td>.67</td>
<td>.81</td>
<td>.84</td>
<td>.77</td>
</tr>
<tr>
<td>S.E.</td>
<td>2.69</td>
<td>2.39</td>
<td>2.29</td>
<td>2.46</td>
</tr>
</tbody>
</table>
A further breakdown of grade level according to sex produced similar findings. The twenty-four reliability coefficients are reported in Table 20, and range from a low of .64 (for ninth grade males) to a high of .85 (for eleventh grade females).

**TABLE 20**

**MUSIC DESCRIPTION TEST: RELIABILITY COEFFICIENTS AND STANDARD ERRORS FOR MALES AND FEMALES, GRADES NINE THROUGH TWELVE**

<table>
<thead>
<tr>
<th></th>
<th>Reliability Coefficients and Standard Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>K-R 20</td>
</tr>
<tr>
<td>9th Grade</td>
<td></td>
</tr>
<tr>
<td>Male (N=211)</td>
<td>.68</td>
</tr>
<tr>
<td>Female (N=182)</td>
<td>.70</td>
</tr>
<tr>
<td>10th Grade</td>
<td></td>
</tr>
<tr>
<td>Male (N=121)</td>
<td>.76</td>
</tr>
<tr>
<td>Female (N=135)</td>
<td>.78</td>
</tr>
<tr>
<td>11th Grade</td>
<td></td>
</tr>
<tr>
<td>Male (N=173)</td>
<td>.80</td>
</tr>
<tr>
<td>Female (N=162)</td>
<td>.79</td>
</tr>
<tr>
<td>12th Grade</td>
<td></td>
</tr>
<tr>
<td>Male (N=151)</td>
<td>.73</td>
</tr>
<tr>
<td>Female (N=162)</td>
<td>.78</td>
</tr>
</tbody>
</table>

Finally, separate reliability coefficients were computed for performers and non-performers at each of the four grade levels. These twenty-four coefficients, found in Table 21, ranged from as low as .47 (ninth grade non-performers) to as high as .80 (tenth grade performers).
TABLE 21

MUSIC DESCRIPTION TEST: RELIABILITY COEFFICIENTS AND
STANDARD ERRORS FOR PERFORMERS AND NON-PERFORMERS,
GRADES NINE THROUGH TWELVE

<table>
<thead>
<tr>
<th>Grade</th>
<th>Performer (N)</th>
<th>Non-Performer (N)</th>
<th>Reliability Coefficients and Standard Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>K-R 20</td>
</tr>
<tr>
<td>9th</td>
<td></td>
<td></td>
<td>.67</td>
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<td></td>
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<td></td>
<td>(N=177)</td>
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<td>.68</td>
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<tr>
<td>11th</td>
<td></td>
<td></td>
<td>.74</td>
</tr>
<tr>
<td></td>
<td>(N=239)</td>
<td></td>
<td>.68</td>
</tr>
<tr>
<td>12th</td>
<td></td>
<td></td>
<td>.74</td>
</tr>
<tr>
<td></td>
<td>(N=254)</td>
<td></td>
<td>.60</td>
</tr>
</tbody>
</table>

By means of the analyses performed upon the data of the more homogeneous groups it was possible to identify possible sources which tended to lower the reliability coefficients for the total group. Reliability coefficients were lowest for: (1) ninth grade non-performers (r = .54, .47, and .51), (2) twelfth grade non-performers (r = .60, .54, and .64), and (3) non-performers from the total group (r = .63, .59, and .65). Such low coefficients were not
merely the result of the test being too difficult for these particular sub-groups. The groups having the low reliability coefficients also had especially small ranges of scores, and it has been established in statistical studies that smaller score ranges can produce lower reliability coefficients. The ranges for the ninth grade non-performers, twelfth grade non-performers, and non-performers from the total group were nineteen, seventeen, and twenty-five points, respectively, while the range for the total group was thirty points.

Low item-test correlations also might be possible sources of less reliability for the total test. Although most items had acceptable discrimination levels, four items probably should be revised in any further research efforts with the test. The O.S.U. Item Analysis Program produced three measures of item-test discrimination (Phi, point biserial, and D). In terms of these correlations, which are reproduced in Table 22, item number two is unacceptable, while items seven, nine, and twenty-six are borderline cases.


<table>
<thead>
<tr>
<th>Item</th>
<th>Relative Diff.</th>
<th>Item-Test Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Phi Coef.</td>
</tr>
<tr>
<td>1</td>
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</tr>
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<td>.05</td>
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<tr>
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<td>.58</td>
<td>.33</td>
</tr>
<tr>
<td>6</td>
<td>.55</td>
<td>.37</td>
</tr>
<tr>
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<td>.75</td>
<td>.16</td>
</tr>
<tr>
<td>8</td>
<td>.53</td>
<td>.24</td>
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<td>.15</td>
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<td>.55</td>
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<td>.38</td>
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<tr>
<td>32</td>
<td>.32</td>
<td>.29</td>
</tr>
</tbody>
</table>

**TABLE 22**

**MUSIC DESCRIPTION TEST: ITEM DIFFICULTY AND ITEM-TEST CORRELATIONS FOR THE TOTAL GROUP**
In spite of the identified sources of less reliability, it was concluded that one of the objectives of the study was achieved--the development of a reliable test. This was believed especially true for the total group, where the reliability coefficients were (from three analyses) .77, .75, and .79. Although these reliabilities would be low for a commercially available standardized test, they were considered acceptable since: (1) the test was quite short, and (2) this was a pilot study.

Assessment of Student Attainment

The second principle objective of this study was to determine the status of high school students' ability to select verbal descriptors which appropriately described the melodic, rhythmic, harmonic, timbre, textural, and dynamic aspects of aurally perceived musical stimuli. Since this was a pilot study, it was determined that this second principle objective could most appropriately be achieved simply by reporting the results of the test. Statistical tests of significant difference between means were not employed for this pilot study which, statistically, was a correlational study.

Total group

The Music Description Test was administered to more than 1,300 students, with 1,297 answer sheets being considered totally usable. In Tables 23 and 24 a slight
descrepancy will be noted. This descrepancy (1,297 versus 1,298) results from the fact that one student took the test but provided no data as to sex, educational level, and music experience. This situation was not discovered until after the test results for the total group had been analyzed. The punched card for this student was then removed and was not included in any of the subsequent runs of the O.S.U. Item Analysis Program.

The rather normally distributed raw scores of the total group are shown in Table 23, as are frequencies, cumulative frequencies, percentile rankings, and t-score transformations. Students exhibited a considerable range of competence on the behavior being assessed, with the range extending from one student who correctly answered only two items correctly to one student who missed no items. The mean for the total group was 16.98, with a standard deviation of 5.41, and a median score of 16.80 (Table 24).

An analysis of the data contained in Table 24 reveals that the population selected for the final testing was somewhat similar to those selected for the pilot testing. Median scores on Pilot Tests A, B, C, and D were 15.56, 16.06, 11.20, and 14.16, respectively, while the total group for the final testing produced a median score of 16.80. Each of the pilot tests, it will be recalled, had a total of thirty items while the Music Description Test contained thirty-two items.
TABLE 23

MUSIC DESCRIPTION TEST: TOTAL GROUP SCORE DISTRIBUTION, PERCENTILE RANK, AND T-SCORE DISTRIBUTION

<table>
<thead>
<tr>
<th>Score</th>
<th>Freq.</th>
<th>Cum. Freq.</th>
<th>Percentile</th>
<th>T-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>--</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>--</td>
</tr>
<tr>
<td>2</td>
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<td>5</td>
<td>0.39</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
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<td>11</td>
<td>0.85</td>
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<td>4</td>
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<td>21</td>
<td>1.62</td>
<td>28</td>
</tr>
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<td>5</td>
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<td>25</td>
<td>1.93</td>
<td>30</td>
</tr>
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<td>20</td>
<td>45</td>
<td>3.47</td>
<td>32</td>
</tr>
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<td>7</td>
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<td>70</td>
<td>5.39</td>
<td>33</td>
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<td>8.17</td>
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<td>9</td>
<td>49</td>
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<td>271</td>
<td>20.88</td>
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<td>12</td>
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<td>48</td>
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<td>17</td>
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<td>784</td>
<td>60.40</td>
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<td>91.53</td>
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<td>31</td>
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<td>1298</td>
<td>100.00</td>
<td>78</td>
</tr>
</tbody>
</table>
TABLE 24

MUSIC DESCRIPTION TEST: MEANS SCORES, STANDARD DEVIATIONS, 
AND MEDIAN SCORES FOR THE TOTAL GROUP, 
PERFORMERS AND NON-PERFORMERS

<table>
<thead>
<tr>
<th></th>
<th>Total Group (N=1,298)</th>
<th>Performer (N=905)</th>
<th>Non-Performer (N=392)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>16.98</td>
<td>18.58</td>
<td>13.30</td>
</tr>
<tr>
<td>S.D.</td>
<td>5.41</td>
<td>5.04</td>
<td>4.26</td>
</tr>
<tr>
<td>Median</td>
<td>16.80</td>
<td>18.74</td>
<td>13.15</td>
</tr>
</tbody>
</table>

In order to get more specific data regarding student behavior in relation to the Music Description Test, attention is directed to Table 25 and to specific test items. The total group found the following five items to be least difficult (Rel. Diff. = .75 to .71):

4. The vibrato of the solo string instrument helps bring about a more _____ tone.
   a. warm  c. shrill
   b. metallic  d. brittle
   e. crisp
   (Rel. Diff. = .75)

7. Rhythmically this passage is best described as being
   a. vigorous and complex  c. weak and complex
   b. vigorous and simple  d. weak and simple
   e. slow and elastic
   (Rel. Diff. = .75)
### TABLE 25

**MUSIC DESCRIPTION TEST: RELATIVE DIFFICULTY OF ITEMS FOR THE TOTAL GROUP, PERFORMERS, AND NON-PERFORMERS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Relative Difficulty</th>
<th>Item</th>
<th>Relative Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Group</td>
<td></td>
<td>Per.</td>
</tr>
<tr>
<td>1</td>
<td>.73</td>
<td>17</td>
<td>.47</td>
</tr>
<tr>
<td>2</td>
<td>.71</td>
<td>18</td>
<td>.39</td>
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<td>.27</td>
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<td>4</td>
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<td>.55</td>
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<td>.35</td>
</tr>
<tr>
<td>16</td>
<td>.45</td>
<td>32</td>
<td>.32</td>
</tr>
</tbody>
</table>
1. The tone of the solo instrument is
   a. thin  
   b. muffled  
   c. dry  
   d. penetrating  
   e. coarse  

   (Rel. Diff. = .73)

12. Which of the announced cadence points has the most surprising chord?
   a. one  
   b. two  
   c. three  
   d. four  
   e. five  

   (Rel. Diff. = .72)

2. For the most part, the melody played by the solo instrument is best described as being
   a. smooth and in the high register  
   b. smooth and in the low register  
   c. jagged and in the high register  
   d. jagged and in the middle register  
   e. jagged and in the low register  

   (Rel. Diff. = .71)

The items which the total group found to be relatively easy do not appear to be of any one type. As for basic element areas; timbre, rhythm, harmony, and melody are represented. The students even exhibited an understanding of one of the more technical terms found on the test—vibrato.

The total group found the following items to be difficult:
19. The second (contrasting) section in this excerpt is contrasted with the first section in all of the following ways except:

a. abrupt change of dynamic level
b. abrupt key change
c. a more important bass line
d. a bass line which is more melodic
e. more importance for violins and less for woodwinds

(Rel. Diff. = .27)

30. You are about to hear five related passages. Select the version having the most complex harmony.

a. A
b. B
c. C
d. D
e. E

(Rel. Diff. = .29)

32. In this excerpt the music seldom comes to a point of repose. The most likely reason for this is that the harmony is

a. simple rather than complex
b. static rather than active
c. "conventional"
d. tonally obscure
e. rich

(Rel. Diff. = .32)

31. This passage is best described as

a. ponderous
c. lilting
b. awkward
d. serene
e. passive

(Rel. Diff. = .35)
20. Toward the end of the passage greater excitement is achieved by all of the following except:

a. having the violins play in a higher register  
c. adding a second melody in the bass instruments  
b. increasing activity in the percussion section  
d. increasing the volume  
e. changing the tonal center  

(Hel. Diff. = .36)

The total group analysis suggested that students had particular difficulty with certain types of items. Items nineteen and twenty are quite similar and are rather complex in that students are to select the one thing which does not occur. In neither case is there a change in key or tonality. In item number nineteen, distractor "a" was quite popular, while in item number twenty "c" was chosen by 284 students. Items thirty and thirty-two, which also were difficult for the total group, deal with similar concepts. Students overwhelmingly selected version "d" for item thirty—a version which was quite syncopated but much less complex harmonically than was version "c." In the case of item thirty-one, students tended to hear the madrigal as being "awkward" rather than "lilting."

Performers and non-performers

Students who were classified as "performers" had appreciably higher mean and median scores than did those who were considered to be "non-performers." Any student with less than a total of two annual performance units (band, orchestra, chorus, private lessons) was classified
as a "non-performer." The median score for performers was 18.74, while the mean was 18.58 with a standard deviation of 5.04. The non-performance group produced median and mean scores of 13.15 and 13.30, respectively, with a standard deviation of 4.26. These data are displayed in Table 24.

Scores distributions for performers and non-performers are found in Table 26. Scores for the 905 students classified as performers ranged from a low of five items correct to a high of thirty-two items correct. For the non-performers the range was from two to twenty-seven.

### TABLE 26

**MUSIC DESCRIPTION TEST: SCORE DISTRIBUTION--PERFORMERS AND NON-PERFORMERS**

<table>
<thead>
<tr>
<th>Score</th>
<th>Performers (N=905)</th>
<th>Non-Performers (N=392)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 - 31</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>30 - 28</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>27 - 25</td>
<td>74</td>
<td>2</td>
</tr>
<tr>
<td>24 - 22</td>
<td>159</td>
<td>9</td>
</tr>
<tr>
<td>21 - 19</td>
<td>203</td>
<td>33</td>
</tr>
<tr>
<td>18 - 16</td>
<td>189</td>
<td>68</td>
</tr>
<tr>
<td>15 - 13</td>
<td>143</td>
<td>114</td>
</tr>
<tr>
<td>12 - 10</td>
<td>70</td>
<td>95</td>
</tr>
<tr>
<td>9 - 7</td>
<td>30</td>
<td>51</td>
</tr>
<tr>
<td>6 - 4</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>3 - 1</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

Relative difficulty levels of each item for the total group, performers, and non-performers were presented in Table 25. In no case did the non-performers find an item to be less difficult than did the performers. Relative
difficulty levels of each item for non-performers were subtracted from those for performers. This was accomplished to gain more insight into items and item types where performers and non-performers tended to be similar to dissimilar.

The performers and non-performers differed very little (less than five percentage points) with respect to the difficulty level of the following items, two of which are quite similar:

2. For the most part, the melody played by the solo instrument is best described as being
   a. smooth and in the high register
   b. smooth and in the low register
   c. jagged and in the high register
   d. jagged and in the middle register
   e. jagged and in the low register

9. The melody is best described as being
   a. jagged-covering a large range
   b. jagged-covering a small range
   c. smooth-covering a large range
   d. smooth-covering a small range
   e. flowing

4. The vibrato of the solo string instrument helps bring about a more tone.
   a. warm
   b. metallic
   c. shrill
   d. brittle
   e. crisp

On the other hand, performers and non-performers differed greatly in their response to items ten, eighteen, twenty-four, and twenty-eight. For these items, which
follow, the difficulty levels differ from twenty-six to thirty percentage points.

24. The style of articulation in this passage is best described as being

   a. smooth
   b. detached
   c. serene
   d. flowing
   e. graceful

18. This passage contains four phrases. Which combination of phrases contains the most syncopation?

   a. phrases 1 and 2
   b. phrases 1 and 3
   c. phrases 1 and 4
   d. phrases 2 and 3
   e. phrases 3 and 4

10. With respect to tempo, the passage

   a. gradually slows down
   b. gradually accelerates
   c. has an elastic beat
   d. has a very strict beat
   e. abruptly changes pace to a much slower tempo near the end

28. The single melodic motive heard most is based on

   a. an ascending scale
   b. a descending scale
   c. an ascending broken chord
   d. a descending broken chord
   e. a single tone repeated four times

The items on which performers and non-performers differed most (items twenty-four, eighteen, ten, and twenty-eight) did not appear to fit any particular pattern. A total of 143 non-performers selected the correct answer for
item twenty-four, with more than eighty selecting distractors "d" and "e." Item eighteen presented a problem for the non-performer for one of several reasons: (1) not understanding "syncopation," (2) not understanding "phrase," or (3) not perceiving either. No distractor was particularly popular for item eighteen. In the case of item ten, non-performers mistook tempo *rubato* for "gradually accelerating throughout" (distractor "b"). The non-performers also found item twenty-eight to be rather difficult, in that only twenty percent marked it correctly. Again, no distractor was particularly "popular."

**Grade level**

A separate analysis for each grade level (nine through twelve) produced the score distributions, measures of central tendency, and standard deviations found in Tables 27 and 28. The range of scores for the twelfth grade (7-30) was the smallest, while the other grade levels produced the following ranges: grade nine (3-29), grade ten (2-30), and grade eleven (3-32).

At each grade level the scores appeared to be rather normally distributed, with the mean scores for all four grade levels being within two points of the mean score for the total group. It was concluded, therefore, that the verbal-descriptive skills under consideration were valid for grades nine through twelve insofar as the level of difficulty was concerned.
### TABLE 27
MUSIC DESCRIPTION TEST: SCORE DISTRIBUTION--GRADES NINE THROUGH TWELVE

<table>
<thead>
<tr>
<th>Score</th>
<th>9th Grade</th>
<th>10th Grade</th>
<th>11th Grade</th>
<th>12th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 - 31</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>30 - 28</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>27 - 25</td>
<td>9</td>
<td>15</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>24 - 22</td>
<td>30</td>
<td>26</td>
<td>48</td>
<td>64</td>
</tr>
<tr>
<td>21 - 19</td>
<td>55</td>
<td>49</td>
<td>64</td>
<td>68</td>
</tr>
<tr>
<td>18 - 16</td>
<td>85</td>
<td>54</td>
<td>64</td>
<td>54</td>
</tr>
<tr>
<td>15 - 13</td>
<td>104</td>
<td>51</td>
<td>49</td>
<td>53</td>
</tr>
<tr>
<td>12 - 10</td>
<td>72</td>
<td>28</td>
<td>41</td>
<td>24</td>
</tr>
<tr>
<td>9 - 7</td>
<td>25</td>
<td>20</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>6 - 4</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>3 - 1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

### TABLE 28
MUSIC DESCRIPTION TEST: MEAN SCORES, STANDARD DEVIATIONS, AND MEDIAN SCORES FOR GRADES NINE THROUGH TWELVE

<table>
<thead>
<tr>
<th></th>
<th>9th Grade (N=393)</th>
<th>10th Grade (N=256)</th>
<th>11th Grade (N=335)</th>
<th>12th Grade (N=313)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>15.44</td>
<td>16.66</td>
<td>17.55</td>
<td>18.58</td>
</tr>
<tr>
<td>S.D.</td>
<td>4.72</td>
<td>5.48</td>
<td>5.77</td>
<td>5.17</td>
</tr>
<tr>
<td>Median</td>
<td>15.03</td>
<td>16.63</td>
<td>17.59</td>
<td>18.90</td>
</tr>
</tbody>
</table>
Grade level, male and female.—The grade level categories were further analyzed according to sex. Score distributions and related data are found in Tables 29 and 30. The mean scores ranged from 14.87 (ninth grade boys) to 18.72 (twelfth grade girls). The eight mean scores all were within 2.11 points of the mean computed for the total group.

### TABLE 29

**MUSIC DESCRIPTION TEST: SCORE DISTRIBUTION**

**GRADES NINE THROUGH TWELVE**

**MALES AND FEMALES**

<table>
<thead>
<tr>
<th>Scores</th>
<th>9th Grade</th>
<th>10th Grade</th>
<th>11th Grade</th>
<th>12th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>32 - 31</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30 - 28</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>27 - 25</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>24 - 22</td>
<td>12</td>
<td>18</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>21 - 19</td>
<td>31</td>
<td>24</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>18 - 16</td>
<td>40</td>
<td>45</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>15 - 13</td>
<td>56</td>
<td>48</td>
<td>30</td>
<td>21</td>
</tr>
<tr>
<td>12 - 10</td>
<td>46</td>
<td>26</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>9 - 7</td>
<td>15</td>
<td>10</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>6 - 4</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3 - 1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>211</td>
<td>182</td>
<td>121</td>
<td>135</td>
</tr>
</tbody>
</table>

The scores of the twelfth grade boys exhibited the smallest range (thirty-two points) while the scores of the eleventh grade girls had the largest range (twenty-nine points). The large range of scores for eleventh grade girls was mentioned earlier as a possible contributor to
the high reliability coefficients for that sub-group. Although the ninth grade boys did appear to display less skill in verbally describing aural musical stimuli, all eight sub-groups possessed skills to such an extent that they could be measured by the Music Description Test.

**TABLE 30**

**MUSIC DESCRIPTION TEST MEAN SCORES, STANDARD DEVIATIONS, AND MEDIAN SCORES FOR GRADES NINE THROUGH TWELVE—MALES AND FEMALES**

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Male (N)</th>
<th>Female (N)</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th Grade</td>
<td>14.87 (N=211)</td>
<td>16.10 (N=182)</td>
<td>14.24</td>
<td>4.60</td>
<td>15.74</td>
</tr>
<tr>
<td>10th Grade</td>
<td>15.55 (N=121)</td>
<td>17.66 (N=135)</td>
<td>15.43</td>
<td>5.22</td>
<td>18.11</td>
</tr>
<tr>
<td>11th Grade</td>
<td>16.79 (N=173)</td>
<td>18.35 (N=162)</td>
<td>16.96</td>
<td>5.82</td>
<td>18.86</td>
</tr>
<tr>
<td>12th Grade</td>
<td>18.42 (N=151)</td>
<td>18.72 (N=162)</td>
<td>18.94</td>
<td>4.93</td>
<td>18.83</td>
</tr>
</tbody>
</table>

Grade level—performers and non-performers.—Finally, separate analyses were made both for performers (two or more years of performance experience) and non-performers, at each of the four grade levels. Score distributions and related data for the eight sub-groups are found in Tables 31 and 32. Mean scores of these groups were within 3.30
### TABLE 31

**MUSIC DESCRIPTION TEST: SCORE DISTRIBUTION GRADES**

**NINE THROUGH TWELVE, PERFORMERS AND NON-PERFORMERS**

<table>
<thead>
<tr>
<th>Score</th>
<th>9th Grade</th>
<th>10th Grade</th>
<th>11th Grade</th>
<th>12th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-31</td>
<td>0 0</td>
<td>0 0</td>
<td>1 0</td>
<td>0 0</td>
</tr>
<tr>
<td>30-28</td>
<td>4 0</td>
<td>6 0</td>
<td>8 0</td>
<td>14 0</td>
</tr>
<tr>
<td>27-25</td>
<td>9 0</td>
<td>14 1</td>
<td>31 0</td>
<td>20 1</td>
</tr>
<tr>
<td>24-22</td>
<td>27 3</td>
<td>24 2</td>
<td>46 2</td>
<td>62 2</td>
</tr>
<tr>
<td>21-19</td>
<td>48 7</td>
<td>44 5</td>
<td>57 7</td>
<td>54 14</td>
</tr>
<tr>
<td>18-16</td>
<td>64 21</td>
<td>39 15</td>
<td>46 18</td>
<td>40 14</td>
</tr>
<tr>
<td>15-13</td>
<td>59 45</td>
<td>23 28</td>
<td>28 21</td>
<td>33 20</td>
</tr>
<tr>
<td>12-10</td>
<td>25 47</td>
<td>17 11</td>
<td>17 24</td>
<td>11 13</td>
</tr>
<tr>
<td>9-7</td>
<td>8 17</td>
<td>9 11</td>
<td>4 17</td>
<td>9 6</td>
</tr>
<tr>
<td>6-4</td>
<td>2 6</td>
<td>1 5</td>
<td>1 4</td>
<td>0 0</td>
</tr>
<tr>
<td>3-1</td>
<td>0 1</td>
<td>0 1</td>
<td>0 3</td>
<td>0 0</td>
</tr>
<tr>
<td>Total</td>
<td>246 147</td>
<td>177 79</td>
<td>239 96</td>
<td>243 70</td>
</tr>
</tbody>
</table>

Points of the mean for the total group (16.98), ranging from 12.68 (eleventh grade non-performers) to 19.55 (twelfth grade performers).

The eleventh grade non-performers, followed closely by the tenth grade non-performers (mean = 13.27), had greater difficulty with the test than did any of the other twenty-two sub-groups.

In summary, the verbal-descriptive skills under consideration in this research appeared to be possessed to some degree by all sub-groups studied. In most cases the individual scores seemed to be normally distributed within these sub-groups, with mean and median scores in close agreement.
## TABLE 32

**MUSIC DESCRIPTION TEST: MEAN SCORES, STANDARD DEVIATIONS, AND MEDIAN SCORES FOR GRADES NINE THROUGH TWELVE—PERFORMERS AND NON-PERFORMERS**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Performer</th>
<th>Non-Performer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N=246)</td>
<td>(N=147)</td>
</tr>
<tr>
<td>9th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>17.02</td>
<td>12.81</td>
</tr>
<tr>
<td>SD</td>
<td>4.53</td>
<td>3.76</td>
</tr>
<tr>
<td>Median</td>
<td>16.74</td>
<td>12.63</td>
</tr>
<tr>
<td>10th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performer</td>
<td>(N=177)</td>
<td>(N=79)</td>
</tr>
<tr>
<td>Mean</td>
<td>18.18</td>
<td>13.27</td>
</tr>
<tr>
<td>SD</td>
<td>5.19</td>
<td>4.54</td>
</tr>
<tr>
<td>Median</td>
<td>18.47</td>
<td>13.55</td>
</tr>
<tr>
<td>11th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performer</td>
<td>(N=239)</td>
<td>(N=96)</td>
</tr>
<tr>
<td>Mean</td>
<td>19.50</td>
<td>12.68</td>
</tr>
<tr>
<td>SD</td>
<td>5.00</td>
<td>4.53</td>
</tr>
<tr>
<td>Median</td>
<td>19.84</td>
<td>12.50</td>
</tr>
<tr>
<td>12th Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performer</td>
<td>(N=243)</td>
<td>(N=70)</td>
</tr>
<tr>
<td>Mean</td>
<td>19.55</td>
<td>15.20</td>
</tr>
<tr>
<td>SD</td>
<td>5.04</td>
<td>4.09</td>
</tr>
<tr>
<td>Median</td>
<td>19.80</td>
<td>14.93</td>
</tr>
</tbody>
</table>

The groups studied did appear to differ somewhat, with mean scores differing as much as 6.87 points. The sub-groups are ranked according to mean and median scores in Tables 33 and 34.

No statistical tests of significant difference were employed in the assessment of student attainment on the Music Description Test, since this was a correlational study. In the section which follows, however, attention is given to the investigation of possible relationships between the degree of success on the test and various background factors, such as the categories listed in Tables 33 and 34.
<table>
<thead>
<tr>
<th>Rank Order</th>
<th>Sub-Group</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12th Grade Performers</td>
<td>19.55</td>
</tr>
<tr>
<td>2</td>
<td>11th Grade Performers</td>
<td>19.50</td>
</tr>
<tr>
<td>3</td>
<td>12th Grade Females</td>
<td>18.72</td>
</tr>
<tr>
<td>4.5</td>
<td>Performers (Total Group)</td>
<td>18.58</td>
</tr>
<tr>
<td>4.5</td>
<td>12th Grade (Total Group)</td>
<td>18.58</td>
</tr>
<tr>
<td>6</td>
<td>12th Grade Males</td>
<td>18.42</td>
</tr>
<tr>
<td>7</td>
<td>11th Grade Females</td>
<td>18.35</td>
</tr>
<tr>
<td>8</td>
<td>10th Grade Performers</td>
<td>18.18</td>
</tr>
<tr>
<td>9</td>
<td>10th Grade Females</td>
<td>17.66</td>
</tr>
<tr>
<td>10</td>
<td>11th Grade (Total Group)</td>
<td>17.55</td>
</tr>
<tr>
<td>11</td>
<td>9th Grade Performers</td>
<td>17.02</td>
</tr>
<tr>
<td>12</td>
<td>11th Grade Males</td>
<td>16.79</td>
</tr>
<tr>
<td>13</td>
<td>10th Grade (Total Group)</td>
<td>16.66</td>
</tr>
<tr>
<td>14</td>
<td>9th Grade Females</td>
<td>16.10</td>
</tr>
<tr>
<td>15</td>
<td>10th Grade Males</td>
<td>15.55</td>
</tr>
<tr>
<td>16</td>
<td>9th Grade (Total Group)</td>
<td>15.44</td>
</tr>
<tr>
<td>17</td>
<td>12th Grade Non-Performers</td>
<td>15.20</td>
</tr>
<tr>
<td>18</td>
<td>9th Grade Males</td>
<td>14.87</td>
</tr>
<tr>
<td>19</td>
<td>Non-Performers (Total Group)</td>
<td>13.30</td>
</tr>
<tr>
<td>20</td>
<td>10th Grade Non-Performers</td>
<td>13.27</td>
</tr>
<tr>
<td>21</td>
<td>9th Grade Non-Performers</td>
<td>12.81</td>
</tr>
<tr>
<td>22</td>
<td>11th Grade Non-Performer</td>
<td>12.68</td>
</tr>
</tbody>
</table>
TABLE 34

MUSIC DESCRIPTION TEST: RANK ORDER OF THE TWENTY-TWO SUB-GROUPS ACCORDING TO MEDIAN SCORES

<table>
<thead>
<tr>
<th>Rank Order</th>
<th>Sub-Group</th>
<th>Median Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11th Grade Performers</td>
<td>19.84</td>
</tr>
<tr>
<td>2</td>
<td>12th Grade Performers</td>
<td>19.80</td>
</tr>
<tr>
<td>3</td>
<td>12th Grade Males</td>
<td>18.94</td>
</tr>
<tr>
<td>4</td>
<td>12th Grade (Total Group)</td>
<td>18.90</td>
</tr>
<tr>
<td>5</td>
<td>11th Grade Females</td>
<td>18.86</td>
</tr>
<tr>
<td>6</td>
<td>12th Grade Females</td>
<td>18.83</td>
</tr>
<tr>
<td>7</td>
<td>Performers (Total Group)</td>
<td>18.74</td>
</tr>
<tr>
<td>8</td>
<td>10th Grade Performers</td>
<td>18.47</td>
</tr>
<tr>
<td>9</td>
<td>10th Grade Females</td>
<td>18.11</td>
</tr>
<tr>
<td>10</td>
<td>11th Grade (Total Group)</td>
<td>17.59</td>
</tr>
<tr>
<td>11</td>
<td>11th Grade Males</td>
<td>16.96</td>
</tr>
<tr>
<td>12</td>
<td>9th Grade Performers</td>
<td>16.74</td>
</tr>
<tr>
<td>13</td>
<td>10th Grade (Total Group)</td>
<td>16.63</td>
</tr>
<tr>
<td>14</td>
<td>9th Grade Females</td>
<td>15.74</td>
</tr>
<tr>
<td>15</td>
<td>10th Grade Males</td>
<td>15.43</td>
</tr>
<tr>
<td>16</td>
<td>9th Grade (Total Group)</td>
<td>15.03</td>
</tr>
<tr>
<td>17</td>
<td>12th Grade Non-Performers</td>
<td>14.93</td>
</tr>
<tr>
<td>18</td>
<td>9th Grade Males</td>
<td>14.24</td>
</tr>
<tr>
<td>19</td>
<td>10th Grade Non-Performers</td>
<td>13.55</td>
</tr>
<tr>
<td>20</td>
<td>Non-Performers (Total Group)</td>
<td>13.15</td>
</tr>
<tr>
<td>21</td>
<td>9th Grade Non-Performers</td>
<td>12.63</td>
</tr>
<tr>
<td>22</td>
<td>11th Grade Non-Performers</td>
<td>12.50</td>
</tr>
</tbody>
</table>
Background Factors and Attainment

The third principle objective of this study was to investigate possible relationships between student performance on the Music Description Test-Form F and various other factors. Nineteen coefficients of correlation were computed to determine if factors such as sex, educational level, types of music instruction experience, and the number of years of such instructional experience were related to success on the test. Specifically, correlation coefficients were computed between test scores and the factors which follow:

1. Sex
2. Grade level for
   a. The total group
   b. Males
   c. Females
   d. Students with two or more annual units of performance experience
   e. Students with zero to one annual units of music performance experience
   f. Students with four or more years of band
   g. Students with four or more years of orchestra
   h. Students with four or more years of chorus
3. The type and extent of music experience, which follow:
a. Total annual units of performance experience
   (band, orchestra, chorus, and private study)
b. Number of years in band
c. Number of years in orchestra
d. Number of years in chorus
e. Number of years of private study
f. Number of years of general music
g. Presence or absence of music theory instruction
h. Presence or absence of music appreciation instruction
i. Band, orchestra, or chorus—as discrete categories (no student considered who had experience in more than one type of performance group)
j. Performance (two or more years of performance experience)—non-performance (0-1 years of performance experience).

Statistical considerations

The scores provided by the Music Description Test clearly were interval data, but it was not possible to employ any measure of correlation higher than the nominal level. Although some of the educational level and experiential data could be considered ordinal, no meaningful use could be made of ordinal measures of correlation because of the large number of ties.
It was concluded, therefore, that the contingency coefficient\(^1\) would be the most appropriate measure of possible relationships between the students' test scores and other factors. In order to compute the contingency coefficient (C), it is first necessary to determine the chi square value, expressed by the formula:\(^2\)

\[
\chi^2 = \sum \frac{(O - E)^2}{E}
\]

when \(O\) is the obtained frequency in a cell, and \(E\) is the expected frequency in a cell, computed by dividing the product of the appropriate marginal frequencies by the total in the sample.

The contingency coefficient of correlation then may be computed by the following formula:\(^3\)

\[
C = \sqrt{\frac{\chi^2}{N + \chi^2}}
\]

The contingency coefficient does present some problems in interpretation, since: (1) its maximum theoretical limit is determined by the number of cells in the chi


\(^3\)Siegel, op. cit., p. 197.
square table, and (2) it never produces a correlation having a negative sign, the presence of a negative correlation being determined by observing the table itself.

When a table has an equal number of columns and rows, \( k \) by \( k \), the upper limit for "C" is determined by the formula:

\[
\text{Upper limit} = \sqrt{(k - 1)(k)}
\]

The actual upper limit of "C" when there is an unequal number of columns and rows is unknown.\(^5\) Some authorities state that the upper limit for a \( 3 \times 4 \) table is identical with that for a \( 3 \times 3 \) table.\(^6\) Others observe that the upper limit for a \( 3 \times 4 \) table probably lies between that for a \( 3 \times 3 \) table and that for a \( 4 \times 4 \) table.\(^7\) In the sections which follow, the upper theoretical limit for any "C" will be cited to provide the reader with a frame of reference.

There is no test of significance for the contingency coefficient value; however, it is possible to determine the statistical level of significance for any given "C" value.\(^8\)

\(^5\)Siegel, op. cit., pp. 200-201. 
\(^7\)McNemar, op. cit., p. 200. 
\(^8\)Downie and Heath, op. cit., p. 212.
To do so it is necessary to determine the significance of the chi square value used to obtain the "C" value, a procedure which necessitates knowing both the $\chi^2$ value and the number of degrees of freedom (df).

**Relationship of test scores to sex**

A total of 656 male, and 641 female students participated in the final testing. Test scores were grouped, forming four score categories. The grouped scores, in combination with the dichotomy, male-female, formed a $2 \times 4$ table (Table 35), whose highest possible "C" value was between .71 and .87. The scores appeared to be very slightly related to sex, with the girls being somewhat more competent. The "C" value was .13—a correlation which was significant beyond the .001 level of significance.

```
<table>
<thead>
<tr>
<th>Test Score</th>
<th>Male (N=656)</th>
<th>Female (N=641)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-24</td>
<td>61</td>
<td>102</td>
</tr>
<tr>
<td>23-16</td>
<td>295</td>
<td>312</td>
</tr>
<tr>
<td>15-8</td>
<td>273</td>
<td>210</td>
</tr>
<tr>
<td>7-0</td>
<td>27</td>
<td>17</td>
</tr>
</tbody>
</table>

N=1,297; $\chi^2=48.32$; df=3; $C=.13$; Sig. beyond .001 level.
```
A total of eight different correlations were computed to investigate the possibility of relationships existing between test scores and grade level. All eight correlations were positive (based upon inspections of the contingency tables). That is to say, students appeared to be slightly more successful on the test in the successive years of high school (grades nine through twelve).

The correlation between test grade and grade level was found to be .22 (upper possible limit = .87), based on the data presented in Table 36. The "C" value of .22, with nine degrees of freedom was determined to be significant beyond the .001 level.

<table>
<thead>
<tr>
<th>Test Score</th>
<th>9th Grade (N=393)</th>
<th>10th Grade (N=256)</th>
<th>11th Grade (N=335)</th>
<th>12th Grade (N=323)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 - 24</td>
<td>22</td>
<td>29</td>
<td>57</td>
<td>55</td>
</tr>
<tr>
<td>23 - 16</td>
<td>161</td>
<td>121</td>
<td>159</td>
<td>176</td>
</tr>
<tr>
<td>15 - 8</td>
<td>195</td>
<td>94</td>
<td>106</td>
<td>88</td>
</tr>
<tr>
<td>7 - 0</td>
<td>15</td>
<td>12</td>
<td>13</td>
<td>4</td>
</tr>
</tbody>
</table>

N=1,297; $\chi^2=65.80; df=9; C=.22; \text{Sig. beyond .001 level.}$
Computations for males and females, considered separately, produced similar coefficients to that for the total group when the variables under consideration were test grade and grade level. The correlation of grades and grade level for males (Table 37) was .19—a value significant beyond the .01 level. Data for female students (Table 38) produced a "C" value of .20, which was considered significant beyond the .001 level. In both cases the upper theoretical level for "C" was .87.

**TABLE 37**

_ FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND GRADE LEVEL FOR MALE STUDENTS_

<table>
<thead>
<tr>
<th>Test Score</th>
<th>9th Grade (N=393)</th>
<th>10th Grade (N=256)</th>
<th>11th Grade (N=335)</th>
<th>12th Grade (N=323)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-24</td>
<td>10</td>
<td>9</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>23-16</td>
<td>113</td>
<td>51</td>
<td>78</td>
<td>86</td>
</tr>
<tr>
<td>15-8</td>
<td>80</td>
<td>56</td>
<td>62</td>
<td>42</td>
</tr>
<tr>
<td>7-0</td>
<td>8</td>
<td>5</td>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>

N=656; $\chi^2=23.52$; df = 9; C=.19; Sig. at .01 level.
TABLE 38

FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND GRADE LEVEL FOR FEMALE STUDENTS

<table>
<thead>
<tr>
<th>Test Score</th>
<th>9th Grade (N=182)</th>
<th>10th Grade (N=135)</th>
<th>11th Grade (N=162)</th>
<th>12th Grade (N=162)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-24</td>
<td>14</td>
<td>20</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>23-16</td>
<td>81</td>
<td>70</td>
<td>81</td>
<td>80</td>
</tr>
<tr>
<td>15-8</td>
<td>82</td>
<td>38</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>7-0</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

N=641; $r^2=29.67$; df=9; C=.20; Sig. beyond .001 level.

Data found in Tables 39 and 40 produced a correlation of .20 between test grade and grade level for performers, and a similar correlation of .20 for non-performers. These

TABLE 39

FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND GRADE LEVEL FOR PERFORMERS

<table>
<thead>
<tr>
<th>Test Score</th>
<th>9th Grade (N=246)</th>
<th>10th Grade (N=177)</th>
<th>11th Grade (N=238)</th>
<th>12th Grade (N=243)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-24</td>
<td>22</td>
<td>27</td>
<td>56</td>
<td>54</td>
</tr>
<tr>
<td>23-16</td>
<td>130</td>
<td>100</td>
<td>132</td>
<td>136</td>
</tr>
<tr>
<td>15-8</td>
<td>90</td>
<td>45</td>
<td>48</td>
<td>49</td>
</tr>
<tr>
<td>7-0</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

N=905; $r^2=36.22$; df=9; C=.20; Sig. beyond .001 level.
TABLE 40
FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE
AND GRADE LEVEL FOR NON-PERFORMERS

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Grade Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9th Grade (N=147)</td>
</tr>
<tr>
<td>32-16</td>
<td>31</td>
</tr>
<tr>
<td>15-0</td>
<td>116</td>
</tr>
</tbody>
</table>

N=392; χ²=12.51; df=9; C=.18; Sig. at .20 level.

correlations are considered "similar," but not identical
since the upper limit for the performers was .87, while for
the non-performers the upper limit lies between .71 and .87.
The "C" value for the performers was significant beyond the
.001 level, that for the non-performance group being much
lower--only at the .10 level.

Correlation coefficients between grade level and test
grade also were computed for students having considerable
experience (four years or more) in band, orchestra, and
chorus. These data are displayed in Tables 41, 42, and 43.
For the students with four or more years of band experi-
ence, the correlation was .13 (significant at the .05
level), while for those with four or more years of chorus
experience the grade level-test grade correlation was .16
(significant at the .01 level). The correlation between
grade level and test grade was highest for students with
four or more years of orchestra. In fact, this correlation
### TABLE 41

FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND GRADE LEVEL FOR STUDENTS WITH FOUR OR MORE YEARS OF BAND EXPERIENCE

<table>
<thead>
<tr>
<th>Test Score</th>
<th>9th Grade (N=85)</th>
<th>10th Grade (N=95)</th>
<th>11th Grade (N=128)</th>
<th>12th Grade (N=118)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-16</td>
<td>61</td>
<td>82</td>
<td>109</td>
<td>101</td>
</tr>
<tr>
<td>15-0</td>
<td>24</td>
<td>13</td>
<td>19</td>
<td>17</td>
</tr>
</tbody>
</table>

N=426; $\chi^2=8.26$; df=3; C=.13; Sig. at .05 level.

### TABLE 42

FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND GRADE LEVEL FOR STUDENTS WITH FOUR OR MORE YEARS OF ORCHESTRA EXPERIENCE

<table>
<thead>
<tr>
<th>Test Score</th>
<th>9th Grade (N=20)</th>
<th>10th Grade (N=18)</th>
<th>11th Grade (N=21)</th>
<th>12th Grade (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-16</td>
<td>3</td>
<td>5</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>15-0</td>
<td>17</td>
<td>13</td>
<td>8</td>
<td>22</td>
</tr>
</tbody>
</table>

N=90; $\chi^2=12.01$; df=3; C=.34; Sig. at .01 level.

of .34 (significant at the .01 level), although rather low, was one of the highest correlations produced in the study.
TABLE 43

FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE
AND GRADE LEVEL FOR STUDENTS WITH FOUR OR
MORE YEARS OF CHORUS EXPERIENCE

<table>
<thead>
<tr>
<th>Test Score</th>
<th>9th Grade (N=30)</th>
<th>10th Grade (N=38)</th>
<th>11th Grade (N=66)</th>
<th>12th Grade (N=106)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-24</td>
<td>4</td>
<td>6</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>23-0</td>
<td>26</td>
<td>32</td>
<td>46</td>
<td>86</td>
</tr>
</tbody>
</table>

N=240; \( \chi^2=6.16; \) df=3; \( C=.16; \) Sig. at .20 level.

Relationship of test scores to type and extent of music instruction experience

Ten separate contingency correlations were computed to determine the presence of possible relationships between test scores and music instruction experience. Both the type of experience (band, orchestra, chorus, general music, private study, music theory, and music appreciation) and the extent of such experiences were investigated in terms of their possible relationships to test scores.

A rather sizeable number (N=576) of students participating in the final testing indicated that they had had band instruction experience (Table 44). Such experience ranged from as little as one to as many as nine years. It was necessary to group test scores into two categories, and years of band experience into four categories so that
TABLE 44
FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE
AND YEARS OF BAND EXPERIENCE

<table>
<thead>
<tr>
<th>Test Score</th>
<th>1-3</th>
<th>4-5</th>
<th>6-7</th>
<th>8-9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N=130)</td>
<td>(N=173)</td>
<td>(N=192)</td>
<td>(N=62)</td>
</tr>
<tr>
<td>32-16</td>
<td>91</td>
<td>123</td>
<td>174</td>
<td>57</td>
</tr>
<tr>
<td>15-0</td>
<td>58</td>
<td>50</td>
<td>18</td>
<td>5</td>
</tr>
</tbody>
</table>

N=576; $\chi^2=53.37$, df=3; $C=.29$; Sig. beyond .001 level.

...the requirements were met for computing chi square values. Specific reference is made to the existence of no empty cells and minimum expected cell frequencies. The investigation of a possible relationship between test scores and the number of years in band produced a coefficient of .29, significant beyond the .001 level. The maximum possible value for "C" was determined, in this case, to lie between .71 and .87.

A similar computation for students who had had orchestra experience (Table 45) produced a much lower coefficient. For orchestra students, years in orchestra and test scores exhibited a low relationship ($C = .11$), the theoretical upper limit for "C" being between .71 and .87. Not only was the relationship low, chance occurrence

---

9Siegel, op. cit., pp. 200-201.
alone could have produced such a value almost once in every two times (Sig. at .70 level).

TABLE 45

FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND YEARS OF ORCHESTRA EXPERIENCE

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Years of Orchestra Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3</td>
</tr>
<tr>
<td></td>
<td>(N=89)</td>
</tr>
<tr>
<td>32-16</td>
<td>71</td>
</tr>
<tr>
<td>15-0</td>
<td>15</td>
</tr>
</tbody>
</table>

N=178; $\chi^2=2.36$; df=3; C=.11; Sig. at .70 level.

An investigation of a possible relationship between the number of years of chorus experience and test grade also produced a low correlation coefficient (.15). This correlation, based upon the data in Table 46, was highly significant (.01 > p > .001), even though low. Again, the upper limit for "C" when computed from a 2 X 4 table was believed to lie between .71 and .87.

Of the students who indicated band (N=576), orchestra (N=178), and chorus (N=713) experience, relatively few could claim membership in only one of these performance groups during their school years. In order to investigate the possible relationships between test scores and instructional experience in these ensembles, discrete categories were formed. The 231 students who reported only
TABLE 46
FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND YEARS OF CHORUS EXPERIENCE

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Years of Chorus Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3 (N=473)</td>
</tr>
<tr>
<td>32-16</td>
<td>306</td>
</tr>
<tr>
<td>15-0</td>
<td>167</td>
</tr>
</tbody>
</table>

N=713; $\chi^2=15.90$ df=3; C=.15; Sig. at .01 level.

One type of performance group experience (Table 47) were distributed as follows: band-119, orchestra-10, and chorus-102.

TABLE 47
FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND MUSIC PERFORMANCE EXPERIENCE IN BAND, ORCHESTRA, OR CHORUS

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Music Performance Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Band (N=119)</td>
</tr>
<tr>
<td>32-16</td>
<td>95</td>
</tr>
<tr>
<td>15-0</td>
<td>24</td>
</tr>
</tbody>
</table>

N=231; $\chi^2=6.80$ df=2; C=.17; Sig. at .05 level.

A rather low correlation of .17 (significant at the .05 level) was found when the students' test scores were compared with their performance in either band, orchestra,
or chorus. Inspection of Table 47 indicates that the three performance groups would be ranked as follows, in terms of student performance on the test: (1) orchestra, (2) band, and (3) chorus. The possible upper limit for "C" in the 2 X 3 table (Table 47) was believed to be between .57 and .71.

The number years of private study also appeared to have a slight positive relationship to test scores ($C = .20$). The "C" value was highly significant (beyond the .001 level). Data in Table 48, being a 2 X 4 table, could have produced a "C" no higher than .71 to .87.

**TABLE 48**

**FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND YEARS OF PRIVATE STUDY**

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Years of Private Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3 (N=264)</td>
</tr>
<tr>
<td>32-16</td>
<td>184</td>
</tr>
<tr>
<td>15-0</td>
<td>80</td>
</tr>
</tbody>
</table>

$N=570; \chi^2=24.95; \text{df}=3; C=.20; \text{Sig. beyond .001 level.}$

Finally, in terms of performance experience in general, two correlations were computed to investigate the possibility of a relationship between performance and test scores. In order to investigate the possible relationship
of test scores to the dichotomy, performer - non-performer, an operational definition of "performer" was developed. The operational definition produced 905 performers and 392 non-performers (Table 49). The contingency correlation computed from the data found in Table 49 was .40, the highest "C" value computed in the study. It was significant beyond the .001 level. Since the "C" was computed from a chi square produced by a 2 X 4 table, the upper limit was believed to fall between .71 and .87.

TABLE 49

FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND MUSIC PERFORMANCE

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Performer (N=905)</th>
<th>Non-Performer (N=392)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-14</td>
<td>159</td>
<td>3</td>
</tr>
<tr>
<td>23-16</td>
<td>498</td>
<td>109</td>
</tr>
<tr>
<td>15-8</td>
<td>232</td>
<td>252</td>
</tr>
<tr>
<td>7-0</td>
<td>16</td>
<td>28</td>
</tr>
</tbody>
</table>

N=1,297; \( \chi^2 = 240.65 \); df=3; C=.40; Sig. beyond .001 level.

A second correlation coefficient was computed on the variable of test score and total annual performance units. For this purpose the number of years experience in band, orchestra, chorus, and private study were totaled. The range of experience was from zero to thirty-two annual units. Only the scores of students with at least one year
of performance experience were used in the computation of "C" (Table 50). This too produced one of the higher correlations (.37)—one which was significant beyond the .001 level. The possible upper limit of this "C" also was between .71 and .87.

TABLE 50

FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND TOTAL ANNUAL UNITS OF PERFORMANCE (BAND, ORCHESTRA, CHORUS, AND PRIVATE STUDY)

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Total Annual Units of Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3 (N=250)</td>
</tr>
<tr>
<td>32-16</td>
<td>101</td>
</tr>
<tr>
<td>15-0</td>
<td>149</td>
</tr>
</tbody>
</table>

N=989; \( \chi^2 = 160.33; \) df=3; \( C = .37; \) Sig. beyond the .001 level.

An investigation of possible relationships between certain non-performance music instruction experiences and test scores produced surprisingly low correlations, since traditionally the concepts involved in the Music Description Test are studied more often in general music, music appreciation, and music theory courses than in the performance groups.

The number of years of general music instruction produced a correlation of .19 with test scores. This "C"
value, which was significant beyond the .001 level, was considerably below the potential upper limit for a 4 X 4 table (.87), such as Table 51.

**TABLE 51**

**FREQUENCY TABLE: MUSIC DESCRIPTION TEST SCORE AND YEARS OF GENERAL MUSIC**

<table>
<thead>
<tr>
<th>Test Score</th>
<th>0-3 (N=767)</th>
<th>4-5 (N=102)</th>
<th>6-7 (N=157)</th>
<th>8-9 (N=271)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-24</td>
<td>104</td>
<td>6</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td>23-16</td>
<td>316</td>
<td>45</td>
<td>85</td>
<td>161</td>
</tr>
<tr>
<td>15-8</td>
<td>314</td>
<td>45</td>
<td>50</td>
<td>74</td>
</tr>
<tr>
<td>7-0</td>
<td>33</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 45.51; \text{df} = 9; \text{Sig. beyond .001 level.} \]

Both Tables 52 and 53 had a potential upper limit of between .71 and .87 for "C," but correlations for music theory courses and music appreciation courses fell far below that potential. Since no students indicated more than one year for either of these courses, it was possible to place the frequency data in 2 X 4 tables. Test scores in relation to the presence or absence of music appreciation courses produced a "C" of .11 (Sig. at .01 level), while test scores in relation to the presence or absence of courses in music theory provided a "C" of .20 (significant beyond the .001 level).
<table>
<thead>
<tr>
<th>Test Score</th>
<th>Music Appreciation Course (N=197)</th>
<th>No Music Appreciation Course (N=1,100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-24</td>
<td>41</td>
<td>122</td>
</tr>
<tr>
<td>23-16</td>
<td>73</td>
<td>411</td>
</tr>
<tr>
<td>15-8</td>
<td>76</td>
<td>530</td>
</tr>
<tr>
<td>7-0</td>
<td>7</td>
<td>37</td>
</tr>
</tbody>
</table>

\[ N=1,297; \chi^2=15.39; \text{df}=3; C=.11; \text{Sig. at .01 level}. \]

<table>
<thead>
<tr>
<th>Test Score</th>
<th>Music Theory Course (N=125)</th>
<th>No Music Theory Course (N=1,172)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-24</td>
<td>40</td>
<td>123</td>
</tr>
<tr>
<td>23-16</td>
<td>52</td>
<td>432</td>
</tr>
<tr>
<td>15-8</td>
<td>30</td>
<td>576</td>
</tr>
<tr>
<td>7-0</td>
<td>3</td>
<td>41</td>
</tr>
</tbody>
</table>

\[ N=1,172; \chi^2=55.74; \text{df}=3; C=.20; \text{Sig. beyond .001 level}. \]
Summary

Listening, it has been suggested, is the single most important musical behavior. All other musical behaviors are dependent, in large part, upon listening competence. Although music listening skills are indispensable for such persons as the concert artist, the music teacher, the composer, and the choreographer, it is believed that the so-called "consumer of music" also needs to possess certain listening skills.

Since listening is a highly personal phenomenon—one which cannot be directly observed—some means must be found from which particular types of listening attainment might be inferred. For this study it was determined that listening attainment could best be inferred from verbal descriptions of aural music stimuli.

Although the music education profession, through some of its spokesmen, appears to value both music listening skill development, and the development of concomitant verbal-descriptive skills, some doubt exists as to student competence in these areas. The assumption on the part of
many music educators appears to be that students will acquire these kinds of learnings in any type of music activity, even though these particular skills are not expressed as a part of formal instructional objectives for a specific course.

The problem

The basic concern of this study, therefore, was to determine if the development of verbal-descriptive skills (in relation to aural musical stimuli) was related to particular types of music instruction experiences.

The investigation of the problem led to the formulation of three basic objectives. It first was necessary to develop a test to reliably measure certain verbal-descriptive skills (pertaining to aural musical stimuli) at the high school level (grades nine through twelve). The second objective was to determine the general status of attainment, by a selected sample of high school students, with respect to their ability to select verbal descriptors which appropriately described the melodic, rhythmic, harmonic, timbre, textural, and dynamic aspects of aural musical stimuli. The final objective of the study was to investigate the possibility of relationships between performance on the test and the type and extent of music instruction experience.
Rationale and review of related literature

The review of related literature revealed that authorities suggest that there are several kinds of listening, ranging from the very casual type to a highly analytical type. Recognizing that listening is an unobservable phenomenon, other authorities choose to refer to differing response-types. Regardless of the specific terminology, both approaches suggest that some of the "higher level" listening skills are of a cognitive nature. The type of listening responses investigated in this study were of the cognitive type. Sensuous or sensory response-types were not studied since it appeared that sensory gratification was not considered to be the principle instructional objective of music education.

A second and related concept upon which the study was based concerned the role of verbal description and communication in music listening. Since man has created a "verbal world," it was suggested that most persons acquire the ability to "think about music" in verbal terms. Anyone who utters a word about music he has perceived, or anyone who writes a book about music is demonstrating the apparent necessity for one to acquire verbal skills to think about and communicate about music.

Just as there are different levels of listening or listening responses, several levels of verbal descriptors
are used. This pluralism is especially evident in the use of highly affect laden words and concepts to describe music—a characteristic of the Romantic tradition in music. On the other hand, musicians sometimes employ very technical descriptors. In this study, an attempt was made to avoid extremes of both types whenever possible.

In relation to music education, specifically, the literature revealed that music education: (1) appears to be concerned with listening skills in the cognitive domain, and (2) recognizes that such skill development necessitates acquiring verbal-descriptive skills. It seemed logical, therefore, for listening attainment to be inferred from verbal-descriptive behavior.

Although listening achievement appears to be a valued aim of music education, relatively little research was found to deal with listening achievement as inferred from verbal-descriptive behavior. Several achievement-type tests in music were reviewed but none, for several reasons, was acceptable for use in the study—necessitating the need for the development of an original test.

**Procedures**

Prior to testing students it was necessary to:

(1) identify and select verbal-descriptive skills believed to be appropriate for the general "consumer of music;"

(2) develop a catalogue of verbal-descriptors, (3) conduct
a feasibility study, (4) develop and administer pilot tests, and (5) develop the final test.

Fourteen sources\(^1,2\) were employed to determine appropriate verbal-descriptive skills, the same sources being used to develop a catalogue of verbal descriptors. For the most part, "desirable" skills for the "general consumer" of music had to be inferred from statements of instructional activities. A general instructional objective, operationally derived, was developed for identifying appropriate verbal-descriptive skills. This general instructional objective was stated as follows:

All high school students should be capable of demonstrating an aspect of their sensitivity to aural musical stimuli by verbally describing melodic, rhythmic, harmonic, timbre, texture, and dynamic aspects of the stimuli. The students ought to have at their command concepts and commonly used terms such as those found in the Catalogue of Verbal Descriptors developed for this study (see Appendix C). It was possible, by means of the above general objective, to identify twenty-seven specific verbal-

\(^1\)See Appendix C.

descriptive skills. This list of skills, most of which were represented in the final test items, was not considered to be a comprehensive corpus of skills, but rather a list which was appropriate for use in this study.

Since research was limited on the specific topic under consideration, it was believed advisable to conduct a feasibility study. A thirty-item test (Appendix H) was developed and administered to 160 high school and college students. The general success of the feasibility study led to the development of four pilot tests (Appendices E through H).

Items on each pilot test were analyzed to determine their relative difficulty and discrimination characteristics. Ninety-two of the 120 pilot test items were considered appropriate for use in the final test, based upon difficulty level and item-test correlation. Items then were selected for the final test, based upon: (1) appropriate difficulty level, (2) discrimination power, and (3) basic element classification (this distribution being based upon the median percentage of page space given to each basic element in the thirteen sources investigated).

The final test, Music Description Test, was reproduced and the appropriate stimuli were recorded on magnetic tape. The test, tape, and opinionnaire (Appendix B) were presented to a group of graduate students in music education to: (1) secure their judgment with respect to the
basic premises upon which the study was based, and (2) de-
termine the face or content validity of the test. For the
most part, it was concluded that the responses of this
group of music educators were supportive of the basic prem-
ises and the content validity of the test.

The thirty-two item **Music Description Test** was
administered to a stratified, random sample of 1,300 stu-
dents in thirty-three schools. Stratification was employed
on the variable of active participation in one of the
school's performance groups. The thirty-three partici-
pating schools were appropriately distributed according to
city (64 percent), county (30 percent), and exempted
village (6 percent) systems.

Totally usable answer sheets were returned by 1,297
students (656 males and 641 females). The answer sheets
were graded at The Ohio State University Test Development
Center and all answer sheet responses were transferred to
punched cards for processing by The Ohio State University
Computer Center.

The **O.S.U. Item Analysis Program** (Appendix K) was
employed in producing twenty-three total analyses of the
test results. Analyses of the total group and the twenty-
two groups (based upon performance experience, grade level,
and sex) were presented in Chapter IV.
Conclusions

The conclusions of this study are presented under two heads: (1) the reliability of the Music Description Test, and (2) answers to the questions raised in the problem section of Chapter I.

Reliability of the Music Description Test

A general conclusion of this study is that it appears possible to develop a test to measure reliably high school students' verbal-descriptive skills in relation to aural musical stimuli. Not only was the particular test developed for this study appropriate for students who were music performers, it also was found to be capable of measuring verbal-descriptive skills on the part of students who were not considered performers.

The reliability coefficients (Kuder-Richardson Formula No. 20, Kuder-Richardson Formula No. 21, and Odd-Even Split) for the total group were .77, .75, and .79, respectively. It was concluded that these coefficients compared favorably with similar efforts in the field, especially for a test of so few items (thirty-two) and for a test used in a pilot study.

The three measures of reliability also were produced for each of the twenty-two sub-groups. These coefficients ranged from .85 to .47. The lower reliabilities were believed to be produced by guessing (by younger non-per-
formers, particularly) and by small score ranges for some of the sub-groups.

The O.S.U. Item Analysis Program provided three measures of item-test correlation (phi, point biserial, and D). Most items were considered to be of acceptable discrimination power with the possible exception of one item (item two) and three items which produced doubtful measures of discrimination (items seven, nine, and twenty-six).

Answers to questions

Four questions were raised in Chapter I, under objectives of the study. These questions are restated below along with answers based on the data obtained in the study:

1. What is the status of high school students' attainment with respect to verbally describing aurally presented musical stimulus?

This particular question can be answered in a number of ways, depending upon the standard employed to determine the status. In terms of the performance of the 1,297 Ohio high school students on the Music Description Test, it could be said that the students performed in an average manner, as a group, since the mean was 16.98 on the thirty-two item test. Students did differ considerably in the skills being measured, with the scores ranging from a low of two items correct to a high of thirty-two correct. The
scores were rather normally distributed, with mean and median scores in close agreement.

Some sub-groups demonstrated that their verbal-descriptive skills were considerably more developed than were those of other groups. Mean scores ranged from a high of 19.55 (12th grade performers) to a low of 12.68 (11th grade non-performers). In general, performers scored higher than non-performers (see Chapter IV for an operational definition of "performer."). Additionally, students in the higher grades produced higher mean scores than did those in the lower grades. And finally, females appeared to be somewhat superior to males at a given grade level.

The sub-groups which produced higher mean scores were: twelfth grade performers (19.55), eleventh grade performers (19.50), and twelfth grade females (18.72). In contrast, the groups which produced low mean scores were: tenth grade non-performers (13.27), ninth grade non-performers (12.81), and eleventh grade non-performers (12.68).

2. What relationships, if any, seem to exist between this particular aspect of students' musical attainment (see question one, above) and the existence of non-existence of various types of music instruction experienced in the students' school years?
Based upon the analysis of the students' performance on the **Music Description Test**, it must be concluded that no specific music instruction experience exhibited other than a low or moderate relationship with verbal-descriptive skill development. Surprisingly, even students who had courses in music appreciation and music theory performed only slightly better on the test than did students who had not had such courses, the following correlations being computed: music appreciation-no music appreciation, $C_{11} = 11$; music theory-no music theory, $C = .20$. In both cases the maximum possible value for "C" was between .71 and .87.

The correlation of test scores to total performance experience produced the highest coefficient in the study. When the performer-non-performer dichotomy was formed and test scores for each of these groups were compared, a correlation of .40 (maximum "C" value being .71-.87) was produced.

When the students' performance experience was analyzed to determine which students had had membership in only one of the three performance ensembles, the distribution was found to be: band--119, orchestra--10, and chorus--102. Test scores then were compared with these three discrete experiences, producing a "C" value of .17 (upper possible limit for "C" being .57-.71). In this case the higher test scores were slightly associated with orchestral experience, while the lower test scores were
slightly associated with chorus experience, the groups being ranked as follows: 1--orchestra, 2--band, and 3--chorus.

3. What relationships, if any, seem to exist between this particular aspect of the students' musical attainment (see question number one, above) and their year in school?

A total of eight correlations were computed relating to the variable, grade level. All these correlations indicated a low to moderate relationship between test scores and grade level. These "C" values ranged from .13 to .34, with the correlation between test score and grade level for the total group being .22. Test performance-grade level correlations were computed for the following groups (maximum possible value for "C" is indicated in parentheses):

1. Total group .................. C=.22 (.87)

2. Males ........................ C=.19 (.87)

3. Females ..................... C=.20 (.87)

4. Performers ................... C=.20 (.87)

5. Non-Performers .............. C=.18 (.71-.87)

6. Group having four or more years of band .............. C=.13 (.71-.87)

7. Group having four or more years of orchestra ......... C=.34 (.71-.87)

8. Group having four or more years of chorus .............. C=.16 (.71-.87)
4. **What relationships, if any, seem to exist between this particular aspect of students' musical attainment (see question number one, above) and their number of years of instruction in the various school music groups?**

Results similar to those reported above were obtained when test scores were compared with the number of years of performance experience. The contingency correlations ranged from low to moderate. With respect to years of performance experience, total years of performance (band, orchestra, chorus, and private study) appeared to have a stronger relationship with test results than did years of experience in any single performance area.

The correlation of test scores and total annual performance units produced a "C" value of .37 (the upper possible limit being between .71 and .87)—one of the highest correlations produced in the study. The correlations of test scores and years of performance experience for the individual areas were:

1. **Band** .................. $C = .29$ ($ .71 - .87$)
2. **Orchestra** .............. $C = .11$ ($ .71 - .87$)
3. **Chorus** ................. $C = .15$ ($ .71 - .87$)
4. **Private study** ........... $C = .20$ ($ .71 - .87$)

One final correlation was computed to investigate a possible relationship between the number of years of general music instruction and test scores. The relationship
between years of general music instruction and test scores was comparable to those for performance experience and test scores, the contingency correlation being .19 (the upper limit was .87).

The assumption investigated.—Although not stated as a question to be answered, it was stated that a purpose of this research was to investigate the assumption that skills in verbally describing aural musical stimuli develop indirectly, incidentally, and independently of the specific type of music instruction offered. Based on this pilot study the following observations can be made:

1. The assumption, to some extent, is valid. This observation is made based upon the fact that students who had a greater extent of music instruction tended, when considered as a group, to be more successful in their performance upon the Music Description Test. In addition, positive (although low) correlations were determined to exist between test scores and the type and extent of music instruction experience.

2. The extent of verbal-descriptive attainment, based upon the students' performance on the Music Description Test, was reasonable. That is, one could expect no higher level of performance solely through incidental learning.

3. It is doubtful that the degree of student attainment is as great as music education would desire. For
example, the difference in mean scores for ninth and twelfth grade performers was only 2.53 points, and that between twelfth grade performers and twelfth grade non-performers was 4.35 points.

4. Finally, complete reliance on incidental learning in the area of verbal-descriptive skill development has not been and will not be sufficient if students are to become increasingly proficient in these musical skills during their school years.

Implications

Several implications may be drawn from the findings of this pilot study. Yet, the very fact that it was a pilot study suggests that most of the implications will be directed toward further research and testing, with fewer implications being drawn for music instruction in the schools.

Research

The implications for research are of two basic types. First, it appears desirable to further determine the validity of the premises upon which the study was based, and the extent to which the approach of inferring music listening skills from verbal-descriptive behavior is consistent with these premises. Second, further research might be conducted to gain greater insight into the nature of verbal-descriptive behavior in relation to aural
musical stimuli, and its possible relationships to other musical and verbal skills.

Aside from further validity studies, the following specific research topics could be pursued:

1. An investigation of possible relationships between test scores on the Music Description Test (or a revision of the instrument) and:
   a. performance on a test of musicality,
   b. performance on a vocabulary test,
   c. music performance achievement (a qualitative measure), and
   d. performance on an intelligence test.

2. An investigation of the effect of instruction aimed at improving verbal-descriptive skills upon:
   a. music performance,
   b. the enjoyment of music, and
   c. understanding the musical characteristics of historical periods.

3. An investigation of integrating instruction aimed at improving verbal-descriptive skills within the context of high school performance groups using:
   a. the literature being performed, and
   b. electronic and optical "hardware."

4. An investigation of verbal-descriptive skill development throughout the school years, with appropriate difficulty levels for descriptors and musical stimuli being determined.
Further revision of the Music Description Test appears to be advisable to refine the reliability of the test. In addition, attempts should be made to shorten the administration time of the present thirty-two item test, so that more items may be administered in a forty-five minute period. One such method might involve presenting the musical stimuli once rather than twice.

Specific implications for instructional practices are few, except as they relate to pedagogical research. Yet, if the premises of the study are valid and if the skills measured by the Music Description Test validity reflects these premises, two general implications of the findings may be drawn:

1. Music educators, in general, ought to place greater instructional emphasis upon verbal-descriptive skill development in performance activities. Not doing so indicates the possibility of inconsistency with certain general objectives of music education. If music educators were systematically introducing verbal-descriptive skill development as a regular part of the regular performance group instructional program, throughout the students' school years, correlations between test scores and grade level ought to be higher for performers. This correlation should be larger for music group participants than for non-participants, unless the non-participants study music
appreciation, general music, or a similar course. Yet, test score-grade level correlations were quite similar for performers and non-performers in this study. The test score-grade level correlation for performers was .20, while for non-performers the correlation between the two variables was .18.

2. A second implication for instruction is that since it was demonstrated that non-performers can verbally describe musical stimuli, it would seem appropriate to offer instruction especially for the purpose of developing such skills in non-performers.
APPENDIX A

SOURCES ANALYZED FOR MUSIC LISTENING INSTRUCTION
ORGANIZATION, SPACE ALLOCATED TO BASIC
ELEMENTS, AND LISTENING
SKILLS EMPHASIZED

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APPENDIX B

VALIDITY STUDY OPINIONNAIRE
Dear Colleague:

You are being asked to react to a test which is to be administered to between 1,200 and 1,500 high school students (grades nine through twelve). These thirty-two items were among 120 items contained on four different pilot tests. Each pilot test was administered to a minimum of 200 high school students. In terms of the pilot testing, these thirty-two items appear to be discriminating and of desirable difficulty levels. (At least twenty percent of the students were able to answer the most difficult items correctly while eighty percent correctly answered the easiest items.)

Thank you in advance for taking an hour of your valuable time to assist in this study.

Sincerely,

Woodford W. Zimmerman
Instructor in Music
The Ohio State University
Lima Campus
The following statements and questions have some bearing upon the test which you have just seen and heard. Please respond to the statements and questions by marking in one of the five positions found to the right of each statement or question.

1. Listening is the most important ingredient of all musical behaviors. // // // // //

2. "When we lack the proper words to use as symbols for manipulating and communicating our experience, it is doubtful if the experience is precise or vivid or clear to us."

3. Do you believe that one is able to infer a particular type of music achievement from student performance in this test? // // // // //

4. The development of verbal-descriptive skills, such as those being measured by the enclosed test is necessary if a student (high school or college) is to fully understand his perceptions and if he is to be able to communicate about melodic movement, harmonic and rhythmic configuration, or if he is to demonstrate his ability to discriminate in terms of the timbre, texture, and dynamic aspect of musical stimuli. // // // // //
5. In your judgment, are these verbal-descriptive skills worth-while instructional goals in music education? strongly agree strongly disagree // // // // //

6. Is such achievement likely to make the student a "more perceptive" listener? // // // // //

7. "A genuine understanding of music is dependent to a considerable extent on intellectual effort."

8. "To find profound values in music, one must sometimes listen and think, as well as play and sing."

9. These verbal-descriptive skills are important in increasing one's "genuine understanding" of music. // // // // //

10. These verbal-descriptive skills are important in increasing one's ability or capacity of finding "profound values" in music. // // // // //

11. The items contained on this test validly measure a student's ability to verbally describe melodic, rhythmic, harmonic, timbre, texture, and dynamics aspects of aurally presented musical stimuli. // // // // //

12. Is this test a logical outgrowth of instructional experiences recommended in the M.E.N.C. publication Music in General Education? (See attached page for some recommended experiences all music classes at the high school level should provide.)
13. Are there items on the test which, in your judgment, do not validly measure a student's ability to verbally describe melodic, rhythmic, harmonic, timbre, texture, or dynamics aspects of an aurally presented musical stimuli? If so, which items?
Instructional experiences all music classes should provide.


**Rhythm** (Students should have these opportunities.)

1. Experience the underlying pulsation in music....
2. Demonstrate that they understand the relationship between duration and pulse.
3. Determine the basic metric pattern of music they hear...
4. Observe the expressive use of accents in music.
5. Observe the rhythmic principles of recurrence or alteration....
6. Observe an awareness of...changing meter, polyrhythms, syncopation, irregular accents....

**Melody**

1. Student should experience that melodies are smooth, graceful, angular.
2. Experiment with tonal movement--up, down, or repetition--and with tonal organization--step, half step, skip, or leap....
3. Develop an understanding of tonal groupings such as the motive, phrase, sequence, and theme....
4. Observe...range, register, and length of melodic grouping....
5. Sense and to understand the tension and release of active and rest tones...also experience major, minor, chromatic, and whole tone scales...

**Harmony**

1. Students should advance their understanding of the expressive qualities of consonance and dissonance....
2. Learn how chords are...related to tonal centers....
3. Develop an understanding of...cadences and modulation....

**Timbre**

1. Develop the ability to recognize the various tone colors of instruments....
2. Study the phenomenon of vibrato as it relates to tone quality....
APPENDIX C

CATALOGUE OF VERBAL DESCRIPTORS AND CONCEPTS

I. Melody
II. Rhythm
III. Harmony
IV. Timbre
V. Texture
VI. Dynamics
I. CATALOGUE OF VERBAL DESCRIPTORS
AND CONCEPTS (MELODY)

<table>
<thead>
<tr>
<th>active</th>
<th>contrast</th>
<th>gentle</th>
</tr>
</thead>
<tbody>
<tr>
<td>angular</td>
<td>contrast</td>
<td>*graceful</td>
</tr>
<tr>
<td>apex</td>
<td>*descending</td>
<td>gradually</td>
</tr>
<tr>
<td>apices</td>
<td>descent</td>
<td>(ascending-</td>
</tr>
<tr>
<td>*ascending</td>
<td>disconnected</td>
<td>descending)</td>
</tr>
<tr>
<td>ascent</td>
<td>disjunct</td>
<td>hidden</td>
</tr>
<tr>
<td>*awkward</td>
<td>downward</td>
<td>*high (range-</td>
</tr>
<tr>
<td>bold</td>
<td>down</td>
<td>register)</td>
</tr>
<tr>
<td>cadence</td>
<td>dramatic</td>
<td>humorous</td>
</tr>
<tr>
<td>cadential</td>
<td>emotional</td>
<td>inconclusive</td>
</tr>
<tr>
<td>cantabile</td>
<td>energetic</td>
<td>instrumental</td>
</tr>
<tr>
<td>cheerful</td>
<td>expressive</td>
<td>(style)</td>
</tr>
<tr>
<td>chromatic</td>
<td>extended</td>
<td>*jagged</td>
</tr>
<tr>
<td>climax</td>
<td>falling</td>
<td>key</td>
</tr>
<tr>
<td>complete</td>
<td>final</td>
<td>languid</td>
</tr>
<tr>
<td>complex</td>
<td>finality</td>
<td>*leap</td>
</tr>
<tr>
<td>conclusive</td>
<td>florid</td>
<td>level (contour)</td>
</tr>
<tr>
<td>conjunct</td>
<td>*flowing</td>
<td>(lilting</td>
</tr>
<tr>
<td>connected</td>
<td>flow</td>
<td>line (melodic)</td>
</tr>
<tr>
<td>contour</td>
<td>fragmentary</td>
<td>*low (range,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>register)</td>
</tr>
</tbody>
</table>

*Indicates words used in Music Description Test.
lyric
mode
modal
modulation
modulate
motive
narrow (leap, interval)
obvious
*passive
peaceful
pensive
phrase
pitch level
plunging
points of interest (high-low)
quiet
quietness
*range (high-low, wide-narrow, large-small)
rapidly (ascending-descending)
*register (high-low-medium)
vocal (style)
wide (leap, interval)

relaxed
relaxation
repeated
repetition
repose
reposeful
resting point
restraint
rising
robust
salient
*scale
scalewise
sequential
sequence
*serene
short (phrase, motive) undulations
shortened
sighing
simple
singing (style)
*skip
skipwise
skipping
*smooth
soaring
soothing
static
*step
stepwise
stirring
symmetrical
tense
tension
tessitura
*tonal center
tonality
touching
tuneful
tuneful

upward
up
variation
vary
vigorous
II. CATALOGUE OF VERBAL DESCRIPTORS

AND CONCEPTS (RHYTHM)

*accelerate
acceleration
accelerando
accented
* accent
accentual
agitated
*articulation
attack
*beat
breadth
brisk
buoyant
*complex
complicated
compound (meter)
crisp
cross-rhythm
cross-accent
decreases (speed, tempo)

*detached (style, tones)
development

dignity

displaced
displacement
duple (meter)
duration (short-long)
*elastic (beat)
emphasize
*energetic
even (duration, stress)
evenly spaced (accents)

exciting
expressive

fast

figure (rhythmic)
flexible
*flowing
fluctuating

fluctuation
free

gay

graceful

gradual (change)
gradually

grouped (beats)

groupings

groups

heavy

heaviness

imbalance

increased (speed)

independent

irregular (patterns, meter)

jazzy

jagged

lamenting

legato

light
lilting
long (duration)
majestic
meter
metrical
*moderate (tempo)
motive
movement (maintained, ritardando increased, diminished)
non-metric
off-beat
*pace
pattern
phrase
points of arrival (clear, frequent, strong, contrasts)
polyrhythm
*pulsation
pulse
quadruple (meter)
*quick
rate
recurring
regular (patterns)
regularity
reiterated
reiteration
release (of tone)
retardation
rigorously
rubato
short (duration)
*simple
*slow
* slow-down
speed (increased-decreased)
staccato
steady
stirring
stress
stressed
stressing
strict
*strong (accent, rhythm, pulse, pulsation)

superimpose
*syncopation
*tempo (slow, moderate, medium, quick, fast)
tender
triple (meter)
unaccented
undulating
unevenness
unexpected
unmetrical
unvarying
upbeat
values (note)
varing
*vigorous
vitality
*weak (accent, rhythm)
weight
### III. CATALOGUE OF VERBAL DESCRIPTORS AND CONCEPTS (HARMONY)

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*Indicates essential terms.
richness  weight

*simple  whole-tone

*sonorous  wide (spacing)

  sonority
  spacing (wide-narrow)

stable
  stability

*static
  substitution

*tense
  tension

tertian

*thin
  tonal center

*tonal obscurity
  tonality
  tone cluster
  tonic
  traditional chords
  triad

unconventional
  unfulfilled
  unresolved
### IV. CATALOGUE OF VERBAL DESCRIPTORS AND CONCEPTS (TINMBRE)

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V. CATALOGUE OF VERBAL DESCRIPTORS
AND CONCEPTS (TEXTURE)

*accompaniment
accompanyed
accompany
answer

*bass (voice, part, line)
chordal (accompaniment)

contrapuntal
counterpoint

*entrance

*full (scoring)

heavy

*homophonic

imitate

independent

light

line (melodic)

lower (voice, part)

*melodic line

middle (voice, part)

*monophonic

overlapping

*part (melodic)

*polyphonic

scoring (full, thin)

simultaneous combination

subject

supporting chords

thick

unaccompanied

upper (voice, part)

*voice (melodic)
VI. CATALOGUE OF VERBAL DESCRIPTORS
AND CONCEPTS (DYNAMICS)

amount of sound
subtle (change)

*change

sudden

crescendo

swelling (slight, great)

decrescendo

*volume

dynamics range (great, small)

expressive

full

growth (increase, decrease)

growing (louder, softer)

immediate

increase

* increasing

intense

intensity

light

loud (very, extremely)

minute (change)

soft (extremely, moderately)

strong
APPENDIX D

TEST DEVELOPED FOR THE
FEASIBILITY STUDY
1. The tempo at the beginning is
   a. moderate and gradually slows down
   b. steady throughout
   c. slow and abruptly slows down becomes fast
   d. slow and gradually accelerates
   e. fast and abruptly becomes slow

2. The very high pitch tones near the end of the excerpt are produced by the
   a. flute
   b. oboe
   c. piccolo
   d. clarinet
   e. trumpet

3. Which of the following instruments is not heard?
   a. snare drum
   b. bass clarinet
   c. muted brass instruments
   d. trumpet
   e. soprano clarinet

4. The principal melodic instrument is the
   a. tenor saxophone
   b. basson
   c. bass clarinet
   d. baritone saxophone
   e. tuba
5. The most important motive of the opening section consists of:
   a. one note  c. three notes  
   b. two notes  d. five notes  
   e. seven notes

6. Which note of the most important musical motive receives the greatest accentuation?
   a. the first  c. the third  
   b. the second  d. the fourth  
   e. the fifth

7. In relation to the underlying pulsation, the more accented tones seem to occur:
   a. on every beat  c. every three beats  
   b. every two beats  d. every four beats  
   e. with great irregularity

8. Which of the following is not heard?
   a. bowed strings  c. piano  
   b. pizzacato strings  d. muted strings  
   e. string bass

9. In this excerpt the accented tones occur:
   a. every two beats  c. every four beats  
   b. every three beats  d. every five beats  
   e. with irregularity

10. Which of the following is not heard?
    a. tuba  c. vibraphone  
    b. xylophone  d. trombone  
    e. oboe
11. The performing group is
   a. a string ensemble
   b. a band
   e. a string quartet
   c. an orchestra
   d. a wind ensemble

12. For the most part, the excerpt may be described as having
   a. full scoring with changes in the dynamics level
   b. thin scoring with no change in the dynamics level
   e. thin scoring with a consistently high volume level
   c. full scoring with no change in the dynamics level
   d. thin scoring with changes in the dynamics level

13. The excerpt ends with
   a. one flute and bowed strings
   e. two oboes and bowed strings
   b. two flutes and plucked strings
   c. two clarinets and plucked strings
   d. one clarinet and plucked strings
14. The performing group is a

a. string orchestra  
b. violin quartet       
c. string choir         
d. string quartet      
e. violin duet

15. The meter is

a. duple (pulsations organized into two's)  
b. triple (pulsations organized into three's)  
c. quadruple (pulsations organized into four's)  
d. quintuple (pulsations organized into five's)  
e. irregular

16. This excerpt contains eight phrases which are grouped in two's. They might be diagrammed as

P_1 P_2 P_3 P_4 P_5 P_6 P_7 P_8

All of the phrases are of equal length except which of the following, which is lengthened.

a. P_3  
b. P_4  
c. P_6  
d. P_7  
e. P_8

17. Which of the following is the most important aspect of the musical motive which is repeated many times during this excerpt?

a. its harmony  
b. its melody  
c. its rhythm  
d. its unique use of orchestral instruments  
e. its tone quality
18. The most prominent sounds in the beginning are created by

a. strings and harp  
b. woodwinds and xylophone  
c. strings and piano  
d. strings and flute  
e. harp and woodwinds

19. The most important aspects of the opening of this excerpt are:

a. melody and rhythm  
b. harmony and tone color  
c. melody and harmony  
d. rhythm and tone color  
e. melody and tone color

20. The most important melodic part is played by the

a. violins  
b. flutes  
c. harp  
d. clarinet  
e. string bass

21. This excerpt contains phrases which are:

a. of equal length throughout  
b. shorter and clearer at the first—then longer and less clear than in the first  
c. long throughout  
d. shorter and clearer in the second half  
e. heard in the low register—usually

22. The points of greatest rest occur at the end of the

a. first and second phrases  
b. first and last phrases  
c. second and third phrases  
d. second and last phrases  
e. third and fourth
23. Which of the following does not apply to the excerpt?
   a. strong rhythmically
   b. quick tempo
   c. oboe is highest instrument heard
   d. heavily accented pulsations usually occur every two of four beats
   e. played by an ensemble consisting of strings and winds

24. Which of the following instruments is not heard?
   a. bassoon
   b. oboe
   c. trumpet
   d. French horns
   e. string bass

25. This excerpt contains four phrases.
The last part of the final phrase is most closely related to which of the following? (in a melodic sense)
   a. first phrase, first part
   b. first phrase, second part
   c. second phrase, second part
   d. third phrase, second part
   e. last phrase, first part

26. Which of the following best describes the four phrases of this excerpt?
   a. each succeeding phrase is heard at a higher pitch level
   b. each succeeding phrase is heard at a lower pitch level
   c. for the most part, all phrases are at the same pitch level
   d. only the last phrase is heard at a different pitch level
   e. the phrases are identical in all respects
27. The melody in this excerpt is
   a. quite prominent  
   b. relatively prominent  
   c. prominent  
   d. fairly prominent  
   e. almost non-existent

28. The bell-effect is created mostly by means of
   a. accentuation of tones  
   b. duration of the tones  
   c. tone quality  
   d. harmony  
   e. rhythm

29. Changes in the loudness level
   a. hardly ever occur  
   b. are always abrupt  
   c. are usually abrupt  
   d. are always gradual  
   e. are usually gradual

30. Which of the following is least responsible for the spirited and energetic qualities of this excerpt?
   a. the tempo  
   b. the key center  
   c. the short duration of melodic tones  
   d. the predominance of skips, rather than steps, in the melody  
   e. the relatively thin, rather than thick, scoring
APPENDIX E

PILOT TEST A
Form A

1. The principal melody is best described as being:
   a. smooth
   b. connected
   c. graceful
   d. angular
   e. lyric

2. The tempo at the beginning is:
   a. moderate and gradually slows down
   b. slow and abruptly becomes fast
   c. fast and abruptly becomes slow
   d. moderately slow and gradually accelerates
   e. fast and remains fast throughout

3. The principal melodic tones are best described as mostly moving by:
   a. steps
   b. skips
   c. repetition
   d. scale passages
   e. descending passages

4. You are about to hear five related passages. Select the version having the most complex harmony.
   a. A
   b. B
   c. C
   d. D
   e. E

5. The accompanying ensemble's answer to the part played by the solo instrument is more
   a. lyric
   b. thin
   c. jagged
   d. heavily accented
   e. angular
Form A

6. The tempo

   a. gradually becomes c. is strict
       slower throughout
   b. is steady throughout d. is flexible
   e. is rigid

7. This passage contains two contrasting parts. In comparison with the first part, the second part has all of the following except:

   a. a greater emphasis c. more melodic
       upon harmony voices (parts)
   b. melodic tones of longer d. more tones in
       duration (usually) the lower register
   e. heavier accentuation

8. The phrases are

   a. short with clear endings c. overlap
   b. long with clear d. very long with
       endings obscure endings
   e. of identical length

9. The second (contrasting) section in this excerpt is contrasted with the first section in all of the following ways except:

   a. abrupt change of c. a more important
       dynamic level bass line
   b. abrupt key change d. a bass line which
       is more melodic
   e. more importance for violins
       and less for woodwinds

10. This excerpt has which of the following time element qualities?

    a. slow tempo-strong c. quick tempo-strong
        pulsation every 3 beats pulsation every 3 beats
    b. slow tempo-strong d. quick tempo-strong
        pulsation every 2 or 4 beats pulsation every 2 or 4 beats
    e. moderate tempo-strong
        pulsation every 3 beats
Form A

11. Toward the end of the passage greater excitement is achieved by all of the following except:

   a. having the violins play in a higher register
   b. increasing the activity in the percussion section
   c. adding a second melody in the brass instruments
   d. increasing the volume in the percussion section
   e. changing the tonal center

12. With respect to tempo, the passage

   a. gradually slows down throughout
   b. gradually accelerates throughout
   c. has an elastic beat throughout
   d. has a very strict beat throughout
   e. abruptly changes pace to a much slower one near the end

13. The single melodic motive heard most is based on

   a. an ascending scale
   b. a descending scale
   c. an ascending broken chord
   d. a descending broken chord
   e. a single tone repeated four times

14. All of the following are present and responsible for the expressive quality of this excerpt, except:

   a. flexible tempo
   b. rich tone quality of the instrument
   c. slightly dissonant harmonies
   d. no skips in the melody line
   e. rich harmonies

15. The musical element which is most responsible for the "bag-pipe" effect is

   a. melody
   b. rhythm
   c. harmony
   d. texture (number of melodic parts)
   e. timbre (tone color)
Form A

16. Changes in the loudness level
   a. hardly ever occur
   b. are always abrupt
   c. are usually abrupt
   d. are always gradual
   e. are usually gradual

17. Rhythmically this passage is best described as being
   a. weak
   b. strong
   c. simple
   d. unaccented
   e. relaxed

18. Rhythmically this excerpt may best be described as being
   a. lightly accented
   b. graceful
   c. weakly accented
   d. simple
   e. complex

19. The melody in this passage is best described as being
   a. jagged-covering a large range
   b. jagged-covering a small range
   c. smooth-covering a large range
   d. smooth-covering a small range
   e. flowing

20. The sound of the solo string instrument is best described as being
   a. light
   b. sparkling
   c. rich
   d. lean
   e. muffled

21. Compared with the first three chords, the fourth chord is
   a. more dissonant
   b. more consonant
   c. more complex
   d. more active
   e. more tense
22. This passage contains two phrases. Which of the following statements is true.

a. the duration of tones in phrase one makes for a more "graceful" melody than that of phrase two
b. the duration of tones in phrase two makes for a more "graceful" melody than that of phrase one
c. all tones in phrases one and two are of equal duration
d. all tones in phrases one and two are of unequal duration
e. both phrases one and two are played in a very detached style

23. The beat (pulsation) in this excerpt is

a. weak
b. steady
c. elastic
d. very fast
e. flexible

24. In terms of texture, this passage contains two contrasting bits of musical material. Which of the following combinations best describe the two textures?

a. 1-homophonic, and 2-polyphonic
b. 1-homophonic, and 2-monophonic
c. 1-polyphonic, and 2-homophonic
d. 1-polyphonic, and 2-monophonic
e. 1-monophonic, and 2-homophonic

25. Rhythmically, this excerpt is best described as having a

a. moderate, steady tempo
b. moderate, unsteady tempo
c. fast, steady tempo
d. fast, unsteady tempo
e. very slow, steady tempo
Form A

26. The tempo of this excerpt is best described as being
   a. very slow          c. moderately slow
   b. slow               d. moderate
   e. brisk

27. The vibrato of the solo string instrument helps bring about which of the following?
   a. a warm tone        c. a shrill tone
   b. a metallic tone    d. a brittle tone
   e. a crisp tone

28. In the melody played by the solo instrument, which of the following is not true?
   a. the melodic tones both by step and skip
   b. the melody is bold
   c. the melody is florid
   d. the melody is heard in the low register of the instrument sometimes
   e. the melody is expressive

29. Which of the following is not a characteristic of this melody?
   a. vigorous          c. active
   b. stirring          d. brisk
   e. solemn

30. The brass instruments in this excerpt sound
   a. muffled          c. shrill
   b. bright           d. pure
   e. piercing
APPENDIX F

PILOT TEST B
Form B

1. The underlying pulsation (beat) is most accented
   a. every 3 beats    c. every 6 beats
   b. every 4 beats    d. every 8 beats
   e. irregularly

2. The principal melodic instrument plays
   a. in both its high and c. primarily in its high
      very low registers    register
   b. primarily in its low     d. in a narrow range
      register             e. a relatively narrow range

3. You are about to hear five related excerpts. The
   version containing the greatest amount of syncopation is:
   a. A                  c. C
   b. B                  d. D
   e. E

4. The accented tones appear to come
   a. every 2 beats    c. every 4 beats
   b. every 3 beats    d. every 5 beats
   e. with irregularity

5. This passage contains
   a. one melodic part    c. three melodic parts
      (voices)           (voices)
   b. two melodic parts   d. four melodic parts
      (voices)           (voices)
   e. five melodic parts (voices)

6. As the music progresses, the melody becomes more
   a. disjunct          c. angular
   b. separated         d. smooth
   e. awkward
Form B

7. Assuming that this passage has four phrases, which of the following is the best statement regarding the length of the phrases?

a. phrase one is the shortest  
   c. phrase three is the shortest
b. phrase two is the shortest  
   d. phrase four is the shortest
    e. all phrases are of equal length

8. This example ends on a

a. full chord which is at rest  
   c. thin chord which is at rest
b. full chord which is a point of tension  
   d. thin chord which is a point of tension
   e. chord which sounds quite final

9. For the most part, the melodies may be said to move

a. by step in a connected style  
   c. by step in a separated style
b. by skip in a connected style  
   d. by skip in a separated style
    e. in the lower register of each solo instrument

10. Which best describes the excerpt?

a. steady pulsation—with strong pulsations occurring every two beats  
   c. flexible pulsation—with accented pulsations occurring every two beats
b. steady pulsation—with accented pulsations occurring every three beats  
   d. flexible pulsation—with accented pulsations occurring every three beats
    e. flexible pulsation—with accented pulsations occurring every five beats
Form B

11. The melody in this passage is
   a. quite prominent
   b. relatively prominent
   c. prominent
   d. fairly prominent
   e. almost nonexistent

12. Which of the following is least responsible for the spirited and energetic qualities of this excerpt?
   a. the tempo
   b. the key center (tonality)
   c. the short duration of melody tones
   d. the predominance of skips, rather than steps, in the melody
   e. the relatively thin, rather than thick, scoring

13. Which of the entering instruments is playing in the most detached style?
   a. first
   b. second
   c. third
   d. fourth
   e. fifth

14. Rhythmically this passage is best described as being
   a. vigorous and complex
   b. vigorous and simple
   c. weak and complex
   d. weak and simple
   e. slow and elastic

15. The harmony in this excerpt is best described as being
   a. thin
   b. simple
   c. rich
   d. in a constant state of repose
   e. static
Form B

16. This passage contains music for a solo instrument which is accompanied by other instruments. Which combination best describes the tone qualities?

   a. solo-sonorous,          c. solo-rich accompaniment-
     accompaniment-crisp      shrill
   b. solo-crisp,              d. solo-shrill,
     accompaniment-mellow     accompaniment-full
   e. solo-nasal,              accompaniment-sweet

17. In relation to the underlying pulsation, more accented melody tones seem to occur

   a. on every beat           c. every four beats
   b. every three beats       d. every five beats
   e. with great irregularity

18. Which best describes the texture of this excerpt, once all the instruments have entered?

   a. one melody--no          c. one melody with
     accompaniment            accompaniment
   b. two melodies--no        d. two melodies with
     accompaniment            accompaniment
   e. three melodies--no      accompaniment

19. For the most part, the progression of melodic tones is

   a. chromatic               c. stepwise
   b. by skip                 d. static
   e. flowing

20. This passage contains four phrases. Which combination of phrases contains the most syncopation?

   a. phrases 1 and 2         c. phrases 1 and 4
   b. phrases 1 and 3         d. phrases 2 and 3
   e. phrases 3 and 4
21. In this excerpt one melodic motive is heard many times. This motive contains how many notes?

   a. 2  
   b. 3  
   c. 4  
   d. 5  
   e. 6

22. What best describes the phrases in this passage?

   a. short and of equal length  
   b. short and of unequal length  
   c. long and of equal length  
   d. long and of unequal length  
   e. soaring

23. The meter is

   a. duple (pulsations organized in two's)  
   b. triple (pulsations organized in three's)  
   c. quadruple (pulsations organized in four's)  
   d. quintuple (pulsations organized in five's)  
   e. irregular

24. Harmonically this passage is best described as being

   a. rich and static  
   b. rich and sonorous  
   c. thin and static  
   d. thin and tense  
   e. thin and relaxed

25. The melodies in this passage are best described as consisting of

   a. short motives which are heard on different pitch levels  
   b. short motives which are repeated on the same pitch level  
   c. long continuous melodic lines which retain the same key center  
   d. long continuous melodic lines which change key center  
   e. unrelated tones
26. The tone of the most prominent instruments is best described as
   a. fragile     c. emphatic
   b. pure        d. delicate
   e. dark

27. For the most part the texture of this passage consists of
   a. a single melody played by one instrument
e. a very smooth melody
   b. a single melody played by several instruments
   c. more than one melody played at the same time
   d. a melody with an accompaniment

28. The opening of this passage is best described as
   a. heavy
   b. rippling
   e. muffled
   c. snarling
   d. dark

29. Rhythmically this passage is
   a. quite simple
   b. unaccented
   e. static
   c. of slow tempo
   d. syncopated

30. The instruments heard playing the melody are playing in which of these registers?
   a. very high
   b. high
   e. very low
   c. middle
   d. low
APPENDIX G

PILOT TEST C
Form C

1. In this excerpt the melodic parts are best described as being
   a. mostly scale segments  c. smooth
   b. lyric  d. conjunct
   e. disjunct

2. The most important motive of this excerpt consists of
   a. one note  c. three notes
   b. two notes  d. five notes
   e. seven notes

3. The accompanying ensemble answers the solo instrument
   a. at a lower pitch level  c. at a higher pitch level
   b. at the same pitch level  d. in a different key
   e. in a more detached style

4. The accented tones occur
   a. every two beats  c. every four beats
   b. every three beats  d. every five beats
   e. with irregularity

5. The harmony or final chord at a phrase ending may be classified, in a relative sense, as being a point of tension or rest. Which of the following arrangements best describes the endings of the four phrases in this passage? (Phrase endings are announced.)
   a. rest-rest-rest-tension  c. tension-rest-rest-tension
   b. rest-tension-tension-  d. tension-tension-tension-
     rest
   e. tension-rest-
     rest-rest

6. The phrases in this example are
   a. of equal length with clear endings  c. of unequal length with overlapping phrases
   b. of equal length with overlapping phrases  d. of unequal length, but with clear endings
   e. quite long
Form C

7. As the basic theme is repeated, contrast is most often achieved through changing
   a. the instrument playing   c. rhythm
   the melody
   b. key center                 d. meter
   e. melodic style

8. The tone quality of this instrument is best described as being
   a. thin   c. heavy
   b. shrill  d. harsh
   e. breathy

9. This excerpt has five phrase segments. The melodic apex, or highest point, occurs in phrase segment
   a. one  c. three
   b. two   d. four
   e. five

10. The bell effect is caused mostly by means of
    a. accentuation of tones  c. tone quality
    b. duration of tones      d. harmony
    e. rhythm

11. The tone of the instruments playing the melody is best described as being
    a. refined  c. booming
    b. thick    d. fuzzy
    e. pinched

12. In this passage the sound of the instruments playing the melody is best described as being
    a. mellow  c. rasping
    b. husky   d. nasal
    e. booming
Form C

13. In comparison to melodies played by the other instruments, the melodies played by the string instruments are more

a. lyric                      c. vigorous
b. disconnected              d. awkward
e. bold

14. This passage may be described as being strong and energetic. Which of the following does not contribute to this?

a. placement of accents       c. detached articulation
b. quick tempo                d. syncopation
     e. flowing melody

15. The sound of the solo voice is best described as being

a. dark                        c. piercing
b. penetrating                d. shrill
     e. thin

16. The tempo of this excerpt is

a. quite slow                  c. moderate
b. slow                       d. fast
     e. quite fast

17. The final chord of this passage is best described as being

a. quite dissonant            c. an "active" chord
b. a chord at "rest"          d. a chord of "repose"
     e. a "complex" chord

18. Which of the following best describes this excerpt?

a. one melody with an         c. contrapuntal
   accompaniment
b. little melodic interest-   d. little melodic interest-
   principally harmony         principally rhythm
     e. little melodic interest-
        principal emphasis upon
tone color
Form C

19. Rhythmically this passage is best described as being

   -a. moderately slow—with accents every two beats
   -b. moderately slow—with accents every three beats
   -c. moderately slow—with accents every seven beats
   -d. fast—with accents every two beats
   -e. fast—with accents every three beats

20. This passage contains two contrasting parts—(1) the introduction, and (2) that which follows. How are they best classified in terms of meter?

   -a. 1-duple, and 2-triple
   -b. 1-triple, and 2-duple
   -c. 1-triple, and 2-non-metrical
   -d. 1-non-metrical, and 2-duple
   -e. 1-non-metrical, and 2-triple

21. The phrases in this excerpt are best described as being

   -a. long and flowing
   -b. short and flowing
   -c. long and descending
   -d. short and descending
   -e. long and relaxed

22. Which of the announced cadence points has the most surprising chord?

   -a. one
   -b. two
   -c. three
   -d. four
   -e. five

23. In this excerpt one melodic motive is heard several times. When initially presented it is best described as

   -a. descending by skip
   -b. descending chromatically
   -c. ascending stepwise
   -d. ascending by skip
   -e. ascending chromatically
Form C

24. In this passage the phrases are

- a. of equal length
- b. shorter and clearer at the first than in the latter part
- c. long throughout
- d. shorter and clearer in the second half than in the first
- e. heard in the low register

25. The sound of the solo instrument playing in the low register is best described as being

- a. delicate
- b. metallic
- c. reedy
- d. crisp
- e. thin

26. The sound of this instrument is best described as being

- a. mellow
- b. metallic
- c. sweet
- d. lush
- e. reedy

27. The sound of the solo instrument is best described as being

- a. shrill
- b. brilliant
- c. dry
- d. velvety
- e. thin

28. For the most part, the melody played by the solo instrument is best described as being

- a. smooth and in the high register
- b. smooth and in the low register
- c. jagged and in the high register
- d. jagged and in the middle register
- e. jagged and in the low register
Form C

29. Compared with the first melodic instrument, the tone of the second melodic instrument is less

a. mellow  c. reedy
b. piercing  d. strident
e. nasal

30. For the most part, in this excerpt the harmony is

a. dissonant, and of less importance than the melody
c. consonant, and of less importance than the melody
b. dissonant, and of greater importance than the melody
d. consonant, and of greater importance than the melody
e. consonant, and of greater importance than the rhythm
APPENDIX H

PILOT TEST D
Form D

1. Which note of the most important musical motive receives the greatest accent?
   a. the first  
   b. the second  
   c. the third  
   d. the fourth  
   e. the fifth

2. For the most part, the solo instrument is heard in its
   a. high register  
   b. middle register  
   c. middle-low register  
   d. low register  
   e. very low register

3. Two melodic parts are heard in the beginning of this excerpt. When the second part enters it does so
   a. in a higher register, and with shorter notes  
   b. in a higher register,  
   c. in a lower register, and with shorter notes  
   d. in a lower register, and with longer notes  
   e. in a lower register, and with the same length notes

4. For the most part, this passage may be described as having
   a. full scoring with changes in the dynamics level  
   b. full scoring with no change in the dynamics level  
   c. thin scoring with no change in the dynamics level  
   d. thin scoring with changes in the dynamics level  
   e. thin scoring with a consistently high volume level

5. The opening consists of the simultaneous sounding of
   a. one tone  
   b. two tones  
   c. three tones  
   d. four tones  
   e. more than four tones
Form D

6. There are ______ very strong points of "harmonic arrival" or points of "repose" in this passage.

   a. 1  c. 3
   b. 2  d. 4
   e. 5

7. Which of the following is the most important aspect of the musical motive which is repeated many times during this excerpt?

   a. Its harmony  c. Its rhythm
   b. Its melody    d. Its unique use of  
                    orchestral instruments
   e. Its tone quality

8. The most important aspect of the opening of this passage are:

   a. melody and rhythm  c. melody and harmony
   b. tone color and harmony  d. rhythm and tone color
   e. melody and tone color

9. The phrases

   a. are of equal length  c. are very short
   b. are of unequal length  d. have varying lengths
   e. have unclear endings

10. Four phrase endings are announced. The points of greatest rest (harmonically) occur at

    a. 1 and 2  c. 2 and 3
    b. 1 and 4  d. 2 and 4
    e. 3 and 4
Form D

11. Assuming that this passage contains four phrases, the last part of the last phrase is most closely related to which of the following (in a melodic sense):

- a. 1st phrase, 1st part
- b. 1st phrase, 2nd part
- c. 2nd phrase, 2nd part
- d. 3rd phrase, 2nd part
- e. 4th phrase, 1st part

12. The melody moves mostly by

- a. leaps
- b. skips
- c. steps
- d. repetition of a single tone
- e. a combination of skips and leaps

13. The style of a melody may be somewhat relaxed or somewhat tense. In this passage both are present. In which of the following orders do they occur?

- a. 1-relaxed, 2-relaxed, 3-tense
- b. 1-tense, 2-tense, 3-relaxed
- c. 1-relaxed, 2-tense, 3-relaxed
- d. 1-tense, 2-relaxed, 3-tense
- e. 1-tense, 2-tense, 3-relaxed

14. In this excerpt the music seldom comes to a point of repose. The most likely reason for this is that the harmony is

- a. simple rather than complex
- b. static rather than active
- c. "conventional"
- d. tonally obscure
- e. rich

15. The principal melody in this passage

- a. moves by steps only
- b. moves by skips only
- c. moves by steps and skips
- d. is "flowing"
- e. never reaches a climax
16. The sound of this voice is best described as being;
   a. dark                c. brilliant
   b. dry                 d. soft
   e. muffled

17. The underlying pulsations fall into a pattern consisting of ____ beats.
   a. 2                   c. 4
   b. 3                   d. 5
   e. 7

18. The melody in this excerpt is based upon tones from a (an)
   a. major scale         c. synthetic, 20th century scale
   b. minor scale         d. ancient Oriental pentatonic scale
   e. computer

19. Which of the following best describes the melodic phrases?
   a. short and choppy    c. simple and humorous
   b. bold and stirring   d. constantly descending
   e. long and flowing

20. Which one of the following is Not heard in the passage?
   a. moderate tempo      c. large melodic range by the solo string instrument
   b. flexible tempo      d. much syncopation
   e. phrases of moderate length

21. The tone quality of the principal solo instrument is best described as being
   a. reedy                c. mellow
   b. hard                 d. thin
   e. dark
Form D

22. What term best describes the bass part in the excerpt?
   a. active          c. energetic
   b. scale-like      d. static
   e. disjunct

23. The texture of this passage is best described as being
   a. polyphonic       c. monophonic
   b. homophonic       d. thin
   e. simple

24. This passage is best described as
   a. ponderous        c. lilting
   b. awkward          d. serene
   e. passive

25. This excerpt has harmony which is
   a. simple           c. thin
   b. very stable      d. static
   e. rather dissonant

26. The style of articulation in this passage is best described as being
   a. smooth           c. serene
   b. detached         d. flowing
   e. graceful

27. The tone of the solo instrument is
   a. thin            c. dry
   b. muffled         d. penetrating
   e. coarse
28. The tempo
   a. is moderate and gradually slows down
   b. is moderate and gradually speeds up
   c. is moderate and steady
   d. is very fast
   e. is very slow

29. The sound of these male voices is best described as
   a. powerful
   b. thin
   c. harsh
   d. sparkling
   e. light

30. In this passage the phrases
   a. are short with clear endings
   b. are long with clear endings
   c. overlap
   d. have frequent cadences
   e. have points of repose often
APPENDIX I

MUSIC DESCRIPTION TEST
MUSIC DESCRIPTION TEST

It is most important that you complete the following questionnaire carefully. Count any activities of this year as a complete year.

NOTE---------This information is to be indicated in numbers 61 through 75 on the answer sheet.

A. Indicate the number of years you have participated in BAND by marking the appropriate space in either 61 or 62.

61. a. less than one year c. 2 years
    b. 1 year d. 3 years
       e. 4 years

62. a. 5 years c. 7 years
    b. 6 years d. 8 years
       e. 9 years or more

B. Indicate the number of years you have participated in ORCHESTRA by marking the appropriate space in either 63 or 64.

63. a. less than one year c. 2 years
    b. 1 year d. 3 years
       e. 9 years or more

C. Indicate the number of years you have participated in CHORUS or GLEE CLUB by marking the appropriate space in either number 65 or 66.

65. a. less than one year c. 2 years
    b. 1 year d. 3 years
       e. 4 years

66. a. 5 years c. 7 years
    b. 6 years d. 8 years
       e. 9 years or more
D. Indicate the number of years you have participated in GENERAL MUSIC (classroom music where you might have sung, played instruments, listened to and read about music) by marking the appropriate space in either number 67 or 68.

67. a. less than one year  c. 2 years
   b. 1 year                 d. 3 years
   e. 4 years

68. a. 5 years                    c. 7 years
   b. 6 years                   d. 8 years
   e. 9 years or more

E. Indicate the number of years you have taken private music lessons by marking the appropriate space either 69 or 70.

69. a. less than one year  c. 2 years
   b. 1 year                 d. 3 years
   e. 4 years

70. a. 5 years                    c. 7 years
   b. 6 years                   d. 8 years
   e. 9 years or more

F. Indicate the number of years you have had a course in MUSIC APPRECIATION by marking the appropriate space in number 71.

71. a. less than one year  c. 2 years
   b. 1 year                 d. 3 years
   e. 4 years

---LEAVE NUMBER 72 BLANK---

G. Indicate the number of years you have had a course in MUSIC THEORY by marking the appropriate space in number 73.

73. a. less than one year  c. 2 years
   b. 1 year                 d. 3 years
   e. 4 years

---LEAVE NUMBER 74 BLANK---
H. Indicate your year in high school by marking the appropriate space in number 75.

75. a. grade 9   c. grade 11
    b. grade 10   d. grade 12

I. If you play a music instrument or instruments write the name of the instruments in the space provided for your name at the top of the answer sheet.

J. Mark the appropriate space for "male" or "female" located near the identification number at the top of the answer sheet.

PREPARE TO TAKE THE TEST BEGINNING WITH ITEM NUMBER ONE ON THE ANSWER SHEET.
1. The tone of the solo instrument is
   a. thin                c. dry
   b. muffled             d. penetrating
   e. coarse

2. For the most part, the melody played by the solo instrument is best described as being
   a. smooth and in the high register
   b. smooth and in the low register
   c. jagged and in the high register
   d. jagged and in the middle register
   e. jagged and in the low register

3. This passage contains
   a. one melodic part (voice)
   b. two melodic parts (voices)
   c. three melodic parts (voices)
   d. four melodic parts (voices)
   e. five melodic parts (voices)

4. The vibrato of the solo string instrument helps bring about a more __________ tone.
   a. warm                c. shrill
   b. metallic            d. brittle
   e. crisp

5. The sound of this instrument is best described as being
   a. mellow               c. sweet
   b. metallic             d. lush
   e. reedy
6. This passage may be described as being strong and energetic. Which of the following is not present to contribute to this?
   a. placement of accents       c. detached articulation
   b. quick tempo                d. syncopation
   e. flowing melody

7. Rhythmically this passage is best described as being
   a. vigorous and complex       c. weak and complex
   b. vigorous and simple        d. weak and simple
   e. slow and elastic

8. Harmonically this passage is best described as being,
   a. rich and static            c. thin and static
   b. rich and sonorous          d. thin and tense
   e. thin and relaxed

9. This melody is best described as being
   a. jagged-covering a large range
   b. jagged-covering a small range
   c. smooth-covering a large range
   d. smooth-covering a small range
   e. flowing

10. With respect to tempo, the passage
    a. gradually slows down       c. has an elastic beat throughout
    b. gradually accelerates      d. has a very strict beat
    e. abruptly changes pace to a much slower tempo near the end
11. The most important aspects of the opening of this passage are:
   a. melody and rhythm
   b. tone color and harmony
   c. melody and harmony
   d. rhythm and tone color
   e. melody and tone color

12. Which of the announced cadence points has the most surprising chord?
   a. one
   b. two
   c. three
   d. four
   e. five

13. Which best describes the texture of this excerpt, once all of the instruments have entered?
   a. one melody--no accompaniment
   b. two melodies--no accompaniment
   c. one melody with accompaniment
   d. two melodies with accompaniment
   e. three melodies--no accompaniment

14. The brass instruments in this excerpt sound
   a. muffled
   b. bright
   c. shrill
   d. pure
   e. piercing

15. Which of the entering instruments is playing in the most detached style?
   a. first
   b. second
   c. third
   d. fourth
   e. fifth
16. This passage contains music for a solo instrument which is accompanied by other instruments. Which combination below best describes the tone qualities?

a. solo-sonorous, 
   accompaniment-crisp
b. solo-crisp, 
   accompaniment-mellow
c. solo-rich, 
   accompaniment-shrill
d. solo-shrill, 
   accompaniment-full
e. solo-nasal, 
   accompaniment-sweet

17. The melody moves mostly by

a. leaps
b. skips
c. steps
d. repetition of a single tone
e. a combination of skips and leaps

18. This passage contains four phrases. Which combination of phrases contains the most syncopation?

a. phrases 1 and 2
b. phrases 1 and 3
c. phrases 1 and 4
d. phrases 2 and 3
e. phrases 3 and 4

19. The second (contrasting) section in this excerpt is contrasted with the first section in all of the following ways except:

a. abrupt change of dynamic level
b. abrupt key change
c. a more important bass line
d. a bass line which is more melodic
e. more important for violins and less for woodwinds
20. Toward the end of the passage greater excitement is achieved by all of the following except:

a. having the violins play in a higher register  
c. adding a second melody in the bass instruments

b. increasing activity in the percussion section  
d. increasing the volume in the percussion section

e. changing the tonal center

21. For the most part, the solo instrument is heard in its

a. high register  
c. middle-low register

b. middle register  
d. low register

e. very low register

22. This excerpt has harmony which is

a. simple  
c. thin

b. very stable  
d. static

e. rather dissonant

23. For the most part, this passage may be described as having

a. full scoring with no changes in the dynamics level  
c. thin scoring with no change in the dynamics level

b. full scoring with no change in the dynamics level  
d. thin scoring with changes in the dynamics level

e. thin scoring with a consistently high volume level
24. The style of articulation in this passage is best described as being
   a. smooth       c. serene
   b. detached     d. flowing
   e. graceful

25. The texture of this passage is best described as being
   a. polyphonic  c. monophonic
   b. homophonic  d. thin
   e. simple

26. The tone quality of this instrument is best described as being
   a. thin        c. heavy
   b. shrill      d. harsh
   e. breathy

27. This excerpt has which of the following time element qualities?
   a. slow tempo-strong pulsation every 3 beats
   b. slow tempo-strong pulsation every 2 or 4 beats
   e. moderate tempo-strong pulsation every 3 beats
   c. quick tempo-strong pulsation every 3 beats
   d. quick tempo-strong pulsation every 2 or 4 beats

28. The single melodic motive heard most is based on
   a. an ascending scale       c. an ascending broken chord
   b. a descending scale       d. a descending broken chord
   e. a single tone repeated four times
29. The sound of the solo instrument is best described as being

   a. shrill                      c. dry
   b. brilliant                   d. velvety
   e. thin

30. You are about to hear five related passages. Select the version having the most complex harmony.

   a. A                          c. C
   b. B                          d. D
   e. E

31. This passage is best described as

   a. ponderous                  c. lilting
   b. awkward                    d. serence
   e. passive

32. In this excerpt the music seldom comes to a point of repose. The most likely reason for this is that the harmony is

   a. simple rather than complex  c. "conventional"
   b. static rather than active   d. tonally obscure
   e. rich
APPENDIX J

MUSICAL STIMULI USED FOR THE
MUSIC DESCRIPTION TEST


6. Mennin, Peter. String Quartet No. 2, Fourth movement, Beginning to meas. 15.

7. Mennin, Peter. String Quartet No. 2, Fourth movement, Beginning to meas. 8.


14. Schütz, Heinrich. Fili mi, Absalon (Symphoniae Sacrae, I [1629]), Beginning to meas. 8.


22. Marenzio, Luca. *Solo e Pensoso* (Magrigal), Beginning to meas. 11.


29. Nielsen, Carl. *Symphony No. 3 (Sinfonia Expansiva), OP. 27*, Second movement, Beginning to meas. 5.

30. Saint-Saëns, Camille. *Concerto No. 4 for Piano and Orchestra*, Op. 44, (a) Beginning to meas. 8, (b) Meas. 18-33, (c) Meas. 34-41, (d) Meas. 74-81, (e) Meas. 9-16.


APPENDIX K

O.S.U. ITEM ANALYSIS PROGRAM
O.S.U. ITEM ANALYSIS PROGRAM

PURPOSE

To provide a rapid and efficient means of analyzing objective type tests in accordance with standard analysis procedures.

RESTRICTIONS

1. OSIA is a SCATRAN program in three segments and will operate during time-sharing.

2. For restrictions on size of data and preparation of data input decks, see Appendix (parts C. and D).

3. This program operates through the O.S.U. System only.

USAGE

Multiple sets of data may be processed successively under control of data control cards. See Appendix.

TIMING

System and compilation time totals 1.3 minutes.

<table>
<thead>
<tr>
<th>No. students</th>
<th>No. Items</th>
<th>Exterior Criteria</th>
<th>Exec. Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>67</td>
<td>yes</td>
<td>.4</td>
</tr>
<tr>
<td>350</td>
<td>50</td>
<td>no</td>
<td>1.4+</td>
</tr>
<tr>
<td>25</td>
<td>50</td>
<td>no</td>
<td>.2</td>
</tr>
</tbody>
</table>

SOURCE

Ruth Knight
A. Purpose

The purpose of this program is to provide a rapid and efficient means of analyzing objective-type tests in accordance with standard analysis procedures.

B. Analyses Performed

1. Analysis performed on master control card.

2. A score analysis which gives a score list, frequency distribution, cumulative frequency, and percentiles.

3. Item statistics
   a. item difficulty
   b. item discrimination (phi coefficient and point biserial r)
   c. proportion of total group answering item correctly
   d. alternative count for upper and lower groups of subjects taking the test (up to 9 alternatives)

4. Summary statistics
   a. total number of persons taking the test
   b. number of persons in each of upper and lower groups
   c. number of items on the test
   d. mean scores for upper, lower, and total groups
   e. median score for total group
   f. standard deviation for total group
   g. reliability coefficient and standard error by one or all of the following formulae:
      1. Kuder-Richardson #20
      2. Kuder-Richardson #21
      3. Odd-Even split corrected by the Spearman-Brown Prophecy formula

5. A card containing the ID, test score, standardized score, and percentile for each individual (optional).

6. A listing containing test ID, student ID and name, total score, standardized score and percentile for each individual (optional).
Note: upper and low groups may be chosen by means of an external criteria (optional).

C. Program Language and Requirements

This is a SCATRAN program in three segments and will time-share. The program at present will accommodate up to 2500 subjects and 118 items. These numbers may be extended by changing the parameters card, but the number of items must be a multiple of 59. For example, if the program must handle 150 items, the parameter must be changed from 118 to 177. Any extension of parameters will eliminate the time-sharing feature.

D. Deck Setup

1. Master Control Card (required)

<table>
<thead>
<tr>
<th>Col.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5-7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14-20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>blank</td>
<td></td>
<td>number of items on exterior test (if provided)</td>
<td></td>
<td>no. alternatives per item on ext. test (if provided)</td>
<td></td>
<td>number of key cards for ext. test (if provided)</td>
<td></td>
<td>number of cards per subject on ext. test (if provided)</td>
<td>percentage of total to constitute upper group (of form 000.xxx)</td>
</tr>
</tbody>
</table>
21-27 percentage of total to constitute lower group (of form 000.xxx)  
*for example, 27.5% would be punched 000.275

28 blank

29 indicator - is name deck provided?  
0 no  
1 yes

30 blank

31 indicator - on exterior deck, are total scores given? (if provided)  
0 no, totals not given - deck must be scored  
1 yes

2. Exterior Criteria Test Deck  
(optional depending on col. 3 of master control card)

a. key card(s) - must be omitted if col. 31 above punched with a 1
   - same format as described later for regular data key cards if col. 31 above punched with a 0

b. data cards - if 1 in col. 31 above, first 11 columns same as for regular data described later; col. 12-14 have score
   - if 0 in col. 31 above, same format as described later

c. terminal card  
Col. 1  6

2-80 blank

3. Name Deck (optional depending on col. 29 of master control card above)

a. one card for each student number appearing in the data decks (these must be sorted in increasing numerical order by student ID number)
Col. 1   blank
2-5   ignored by program
6-10   student ID number
11-40   subject's name

b. terminal card

Col. 1   6
2-80   blank

4. Regular Data (required)

a. Title card(s)

This title (up to 3 lines of 66 characters or less per line) appears at appropriate places in the output listing.

Col. 1   0
2-4   blank
5   title card sequence number ($\leq 3$)
6   blank
7-72   desired line of title
73-80   not used

b. parameter card

Certain parameters defining the test and desired options are supplied the program by this card.

Col. 1   1
2   blank
3-5   number of items on test
6   blank
7-11   number of persons taking test (not used by program)
12   blank
13  number of alternatives per item (up to 9)
14  blank
15  item discrimination coefficient (not used by program—both phi coefficient and point biserial r are arbitrarily computed)
16  blank
17  reliability coefficient desired
   0 KR21
   1 KR20
   2 Odd-Even
   3 all of above
18  blank
19  raw score listing options
   blank  nothing
   0  punch cards only
   1  punch cards and list
   2  list only
20  blank
21-22  number of key cards
23  blank
24-25  number of data cards per subject (1 or 2)
26  blank
27-33  new standard deviation (of form xxx.xxx)
34  blank
35-41  new mean (of form xxx.xxx)
42-80  ignored by program

c. key cards(s) for scoring the test
Col.  1  2
   2  key card sequence number (1 or 2)
   3-4  test ID number
5 form number
6-11 ignored by program
12-70 key or correct answers for each item
71-80 not used
d. data cards

Containing the responses to each item on the text by each individual taking the test.

Col. 1 3
2 card sequence number (1 or 2)
3-4 test ID number
5 form
6-10 student ID number
11 sex (ignored by program)
12-70 subject's responses for each item
71-72 raw score (not used)
73-80 not used

*These cards must be sorted in increasing numerical order by student ID number.

e. terminal card

Col. 1 5
2-80 blank

5. End of Run Card

Col. 1 4
2-80 blank

**Any number of sets (1. -4.) may precede the End Run card. The End Run card appears only once at the very end— not between individual forms.
E. Method

1. Item Difficulty

For the combination group (upper and lower), the difficulty is found by dividing the total number getting the item correct by the total number in the two groups.

2. Phi Coefficient

$$\phi = \frac{a \delta - \beta \gamma}{\sqrt{pq \cdot p'q'}}$$

where $a$ is the ratio of the upper group answering the item correctly to the total number in the two groups.

$\beta$ is the ratio of the lower group answering the item correctly to the total number in the two groups.

and $\delta$ is the ratio of the upper group answering the item incorrectly to the total number in the two groups.

$\gamma$ is the ratio of the lower group answering the item incorrectly to the total number in the two groups.

$$p = \frac{a + \beta}{\beta}$$

$$q = \frac{\delta + \delta}{\delta}$$

$$p' = \frac{a + \delta}{\delta}$$

$$q' = \frac{\beta + \delta}{\delta}$$

3. Point Biserial r Coefficient

$$\rho_{bis} = \frac{M_p - M_t}{s} \cdot \sqrt{p/q}$$

where $M_p$ is the mean test score of those getting the item correct.

$M_t$ is the mean test score of the total group.

$p$ is the number of students getting the item correct.

$q$ is the number of students getting the item wrong.

$s$ is the standard deviation.
4. Upper and Lower Groups

The percentages of the total which are to constitute the upper and lower groups are specified by the user on the master control card. Groups are selected on the basis of high (or low) test scores either on an external criteria test or on the test being analyzed. This is specified in column 3 of the master control card.

5. Mean Score

The mean score for a given group (upper, lower, or total) is the sum of scores of the group divided by the total number in the group.

6. Median Score

\[ MD = L + \frac{i(N/2 - F)}{f} \]

where

- \( MD \) is the Median
- \( L \) is the lower limit of the Median interval
- \( i \) is the length of the Median interval
- \( f \) is the frequency for the Median interval
- \( F \) is the cumulative frequency for all intervals below the Median interval
- \( N \) is the total number of subjects taking the test

7. Standard Deviation

\[ \sigma = \sqrt{\frac{N \sum x^2 - (\sum x)^2}{N(N-1)}} \]

where

- \( \sigma \) is the standard deviation of the test
- \( x \) is the individual score
- \( N \) is the total number of subjects taking the test

8. t-score (computed for each individual subject)

\[ \left( \frac{x - \bar{x}}{s} \cdot \sigma \right) + \mu \]
where \( x \) is the individual's score
\( \bar{x} \) is the mean score
\( s \) is the standard deviation
\( \sigma \) is the new standard deviation specified on regular data parameter card
\( \mu \) is the new mean specified on the regular data parameter card

9. Reliability Coefficient

Reliability coefficients may be computed from one or all of the following formulae:

a. Kuder-Richardson formula #20

\[
rtt = \frac{k}{k-1} \left( \frac{s^2 - \sum p \cdot q}{s^2} \right)
\]

\( rtt \) is the estimate of reliability
\( k \) is the number of items in the test
\( s \) is the standard deviation of the test
\( p \) is the proportion passing a particular item
\( q \) is the proportion failing the same item

b. Kuder-Richardson formula #21

\[
rtt = \frac{k}{k-1} \left[ 1 - \frac{n}{s^2} \left( 1 - \frac{\bar{x}}{k} \right) \right]
\]

\( \bar{x} \) is the mean score of the group
other symbols have same meaning as in a. above

c. Odd-Even split

\[
rtt = \frac{N \sum \delta \cdot E - (\sum \delta \cdot \sum E)}{\sqrt{[N \sum \delta^2 - (\sum \delta)^2] \cdot [N \sum E^2 - (\sum E)^2]}}
\]

\( \delta \) is the odd-number score
\( E \) is the even number score
\( N \) is the number of pairs of scores

* This correlation yields a relationship between two tests of 1/2 the length of the true test and is corrected for attenuation by the Spearmen-Brown Prophecy formula:
2 \frac{r_{tt}}{r = 1 + r_{tt}}

10. Standard Error

For each of the above reliability coefficients above, a standard error is computed according to the following formula:

\[
\text{Err} = s \sqrt{1-r}
\]

s is the standard deviation
r is the appropriate reliability coefficient

Notes on the program:

Special parameters:

NOS 2500 (number of students)
DSZ 118 (number of items on test)
DSZ1 3540 (must be 30 x DSZ)

Note that Segment 3 has only 26 locations available before it exceeds time-sharing capability. Library extensions used may not therefore be greater than 26.

Three tape units are assigned for the use of 6 non-system reserve files. Another unit accommodates the segment tape.


Beach, Frank A. *Beach Music Test*. Emporia, Kansas: Kansas State Teachers College, Bureau of Educational Measurements, 1930.


Strouse, Catherine E. Strouse Music Test. Emporia, Kansas: Kansas State Teachers College, Bureau of Educational Measurements, 1937.