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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

AN ANALYSIS OF ACHIEVEMENT, PROCEDURES, AND ACTIVITIES OF SELECTED HIGH SCHOOL BAND PROGRAMS IN OKLAHOMA

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

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degree of

DOCTOR OF MUSIC EDUCATION

BY

JAMES AUBREY JARRELL

Norman, Oklahoma

1971

AN ANALYSIS OF ACHIEVEMENT, PROCEDURES, AND ACTIVITIES OF SELECTED HIGH SCHOOL BAND PROGRAMS IN OKLAHOMA

APPROVED BY

DISSERTATION COMMITTEE

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J.A.J.

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AN ANALYSIS OF ACHIEVEMENT, PROCEDURES, AND ACTIVITIES OF SELECTED HIGH SCHOOL BAND PROGRAMS IN OKLAHOMA

CHAPTER 1

NATURE AND SCOPE OF THE PROJECT

This study is concerned with an analysis of achievement, procedures, and activities as found in the band programs of thirty-one high schools in the State of Oklahoma. To this writer's knowledge, there has not been a study of musical achievement in the high schools of Oklahoma. This study has been undertaken as an attempt to provide a source of information concerning identifiable outcomes of instrumental music education in terms of achievement with relationship to teacher methods and student activities.

If music education is to continue to be a part of our general education, it must be justified by its worth in teaching what it purports to teach. A broad, state-wide evaluation seems appropriate to determine whether or not the goals of music education in the high school are being realized and, if so, to what degree.

It would seem that, for the most part, music education in the schools of Oklahoma is limited to instruction received while participating in performing groups: band, orchestra, and chorus. Since music

education for many students is centered around performance, an analysis and appraisal of the results of this particular process of music education in Oklahoma seems warranted.

Past evaluations have been based on data from questionnaires designed to assess the potential for a successful music education program. However, recognizing the gulf that exists between potential and realization in music education, there seems to be a need for an achievement-oriented appraisal of music education. This problem is summed up by Higgins and Merwin:

> However, there is a great lack of knowledge concerning the level of education accomplishment of larger groups (referring to state, regional, and national). The information we have at state and national levels is confined almost exclusively to process rather than outcome variables - by process variables we mean aspects of the educational environment to which the particular child is exposed. For instance, we gather information on the number of teachers in the country, the type of degrees they hold, their ages and experience. We enumerate the number of books in libraries and calculate ratios of students and teachers. However, we currently have inadequate information regarding the outcomes of educational process.[1]

It appears that evaluation of the music education process has been a neglected part of music education in general. Colwell has been critical of evaluation as presented in music education texts:

> One recent text lists nearly forty questions which may be used to evaluate the music program, out of which not a single question inquires what the pupils have learned, whether habits and attitudes have been changed, or skills and appreciation developed.[2]

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[1]Martin J. Higgins and Jack C. Merwin, "Assessing the Progress of Education in Music," Music Educators Journal, LIII, No. 8 (1957), pp. 52-53.

[2]Richard Colwell, "Evaluation: Its Use and Significance," Music Educators Journal, XLIX, No. 4 (1963), p. 45.

Basic Assumptions

It is assumed that musical achievement of performing groups can be measured using an objective test as the instrument of measurement. It is also assumed that the student can identify certain elements of music and respond regarding their nature after having learned those elements necessary for performance. Although it cannot be assumed that knowledge of these elements would assure that the student would be proficient as a performer, it is reasonable to assume that the student could not be proficient without the knowledge of these elements.

Delimitations of the Study

The validity of an evaluation of this type will depend upon the validity and reliability of the measurement instrument used. The results as reported in this study are conclusive only as restricted by the limitations of the achievement test employed. The cause and effect relationships are valid only so far as the questionnaires were answered honestly and the correlations between questionnaire items and test scores are significant.

The areas investigated and included in this report are divided into two categories: (1) those activities that involve students on an individual basis; and (2) those procedures that affect all students within a given band or situation. Those variables affecting individual students are included in the following list:

1. age
2. grade
3. sex

4. instruction in piano (reported as total number of years regardless of when accrued)
5. number of years in band
6. participation in district solo contest
7. participation in state solo contest
8. participation in district ensemble contest
9. participation in state ensemble contest
10. participation in all-district band
11. participation in all-state band
12. participation in stage band
13. private study on their band instrument (currently)
14. participation in chorus as a regular part of their class schedule
15. participation in orchestra as a regular part of their class schedule
16. participation in an extra-curricular music group
17. total practice time per week
18. student music preference (marches, popular, and contest type music)
19. test score

Those variables reported as procedures (or characteristics common to all students in a given school) include the following:

1. major instrument of the teacher
2. teacher tenure (less than two years constitutes non-tenure)
3. total years experience of teacher
4. services of an assistant
5. regularly scheduled sectional rehearsals
6. total class time per week

7. total rehearsal time allotted to reading

8. total time spent preparing for district contest

9. use of technique studies as a regular part of the rehearsal schedule

10. total marching performance per year

11. total public concert performances per year (including contests, formal concerts, student assemblies and special programs but not including football games and pep rallies)

12. total number of weeks spent marching

13. participation in marching contest(s)

14. grading procedure of teacher (classified as to subjective or objective)

15. district contest ratings in concert (reported as a numerical average for the years 1969, 1970, and 1971)

16. district contest ratings in sightreading (reported as a numerical average for the years 1969, 1970, and 1971)

17. state contest ratings in concert (reported as a numerical average for the years 1969 and 1970)

18. state contest ratings in sightreading (reported as a numerical average for the years 1969 and 1970)

19. summer band program (does not include summer marching programs)

20. school classification

21. difficulty level of repertoire

The correlation matrix and resulting factor analysis include all the variables on the preceding lists with the exception of 17, category "1"; 17 and 18, category "2". Statistical treatment does not include students below grade nine; however, achievement of these grades is reported.

Extra-musical factors such as physical plant, expenditure per pupil, teacher salaries, number of students in the program, and teaching

load, will not be included in this report.

Procedure

Selection of Achievement Test

One of the major tasks in implementing a study of this nature is the selection of a suitable instrument for measuring achievement. The ideal achievement test would be one that is short, comprehensive, valid, reliable, and standardized (using a large population sample).[3] Since a music test which is both short and comprehensive is nearly out of the realm of feasibility, an instrument which would conform adequately in reliability, validity, and length was sought. A Test to Measure the Ability of High School Students to Evaluate Musical Performance by John Iltis was the instrument selected. One class period was allocated by the participating schools for administering the test; therefore, comprehensiveness was not feasible in this study. Of the tests reviewed, only the Iltis test proved to be completely relevant to those areas stressed daily by most band teachers. It also offers the advantage of having been normed to a limited degree, providing statistics obtained from groups of students very similar to those examined in this study. The test is the product of a doctoral study completed by Iltis at Indiana University in 1970.[4] Chapter two will be devoted to a de-

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[3]William E. Whybrew, Measurement and Evaluation in Music (Wm. C. Brown Company, Dubuque, Iowa, 1962), pp. 56-73.

[4]John Leon Iltis, "The Construction and Validation of a test to Measure the Ability of High School Students to Evaluate Musical Performance" (unpublished Mus. Ed.D. dissertation, Indiana University, 1970).

scription of this instrument.

Student Questionnaire

The rationale for selection of student questionnaire items was to include those activities and variables believed to have a direct effect on achievement. Since the test and the questionnaire were to be completed in one regularly scheduled class period, the questionnaire was necessarily brief, requiring less than five minutes for its completion. A copy of the student questionnaire is included in Appendix A.

Teacher Interview

Due to the possible ambiguity of some items pertaining to procedures, the author chose to use the structured interview for collection of data from individual teachers. The blanks for this purpose were prepared much in the same manner as those for the student questionnaire. With one exception, the data solicited from the teachers were recorded on the interview blanks by the author.[5] The teacher interviews were conducted on the same day as test administration.

Rationale for selection of items for the teacher interview was to include those procedures and variables that are believed to have a direct effect on student achievement. Items regarding the physical plant and budget were not included in this study. A copy of the teacher interview form is included in Appendix A.

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[5]In this exceptional case, time would not permit an interview so the investigator prepared written explanations for ambiguous questions and the teacher completed the interview blank at a later date.

Selection of Schools

The schools included in this study were selected at random. To insure an adequate representation of schools from the various classifications, randomization was limited to schools within a particular classification. All schools in a particular classification were assigned numbers in alphabetical order, beginning with one and continuing consecutively until all schools had been numbered. Numbers were then drawn from a bowl until all numbers from a given classification were drawn. This procedure was repeated until all classifications were selected. Schools were invited to participate in the project in the order their number was drawn until the desired number of participants had been obtained. Four schools each in classes AA, A, BB, and B were invited to participate in the study. Five schools each were invited to participate from classes C, DD, and D. The inclusion of five schools from each of the smaller classifications was necessary to achieve a balanced sample in terms of numbers of students. The classification system as prescribed by the Oklahoma Secondary School Activities Association is as follows:

1. Schools will be placed in one of the following classes according to the membership shown on the Accrediting Report sent to the State Department of Education on October 1st of the current school year. Senior high school will be based on grades 10, 11, and 12,. . .

    a. Class AA -- schools of 1,000 or more membership
    b. Class A -- schools of 750 to 999 membership
    c. Class BB -- schools of 450 to 749 membership
    d. Class B -- schools of 250 to 449 membership
    e. Class C -- schools of 175 to 249 membership
    f. Class DD -- schools of 86 to 174 membership
    g. Class D -- schools of less than 86 membership[6]

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[6]Oklahoma Secondary School Activities Association, "1968-1969 Yearbook," Leo K. Higbie, Executive Secretary, Oklahoma City, Oklahoma.

The band teachers from the high schools selected were contacted by telephone, the project was explained, and an invitation to participate in the project was extended. Enthusiastic response to the project resulted in all teachers accepting the invitation to participate. Before actual testing began, one school withdrew acceptance due to local scheduling difficulties.

The author feels that randomization was achieved due to the fact that schools were contacted in order of selection, and only one school included in this group failed to participate. That school was not replaced by an alternate because the population figures in its classification remained congruent with the other classifications.

Scheduling of Test Administration Dates

Arrangements for the test to be administered during the months of January and February were made in the following manner. In December, each teacher was sent a letter requesting information concerning rehearsal time and days his band rehearsed. The teachers were asked to specify the month, day, and time they wished the test to be administered to their group. They were also asked to list any dates that would be unsatisfactory due to possible conflicts. Following the receipt of information pertinent to scheduling, a master schedule was prepared. Teachers of each band were notified of the date and time of test administration and were requested to make available a screen for use with an overhead projector.

The excellent cooperation of the teachers resulted in the testing being completed in a total of five weeks, beginning on Monday,

January 4, 1971 and concluding on Friday, February 5, 1971. The months of January and February proved to be those most convenient for the teachers to include administration of an achievement test in their schedules.

Equipment Used in Test Administration

The Iltis test is a recorded test and designed to utilize musical scores in conjunction with recorded excerpts. Since, by Dr. Iltis' admission, part of the test tape is in rather poor fidelity,[7] the investigator found that quality equipment was needed to reproduce the sound at the audio level required for large-group test administration. For this purpose, a stereo amplifier with maximum power of thirty watts per channel was used. The speaker used in conjunction with the amplifier was an air-suspension stereo speaker housed in one cabinet. The audio equipment served its purpose quite well. Regardless of their location in the room, test subjects were able to hear all test items, and distortion was kept at a minimum.

Other equipment used in the test administration included a tape recorder, used in the capacity of a tape deck; an overhead projector for projection of musical scores; answer sheets; and number 2 lead pencils.

The only problems arising were those concerned with viewing of the musical score. The screens for the overhead projector varied in size from school to school, and in situations where the screen was small and the test group quite large, it was difficult for those farthest from

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[7]Iltis, "The Construction and Validation of a Test." p. 64

the screen to view the score. Since score viewing is optional on four of the five performance areas of the test, and experience in score reading was lacking in a majority of all students taking the test, the author feels that over-all test scores were not affected by this problem.

Testing Procedure

In all cases administration of the test took place during the regular class period assigned to band rehearsal. In most instances the test was administered in the rehearsal room, the exceptions being three administrations in school cafeterias and four in small auditoriums. The cafeterias offered the advantage of tables to write on, while the auditoriums seemed to accommodate the larger groups more satisfactorily with regard to score viewing. The author feels that the site of the test administration will have little or no effect on students' scores since smaller groups were at no disadvantage visually and the use of improvised lap boards in rehearsal room situations presented no apparent problems.

The first ten minutes of the testing period were utilized for a short, verbal introduction to the test and an explanation of the marking procedure for answer sheets. Since the answer sheets used in the administration of the test were different from those used by Iltis, that part of the instructions on the test tape was deleted.

After the introductory remarks pertaining to the nature of the test and the marking of answer sheets, the instructions and orientation for the test as presented on the test tape were played for the subjects. Following this playing, the students were given the opportunity to ask

questions concerning the test and the marking of the answer sheet. There were no practice tapes used in conjunction with the test administration.[8] Following the question and answer period, the test was administered without interruption.

Upon completion of the test (thirty-five minutes) the subjects answered the questionnaires. The author was available to answer any questions that arose during the completion of the questionnaires.

The entire procedure involving instructions, orientation, question and answer period, test administration, and completion of the questionnaires was accomplished in one fifty-minute class period.

Test Scoring and Collation of Data

After all students had been tested, the data from the student questionnaires and the teacher interview forms were transferred to unused answer spaces on the answer sheets. A simple code was devised for this purpose and the computer programmer was able to write a program enabling the computer punch cards to be punched directly from the answer sheets. Test blanks were machine scored in an operation separate from the operation previously described. Due to the unorthodox use of the machine-scored answer sheets and the sophisticated method of scoring the Iltis test, a separate program was necessary for this operation.

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[8]The use of practice tapes to familiarize the subjects with the nature of the exam were used by Iltis in varying degrees. This usage will be discussed in chapter two of this report.

Similar and/or Related Studies

"The Construction and Validation of a Test of Expressive Phrasing in Music," James Axel Hoffren.[9]

The Hoffren phrasing test consists of recorded pairs of examples, one of the examples containing a flaw or flaws. Each item of the pair is performed by the same musician and on the same instrument. Instruments used in performance are the trumpet, clarinet, and oboe.

Hoffren used a Wing subtest for a validity check. Correlation with the Wing subtest was .35. Correlation with independent adjudicators was .27 and .45.

"An Objective Performance-Related Music Achievement Test," Paul M. Mansur.[10]

The Mansur test is a non-recorded test. The student studies a musical example and responds to a series of statements that refer to the example. The student marks a preference as to whether he agrees or disagrees with the statements. The test consists of seventy-five items designed to elicit knowledge of musical terms and other items of interpretation.

The test was given to those students nominated for audition to the Oklahoma all-state band and orchestra. The results of the test were correlated with whether the student made the band or orchestra or failed

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[9]James Axel Hoffren, "The Construction and Validation of a Test of Expressive Phrasing in Music" (unpublished Ed.D. dissertation, University of Illinois, 1962).

[10]Paul M. Mansur, "An Objective Performance-Related Music Achievement Test" (unpublished Ed.D. dissertation, University of Oklahoma, 1965).

to qualify for one of the groups. The selection of those students for the band and orchestra was determined by individual auditions, evaluated by a panel of judges.

The reliability of the test was computed by chance halves and resulted in r = .617. Validity of the test was determined by two biserial correlations: first, computed with the assumption that the two groups were approximately equal (r_{bis} = .42); second, computed with the alternate assumption that the all-state selection is a discrete dichotomous factor (r_{pbi} = .34).

"The Construction, Validation, and Standardization of a Test in Music Perception for High School Performance Groups," John Holman Fluke.[11]

The Fluke test is a recorded test of sixty items, subdivided into three sections, rhythm, melody, and harmony. The student listens to the example and responds to a multiple-choice question. Following the response, the example is then played again. The Fluke test seems to be an excellent test of its kind; however, very little is mentioned concerning performance media of the test tape. Reliability, discrimination, and difficulty indices seem adequate.

"The Norming of a Test of Music Perception for Senior High School Performance Groups in the Rocky Mountain Area," Milton Maurice Schimke.[12]

Schimke revised and normed the Fluke test, using a population

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[11]John Holman Fluke, "The Construction, Validation, and Standardization of a Test in Music Perception for High School Performance Groups" (unpublished Ed.D. dissertation, Colorado State College, 1963).

[12]Milton Maurice Schimke, "The Norming of a Test of Music Perception for Senior High School Performance Groups in the Rocky Mountain

sample of 3,244 chorus, band, and orchestra students from five states in the Rocky Mountain area. Schimke also shortened the test from sixty items to fifty-one items, requiring forty-five minutes for administration.

"An Evaluation of the Music Program at the University of Illinois High School," Warren Henry Schuetz.[13]

The purpose of Schuetz's study was to formulate objectives for the music program at University High School, Urbana, Illinois, and to evaluate aspects of present and past behavior in terms of these objectives. Schuetz sought to determine the effectiveness of the music program in terms of progress shown in one semester and one year.

Schuetz also did a follow-up study of the graduates of University High School to discover the impact of the high school music program upon them. Schuetz used achievement tests and a questionnaire in his evaluation. The questionnaire was used in connection with the survey of impact on graduates of the high school. The abstract does not specify the tests used in conjunction with the study.

"An Investigation of Achievement in Music in the Public Schools of Sioux Falls, South Dakota," Richard James Colwell.[14]

Colwell's study was based on achievement occurring in one year.

Area" (unpublished Ed.D. dissertation, Colorado State College, 1966).

[13]Warren Henry Schuetz, "An Evaluation of the Music Program at the University of Illinois High School" (unpublished Ed.D. dissertation, University of Illinois, 1964).

[14]Richard James Colwell, "An Investigation of Achievement in Music in the Public Schools of Sioux Falls, South Dakota" (unpublished Ed.D. dissertation, University of Illinois, 1961).

His investigation centered around the following sub-problems.

1. How does the use of different instruction books affect development of playing skill in beginning wind and string instruction?

2. What are the differences in achievement of pupils when considered in terms of three categories: vocal only, instrumental only, and a combination of vocal and instrumental?

3. How are scores on achievement related to scores on aptitude, intelligence, ability to recognize and sing intervals, and on predictions of success by instrumental teachers?

Colwell used the following tests in the study:

Knuth Musical Achievement Test

Farnum Music Notation Test

Foss Test for Instrumental Achievement

Aliferis Music Achievement Test

Watkins-Farnum Performance Scale

"Effects of Participation in School Music Performance Organizations on the Ability to Perceive Aesthetic Elements in Recorded Music as Measured by an Original Test of Musical Perception," Joseph Kevin McCarthy.[15]

A questionnaire, the Test of Musical Perception, and the Musical Aptitude Profile, were administered to the members of bands, orchestras, and choruses in three schools selected by virtue of their having excellent musical performance organizations. Control groups having no school music performance experience were also used. Groups were in-

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[15]Joseph Kevin McCarthy, "Effects of Participation in School Music Performance Organizations on the Ability to Perceive Aesthetic Elements in Recorded Music as Measured by an Original Test of Musical Perception" (unpublished Ph.D. dissertation, Case Western Reserve University, 1969).

dividually matched to experimental subjects on mental ability, sex, and level in school. The tests showed a significant difference in ability to perceive aesthetic elements after participation in performance groups.

"A Study of Musical Achievement of Elementary and Junior High School Pupils at Malcolm Price Laboratory School of the State College of Iowa," Robert Joseph Tuley.[16]

The study was done on a basis of the effect of one year of musical instruction on the musical achievement of pupils in grades four through eight. The tests used were used for both pre-test and post-test.

Tuley used the following tests in the study:

Knuth Music Achievement Test

Gaston Test of Musicality

The Farnum Music Notation Test

Colwell Music Achievement Test

Suggestions were made for program development and evaluation that would serve as a point of departure for the faculty.

"A Study of the Musicality, Intelligence, and Music Achievement of Vocalists and Instrumentalists in Selected High Schools," Gus C. Lease.[17]

The purpose of the study was to determine differences between

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[16]Robert Joseph Tuley, "A Study of Musical Achievement of Elementary and Junior High School Pupils at Malcolm Price Laboratory School of the State College of Iowa" (unpublished Ed.D. dissertation, University of Illinois, 1968).

[17]Gus C. Lease, "A Study of the Musicality, Intelligence, and Music Achievement of Vocalists and Instrumentalists in Selected High Schools" (unpublished Ed.D. dissertation, University of South Dakota, 1959).

vocalists and instrumentalists in musicality, intelligence, and musical achievement. Instrumentalists were found to be superior on quantitative, pitch, tonal memory, rhythm, and musical memory, with there being no difference recorded on the verbal. Three music tests and one intelligence test were used for the study.

"An Evaluation of Music Programs in Selected Secondary Schools of Nebraska," Evert Paulson.[18]

Paulson's study was an evaluation of music programs of sixteen schools in Nebraska. He formulated a list of twelve principles indicative of quality music programs. Schools were evaluated on the basis of their compliance with the twelve principles. No tests were used in this evaluation.

"An Appraisal of Music Education in Knox County Schools, 1961-62," James Wilson Phifer.[19]

Phifer appraised the music program in the schools of Knoxville and Knox County, Tennessee, grades one through twelve. The appraisal was made in terms of goals and standards set forth in publications of of the MENC and the Tennessee State Department of Education.

The study included seven areas:

1. Stated purposes of education
2. Organization and function of music administration and supervision

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[18]Evert Paulson, "An Evaluation of Music Programs in Selected Secondary Schools of Nebraska" (unpublished Ed.D. dissertation, University of Nebraska, 1964).

[19]James Wilson Phifer, "An Appraisal of Music Education in Knox County Schools, 1961-62" (unpublished Ed.D. dissertation, University of Tennessee, 1963).

3. Music curriculum, grades 1-12
4. Personnel who teach music
5. Materials, equipment, and physical facilities for music instruction
6. Financial support of the music program
7. Business procedures in operating the music program

"The Status of Music in Iowa High Schools," Gerald Lee Lawson.[20]

Lawson's study was an investigation to determine the pattern of music courses and activities, items of equipment, teaching aids, extent of high school teachers fulfilling supervisory capacities, attitude toward undergraduate preparation, and attitude of the administration toward music teachers in general.

Questionnaires were used as the measuring instrument.

"The Development of Musicality Through High School Band Rehearsal Techniques: A Survey," John Allen Roberts.[21]

Robert's investigation was concerned with whether or not five concepts of musicality (theory, timbre, form, aesthetic sensitivity, and literature) were being taught in high school band. Questionnaires were used as instruments of evaluation. The survey included thirty-five band directors from Louisiana, Texas, and Oklahoma, and one hundred students who were recent graduates of the programs surveyed.

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[20]Gerald Lee Lawson, "The Status of Music in Iowa High Schools" (unpublished Ph.D. dissertation, University of Iowa, 1962).

[21]John Allen Roberts, "The Development of Musicality Through High School Band Rehearsal Techniques: A Survey" (unpublished Ph.D. dissertation, Louisiana State University, 1969).

Findings indicated that band directors considered the presentation, discussion or demonstration of the five concepts developed in the study, of less than average importance for their band rehearsals. Also, students (graduates) were not comprehending and retaining concepts the band directors believed they are teaching. It seems rather strange that the survey indicated the directors thought the five concepts of less than average importance and at the same time harboured the belief that they were teaching the concepts.

"An Appraisal of Music Programs in Public Schools of Illinois Excluding Chicago," William E. Johnston.[22]

Johnston used the questionnaire as a measuring instrument. The data was organized with relation to three variables - geographic location, school size, and type of school district.

The questionnaire was a modified activity-analysis inventory.

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[22]William E. Johnston, "An Appraisal of Music Programs in Public Schools of Illinois Excluding Chicago" (unpublished Ed.D. dissertation, University of Illinois, 1966).

CHAPTER II

DESCRIPTION OF THE MEASUREMENT INSTRUMENT

Introduction and Rationale

The instrument used in this study to measure achievement was a performance-oriented achievement test, A Test to Measure the Ability of High School Students to Evaluate Musical Performance by John Iltis. The Iltis test is the product of a doctoral study completed by Iltis at Indiana University in 1970.[23]

This test is constructed on the premise that instrumental music students in the high school are capable of making qualitative judgments concerning performance. Rationale for an achievement test of this nature is summarized in the following statement by Iltis:

> The ability to perceive performance errors and to discriminate between "artistic" and "amateurish" performances may well remain with a student long after he has ceased to perform. It is this writer's belief that gains in this type ability can be shown to be one of the long range learnings that result from band, orchestra, chorus, and small ensemble experience. It relates directly to the rehearsal procedure and class discussion often associated with band, orchestra, or chorus class.[24]

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[23] Iltis, "The Construction and Validation of a Test."

[24] Ibid., p. 2.

General Description

The Iltis test consists of twenty-five items, these being divided into five sub-tests (performance areas) of five items each. Those performance areas comprising the sub-tests are intonation, tone quality, interpretation, ensemble, and technique. Each item on the test includes a pair of recorded excerpts and requires the subject to make responses concerning three levels of performance: (1) quality difference in the two performances, (2) instrument or instruments committing the error(s), and (3) the nature of the error. For scoring purposes, this makes each item on the test worth a possible raw score of three, one point at each level, thus a total possible score of seventh-five. (Excerpts used in the Iltis test are identified in Appendix B.)

Level I of each test item in the intonation sub-test provides the student one of the following responses: " 'A' is least satisfactory"; " 'B' is least satisfactory"; "Equal - both 'A' and 'B' are equal and well in tune" (When this response is marked there is no response necessary at levels II and III.); "Equal - both 'A' and 'B' are equal and out of tune"; and "Don't know."[25] The responses at level I for items in each of the sub-tests are very similar in nature to those in the intonation area.

At level II in all sub-tests the choices are the same, that is, selection of the instrument or instruments committing the error. Two lists of instruments are given and the subject responds from one of the lists, depending on whether the excerpt is performed by woodwind quintet

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[25] Ibid., p. 153.

or brass quintet.

The third level of judgment is concerned with the nature of the error. This too is a five-foil, multiple-choice item with responses provided that are appropriate to the performance area being judged.

Test Administration

The administration of the Iltis test requires the test tape, transparencies of music examples, number two lead pencils, machine scored answer sheets, judging booklets (used in conjunction with the answer sheets) and a test site free from audial or visual distractions. The equipment necessary for playing the tape and an overhead projector (using either a blank wall or a screen) for projection of transparencies complete the items needed for test administration.

In addition to the basic items mentioned, Iltis used "training tapes" for orientation to the test. These tapes included items very similar to those appearing on the test tape. The following is a description of Iltis' use of the "training tapes":

1. If two class sessions were available, the entire training tape was to be used with the instructor starting and stopping the tape for class discussion. This tape was forty minutes in length.
2. If the entire test had to be given in one class period, a minimum of ten minutes for briefing was necessary, excluding the time needed to fill out background questionnaires.
3. If the short briefing session was held, training Tape 2 was employed. This tape provided one test example in each of the five major performance areas. This session required a minimum of ten minutes of briefing, but could be extended with class discussion if time was available.[26]

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[26] Ibid., p. 61.

If test materials are passed out beforehand, the test can be administered in forty-five minutes. This time span does not allow a period for answering questions. This is the time required for playing the training tape and test tape.

The response time for each of the twenty-five items is fifteen seconds, amounting to an average of five seconds for the response at each of the three levels.

The pairs of recorded excerpts are performed by either woodwind quintet or brass quintet, each item comprising a pair recorded by the same ensemble. In addition to hearing the two examples of a short excerpt, the subject may also view the score of the excerpt being performed. This is accomplished by means of transparencies and an overhead projector. Viewing of the score is optional to the subject so he does not have to watch the score if this proves to be confusing. However, the interpretation sub-test, by its very nature, dictates score reading.

Examinees mark their answers on a machine-scored answer sheet. A judging booklet is used in conjunction with the answer sheet and is so arranged that the examinee responds to the five items in each sub-test before turning the page to the next performance area.[27] The possible responses are the same at each level for all five items in each sub-test.

Iltis administered the final form of his test, the form used by the author, to 726 examinees. The following is Iltis' description of

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[27]Copies of the judging booklet are included in Appendix B.

the groups comprising this number.

1. Performer's Clinic. The group of seventy from the Indiana University Performer's Clinic represented a rather select sampling of high school students attending a two-week workshop mostly for private applied music study. Students from this group were composed of mixed instrumental, vocal, and piano backgrounds. They were tested during a music appreciation class that was preceded by an hour-long training session.
2. Senior Music Clinic. The group of 621 Senior Music students included 546 from the University of Wisconsin Summer Music Clinic Fundamentals Classes and also 75 students from the Sight-Reading Orchestra at the Indiana University Summer Music Camp. These students also represented a more select sampling than would normally be encountered in a high school situation, but they did not represent the highest ranking performers in attendence at either of these clinics.* They were given a briefing session of only ten minutes and questionnaires were handed out on the day prior to the actual testing.
3. Validating Group. The Validating Group of thirty-five was composed of selected music teachers and professional performers who took the test in the following separate administrations: (1) a graduate research methods class at Indiana University, (2) a graduate band conducting course composed of high school and college band directors, and (3) smaller groups of individuals selected for their experience and knowledge of wind instruments. All of the persons in the validating group replied to question four of the questionnaire with a response of 7, 8, or 9, indicating that they were professional musicians either as graduate students, performers, or teachers.
4. Junior Music Clinic Group. The 305 examinees from the University of Wisconsin Junior Summer Clinic were taken from music fundamentals classes and were treated separately because of their age and because they were unable to complete the entire test in the space of one hour. In this instance students were given an extended briefing session and one or two separate subtests for each class, so that a semi-valid picture of abilities of junior high students might be obtained.

*Students able to pass a proficiency examination were not required to take Fundamentals at the University of Wisconsin Clinic and the students enrolled in Sight Reading Orchestra at the Indiana Music Clinic did not include the top chair players who were in

Chamber Orchestra at the time the test was given.[28]

Scoring Method

The scoring method used in conjunction with the Iltis test is rather unique. The response at level I must be correct for the responses at levels II and III to be scored as correct responses. The response at level II must be correct for the response at level III to be scored as a correct response. This particular scoring procedure necessitated a different formula for determining item difficulty. Iltis developed the following formula for this purpose: " $pa = \frac{3x + 2y + z}{3}$, where pa = the average percent of correctness, x = the percent of examinees scoring 1 on the question, y = the percent of examinees scoring 2 on the question, and z = the percent of examinees scoring 3 on the question."[29]

The average difficulty of test items on the Iltis test ranges from 19.0 percent to 82.1 percent.[30] Iltis found the two most difficult subtests to be those involving intonation and interpretation items, while those involving technique and tone items were somewhat easier.[31] According to Iltis, "Item correlations with total scores show good discriminating power in every case ranging from 0.225 to 0.526."[32]

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[28]Iltis, "The Construction and Validation of a Test " pp. 77-78.

[29]Ibid., p. 70.

[30]Ibid., p. 90.

[31]Ibid., pp 90 and 94.

[32]Ibid., p. 96.

Validation and Reliability

Three types of validating procedures were used by Iltis to determine the validity of the test. The following is a description as presented by Iltis in his study.

> Three types of validating procedures were carried out in order to determine the validity of the test, (1) content validity, (2) concurrent validity, and (3) construct validity.
>
> Content Validity. Content validity was established by analyzing the content of adjudication forms from contests and festivals from Indiana, Wisconsin, and Illinois. Test items were developed that introduced errors relating to the types of evaluative decisions asked for on these forms. . .
>
> Content validity with respect to performance media employed in the construction of test items was established by analyzing the various types of performing groups found in high school music programs throughout the country. Musical instruments chosen for inclusion in the test were shown to be representative of both the curriculum and the adjudicative areas selected.
>
> Content validity with respect to the final test and the opinion of teachers was established by reviewing the test with individual teachers item by item. Items which were of doubtful validity were revised or replaced.
>
> Concurrent Validity. Concurrent validity was established by comparing the teacher ratings of students' musical potential with total test scores on Form V and VI and by comparing student self-ratings with total test scores on Form VII. Positive relationships exist with both of these procedures; that is, those who were rated high received high scores and those who were rated low received low . . .
>
> Construct Validity. Construct validity was established by means hypothesizing certain attributes of recognized adjudicators and music teachers known to the writer. These attributes were then represented in four of the questions presented in the two questionnaires used in Forms V, VI, and VII as follows:
>
> 1. Adjudicators and music teachers seem to prefer chamber music and classical music.
> 2. Adjudicators and music teachers have had considerable experience in the field of music performance either as teachers, conductors, or performers.
> 3. Adjudicators and music teachers have studied music privately for a long time in the course of their musical training.
> 4. Adjudicators and music teachers as a group would tend to score higher than any other group of musicians in a test of the ability to evaluate musical performance.

> If these hypothesized attributes could be shown to hold true for a sample population known by the writer, this population might then be used as a validating group for the test. Analysis of questionnaire responses with respect to total test scores support these hypotheses,. . .[33]

Reliability for the Iltis test was established by means of the split-half method, using odd and even items of the test.[34] The resulting product-moment coefficient, corrected by the Spearman-Brown Prophecy Formula, was .72.[35]

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[33] Ibid., pp 107, 110, 111.

[34] Ibid., p. 111.

[35] Ibid., p. 111.

CHAPTER III

DESCRIPTION OF POPULATION SAMPLE

The reader is reminded that the population sample was selected at random and in its broadest sense consists of band students from thirty-one high schools in Oklahoma. The students were not selected except that they were regularly enrolled in band in their respective high schools. The total sample of 1,934 students includes grades six through twelve. However, for purposes of statistical analysis the sample will be limited to 1,695 students from grades nine through twelve. Two population samples will be referred to in this description -- grades six through twelve and grades nine through twelve. The sample consisting of grades six through twelve will be referred to as the "total sample"; and the sample consisting of grades nine through twelve will be referred to as the "high school sample."

Table 1 shows the frequency distributions of students by grade, sex, and school classification. The larger percentages of the total sample are found from the larger school classifications -- AA, A, BB, and B, -- with the smaller schools -- C, DD, and D, -- contributing only 33.78 per cent of the total population. This figure lacks only 9.12 per cent of meeting the ideal distribution of 14.3 per cent per classification. However, these numbers can be misleading, for the reader will note that the three smaller classifications contribute the

TABLE 1

FREQUENCY DISTRIBUTION OF POPULATION SAMPLE

	CLASSIFICATION							Subj.	%
	AA	A	BB	B	C	DD	D	Total	Total
Males									
Sixth grade									
Number.....	0	0	0	0	0	7	0	7	
*Percentage....	0.00	0.00	0.00	0.00	0.00	0.36	0.00		0.36
Seventh grade									
Number.....	0	0	0	3	7	12	12	34	
*Percentage....	0.00	0.00	0.00	0.16	0.36	0.62	0.62		1.76
Eighth grade									
Number.....	0	0	0	11	23	16	11	61	
*Percentage....	0.00	0.00	0.00	0.57	1.19	0.83	0.57		3.16
Ninth grade									
Number.....	4	0	1	29	26	22	20	102	
*Percentage....	0.21	0.00	0.05	1.50	1.34	1.14	1.03		5.27
Tenth grade									
Number.....	71	69	49	35	25	17	10	276	
*Percentage....	3.67	3.57	2.53	1.81	1.29	0.88	0.52		14.27
Eleventh grade									
Number.....	76	61	33	40	15	14	7	246	
*Percentage....	3.91	3.15	1.71	2.07	0.78	0.72	0.36		12.70
Twelfth grade									
Number.....	60	63	29	21	12	4	7	196	
*Percentage....	3.10	3.26	1.50	1.09	0.62	0.21	0.36		10.14
Total.....	. .	. .	. .	. .	. .	. .	. .	922	47.66
Females									
Sixth grade									
Number.....	0	0	0	0	0	11	0	11	
*Percentage....	0.00	0.00	0.00	0.00	0.00	0.57	0.00		0.57
Seventh grade									
Number.....	0	0	0	13	16	20	10	59	
*Percentage....	0.00	0.00	0.00	0.67	0.83	1.03	0.52		3.05
Eighth grade									
Number.....	0	0	0	17	25	14	11	67	
*Percentage....	0.00	0.00	0.00	0.88	1.29	0.72	0.57		3.46
Ninth grade									
Number.....	3	0	0	36	41	15	18	113	
*Percentage....	0.16	0.00	0.00	1.86	2.12	0.76	0.93		5.83
Tenth grade									
Number.....	36	56	93	47	33	32	19	316	
*Percentage....	1.86	2.90	4.81	2.43	1.71	1.65	0.98		16.34

TABLE 1--Continued

	CLASSIFICATION							Subj. Total	% Total
	AA	A	BB	B	C	DD	D		
Females									
Eleventh grade									
Number.....	45	37	47	35	30	19	19	232	
*Percentage....	2.33	1.91	2.43	1.81	1.55	0.98	0.98		11.99
Twelfth grade									
Number.....	36	46	54	23	23	18	14	214	
*Percentage....	1.86	2.38	2.79	1.19	1.19	0.93	0.72		11.06
Total.....	. .	. .	. .	. .	. .	. .	. .	1012	52.30
Males and Females									
Sixth grade									
Number.....	0	0	0	0	0	18	0	18	
*Percentage....	0.00	0.00	0.00	0.00	0.00	0.93	0.00		0.93
Seventh grade									
Number.....	0	0	0	16	23	32	22	93	
*Percentage....	0.00	0.00	0.00	0.83	1.19	1.65	1.14		4.81
Eighth grade									
Number.....	0	0	0	28	48	30	22	128	
*Percentage....	0.00	0.00	0.00	1.45	2.48	1.55	1.14		6.62
Ninth grade									
Number.....	7	0	1	65	67	37	38	215	
*Percentage....	0.37	0.00	0.05	3.36	3.46	1.90	1.96		11.10
Tenth grade									
Number.....	107	125	142	82	58	49	29	592	
*Percentage....	5.53	6.47	7.34	4.24	3.00	2.53	1.50		30.61
Eleventh grade									
Number.....	121	98	80	75	45	33	26	478	
*Percentage....	6.24	5.06	4.14	3.88	2.33	1.70	1.34		24.69
Twelfth grade									
Number.....	96	109	83	44	35	22	21	410	
*Percentage....	4.96	5.64	4.29	2.28	1.81	1.14	1.09		21.21
Total.....	17.10	17.17	15.82	16.04	14.27	11.40	8.17	1934	99.97

*The percentages shown here represent the per cent of the total population sample.

majority of the sixth-, seventh-, and eighth-grade subjects. Since the statistical analysis presented in this paper will include only grades nine through twelve, the percentage of this population from classes C, DD, and D, will be smaller. This difference is shown in Table 2. When delimiting the population sample to grades nine through twelve, the percentage of contribution of the three smaller classifications is only 27.12 per cent of the high school sample (1,695 subjects).

Individual Responses

Table 3 shows the individual responses of students to questionnaire items. These responses are expressed as a percentage of the total high school sample. It is interesting to note that slightly over forty-four per cent of the subjects have had at least one year of piano study. There was no specification on the student questionnaire as to when the study took place. Consequently, one can speculate that this could very well have been during the elementary years for many who responded affirmatively to this item.

Two other activities, district solo and district ensemble participation, seemed to have involved a large percentage of the population sample. The wording of the question on the student questionnaire did not specify when the participation took place. One cannot assume that this happened during high school, since many students participate in these activities at the junior high school level.

Another activity with a high percentage of participation is stage band. The relatively high percentage of participation figure, 26.08, is rather interesting when considering that slightly less than

TABLE 2

FREQUENCY DISTRIBUTION OF HIGH SCHOOL SAMPLE

	CLASSIFICATION							Subj.	%
	AA	A	BB	B	C	DD	D	Total	Total
Males									
Ninth grade									
Number	4	0	1	29	26	22	20	102	
Percentage	0.23	0.00	0.05	1.71	1.53	1.29	1.17		5.98
Tenth grade									
Number	71	69	49	35	25	17	10	276	
Percentage	4.18	4.07	2.89	2.06	1.47	1.00	0.58		16.25
Eleventh grade									
Number	76	61	33	40	15	14	7	246	
Percentage	4.48	3.59	1.94	2.35	0.88	0.82	0.41		14.47
Twelfth grade									
Number	60	63	29	21	12	4	7	196	
Percentage	3.53	3.71	1.71	1.23	0.70	0.23	0.41		11.52
Total N.	211	193	112	125	78	57	44	820	48.22
Females									
Ninth grade									
Number	3	0	0	36	41	15	18	113	
Percentage	0.17	0.00	0.00	2.12	2.41	0.88	1.06		6.64
Tenth grade									
Number	36	56	93	47	33	32	19	316	
Percentage	2.12	3.30	5.48	2.77	1.94	1.88	1.12		18.61
Eleventh grade									
Number	45	37	47	35	30	19	19	232	
Percentage	2.65	2.18	2.77	2.06	1.76	1.12	1.12		13.66
Twelfth grade									
Number	36	46	54	23	23	18	14	214	
Percentage	2.12	2.71	3.18	1.35	1.35	1.06	0.82		12.59
Total N.	120	139	194	141	127	84	70	875	51.50
Males and Females									
Ninth grade									
Number	7	0	1	65	67	37	38	215	
Percentage	0.40	0.00	0.05	3.83	3.94	2.17	2.23		12.62
Tenth grade									
Number	107	125	142	82	58	49	29	592	
Percentage	6.30	7.37	8.37	4.83	3.41	2.88	1.70		34.86
Eleventh grade									
Number	121	98	80	75	45	33	26	478	
Percentage	7.13	5.77	4.71	4.41	2.64	1.94	1.53		28.13
Twelfth grade									
Number	96	109	83	44	35	22	21	410	
Percentage	5.65	6.42	4.89	2.58	2.05	1.29	1.23		24.11
Total %	19.48	19.56	18.02	15.65	12.05	8.28	6.69	1695	99.72

TABLE 3

FREQUENCY DISTRIBUTION OF STUDENT ACTIVITIES EXPRESSED AS THE PERCENTAGE OF THE TOTAL SAMPLE, GRADES NINE THROUGH TWELVE

	Piano	Dist. Solo	State Solo	Dist. Ens.	State Ens.	All Dist.	All State	Stage Band	Pvt. Study	*Extra Group	Chorus	Orches-tra
9th grade												
Males.....	1.59	1.18	0.06	0.71	0.18	0.35	0.00	1.42	0.24	0.47	0.71	0.00
Females.....	3.83	1.95	0.06	1.53	0.29	0.77	0.00	0.94	0.18	0.18	1.77	0.06
Total.....	5.42	3.13	0.12	2.24	0.47	1.12	0.00	2.36	0.42	0.65	2.48	0.06
10th grade												
Males.....	5.19	5.31	0.88	4.60	0.94	2.48	0.29	5.25	1.53	2.48	1.00	0.59
Females.....	10.09	6.19	0.59	7.14	1.12	2.60	0.12	1.95	2.24	2.42	3.01	0.24
Total.....	15.28	11.50	1.47	11.74	2.06	5.08	0.41	7.20	3.77	4.90	4.01	0.83
11th grade												
Males.....	4.84	5.01	0.77	3.83	1.06	2.18	0.29	5.66	1.47	3.83	1.06	0.53
Females.....	8.20	6.02	1.71	6.73	2.54	2.48	0.47	2.54	1.71	1.47	2.18	0.35
Total	13.04	11.03	2.48	10.56	3.60	4.66	0.76	8.20	3.18	5.30	3.24	0.88
12th grade												
Males.....	3.01	4.42	1.89	4.19	1.89	2.06	0.59	4.90	0.94	2.89	1.30	1.06
Females.....	7.37	6.37	2.30	7.32	3.66	3.19	1.06	3.42	1.71	1.42	3.01	0.59
Total	10.38	10.79	4.19	11.51	5.55	5.25	1.65	8.32	2.65	4.31	4.31	1.65
Grand Total.....	44.12	36.45	8.26	36.05	11.68	16.11	2.82	26.08	10.02	15.16	14.04	3.42

*Students who participate in an extra-curricular music group.

thirty-three percent of the participating schools do not have stage band programs (see Table 9).

One of the most interesting observations concerns the musical tastes of the subjects. Students were asked to mark those types of music they preferred and enjoyed playing. It was possible for the subject to show a preference to each of the three areas -- popular music, marches, and contest type music. Table 4 shows the musical preferences of the subjects and is expressed as the percentage of subjects in a particular grade-sex category, and also as a percentage of the total high school sample. Preference of contest music increases with grade to the extent that the trend is obvious. The percentage of those students marking popular music as a preference decreases as the grade level gets higher.

Table 5 shows the practice habits of the high school sample with regard to hours spent in individual practice. The percentages presented in this table are computed as the percentage of subjects in a particular grade-sex category, and as a percentage of the total high school sample. The procedure used in recording practice data is as follows: any time value of less than one hour per week was recorded as zero; the remaining intervals may be interpreted as at least one hour but not two hours, et cetera. In other words, a response of one hour and forty-five minutes was not rounded to the nearest hour but rather was recorded as one hour. The percentage figures tend to validate the honesty of responses. From this writer's experience with high school bands, the percentages seem realistic.

Table 6 reflects the instrumentation of the sample, grades nine

TABLE 4

THE STUDENTS' MUSICAL PREFERENCE SHOWN AS A PERCENTAGE OF THE TOTAL SAMPLE, GRADES NINE THROUGH TWELVE IN CHART "A," AND AS A PERCENTAGE OF GRADE-SEX CATEGORY IN CHART "B."

	Contest	Marches	Popular	Contest	Marches	Popular
	Chart "A"			Chart "B"		
Ninth grade						
Males.....	1.12	1.83	5.07	18.60	30.40	84.30
Females.....	1.65	1.59	5.66	24.80	23.90	85.00
Total.....	2.77	3.42	10.73	. .	. .	. .
Tenth grade						
Males.....	5.25	4.90	13.04	32.20	30.10	80.00
Females.....	7.55	5.43	15.28	40.50	29.10	82.00
Total.....	12.80	10.33	28.32	. .	. .	. .
Eleventh grade						
Males.....	5.19	3.72	11.39	35.80	25.60	78.50
Females.....	6.31	4.96	10.56	46.10	36.20	77.20
Total.....	11.50	8.68	21.95	. .	. .	. .
Twelfth grade						
Males.....	5.72	3.24	7.85	49.50	28.10	67.90
Females.....	7.43	4.60	8.32	58.90	36.10	65.90
Total.....	13.15	7.84	16.17	. .	. .	. .
Grand Total.....	40.22	30.27	77.17	. .	. .	. .

TABLE 5

THE NUMBER OF HOURS PRACTICED PER WEEK BY INDIVIDUAL STUDENTS. EXPRESSED AS PERCENTAGE OF TOTAL POPULATION, CHART "A," AND AS PERCENTAGE OF GRADE-SEX CATEGORY, CHART "B."

	Hours Per Week							Hours Per Week						
	0	1	2	3	4	5	6+	0	1	2	3	4	5	6+
	Chart "A"							Chart "B"						
9th grade														
Males.....	1.83	1.37	1.53	0.65	0.06	0.29	0.30	30.40	22.50	25.50	10.80	1.00	4.90	5.00
Females.....	1.65	1.47	1.65	0.24	0.24	0.83	0.59	24.80	22.10	24.80	3.50	3.50	12.40	8.90
Total.....	3.48	2.84	3.18	0.89	0.30	1.12	0.89	. .	. .	. .	. .	. .	. .	. .
10th grade														
Males.....	3.95	2.30	2.65	2.30	1.47	1.37	2.24	24.30	14.10	16.30	14.10	9.10	8.30	13.70
Females.....	3.01	3.83	5.37	1.83	1.65	1.24	1.71	16.10	20.60	28.80	9.80	8.90	6.60	9.10
Total.....	6.96	6.13	8.02	4.13	3.12	2.61	3.95	. .	. .	. .	. .	. .	. .	. .
11th grade														
Males.....	4.13	1.24	2.06	2.30	1.71	1.24	1.84	28.50	8.50	14.20	15.90	11.80	8.50	12.60
Females.....	2.77	2.36	2.83	2.06	0.83	1.42	1.42	20.30	17.20	20.70	15.10	6.00	10.30	10.30
Total.....	6.90	3.60	4.89	4.36	2.54	2.66	3.26	. .	. .	. .	. .	. .	. .	. .
12th grade														
Males.....	2.65	1.24	1.77	1.59	1.18	1.53	1.58	23.00	10.70	15.30	13.80	10.20	13.30	13.80
Females.....	3.01	1.89	2.06	1.47	1.36	1.47	1.35	24.70	15.00	16.40	11.70	10.70	11.70	9.80
Total.....	5.66	3.13	3.83	3.06	2.54	3.00	2.93	. .	. .	. .	. .	. .	. .	. .
Grand Total.....	23.00	15.70	19.92	12.44	8.50	9.39	11.03	. .	. .	. .	. .	. .	. .	. .

through twelve. The percentages expressed here are also percentages of the total high school sample. The reader will notice that the flute and tuba are listed as one category. This unorthodox grouping was the result of a programming error by the computer programmer. Unfortunately, this error was not discovered until the analysis of this particular segment of data. There seems to be some over-loading in the cornet and saxophone sections. However, for the most part, the instrumentation seems to be congruent with that found in such groups as all-state and all-district clinic groups, assuming that these groups have fairly standard instrumentation.

TABLE 6

POPULATION DISTRIBUTION BY INSTRUMENT

Instruments	9th Boys	9th Girls	10th Boys	10th Girls	11th Boys	11th Girls	12th Boys	12th Girls	Total
Flute/Tuba .	0.29	1.59	1.59	4.60	1.53	3.72	0.83	4.07	18.22
Oboe	0.06	0.12	0.06	0.24	0.06	0.35	0.24	0.35	1.48
Clarinet ...	0.18	2.60	1.71	6.73	1.47	4.19	0.83	3.13	20.84
Bassoon	0.00	0.12	0.18	0.18	0.12	0.18	0.06	0.47	1.31
Bass Clar. .	0.00	0.35	0.29	1.36	0.18	1.12	0.41	0.88	4.59
Saxophone ..	0.47	0.88	1.59	1.95	1.53	1.77	1.36	1.00	10.55
Cornet	1.95	0.41	4.31	1.00	3.72	0.77	3.01	0.77	15.94
Horn	0.24	0.35	0.83	1.18	0.77	0.35	0.65	0.94	5.31
Baritone ...	0.47	0.00	0.65	0.12	1.24	0.29	1.00	0.24	4.01
Trombone ...	0.94	0.06	2.60	0.35	1.77	0.35	1.53	0.06	7.66
Percussion .	1.42	0.12	2.42	0.88	2.12	0.59	1.47	0.65	9.67
Str. Bass ..	0.00	0.00	0.06	0.00	0.00	0.00	0.18	0.06	0.30

Procedures and School Situations

The investigator found all teachers to be certified, eighteen of these possessing a baccalaureate degree and thirteen having obtained the masters degree. Twenty-six of the thirty-one teachers have three or more

years' experience and nineteen of the teachers have been in their present positions for three years or more.

Table 7 indicates, by school classification, the various lengths of rehearsal periods as scheduled during the regular school day. All schools, with one exception, scheduled band during the school day. This particular school band met before school each morning. Slightly over fifty per cent of the school bands have a regularly scheduled period of fifty-five minutes. Of particular interest, and not mentioned in the table, is one situation where the rehearsals during the school day did not involve the entire band. Woodwinds met separately and at a different time from the brass-percussion. When it was desirable to rehearse the entire band, a full-band rehearsal was scheduled for a morning before regular school classes began. The teacher involved was very optomistic concerning the possibilities for this particular arrangement.

TABLE 7

FREQUENCY DISTRIBUTION OF THE TOTAL LENGTH OF REGULARLY SCHEDULED CLASS PERIODS, FIVE MEETINGS PER WEEK

Minutes Per Class Period	CLASSIFICATION							Total	% Total
	AA	A	BB	B	C	DD	D		
50.....	0	0	2	0	0	4	0	6	19.30
*55.....	2	1	1	4	4	1	3	16	51.60
60.....	0	2	0	0	0	0	0	2	6.40
65.....	1	1	0	0	0	0	0	2	6.40
**70.....	1	0	1	1	1	0	1	5	16.10

*One school met only four days per week.
**In this group one band met five days per week, three met four days per week on alternate weeks.

Almost one-half (45.1 per cent) of the participating bands scheduled an extra full-band rehearsal at least once each week. Total

rehearsal time per week, including extra rehearsals, is presented in Table 8. The range of total rehearsal time per week begins at two hundred twenty minutes and ends with five hundred fifty minutes, indicating a wide variance in the amount of time spent in rehearsal each week.

TABLE 8

FREQUENCY DISTRIBUTION: TOTAL REHEARSAL TIME PER WEEK INCLUDING EXTRA REHEARSALS

Minutes Per Week	Number	Per Cent	Minutes Per Week	Number	Per Cent
220.....	1	3.2	365.....	1	3.2
250.....	2	6.4	370 - 380.....	3	9.6
260.....	1	3.2	395.....	1	3.2
275 - 280.....	10	32.2	405.....	1	3.2
300.....	2	6.4	425.....	1	3.2
310.....	1	3.2	440.....	1	3.2
325 - 335.....	5	16.1	550.....	1	3.2

Rehearsal procedures for the thirty-one participating bands look much the same on paper. Variations in warm-up time range from ten minutes to thirty minutes per rehearsal. This variation is due largely to the varying length of rehearsals. Those with longer rehearsal periods spend more time with the warm-up procedure. All teachers reported that they use scales and chorale type literature (some just chord tuning exercises). Table 9 indicates frequency responses to some procedures and activities pertaining to individual school situations. It is interesting to note that the use of technical studies as a part of the rehearsal procedure is almost evenly divided between those who use them and those who do not. The reader will also note that a large percentage (67.7 per cent) use some type of electronic tuning device.

Reading time during the rehearsal period varies considerably

TABLE 9

FREQUENCY DISTRIBUTION: PROCEDURES AND ACTIVITIES
PERTAINING TO INDIVIDUAL SCHOOL SITUATIONS

	CLASSIFICATION							Total	% Total
	AA	A	BB	B	C	DD	D		
Regularly Scheduled Extra Rehearsals.....	2	1	3	3	2	3	0	14	45.1
Regular Section Rehearsals.....	3	3	3	3	3	1	0	16	51.6
Assistant.....	0	2	3	0	0	0	0	5	16.1
Use of Technical Studies.....	4	0	2	1	6	1	3	17	54.8
Stage Band.....	3	4	3	4	3	3	1	21	67.7
Use of Electronic Tuner.....	3	3	4	4	3	3	1	21	67.7
Summer Marching.....	0	2	4	1	4	1	2	14	45.1
Teaching Experience (three or more years)	4	4	4	4	5	4	5	26	83.8
*Summer Band.....	1	1	1	2	0	0	0	5	16.1
**Tenure in Present Position.....	4	2	3	2	3	3	2	19	61.2

*Only summer band programs with at least fifty per cent of the high school band enrolled are included. Summer marching programs are not included.

**Three or more years constitutes tenure in a position.

from band to band. On the basis of total minutes per week, the sight-reading time from band to band varies from ten to seventy-five minutes per week. Table 10 lists the frequencies for the times included in this interval. The greater part of the rehearsal time for all bands is spent preparing music for public performance.

TABLE 10

FREQUENCY DISTRIBUTION OF AVERAGE TOTAL SIGHTREADING TIME PER WEEK

Minutes Per Week	CLASSIFICATION							Total	% Total
	AA	A	BB	B	C	DD	D		
10.....	0	0	1	0	0	1	2	4	12.9
15.....	0	0	1	1	2	0	0	4	12.9
20.....	1	0	0	2	0	0	0	3	9.6
25.....	0	1	0	0	0	3	1	5	16.1
30.....	0	0	1	0	1	0	0	2	6.4
35.....	0	0	0	0	1	0	1	2	6.4
40.....	0	1	1	0	0	0	0	2	6.4
45.....	0	1	0	0	0	0	0	1	3.2
50.....	2	0	0	1	0	1	0	4	12.9
55.....	0	0	0	0	0	0	0	0	0.0
60.....	0	0	0	1	0	0	0	1	3.2
65.....	0	0	0	0	0	0	0	0	0.0
70.....	0	0	0	0	0	0	0	0	0.0
75.....	1	1	0	0	1	0	0	3	9.6

Evaluation Procedures

For purposes of this report, the grading procedures used by the teachers participating in this study are grouped into three categories: (1) Those teachers who give no letter or numerical grades. This category evaluates as "satisfactory" and "unsatisfactory." (2) Those giving letter grades and basing these grades primarily on attendence, attitude, demerits, and a subjective appraisal of the student's progress. (3) This category consists of those who use objective methods for arriving at the

students' grades. These methods generally consist of individual auditions of assigned material and written tests. The frequency of participants in the study in three categories is as follows: category 1) three; category 2) seventeen; and category 3) eleven.

Marching Activities

The marching activities for the thirty-one participating bands are quite varied. Two of the bands from smaller schools do very little marching, since the schools represented do not participate in football. The table below presents the frequencies of the participating bands as to the number of weeks involved primarily with marching activities.

TABLE 11

FREQUENCY DISTRIBUTION FOR THE NUMBER OF WEEKS INVOLVING MARCHING ACTIVITIES

	Time in Weeks							
	0	9	10	11	12	13	14	15
Frequency....	2	2	9	5	11	0	1	1
Percentage...	6.4	6.4	29.0	16.1	35.4	0.0	3.2	3.2

Table 12 shows the number of marching performances per year for the participating bands. Even though two schools do not center their fall activities around the marching band, they are included in this table since they both march in parades. The larger numbers of marching performances, seventeen and eighteen, are partially explained by the fact that the schools represented were involved in play-offs for the State football championships, which resulted in an extended football season. Those activities reported as marching performances include football half-time shows, parades, and marching contests. Of particular in-

terest is the fact that in view of the large number of marching performances, thirteen of the bands participating in this study did not attend marching contest in the fall of 1970.

TABLE 12

FREQUENCY DISTRIBUTION FOR THE NUMBER OF PUBLIC MARCHING PERFORMANCES

Marching Performances	Frequency	Per Cent	Marching Performances	Frequency	Per Cent
4	1	3.2	12	6	19.3
5	1	3.2	13	4	12.9
6	1	3.2	14	2	6.4
7	1	3.2	15	1	3.2
8	2	6.4	16	1	3.2
9	4	12.9	17	1	3.2
10	4	12.9	18	1	3.2
11	1	3.2			

Table 13 indicates the number and frequency of parade performances by the bands in this study. Perhaps the most significant revelation of Table 13 is the fact that Oklahomans seem to enjoy parades.

TABLE 13

FREQUENCY DISTRIBUTION FOR THE NUMBER OF MARCHING PERFORMANCES AT PARADES

Parade Performances	Frequency	Per Cent	Parade Performances	Frequency	Per Cent
0	1	3.2	4	8	25.8
1	3	9.6	5	5	16.1
2	9	29.0	6	2	6.4
3	3	9.6			

In isolated cases, teachers indicated that the band played at football games but did not march. For purposes of this report, these appearances were not regarded as either marching or concert perform-

ances.

Concert Activities

By comparison, the participating bands had fewer concert performances than marching performances. Those appearances considered as concert performances include public concerts, student assemblies, and contests. Table 14 indicates the number and frequency of concert performances.

TABLE 14

FREQUENCY DISTRIBUTION FOR THE NUMBER OF CONCERT PERFORMANCES

Concert Performances	Frequency	Per Cent	Concert Performances	Frequency	Per Cent
3.....	3	9.6	7.....	4	12.9
4.....	3	9.6	8.....	5	16.1
5.....	7	22.5	9.....	0	0.0
6.....	7	22.5	10.....	2	6.4

For convenience in comparing the number of marching performances to the number of concert performances, Table 15 gives the ratios (with some rounding and reduction) of marching performances to concert performances, with frequency. There seem to be at least eight bands that

TABLE 15

FREQUENCY DISTRIBUTION OF RATIOS: MARCHING PERFORMANCES TO CONCERT PERFORMANCES

Ratio	Frequency	Per Cent	Ratio	Frequency	Per Cent
1:1	6	19.3	3:1	2	6.4
3:2	7	22.6	4:1	3	9.6
2:1	10	32.2	5:1	1	3.2
5:2	2	6.4			

place an unusual amount of emphasis on marching, that is, if one con-

siders the ratio of more than two-to-one marching performances over concert performances as the statistic for comparison.

Repertoire of Bands

The investigator found that, from his personal experience, repertoire of bands in Oklahoma seem similar to those of other areas of the Southwest. Each teacher was asked to provide a representative sample of the repertoire of his band. This sample was divided into three categories: 1) contest literature; 2) marches; and 3) lighter pieces such as broadway show music, concert arrangements, novelty arrangements, and various types of popular music. Within prescribed difficulty levels the repertoires of the bands were very similar.

For descriptive and analytical purposes the repertoire as represented by category "one" (contest literature) was graded using the levels as set forth in the prescribed music list published by the University of Texas.[36] Grades range from "I" through "V" with grade "I" being the least difficult. The difficulty level of each band's repertoire was determined by averaging the difficulty level of the five works in category "one." No attempt was made to grade marches or "lighter" numbers included in the repertoire. For those works in a repertoire that did not appear on the graded list, the investigator was able to determine the grade level by comparison with works which did appear on the list. If

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[36]The University Interscholastic League, Prescribed Music (For School Years Beginning 1967, 1968, 1969, 1970, Regional Music Competition) Bureau of Public School Service, Division of Extension, The University of Texas at Austin, Number 6751, August, 1970, pp. 7-11.

the investigator was not familiar with the work, the teacher was asked about its difficulty. Table 16 indicates the difficulty level and frequency by school classification. The reader will note that almost half the sample centers in the area 2.6 to 3.6. This area would be considered the medium-difficult range.

TABLE 16

FREQUENCY DISTRIBUTION OF REPERTOIRE DIFFICULTY

Difficulty Level	CLASSIFICATION							Total	% Total
	AA	A	BB	B	C	DD	D		
1.0	0	0	0	0	0	2	1	3	9.6
1.3	0	0	0	0	0	0	1	1	3.2
1.6	0	0	0	1	1	0	0	2	6.4
2.0	0	0	0	0	0	1	0	1	3.2
2.3	0	0	0	0	0	0	1	1	3.2
2.6	0	0	1	0	0	0	1	2	6.4
3.0	0	0	0	0	1	1	0	2	6.4
3.3	0	0	1	2	1	1	0	5	16.1
3.6	0	2	1	1	2	0	0	6	19.3
4.0	1	0	0	0	0	0	0	1	3.2
4.3	2	1	0	0	0	0	0	3	9.6
4.6	0	1	1	1	0	0	0	3	9.6
5.0	1	0	0	0	0	0	0	1	3.2

Whereas a large part of the fall activity involves marching, a similar portion of the spring activity involves preparation for concert contests. Table 17 indicates the number of weeks devoted to concert contest preparation. To help insure uniformity of data, the question concerning contest preparation time was phrased the same in all interviews and consisted of the stipulations listed below.

1. The time period begins when at least two of the three numbers to be performed have been selected.

2. The time period ends with the performance of the literature at district contest.

Some teachers indicated that the majority of the rehearsal period was

not devoted to contest preparation during the time interval indicated for contest preparation. The time intervals indicated by Table 17 do not take into consideration any time spent on the same literature in preparation for contests scheduled after the district competition. With regard to stipulation "one" above, it is understood that some rehearsal time is spent on contest pieces before actual selection.

TABLE 17

FREQUENCY DISTRIBUTION OF THE TOTAL NUMBER OF WEEKS DEVOTED TO CONCERT CONTEST PREPARATION

	CLASSIFICATION								
Weeks	AA	A	BB	B	C	DD	D	Total	Total
4.....	1	1	0	0	1	0	0	3	9.6
5.....	0	0	0	0	0	0	0	0	0.0
6.....	0	1	0	0	0	0	0	1	3.2
7.....	1	0	0	1	1	0	0	3	9.6
8.....	2	1	3	2	2	3	2	15	48.3
9.....	0	0	1	0	0	0	1	2	6.4
10.....	0	1	0	0	0	2	0	3	9.6
11.....	0	0	0	0	0	0	0	0	0.0
12.....	0	0	0	1	1	0	1	3	9.6
13.....	0	0	0	1	0	0	0	1	3.2

Summary

The sample size is adequate for statistical significance and the investigator feels that randomization was achieved. There are thirty-one schools represented and the total sample of high school students includes 1,695 students.

The physical plants and equipment were found to be satisfactory in twenty-eight of the school band programs, with the majority of this number being excellent. Three schools were in need of a more suitable rehearsal room and storage facilities.

The distribution of the high school sample is as follows: 57.06 per cent from the three larger school classifications (AA, A, and BB) and 42.94 per cent from the four smaller classifications (B, C, DD, and D); 51.5 per cent females and 48.5 per cent males; 12.5 per cent ninth-grade students with the remainder of the sample being almost evenly distributed among the tenth, eleventh, and twelfth grades.

Approximately fifty-two per cent of the sample participates in either solo or ensemble contest. Forty-four per cent of the sample has had at least one year of piano instruction and twenty-six per cent of the sample currently participates in stage band. The percentage of participation in other activities is considerably lower than the preceding. Twenty-three per cent of the sample stated that they practiced less than one hour per week and 19.92 per cent practiced between two and three hours per week.

The changes indicated in musical preference from ninth grade to twelfth grade lend credibility to the expectation that musical tastes will change with each year of participation in the band program.

The procedures concerning rehearsals are much the same with variability occurring more as a variance of degree rather than nature of procedures.

Sixteen of the thirty-one bands have a regularly scheduled rehearsal period of fifty-five minutes per day. Forty-five percent of the bands schedule at least one extra rehearsal per week. Percentages for employment of other procedures include: regularly scheduled section rehearsals, fifty-one per cent; use of an electronic tuner, sixty-seven per cent; tenure in present position, sixty-one per cent; more than three

years of experience of the teacher, eighty-three per cent; summer marching programs, forty-five per cent; and summer band programs, (emphasis on performance), sixteen per cent. Forty-one per cent of the bands devote twelve or more weeks to marching activities and forty-eight per cent of the bands devote eight weeks to concert contest preparation.

CHAPTER IV

ANALYSIS OF ACHIEVEMENT

The reader is reminded that the Iltis test has a possible total raw score of seventy-five. The test is composed of five subtests: "Intonation," "Tone Quality," "Interpretation," "Ensemble," and "Technique," and was administered in the same order as presented here. Each of the five subtests has a possible raw score of fifteen.

Reliability

Iltis established reliability for the test by means of the split-half method using the odd and even items. The resulting product-moment correlation, corrected by the Spearman-Brown Prophecy Formula, resulted in an r of .72 from 726 examinees.[37]

This investigator used the same procedure as Iltis in establishing a reliability coefficient for this administration of the test. The resulting r, corrected by the Spearman-Brown Prophecy Formula, was .96. The most plausible explanation for the higher r from this administration of the test is that the population sample in this study was a much more heterogeneous group. The sample used in establishing the reliability coefficients was the high school sample, totaling 1,695 subjects.

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[37]Iltis, "The Construction and Validation of a Test," p. 111.

The strength of the Iltis test for independent measurement of the five areas of achievement is verified by the relatively low subtest intercorrelations. These coefficients are shown in Table 18.

TABLE 18

CORRELATIONS BETWEEN SUBTESTS

	Tone Quality	Interpretation	Ensemble	Technique
Intonation	.3798	.3162	.3235	.3027
Tone Quality		.3364	.4610	.4357
Interpretation			.3598	.3269
Ensemble				.4926

Means and Standard Deviations

Since there are considerable differences in the characteristics of the samples and the administration procedures, a comparison of means between Iltis' and this investigator's test administrations is inappropriate.

Means and standard deviations for the entire population sample are shown in Table 19. The means in Table 19 indicate an increase in mean score for each succeeding grade level, low to high. Also, with the exception of sixth grade, girls scored higher than boys in the same grade. The difference in means of sixth-grade boys and girls is not statistically significant due to the small number involved. The largest difference in means between consecutive grades occurs between grades nine and ten. The least difference in means between consecutive grades occurs between grades ten and eleven. The large difference in means between the ninth grade and twelfth grade would tend to lend credence to the expectation that there is

TABLE 19

MEANS AND STANDARD DEVIATIONS FOR THE TOTAL POPULATION SAMPLE

	Mean	Standard Deviation	Subject Total	Percent of Population
Grades Six Through Eight				
Sixth grade				
Males	15.14	9.62	7	0.36
Females	11.73	6.99	11	0.57
Total	13.06	. .	18	0.93
Seventh grade				
Males	18.21	7.94	34	1.76
Females	20.61	8.94	59	3.05
Total	19.68	. .	93	4.81
Eighth grade				
Males	19.39	8.21	61	3.15
Females	25.40	9.71	67	3.46
Total	22.53	. .	128	6.61
Combined Total (6-8)	. .	. .	239	12.35
Grades Nine Through Twelve				
Ninth grade				
Males	23.15	10.49	102	5.27
Females	27.25	9.63	113	5.84
Total	25.48	. .	215	11.11
Tenth grade				
Males	29.80	11.03	276	14.27
Females	32.58	10.37	316	16.34
Total	31.30	. .	592	30.61
Eleventh grade				
Males	31.30	11.46	246	12.72
Females	34.18	11.04	232	12.00
Total	32.70	. .	478	24.72
Twelfth grade				
Males	34.28	11.28	196	10.13
Females	37.63	9.89	214	11.07
Total	36.03	. .	410	21.20
Combined Total (9-12)	32.09	11.27	1695	87.64

an increase in learning with each year of participation in high school band programs.

Mean Differences Between Grades of the High School Sample

The difference in means with t value and probability level for the high school sample are shown in Table 20.[38] The mean differences between boys and girls within grades are all statistically significant at the .01 confidence level. The difference in means between boys of grades ten and eleven; and between girls of grades ten and eleven are not significant at the .05 level of confidence. However, all other differences between grade levels, by sex, are statistically significant.

TABLE 20

MEAN DIFFERENCES BETWEEN SEX/GRADE CATEGORIES OF THE HIGH SCHOOL SAMPLE WITH CORRESPONDING t VALUES AND PROBABILITY LEVEL

#1 Sex/Grade		#2 Sex/Grade		#1 Mean	#2 Mean	Difference	t	P
F	9	M	9	27.25	23.51	3.74	2.7168	.01
F	10	M	10	32.58	29.80	2.78	3.1742	.01
F	11	M	11	34.18	31.30	2.88	2.8021	.01
F	12	M	12	37.63	34.28	3.35	3.2081	.01
F	11	F	10	34.18	32.58	1.60	1.7419	ns
M	11	M	10	31.30	29.80	1.50	1.5287	ns
F	12	F	11	37.63	34.18	3.45	3.4739	.001
M	12	M	11	34.28	31.30	2.93	2.7387	.01
F	10	F	9	32.58	27.25	5.33	4.7884	.001
M	10	M	9	29.80	23.51	6.29	4.9778	.001
M	10	F	9	29.80	27.25	2.55	2.1462	.02
F	10	M	11	32.58	31.30	1.28	1.8601	ns
M	12	F	10	34.28	32.58	1.70	1.7468	ns
M	12	F	11	34.28	34.18	0.10	0.0922	ns

[38]These computations were made with the t Test of Differences Between Means of Two Independent Samples, as developed by Fisher. J. P. Guilford, Fundamental Statistics in Psychology and Education (New York:

Subtest Means

Table 21 indicates the mean scores for subjects of the high school sample on each of the five subtests. It is interesting to note that the rank order of difficulty for the five subtests, as indicated by the means, is the same for all grades. Students found subtest "2" (Tone Quality) and "5" (Technique) least difficult, with relatively little difference in scores. Subtest "4" (Ensemble) ranks third and students found this to be only slightly more difficult than subtests "2" and "5." Students found the most difficult of the subtests to be "3" (Interpretation) and "1" (Intonation), in that order. The performance of this sample with regard to difficulty level of subtests is consistent with the findings by Iltis on 726 examinees.[39]

One possible explanation for low scoring on subtest "3" is the fact that this is the only subtest that requires score reading as a prerequisite for success. Many of the teachers participating in the study indicated that their students have had very little experience in score reading.

Means of Activity Participants

The rank order of means for those students who participate in various activities is shown in Table 22. The grand mean for the high school sample is also included for comparison. Since the activities included in this table are considered desirable activities, it is not sur-

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McGraw Hill, 1965), pp. 183-185.

[39]Iltis, "The Construction and Validation of a Test," pp. 90-92 and 94.

TABLE 21

MEANS FOR THE FIVE SUBTESTS

	Intonation	Tone Quality	Inter-pretation	Ensemble	Technique
Grades Six Through Eight					
Sixth grade					
Males	2.29	4.86	2.29	2.43	3.29
Females	1.64	2.82	1.64	2.91	2.73
Comb. Mean	1.89	3.61	1.89	2.72	2.95
Seventh grade					
Males	2.59	3.97	2.68	4.00	4.97
Females	3.56	5.47	2.92	4.14	4.53
Comb. Mean	3.21	4.92	2.83	4.09	4.69
Eighth grade					
Males	2.44	4.93	2.61	4.39	5.02
Females	3.66	6.67	3.49	5.64	5.94
Comb. Mean	3.08	5.84	3.07	5.04	5.50
Grades Nine Through Twelve					
Ninth grade					
Males	3.52	5.36	3.60	5.57	5.46
Females	3.80	7.16	3.44	6.21	6.64
Comb. Mean	3.68	6.26	3.52	5.91	6.08
Tenth grade					
Males	4.53	7.82	3.52	6.51	7.42
Females	5.02	8.56	3.87	7.36	7.76
Comb. Mean	4.78	8.22	3.54	6.91	7.60
Eleventh grade					
Males	4.73	7.98	3.78	7.17	7.63
Females	5.12	8.59	4.53	7.83	8.10
Comb. Mean	4.92	8.28	4.14	7.49	7.86
Twelfth grade					
Males	5.19	8.72	4.21	7.78	8.36
Females	5.75	9.35	4.95	8.63	8.95
Comb. Mean	5.48	9.05	4.60	8.22	8.69
Grand Mean (9-12)	4.85	8.19	4.02	7.28	7.74

prising that all of the means, with one exception, are significantly higher than the grand mean. Statistical significance was determined by means of the Critical Ratio method.[40] It will be noted that chorus participants are the only activity group for which the mean is not statistically significant at the .05 level of confidence, and that for a number of the activities the significance of the difference is extremely high.

TABLE 22

MEAN AND STANDARD DEVIATIONS OF ACTIVITY GROUPS WITH CORRESPONDING z VALUES AND PROBABILITY LEVELS FOR DIFFERENCES FROM THE GRAND MEAN

Activity	Mean	Standard Deviation	Subjects	z	P
All-State	43.81	8.25	48	9.84	.00003
State Solo	40.56	9.31	141	10.12	.00003
State Ensemble	39.82	9.93	199	10.14	.00003
Private Study	38.42	11.15	171	7.42	.00003
All-District	38.07	10.58	273	9.33	.00003
District Ensemble	36.30	10.14	612	10.27	.00003
Orchestra Part.	35.90	12.46	58	2.32	.01
District Solo	35.87	10.55	619	8.91	.00003
Extra Group	33.84	11.22	258	1.65	.05
Chorus	33.25	12.14	238	1.47	ns
Stage Band	33.02	11.73	443	1.67	.05
Grand Mean	32.09	11.27	1695	. .	. .

With regard to the total number of participants and mean superiority over the total high school sample, solo and ensemble participation would seem to contribute considerably toward achievement. However, one must not make hasty conclusions for other factors enter into the achievement differences. When one considers the mean scores presented in Table

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[40]Merle W. Tate, Statistics in Education and Psychology (New York: The Macmillan Company, 1965), pp. 416-419.

22, one must also consider that the students participating in these activities are a select group. The positive correlations as shown in the correlation matrix (see page 81) indicate that, for the most part, the same students are participating in these activities. The same is true for all activity groups presented in Table 22. Perhaps the redeeming factor is that fifty-two per cent of the population sample is included in the select group to some extent.

The differences in means, according to activity participation, are presented in Table 23. The mean for the all-state group is higher than any other activity group with a mean difference range from 3.25 to 13.61. All differences are statistically significant.

The differences between state solo participation, state ensemble participation, and private study are not significant at the .05 level of confidence. However, the differences between the mean for state solo participants and all other activity groups are statistically significant. No statistical significance is attached to mean differences existing between state ensemble participants, private study, and all-district band participants.

It is worthwhile to note that due to the rank of the mean and the relatively small number of participants (58), orchestra players' mean difference with other activities is statistically significant only with those activities located at the extremes of Table 22. Generally speaking, most mean differences of two or more are statistically significant when the number of participants is over one hundred twenty.

TABLE 23

MEAN DIFFERENCES BETWEEN ACTIVITY GROUPS WITH CORRESPONDING t VALUE AND PROBABILITY LEVEL

#1 Act. Group	#2 Act. Group	#1 Mean	#2 Mean	Difference	t	P
All-State	State Solo	43.81	40.56	3.25	2.1419	.05
All-State	State Ens.	43.81	39.82	3.99	2.5700	.02
All-State	Pvt. Study	43.81	38.42	5.39	3.1087	.01
All-State	All-Dist.	43.81	38.07	5.74	3.5685	.001
All-State	Dist. Ens.	43.81	36.30	7.51	5.0029	.001
All-State	Orch. Part.	43.81	35.90	7.91	3.3956	.01
All-State	Dist. Solo	43.81	35.87	7.94	5.0926	.001
All-State	Ex. Group	43.81	33.84	9.97	5.8622	.001
All-State	Chorus	43.81	33.25	10.56	5.7481	.001
All-State	Stage Band	43.81	33.02	10.79	6.2086	.001
State Solo	State Ens.	40.56	39.82	0.74	0.6960	ns
State Solo	Pvt. Study	40.56	38.42	2.14	1.8201	ns
State Solo	All-Dist.	40.56	38.07	2.49	2.3736	.02
State Solo	Dist. Ens.	40.56	36.30	4.53	4.8835	.001
State Solo	Orch. Part.	40.56	35.90	4.66	2.8859	.01
State Solo	Dist. Solo	40.56	35.87	4.69	4.5762	.001
State Solo	Ex. Group	40.56	33.84	6.72	6.0941	.001
State Solo	Chorus	40.56	33.25	7.31	6.1672	.001
State Solo	Stage Band	40.56	33.02	7.54	7.0113	.001
State Ens.	Pvt. Study	39.82	38.42	1.40	1.2781	ns
State Ens.	All-Dist.	39.82	38.07	1.75	1.8263	ns
State Ens.	Dist. Ens.	39.82	36.03	3.79	4.6185	.001
State Ens.	Orch. Part.	39.82	35.90	3.92	2.4832	.02
State Ens.	Dist. Solo	39.82	35.87	3.95	4.6684	.001
State Ens.	Ex. Group	39.82	33.84	5.98	5.9573	.001
State Ens.	Chorus	39.82	33.25	6.57	6.1087	.001
State Ens.	Stage Band	39.82	33.02	6.80	7.1421	.001
Pvt. Study	All-Dist.	38.42	38.07	0.35	0.3334	ns
Pvt. Study	Dist. Ens.	38.42	36.30	2.12	2.3737	.02
Pvt. Study	Orch. Part.	38.42	35.90	2.52	1.4471	ns
Pvt. Study	Dist. Solo	38.42	35.87	2.55	2.7702	.01
Pvt. Study	Ex. Group	38.42	33.84	4.58	4.1670	.001
Pvt. Study	Chorus	38.42	33.25	5.17	4.3943	.001
Pvt. Study	Stage Band	38.42	33.02	5.40	5.2093	.001
All-Dist.	Dist. Ens.	38.07	36.30	1.77	2.3857	.02
All-Dist.	Orch. Part.	38.07	35.90	2.17	1.3721	ns
All-Dist.	Dist. Solo	38.07	35.87	2.20	2.8863	.01
All-Dist	Ex. Group	38.07	33.84	4.23	4.5047	.001
All-Dist.	Chorus	38.07	33.25	4.82	4.8065	.001
All-Dist.	Stage Band	38.07	33.02	5.05	5.8571	.001
Dist. Ens.	Orch. Part.	36.30	35.90	0.40	0.2811	ns
Dist. Ens.	Dist. Solo	36.30	35.87	0.43	0.7340	ns

TABLE 23--Continued

#1 Act. Group	#2 Act. Group	#1 Mean	#2 Mean	Difference	t	P
Dist. Ens.	Ex. Group	36.30	33.84	2.46	3.1935	.01
Dist. Ens.	Chorus	36.30	33.25	3.05	3.7254	.001
Dist. Ens.	Stage Band	36.30	33.02	3.28	4.9065	.001
Orch. Part.	Dist. Solo	35.90	35.87	0.03	0.0203	ns
Orch. Part.	Ex. Group	35.90	33.84	2.06	1.2367	ns
Orch. Part.	Chorus	35.90	33.25	2.65	3.2368	.01
Orch. Part.	Stage Band	35.90	33.02	2.88	4.3081	.001
Dist. Solo	Ex. Group	35.87	33.84	2.03	2.5666	.02
Dist. Solo	Chorus	35.87	33.25	2.62	3.1197	.01
Dist. Solo	Stage Band	35.87	33.02	2.85	4.1776	.001
Ex. Group	Chorus	33.84	33.25	0.59	0.5641	ns
Ex. Group	Stage Band	33.84	33.02	0.82	0.9156	ns
Chorus	Stage Band	33.25	33.02	0.23	0.2417	ns

Means for Musical Preference, Grading Procedure, and Section Rehearsal

The reader is reminded that the students could mark a preference for all three categories of music if he so chose. However, the contingency table which follows indicates that the majority of those students who marked popular music as a preference did not mark contest type music as their preference. The reader will note that of the 1,309 subjects responding "yes" to popular music, 907 of this number responded "no" to a preference of contest type music. Conversely, of the 682 subjects responding "yes" to contest music, 280 of these responded "no" to popular music. One can deduce from these figures that the subjects preferring contest type music represent a rather distinct group, whereas those marking a preference for popular music represent a more composite group (77 per cent of the total high school sample).

TABLE 24

CONTINGENCY TABLE FOR POP/CONTEST MUSICAL PREFERENCE

		Prefer Contest: yes	Prefer Contest: no	
Prefer Pop	yes	402	907	1309
	no	280	106	386
		682	1013	

Table 24 reflects the responses to the subjects' musical preferences along with the means and standard deviation for these groups Also included are means relating to two procedures employed by participating teachers (grading and section rehearsal). The superior mean score

of those students preferring contest type music tends to validate the selectivity of this group. Their mean score is significantly higher than the grand mean, at the .00003 level of confidence. Students from band programs where grading is done objectively also scored significantly higher than the total group, at the .00003 level. The only other group represented in Table 25 which achieved a higher mean than the total, comprised those students from programs where sectional rehearsal is a regular activity. This mean is not significantly higher than the grand mean, however.

TABLE 25

MEANS AND STANDARD DEVIATIONS WITH CORRESPONDING z VALUES AND PROBABILITY LEVELS FOR THE DIFFERENCES FROM THE GRAND MEAN

Variable	Mean	Standard Deviation	Subjects	z	P
Contest Preference	35.73	10.75	682	8.84	.00003
Pop Preference	31.42	11.00	1309	-2.20	.01
March Preference	32.01	11.10	514	-0.16	ns
Section Practice	32.44	11.56	1142	1.02	ns
Non Section Prac.	31.37	10.61	553	1.59	ns
Objective Grading	34.52	11.31	744	5.86	.00003
Subjective Grading	30.20	10.87	951	-5.36	.00003
Grand Mean	32.09	11.27	1695	. .	. .

All other groups as categorized in Table 24 scored lower than the mean of the total high school sample. Students from programs where grading is done subjectively scored significantly lower, at the .00003 level of confidence, and the group which indicated preference for popular music scored significantly lower at the .01 level of confidence.

Mean differences between musical preference categories are significant at the .001 level of confidence for contest music preference

compared with popular music and march preference (see Table 26). The mean difference between march preference and popular music preference is very slight and is not statistically significant.

It is most interesting to note the difference in means for those students coming from situations where objective evaluation procedures are employed as opposed to those students from situations where subjective evaluation procedures are employed. At this point, any attempt to explain the difference in achievement in these groups would be purely conjecture.

TABLE 26

MEAN DIFFERENCES FOR MUSIC PREFERENCE: MEAN DIFFERENCES FOR PROCEDURE VARIABLES WITH CORRESPONDING *t* VALUES AND PROBABILITY LEVELS

#1 Variable	#2 Variable	#1 Mean	#2 Mean	Difference	*t*	P
Contest	Pop	35.73	31.42	4.31	8.6148	.001
Contest	March	35.73	32.01	3.72	5.9349	.001
March	Pop	32.01	31.42	0.59	1.0487	ns
Obj. Gr.	Subj. Gr.	34.52	30.20	4.32	8.1371	.001
Obj. Gr.	Sect. Pr.	34.52	32.44	2.08	3.9581	.001
Obj. Gr.	No Sect. Pr.	34.52	31.37	3.15	5.1319	.001
Sect. Pr.	Subj. Gr.	32.44	30.20	2.24	5.0680	.001
Sect. Pr.	No Sect. Pr.	32.44	31.37	1.07	1.8628	ns
No Sect.P	Subj. Gr.	31.37	30.20	1.17	2.0508	.05

Included in Table 26 are the mean differences between groups as categorized according to grading procedures and section practice. The differences of means for these procedures are highly significant with one exception. There is no statistical significance in the difference between the group which has section practice and that which does not. However, it is interesting to note that the slight difference between means for section practice and subjective grading is significant at the

.05 level of confidence.

One will notice that with regard to those groups which represent situations involving regularly scheduled section rehearsal, as opposed to those situations where regular section rehearsal is not the rule, the means adhere rather closely to the grand mean.

Means and Standard Deviations by School Classification

Table 27 shows the means and standard deviations by school classification. Since there were only seven ninth-grade students in classes AA, A, and BB combined, the means for the ninth-grade students are not included in those classifications. The reader should be cautioned against comparing the composite means for each classification. Since ninth-grade means are not included in the larger three classifications and they are included in the four smaller classifications, a valid comparison could not be made on the basis of composite means. Perhaps the most appropriate comparison would result from comparing the means by grade level. This can best be done by referring to Table 28. Mean differences are shown between equal grades and different classifications with some overlapping where mean differences seem to warrant.

The mean for BB twelfth-graders is significantly higher than twelfth-grade means from all other classifications. The differences in twelfth-grade means of all other classifications are not statistically significant.

Even though the mean for BB eleventh-graders is slightly higher than means of twelfth-grade AA, A, B, C, DD, and D, the differences are not statistically significant at the .05 level of confidence. However,

TABLE 27

MEANS AND STANDARD DEVIATIONS BY SCHOOL CLASSIFICATION AND GRADE WITH z VALUE AND PROBABILITY LEVEL FOR DIFFERENCES IN MEANS FROM THE GRAND MEAN

	Mean	Standard Deviation	Subjects	z	P
Class "AA"					
Twelfth grade	35.90	11.64	96	3.20	.001
Eleventh grade	33.27	11.39	121	1.09	ns
Tenth grade	33.62	10.06	107	1.57	ns
Total	34.16	. .	324	. .	. .
Class "A"					
Twelfth grade	35.47	11.19	109	2.96	.001
Eleventh grade	31.18	12.57	99	-0.72	ns
Tenth grade	30.39	11.73	125	-1.62	.05
Total	32.29	. .	333	. .	. .
Class "BB"					
Twelfth grade	39.12	8.60	83	7.44	.00003
Eleventh grade	36.81	11.40	80	3.70	.0002
Tenth grade	32.92	10.56	142	0.93	ns
Total	35.63	. .	305	. .	. .
Class "B"					
Twelfth grade	35.32	9.92	44	2.15	.01
Eleventh grade	31.85	10.74	75	-0.19	ns
Tenth grade	30.79	11.00	82	-1.07	ns
Ninth grade	24.49	12.19	65	-5.02	.00003
Total	30.29	. .	266	. .	. .
Class "C"					
Twelfth grade	34.40	9.35	35	1.46	ns
Eleventh grade	31.07	11.27	45	-0.61	ns
Tenth grade	27.74	10.31	58	-3.21	.001
Ninth grade	25.60	8.92	67	-5.95	.00003
Total	28.91	. .	205	. .	. .
Class "DD"					
Twelfth grade	33.77	10.39	22	0.76	ns
Eleventh grade	29.30	8.57	33	-1.87	.03
Tenth grade	29.39	10.31	49	-1.83	.03
Ninth grade	28.76	8.40	37	-2.41	.009
Total	29.88	. .	141	. .	. .
Class "D"					
Twelfth grade	33.86	9.71	21	0.84	ns
Eleventh grade	32.69	7.35	26	0.45	ns
Tenth grade	30.14	8.40	29	-1.25	ns
Ninth grade	23.37	10.44	38	-5.14	.00003
Total	29.15	. .	114	. .	. .
Grand Mean	32.09	11.27	. .	. .	. .

Notes: z = value of z in standard deviation units above or below grand mean.
P = probability level
ns = not significant at .05 level of confidence

TABLE 28

MEAN DIFFERENCES BETWEEN CLASSIFICATION/GRADE CATEGORIES WITH CORRESPONDING t VALUE AND PROBABILITY LEVEL

#1 Class/Grade		#2 Class/Grade		#1 Mean	#2 Mean	Difference	t	P
BB	12	AA	12	39.12	35.90	3.22	2.0687	.05
BB	12	A	12	39.12	35.47	3.65	2.4623	.02
BB	12	B	12	39.12	35.32	3.80	2.2291	.05
BB	12	C	12	39.12	34.40	4.72	2.6339	.01
BB	12	DD	12	39.12	33.77	5.35	2.4562	.02
BB	12	D	12	39.12	33.86	5.26	2.4150	.02
AA	12	A	12	35.90	35.47	0.43	0.2707	ns
AA	12	B	12	35.90	35.32	0.58	0.2844	ns
AA	12	C	12	35.90	34.40	1.50	0.6814	ns
AA	12	DD	12	35.90	33.77	2.13	0.7830	ns
AA	12	D	12	35.90	33.86	2.04	0.7420	ns
A	12	B	12	35.47	35.32	0.15	0.0770	ns
A	12	C	12	35.47	34.40	1.07	0.5087	ns
A	12	DD	12	35.47	33.77	1.70	0.6533	ns
A	12	D	12	35.47	33.86	1.61	0.6119	ns
B	12	C	12	35.32	34.40	0.92	0.4150	ns
B	12	DD	12	35.32	33.77	1.55	0.5803	ns
B	12	D	12	35.32	33.86	1.46	0.5502	ns
C	12	DD	12	34.40	33.77	0.63	0.2331	ns
C	12	D	12	34.40	33.86	0.54	0.2056	ns
DD	12	D	12	33.77	33.86	0.09	0.0286	ns
BB	11	AA	12	36.81	35.90	0.91	0.5846	ns
BB	11	AA	11	36.81	31.18	5.63	3.8099	.001
BB	11	A	12	36.81	35.47	1.34	0.9040	ns
BB	11	A	11	36.81	31.18	5.63	3.4430	.001
BB	11	B	12	36.81	35.32	1.49	0.8740	ns
BB	11	B	11	36.81	31.85	4.96	3.2026	.01
BB	11	C	12	36.81	34.40	2.41	1.3448	ns
BB	11	C	11	36.81	31.07	5.74	3.2000	.01
BB	11	DD	12	36.81	33.77	3.04	1.5609	ns
BB	11	DD	11	36.81	29.30	7.51	4.2134	.001
BB	11	D	12	36.81	33.86	2.95	1.3544	ns
BB	11	D	11	36.81	32.69	4.12	2.1857	.05
AA	11	A	11	33.27	31.18	2.09	1.2886	ns
AA	11	B	11	33.27	31.85	1.42	0.8644	ns
AA	11	C	11	33.27	31.07	2.20	1.1042	ns
AA	11	DD	11	33.27	29.30	3.97	1.8530	ns
AA	11	D	11	33.27	32.69	0.58	0.2473	ns

TABLE 28--Continued

#1 Class/Grade		#2 Class/Grade		#1 Mean	#2 Mean	Difference	t	P
D	11	A	11	32.69	31.18	1.51	0.5824	ns
D	11	B	11	32.69	31.85	0.84	0.3665	ns
D	11	C	11	32.69	31.07	1.62	0.6478	ns
D	11	DD	11	32.69	29.30	3.39	1.5782	ns
AA	10	A	10	33.62	30.39	3.23	2.2246	.05
AA	10	BB	10	33.62	32.92	0.70	0.0527	ns
AA	10	B	10	33.62	30.74	2.88	1.8689	ns
AA	10	C	10	33.62	27.74	5.88	3.5376	.001
AA	10	DD	10	33.62	29.39	4.23	2.4053	.02
AA	10	D	10	33.62	30.14	3.48	1.6983	ns
BB	10	A	10	32.92	30.39	2.53	1.8502	ns
BB	10	B	10	32.92	30.79	2.13	1.4308	ns
BB	10	C	10	32.92	27.74	5.18	3.1591	.01
BB	10	DD	10	32.92	29.39	3.53	2.0210	.05
BB	10	D	10	32.92	30.14	2.78	1.3283	ns
B	10	C	10	30.79	27.74	3.05	1.6503	ns
B	10	DD	10	30.79	29.39	1.40	0.7170	ns
B	10	D	10	30.79	30.14	0.65	0.2876	ns
D	10	C	10	30.14	27.74	2.40	1.0749	ns
D	10	DD	10	30.14	29.39	0.75	0.3279	ns
DD	9	B	9	28.76	24.49	4.27	1.8743	ns
DD	9	C	9	28.76	25.60	3.16	1.7496	ns
DD	9	D	9	28.76	23.37	5.39	2.4247	.05
C	9	B	9	25.60	24.49	1.11	0.5948	ns
C	9	D	9	25.60	23.37	2.23	1.1456	ns
B	9	D	9	24.49	23.37	1.12	0.4697	ns
DD	9	C	10	28.76	27.74	1.02	0.5647	ns

the fact that BB eleventh-grade means are equal to twelfth-grade means from the other classifications seems worthy of note. The differences between BB eleventh-graders and all other eleventh-graders are statistically significant.

Comparing mean differences of tenth grade by classification reveals that although many differences exist, only differences between AA-A, AA-C, AA-DD, BB-C, and BB-DD are statistically significant (the first classification having the higher mean in each case).

Although differences between grades nine - ten and eleven - twelve are statistically significant when grouped according to sex, there are no mean differences that are significant when tenth-grade girls are compared with eleventh- and twelfth-grade boys. There is also no statistical significance between means of eleventh-grade girls and twelfth-grade boys. The only mean difference with statistical significance between boys and girls of consecutive grades occurs between tenth-grade boys (higher) and ninth-grade girls.

Correlation of Variables

The following discussion will be concerned primarily with correlations between students' achievement (as shown by test scores) and other variables, many of which might be expected to affect achievement (see matrix, page 81). Computation of the *t* formula for significance of correlation coefficients indicates that for a sample of 1,695 subjects, any correlation of .05 or larger is statistically significant at the .05 level of confidence.[41]

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[41]Tate, Statistics in Education and Psychology, p. 281.

Correlations With Raw Score

The correlation of age with raw score results in a positive coefficient of .20. This relatively low figure reflects the distribution of mean scores by grade and classification as is presented in Table 27. Since the correlation of age with grade is understandably quite strong (.79), one could also speculate that the range of scores within grade levels would tend to vary considerably. This explains the relatively low coefficient between age and raw score.

The correlation of grade with raw score (.26) is slightly stronger than that of age with raw score (.20). Since more than one age level is found per grade, this difference is not surprising. However, as determined by use of the t test for significance of difference between correlation coefficients, this slight difference is statistically significant at the .01 level of confidence (see Table 29).[42]

The correlation between the number of years piano instruction and raw score (.20) is the same as that for age with raw score. When comparing correlation coefficients of achievement score with years of piano, age, and grade the resulting coefficients (.20, .20, and .26 respectively) indicate that grade level has a slightly more positive relationship with achievement than age or number of years of piano instruction. The number of years of band participation correlates slightly higher (.23) than does years of piano or age, but less than grade level. This difference is not statistically significant, however. (The reader is reminded to refer to Table 29 for statistical significance of differences in coefficients.)

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[42]Guilford, Fundamental Statistics in Psychology and Education, pp. 190-191.

TABLE 29

DIFFERENCES OF CORRELATION COEFFICIENTS WITH CORRESPONDING t VALUES AND PROBABILITY LEVELS

Variables	r_{12}	r_{13}	r_{23}	t	P
1 Score 2 Grade 3 Age	.26	.20	.79	3.94	.001
1 Score 2 Grade 3 Years of Piano	.26	.20	.02	1.99	.05
1 Score 2 Grade 3 Years in Band	.26	.23	.50	1.29	ns
1 Score 2 Total Sightreading Time 3 Total Rehearsal Time	.19	.10	.50	3.49	.001
1 Score 2 Dist. Sightreading Rating 3 Dist. Concert Rating	.35	.25	.61	4.86	.001
1 Score 2 Total Sightreading Time 3 Dist. Sightreading Rating	.19	.35	.32	-6.18	.001
1 Total Sightreading Time 2 District Concert Rating 3 Dist. Sightreading Rating	.38	.32	.61	3.27	.001
1 Score 2 Dist. Sightreading Rating 3 Difficulty of Repertoire	.35	.24	.52	5.15	.001
1 Score 2 Difficulty of Repertoire 3 Total Sightreading Time	.24	.19	.55	2.18	.05
1 Score 2 No. Marching Performances 3 No. Wks. Marching	-.15	-.09	.33	-2.26	.05
1 Score 2 No. Marching Performances 3 Concert Contest Prep.	-.15	-.05	-.02	-3.05	.01
1 Score 2 No. Concert Performances 3 No. Marching Performances	.13	-.15	-.07	8.58	.001
1 Score 2 Dist. Concert Rating 3 Difficulty of Repertoire	.25	.24	.52	0.75	ns

As is expected, those activity groups involving solo and ensemble participation, all-district and all-state band participation, and private

study, relate strongly to the aural skills necessary for high achievement scores. Those groups comprising stage band, orchestra, and extracurricular music group participants relate only slightly to superior achievement. There is no significant relationship between test achievement and chorus participation.

The reader will note that there is a negative relationship between achievement scores and preference for popular type music (-.18), whereas there is a strong positive relationship between achievement scores and preference for contest type music (.32).

There are several interesting observations to be made with regard to procedures and their correlations with achievement. Those procedures that show the strongest relationship with achievement are performance of difficult repertoire (.24); summer band programs (.25); and objective grading (.24).

It is most interesting to note that the total amount of time devoted to sightreading correlates more closely with achievement scores than does the total amount of class time per week (.19 and .10). Even though this difference is quite small, it is significant at the .01 level of confidence. Since the amount of rehearsal time per week correlates strongly (.50) with total sightreading time, one could surmise that the stronger correlation of sightreading time with raw score indicates the relative importance of sightreading where this type of achievement is concerned. To further emphasize the relationship of sightreading with achievement, one could observe the difference in correlation of concert contest ratings and sightreading contest ratings with achievement (concert contest ratings, .25, and sightreading contest ratings, .35). The

higher correlation coefficient of sightreading ratings with total score would again validate the relative merits of sightreading. This is particularly so since sightreading time correlates more strongly with concert contest ratings than it does with sightreading contest ratings.

The correlation of marching activities with achievement score results in negative coefficients: weeks devoted to marching, -.09, and number of marching performances, -.15. This indicates that students from those programs which devote more time to marching activities are less proficient in the type of aural discrimination measured by the Iltis test. Consistent with these negative coefficients is the correlation of total weeks of concert contest preparation with raw score (-.05), also significantly negative. In contrast, the coefficient for the total number of public concert performances with raw score is a positive .13. There is no significant relationship between achievement scores and the consistent use of technical studies in rehearsal situations.

Correlations With Subtest Scores

It is particularly worthy of note that, for the most part, participation in solo, ensemble, all-district, all-state, and private study relate quite strongly to the Interpretation subtest. In fact, each of these activities relates more closely with the Interpretation score than with any of the other four subtests (with one exception--private study relates more closely with Technique.) The contrast between subtest coefficients and these activities becomes greater as the group in question becomes more select. Since the total high school sample scored lowest on the Interpretation subtest and these particular groups related most closely with that area, there is indication that one of the major dif-

ferences in the more select groups and the remainder of the sample is the ability of the former to read a score and aurally detect performance errors in interpretation.

Correlations Between Activities

Analysis of the coefficients between activity groups reveals that although solo and ensemble participants represent select groups, the percentage of the high school sample involved in one or the other would be greater than the average percentage of the two groups. The contingency table below validates the preceding statement. It will be noticed that 813 (48 per cent) of the high school sample responded "no" to both district solo and district ensemble participation, indicating that fifty-two per cent participate in one or both. Three hundred forty-eight (approximately 20 per cent) responded "yes" to both.

TABLE 30

CONTINGENCY TABLE FOR DISTRICT SOLO/ENSEMBLE PARTICIPATION

		District Ensemble		
		yes	no	
District Solo	yes	348	271	619
	no	264	813	1077
		612	1084	

As would be expected, there are high correlation coefficients between district solo and state solo participation, as well as between district and state ensemble participation. The relatively high correlations

between these activities tend to validate the selectivity of these groups. The reader is reminded that these high coefficients are the result of strong interaction among select groups from within the 52 per cent of the total high school sample which participated in district solo/ensemble contest.

Negative coefficients between sex and activities which are shown on the matrix indicate a higher incidence of girl participants, although few of these are of significant value. The reader will note that incidence of female participation is greatest with district ensemble contest (correlation of .17) and chorus (.16). Positive coefficients indicate a higher incidence of male participants; these relationships are strongest with stage band (.21) and extracurricular music group activities (.13).

Correlation of Activities With Those Variables Affecting Individual Programs

Positive correlations between participation in solo, ensemble, all-district, all-state, and private study with certain variables pertaining to individual school band programs provide some interesting information. For example, these coefficients indicate that slightly more participants in these select activities come from larger school classifications. The correlations must be regarded as somewhat biased, due to the larger number of students in the high school sample coming from the larger school classifications (approximately 57 per cent). The smaller three classifications contribute approximately twenty-seven per cent of the sample, with class "B", the median group, contributing approximately fifteen per cent. However, the degree of bias is lessened by the fact

that, based on percentages of the number of subjects in each classification who participate, the larger three classifications have a much higher percentage of participation. For example, the average percentage of participation in classes AA, A, and BB is 43.7 for district solo participation. The average percentage of participation in district solo from the smaller classifications (DD, D, and C) is only 26.3 per cent.

TABLE 31

PARTICIPATION IN ACTIVITY GROUPS BY SCHOOL CLASSIFICATION: EXPRESSED AS A PERCENTAGE OF THE NUMBER OF SUBJECTS IN THE CLASSIFICATION

Activity	% Classification						
	AA	A	BB	B	C	DD	D
District Solo Contest	36.7	45.0	49.5	30.8	20.5	23.4	35.1
State Solo Contest	11.1	13.2	8.5	7.9	6.3	0.7	1.7
District Ensemble Contest	32.7	35.1	52.8	43.2	32.7	14.2	21.1
State Ensemble Contest	11.4	21.3	16.7	15.0	10.7	2.1	4.4
All-District Band	10.8	15.6	14.7	24.8	14.1	14.9	17.5
All-State Band	2.8	5.1	2.6	2.3	1.9	0.7	0.0
Private Study	22.8	14.7	9.2	4.9	1.9	0.7	1.7

The table above (Table 31) shows the percentage of participation by classification. The reader will note that, without exception, the average participation (percentage figure) is greatest in the three larger classifications. The median class (B) has a higher percentage of participation in all-district band.

Higher coefficients indicate that there are more participants in these activities from those programs which devote the greatest amount of time to sightreading. If one compares coefficients of various activities with sightreading ratings one finds an even stronger relationship. There is also a relatively high positive correlation of these activities with the number of public concert performances.

Generally, there is a negative relationship between these activities, and the number of marching performances. The same is evident but to a lesser degree, with number of weeks devoted to marching activities. Apparently, students from programs which strongly emphasize marching tend to participate less in such activities as solo/ensemble contest, all-district and all-state band and private study.

Correlations of Musical Preferences With Those Variables Affecting Individual Programs

Although not surprising, it is interesting to note that the highest coefficient resulting from a correlation between contest music preference and variables affecting individual band programs occurs with total public concert performances (.32). Similarly high coefficients result from contest music preference with total sightreading time (.30), school classification (.22), contest ratings (.29 and .25 for district concert and sightreading respectively), and repertoire difficulty (.24). The correlations between popular music preference and the same variables result in highly significant negative coefficients. They are as follows: concert contest ratings (-.20), sightreading contest ratings (-.23), number of public concert performances (-.21), total sightreading time (-.23), difficulty of repertoire (-.19), and school classification (-.18). Generally speaking, no significant relationship exists between march preference and these variables, indicating that this group is a composite of those groups who prefer contest and popular music.

Correlations Between Variables Affecting Individual Programs

Rather high positive coefficients result from correlations between the number of years' experience of the teacher and the following:

total sightreading time, .44; school classification, .49; district concert ratings, .37; and difficulty of repertoire, .43. Lesser positive correlation coefficients occur between years of experience of teachers and total class time per week, .17; amount of contest preparation, .15; and district sightreading contest rating, .12. Analysis of these coefficients reveals that more experienced teachers tend to spend more time sightreading, regardless of total class time per week. (The reader is reminded that the coefficient between total rehearsal time per week and sightreading time is .50.) This is evidenced in the considerable difference in the coefficients concerning total class time and total sightreading time with teacher experience (see coefficients above). Although the relationship of teacher experience with achievement is large enough to be statistically significant (.05), it is, nevertheless, quite small when compared with the preceding coefficients. The preceding discussion reveals a rather surprising circumstance. Even though there is a high degree of relationship of teacher experience with those variables which show high relationships with achievement, there is surprisingly little relationship between experience of the teacher and achievement.

There is a strong relationship between situations where the teacher has tenure and programs attaining high concert contest ratings (.54). A similar coefficient (.47) results from the correlation of teacher tenure with the difficulty of repertoire performed. Other strong relationships with teacher tenure are the following: sightreading contest ratings (.38); total sightreading time (.34); and number of public concert performances (.32).

Strong positive relationships exist between regularly scheduled

section rehearsals and the following variables: repertoire difficulty, .53; concert contest ratings, .41; school classification, .44; total marching performances, .34; and total concert contest preparation, .36. The strong correlation between section rehearsals and concert contest ratings is not unexpected; however, the insignificant correlation (.02) with sightreading rating is surprising, since there is such a strong positive relationship between sightreading contest ratings and concert contest ratings (.61).

Technical studies as a regular part of the daily rehearsal do not relate strongly to other variables affecting individual programs. Even though some positive relationships do exist, those relationships that are negative should prove more interesting for analysis. One will find negative relationships between technical studies and larger school classifications, -.11; concert contest ratings, -.23; summer band programs, -.17; and marching contest participation, -.25. These coefficients reveal that there is a higher incidence of use of technical studies in smaller classifications; that those programs using technical studies have slightly lower contest ratings and a tendency to attend marching contest less frequently.

The coefficients resulting from correlations of objective grading procedures with those variables affecting individual programs reveal that those who use objective grading procedures perform the most difficult repertoire (correlation of .56); attain higher sightreading contest ratings (correlation of .52); are more numerous in larger classifications (correlation of .34); devote more time to sightreading (correlation of .41); and perform more public concerts (correlation of .52).

Although not surprising, coefficients reveal that there is a higher incidence of services of an assistant in larger school classifications. Only five programs of the thirty-one have assistant directors. Of these five, three are found in class BB, and two are found in class A. Other strong relationships exist between the services of an assistant and those variables affecting individual band programs; however, these are synonymous with those relationships shown by larger school classifications and, consequently, will not be discussed here.

The incidence of summer band programs strongly relates with the following variables: years of experience of the teacher, .41; total time devoted to sightreading, .30; school classification, .59; total number of public concert performances, .47; concert contest ratings, .32; and sightreading contest ratings, .42. The reader is reminded that for purposes of this study, only those band programs that have at least fifty per cent of the high school band participating in summer programs are included in this report as having a summer band program. An interesting observation concerns the fact that only two procedure variables have a stronger relationship with sightreading ratings than with concert contest ratings; summer band programs and objective grading. Due to the strong relationship of sightreading contest ratings with achievement, this is quite significant.

Total Rehearsal Time Correlations

The reader is reminded that total rehearsal time per week includes that time spent in "extra" rehearsals. The coefficient for total rehearsal time per week and total sightreading time is .50. This strong relationship is particularly interesting, since total sightreading time

has a much stronger relationship with achievement than does total rehearsal time (.19 and .10). Other rather high correlations exist between total rehearsal time per week and the following variables: instrument of the teacher, -.48 (the negative coefficient indicates higher pitched instruments); school classification, .39; and district concert rating, .35. In contrast with the positive correlation coefficient of total class time per week with the number of public concert performances (.39) the correlations of total class time per week and marching activities are negative: weeks devoted to marching, -.09; and, total marching performances, -.10.

Correlations With Total Sightreading Time

High coefficients result from correlations of total sightreading time with repertoire difficulty, .55; district sightreading rating, .31; district concert rating, .38; number of public concert performances, .60; school classification, .47; teacher experience, .44; and total rehearsal time per week, .50. A strong negative coefficient results from the correlation of total sightreading time with total marching performances, -.30.

TABLE 32

MATRIX FOR CORRELATION OF VARIABLES*

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1 Total Raw Score												
2 Odd Score	98											
3 Even Score	98	92										
4 Intonation	63	63	60									
5 Tone Quality	76	72	76	38								
6 Interpretation	62	61	61	32	34							
7 Ensemble	76	73	75	32	46	36						
8 Technique	76	75	73	30	44	33	50					
9 Age	20	21	18	13	14	12	17	15				
10 Grade	26	27	24	17	20	15	21	19	79			
11 Sex	-17	-15	-17	-10	-14	-11	-14	-09	08	02		
12 Piano (years)	20	22	18	16	13	16	16	13	03	02	-39	
13 Years in Band	23	25	21	14	15	15	19	18	50	02	-05	02
14 District Solo	31	31	30	21	19	24	24	23	15	17	-07	17
15 State Solo	35	36	33	23	24	32	24	24	28	34	-03	17
16 District Ensemble	35	36	33	20	24	27	27	27	16	22	-17	16
17 State Ensemble	36	37	33	24	23	33	24	26	28	33	-10	16
18 All-District Band	30	31	27	13	20	27	21	24	11	14	-04	11
19 All-State	34	36	28	13	21	36	24	28	28	33	-02	14
20 Stage Band	06	06	04	05	05	06	-01	05	13	18	21	05
21 Private Lessons	26	26	25	14	11	22	21	23	09	09	-05	13
22 Extra-Cur. Group	08	10	06	06	06	05	09	02	11	15	13	10
23 Chorus Part.	04	05	03	04	01	09	04	-02	03	01	-16	24
24 Orchestra Part.	10	12	07	06	01	07	14	08	18	24	06	01
25 March Preference	-02	-01	-02	-04	-01	-01	01	-01	02	05	-04	03
26 Pop Preference	-18	-18	-17	-11	-08	-17	-16	-13	-16	18	00	01
27 Contest Pref.	32	33	30	19	22	25	26	23	20	25	-08	09
28 Student Inst.	-08	-09	-07	-04	-05	-07	-11	-04	05	03	29	-03
29 Teacher Exper.	05	07	03	05	01	04	04	06	15	17	11	-02
30 Rehearsal Time Amt.	10	11	09	02	07	07	08	12	08	11	00	-03
31 Sightreading Time	19	21	15	10	11	09	16	18	15	16	08	00
32 Tenure	09	12	06	02	02	03	11	12	13	15	00	00
33 Teacher Inst.	-02	-02	-02	-04	-02	-05	-01	-06	01	02	04	02
34 Sectional Rehearsal	06	05	06	10	04	05	-04	06	13	16	-02	02
35 Assistant	21	20	20	12	18	18	15	12	19	19	-01	06
36 Technical Studies	00	-02	02	05	02	04	-03	03	-06	-06	-05	06
37 School Class.	15	17	13	12	10	06	14	13	22	28	21	02
38 Amt. Contest Prep.	-05	-06	-03	-02	04	-04	-06	-01	-10	-11	-13	-02
39 Total March. Perf.	-15	-14	-16	-05	-12	-04	-16	-13	02	-02	-01	02
40 Total Concert Perf.	13	15	11	06	09	07	09	13	13	13	06	04
41 Grading Procedure	24	24	24	10	15	18	18	23	08	12	02	-02
42 Marching Contest	09	09	08	08	18	02	02	02	12	09	-02	02
43 Dist Concert Rate	25	27	23	11	19	15	21	22	19	22	03	01
44 Dist S/R Rate	35	36	33	15	26	17	33	29	13	16	03	06
45 Weeks Devoted March.	-09	-09	-08	00	-05	-01	-09	-13	-01	00	06	01
46 Summer Band	25	24	24	16	21	16	13	22	08	13	01	02
47 Repertoire Dif'culty	24	26	21	16	17	14	18	18	19	23	11	04

*Decimals are omitted.

TABLE 32--Continued*

Variable	13	14	15	16	17	18	19	20	21	22	23	24
1 Total Raw Score												
2 Odd Score												
3 Even Score												
4 Intonation												
5 Tone Quality												
6 Interpretation												
7 Ensemble												
8 Technique												
9 Age												
10 Grade												
11 Sex												
12 Piano (years)												
13 Years in Band												
14 District Solo	22											
15 State Solo	30	40										
16 District Ensemble	22	29	25									
17 State Ensemble	26	25	44	45								
18 All-District Band	20	26	25	24	29							
19 All-State Band	27	14	33	28	29	27						
20 Stage Band	18	13	15	12	15	13	12					
21 Private Lessons	12	39	25	16	20	11	18	01				
22 Extra-Cur. Group	09	11	12	01	04	05	06	06	12			
23 Chorus Part.	05	01	03	-03	03	05	02	01	-02	06		
24 Orchestra Part.	23	07	11	06	12	09	05	-01	10	08	01	
25 March Preference	00	03	02	00	01	03	01	-03	03	01	07	01
26 Pop Preference	-10	-15	-19	-10	-16	-13	-07	00	-16	-04	-01	-07
27 Contest Pref.	18	25	20	17	19	18	14	02	22	06	03	09
28 Student Inst.	-06	01	04	-11	-01	06	-12	07	01	14	00	05
29 Teacher Exper.	05	05	06	02	03	07	00	-13	20	18	-04	27
30 Rehearsal Time Amt.	08	03	02	04	02	03	03	-01	06	-01	-08	-03
31 Sightreading Time	11	11	23	09	10	10	18	-14	42	16	-15	10
32 Tenure	08	-09	-05	04	02	-02	-01	-04	11	-04	00	05
33 Teacher Inst.	02	-04	-04	04	12	-06	-04	06	-13	11	24	37
34 Sectional Rehearsal	07	00	01	14	14	05	01	10	01	-02	-17	01
35 Assistant	10	26	11	18	10	02	07	-02	07	11	-07	-04
36 Technical Studies	07	-03	-02	06	05	-05	-05	-05	-06	00	03	08
37 School Class	09	09	22	12	10	-07	13	-07	38	20	-33	41
38 Amt. Contest Prep.	-06	-04	-11	05	01	20	-08	09	-09	-17	15	-19
39 Total March. Perf.	-01	-22	-19	-11	-12	-09	-15	01	-10	03	-08	-23
40 Total Concert Perf.	08	11	20	10	12	08	15	03	33	08	-18	-12
41 Grading Procedure	12	06	09	14	15	05	08	-03	17	02	-02	10
42 Marching Contest	-13	05	03	13	06	-03	04	05	-01	02	-06	-14
43 Dist Concert Rate	09	19	23	25	26	08	21	10	27	05	-23	12
44 Dist S/R Rate	11	24	30	29	31	10	25	05	30	01	-17	24
45 Weeks Devoted March.	-10	-13	-10	-06	-03	-14	-07	03	-11	00	-03	01
46 Summer Band	02	20	11	17	16	07	06	00	18	03	-10	-01
47 Repertoire Dif'culty	10	15	30	22	31	07	20	03	39	14	-27	21

* Decimals are omitted.

TABLE 32--Continued*

Variable	25	26	27	28	29	30	31	32	33	34	35	36
1												
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16												
17												
18												
19												
20												
21												
22												
23												
24												
25 March Preference												
26 Pop Preference	00											
27 Contest Pref.	07	-36										
28 Student Inst.	03	-01	-05									
29 Teacher Exper.	-05	-12	15	02								
30 Rehearsal Time Amt.	-01	-06	06	-01	17							
31 Sightreading Time	03	-29	30	00	44	50						
32 Tenure	05	-06	06	01	49	05	39					
33 Teacher Inst.	03	09	-21	-01	11	-48	17	13				
34 Sectional Rehearsal	-06	01	02	00	48	07	06	27	-23			
35 Assistant	-06	-08	07	00	45	09	22	-24	10	22		
36 Technical Studies	-02	08	-10	-02	-04	-06	-04	-01	34	18	-12	
37 School Class	02	-18	22	01	49	39	47	27	00	44	42	-11
38 Amt. Contest Prep.	-05	-02	-07	04	15	20	05	21	-10	36	-08	18
39 Total March. Perf.	-02	12	-03	-02	06	-10	-01	10	-32	34	-26	22
40 Total Concert Perf.	04	-21	32	-03	02	39	60	32	-17	00	-06	-06
41 Grading Procedure	07	-08	16	-01	14	05	41	34	-08	13	-05	13
42 Marching Contest	00	-03	06	-04	-14	05	-07	-06	-15	14	33	26
43 Dist. Concert Rate	03	-20	29	-02	37	35	38	54	04	41	55	-24
44 Dist. S/R Rate	03	-23	25	-03	12	21	32	38	05	03	25	06
45 Weeks Devoted March.	-03	12	-01	-02	01	-06	-31	-07	10	33	11	20
46 Summer Band	01	-11	16	01	41	12	30	15	23	17	30	-17
47 Repertoire Dif'culty	-02	-19	29	00	43	26	55	48	09	53	37	20

*Decimals are omitted.

TABLE 32--Continued*

Variable	37	38	39	40	41	42	43	44	45	46
1										
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30										
31										
32										
33										
34										
35										
36										
37 School Class.										
38 Amt. Contest Prep.	-29									
39 Total March. Perf.	-13	-02								
40 Total Concert Perf.	27	-17	07							
41 Grading Procedure	34	-10	06	52						
42 Marching Contest	-14	-26	11	40	-01					
43 Dist Concert Rate	45	-23	-20	35	26	36				
44 Dist. S/R Rate	41	-17	-43	25	52	12	61			
45 Weeks Devoted March.	17	-09	33	-19	-07	14	02	-06		
46 Summer Band	59	12	-32	47	46	25	32	42	01	
47 Repertoire Dif'culty	74	-19	-01	36	56	20	52	52	-02	61

*Decimals are omitted.

Factor Analysis

The final statistical analysis of the data consisted of submitting the correlation matrix to factor analysis using the Osiris "Factan" program from The Institute of Social Research, The University of Michigan. Seventeen principal factors were extracted and these were submitted to orthogonal rotation by means of the Varimax method. Data reduction was accomplished at the .50 level, eliminating three of the forty-seven variables. The highest contribution to total variance by any single factor was only 16 per cent, the next highest 10 per cent, with all others ranging from 3 to 6 per cent contribution. Therefore, no single factor identified important communalities which contributed toward the interpretation of data.

Although the factor analysis added nothing to the interpretation of the data, it did confirm some observations previously discussed. Factor loadings for district-state solo and ensemble contests participation, all-district band and all-state band, preference for contest type music, and sightreading rating were consistently significant in the factor identified with achievement. The second most important factor, which is difficult to identify by a specific label, contained high loadings, all .55 or higher, for total sightreading time, school classification, number of public concert performances, objective grading, summer band, and difficulty of repertoire. Factor analysis also confirmed the inter-relationship among district ensemble, state ensemble, all-district band, and all-state band participation; these variables identified a factor which contributed slightly over 6 per cent to the total variance.

CHAPTER 5

SUMMARY AND CONCLUSIONS

Summary of the Procedure

This project was undertaken as an attempt to provide a source of information concerning identifiable outcomes of instrumental music education in terms of achievement with relationship to teacher methods and student activities. The investigator felt there was a need for an appraisal of instrumental music education programs (high school band programs) that would have student achievement as the major criterion of appraisal.

It was assumed that an objective test could be used to measure those skills that are taught daily in the band rehearsal situation. The instrument chosen to measure these skills was A Test to Measure the Ability of High School Students to Evaluate Musical Performance by John Iltis. The Iltis test (an unpublished test) is a result of doctoral study at Indiana University.[43] The test is a recorded instrument consisting of pairs of musical excerpts in which one, both, or neither may have errors in some area of performance. The subject is required to make a response which involves value judgments concerning the quality of performance, nature of errors, if any, and the instrument(s) committing the errors.

The validity of the test was determined by its analysis, which

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[43]Iltis, "The Construction and Validation of a Test."

was done by professional music educators. The reliability was determined by the split-half method using odd and even items and resulted in a corrected r of .72 for Iltis' administration and an r of .96 for this investigator's administration. The test consists of five subtests with each covering one of five areas of performance: intonation; tone quality; interpretation; ensemble; and technique; and requires forty minutes for administration (including instructions).

Those variables of the music education process which were included in the study were divided into two categories: (1) those activities which affect individual students; and (2) those variables which affect those students within a particular program. These variables were correlated with achievement scores and with one another. The resulting coefficients were placed in a matrix and submitted to a factor analysis.

The population sample used for statistical analysis included 1,695 students, grades nine through twelve, from thirty-one high school bands in the State of Oklahoma. The bands were selected by a somewhat modified stratification method of randomization, the strata being identified as school classification based on enrollment.

The achievement test and questionnaire for student activity data were administered during a five-week period beginning January 4, 1971, and ending February 5, 1971. The data pertaining to individual programs were obtained through personal interviews with the teachers.

Conclusions

The Iltis test has a possible total raw score of seventy-five with each of the five subtests having a possible total score of fifteen.

Due to differences in administration procedures plus the selectivity of the Iltis sample versus the heterogeneity of this sample, no comparison between the scores resulting from the two administrations of the test was attempted in this report. (The large difference in reliability coefficients verifies the characteristic differences of the samples.) However, this investigator feels that the achievement of this sample is comparable to that of the groups tested by Iltis (taking into consideration administration and sample differences).

In a test of aural discrimination of performance errors, subjects from this sample found the areas of interpretation and intonation most difficult. Since the Interpretation subtest requires score reading, a possible explanation for the lack of achievement in the interpretation area is the inability of the subjects to read scores. The investigator found that aural skills increase with each year of band participation, the least amount of increase occurring between grades ten and eleven. Based on the findings from this sample, girls show superior achievement to boys within the same grade level on a test of this nature. Also, there were no significant differences in achievement when comparing tenth-grade girls with eleventh- and twelfth-grade boys. Apparently, tenth-grade girls have developed aural skills equal to eleventh- and twelfth-grade boys, and superior to tenth-grade boys.

Students from this sample who participate in solo and ensemble contests, all-district and all-state band, private study, stage band, and orchestra scored significantly higher than the total high school sample. Also, those students who participate in solo and ensemble contests, all-district and all-state band, and private study scored higher on the

Interpretation subtest (the most difficult subtest) than other students.

Those students whose musical preference was contest type music scored significantly higher than those who preferred marches and those who preferred popular type music. (The wording on the student questionnaire made it possible for a student to mark a preference of all three categories, if he so chose.) In contrast, achievement of those students who prefer popular music was significantly lower than the achievement of the total high school sample. Correlation coefficients for the relationship between those who prefer contest type music and those who prefer popular type music indicate that there is relatively little interaction between the two groups. There was no significant difference in the achievement of those students who preferred marches and those students who preferred popular type music. Even though there is no significant difference in achievement of the march/popular music preference groups, those who preferred popular music scored significantly lower than the total high school sample, whereas there was no significant difference in achievement of those who preferred marches and the total high school sample. The achievement factors and the correlation between these groups indicate that those who prefer marches are a composite of those who prefer contest music and those who prefer popular type music. The findings also indicate an increase in preference of contest type music with each higher grade level and a decrease in preference of popular type music with increase in grade level. Therefore, the band programs included in this sample are effecting a desirable change in students' attitudes toward more serious music.

Many of those variables which affect students in individual band

programs have a highly significant positive relationship with students' achievement. These are as follows: summer band programs (A school was designated as having a summer band program only if fifty per cent of the high school bandsmen were enrolled in the program. Summer programs primarily devoted to marching activities were not included.); performing of the more difficult repertoire; objective grading procedures (This includes those programs which assign specific materials and students are auditioned individually for evaluation purposes. It also includes those programs which administer written exams.); the larger amount of time devoted to sightreading; and the services of an assistant. Those variables having a positive relationship with achievement, but to a lesser degree are: the larger amount of rehearsal time per week (this includes extra rehearsals); and the larger number of public concert performances (includes public concerts, student assemblies, and contests).

There are some variables that have a negative relationship with achievement. Students from those programs which tend to emphasize marching activities scored significantly lower on this test of aural discrimination. The most highly significant negative relationship with achievement is apparent with regard to the larger number of marching performances. Significantly negative in correlation with achievement, but to a lesser degree, are the greater number of weeks devoted to marching activities. Consistent with the findings concerning emphasis on marching are those with regard to the total time devoted to concert contest preparation. Those students from programs which devoted the greater number of weeks to concert contest preparation scored slightly lower (but statistically significant) than those students from those

programs which devote fewer weeks to concert contest preparation.

There is very little difference in achievement of students from those programs which have regularly scheduled section practice and students from those programs which do not. However, there is a strong positive relationship between section practice and concert contest ratings. There is no significant difference in achievement of those students from programs which use technical studies as a part of their rehearsal routine and those students from programs which do not use technical studies.

Those students from bands which received higher district sightreading ratings scored significantly higher than those students from bands which received lower sightreading contest ratings. (Sightreading and concert ratings were recorded as a numerical average for the years 1969, 1970, and 1971.) Also those students from bands which received higher district concert contest ratings scored significantly higher than those students from bands which received the lower concert contest ratings. The contest rating with the most significant relationship with achievement proved to be that for sightreading.

A comparison of achievement between school classifications revealed the following:

1. Twelfth-grade students from class BB scored significantly higher than twelfth-grade students from all other classifications.

2. Eleventh-grade students from class BB scored significantly higher than eleventh-grade students from all other classifications.

3. Aural discrimination (achievement) of eleventh-graders from class BB is equal to that of twelfth-graders from all other

classifications.[44]

4. There is no significant difference in achievement among twelfth-graders in classess AA, A, B, C, DD, and D.

5. There is no significant difference in achievement among eleventh-graders in classes AA, A, B, C, DD, and D.

6. Class AA tenth-graders scored significantly higher than tenth-graders from classes A, C, and DD.

7. Class BB tenth-graders scored significantly higher than tenth-graders from classes C and DD.

With the exception of the superiority of the class BB eleventh- and twelfth-graders and the other differences noted on the above list, no broad conclusions can be made concerning the superiority of achievement scores between smaller school classifications and larger school classifications. Even though the correlation coefficient between school classification and total raw score shows a strong positive relationship, this relationship is biased. The smaller school classifications include a large percentage of ninth graders which would tend to lower the mean of the smaller classifications. The larger school classifications had a total of only seven ninth graders included in this sample.

With regard to the interaction of those variables which are included in the music education process, this study reveals that even

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[44]A possible explanation for superior achievement of grades eleven and twelve from class BB bands could lie in the fact that these schools have a higher percentage (53 per cent) of ensemble contest participation and also a higher percentage of solo contest participation (49.5 per cent). These bands also have the highest incidence of assistant directors. These variables relate quite strongly with achievement.

though those students who participate in solo and ensemble contests, all-district and all-state band, and private study are select groups, when considered collectively they include at least fifty-two per cent of the total high school sample. The findings also indicate a higher incidence of participants in these groups from larger school classifications. Findings relating to sex of participants and distribution in activity groups indicate that there is a higher incidence of female participants in district ensemble contests and chorus, and a higher incidence of male participants in stage band and extra-curricular music groups. The other activity groups prove to be relatively evenly distributed with regard to sex of participants.

There is a higher incidence of participation in solo/ensemble contests, all-district and all-state band, and private study among those band programs which devote the greatest amount of rehearsal time to sightreading and those programs which perform the greater number of public concerts. There is the least incidence of participation in these activities from those programs which emphasize the marching band.

Factor analysis added nothing to the interpretation of the data. However, it did confirm some observations previously discussed.

Recommendations for Further Study

Since findings of this study are based on achievement as determined by a test of aural discrimination of performance errors, it is recommended that a similar study be done using a different measurement instrument. Research which would concentrate on other types of musical perception as the criterion would afford an interesting comparison with the findings of the present study.

Also, since findings in this study indicate a strong relationship between solo and ensemble contest participation and achievement, there would seem to be a need for research which would investigate the characteristics that determine the degree of selectivity of this group, particularly as regards academic achievement and performance proficiency.

There is also need for an experimental study to compare the achievement of band students from programs in which the large concert band is the center of emphasis with achievement of those students in programs in which the emphasis is placed on solo and small ensemble activity. The writer would hypothesize that programs which emphasize the smaller ensembles would prove to be superior to those programs which tend to emphasize the large performing group.

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APPENDIX A

STUDENT QUESTIONNAIRE

Name_____ School_____

Age_____Grade_____ Instrument _____
(if more than one, one you play best)

Have you had instruction in piano?_____ Number of years_____

Number of years in band, including this year. _____ Do you/or have you participated in: District solo contest? _____State solo contest?___ District (small) ensemble contest? _____ State (small) ensemble contest? _____.

Do you participate in solo playing but not at contest?_____

Do you participate in ensemble playing but not at contest? _____

Have you ever participated in All-District band? _____

Have you ever participated in All-State band? _____

Do you participate in stage band? _____

Do you take regular private lessons on your band instrument? _____

Do you participate in a musical group other than band, such as a "rock" group? _____. If you do participate in a musical group other than band, briefly describe the group.

Do you participate in chorus as a regular part of your class schedule? _____. Do you participate in orchestra as a regular part of your class schedule? _____. How much time is spent during the average week on individual practice on your band instrument (not including band class, etc.)? _____hours.

What kind(s) of "band" music do you prefer and enjoy playing? (Circle your preference or preferences).

MARCHES POPULAR TYPE MUSIC CONTEST TYPE MUSIC

ITEMS FOR DIRECTOR INTERVIEW

Name _____

School _____ Classification _____

Degrees and name of institution granting degrees. _____

_____

Number of years in present position. ___ Number of years experience. _____

Major instrument _____

Length of class period _____ Number of days meeting each week _____

Rehearsals outside of class, length and nature. _____

_____

Services of an assistant. _____

Approximate amount of time (rehearsal) spent in the following activities:

Clerical work _____ Warming up _____

Tuning _____ Reading _____

Intensive drill (from band literature) _____ (technique studies) _____

Grading procedure _____

Amount of time spent preparing for concert contest _____

Stage band program _____

Number of weeks devoted to marching _____

Summer band program (length and nature) _____

Are all students able to schedule band at the same hour? _____

Approximate number of public performances involving marching at:

Football games _____ Parades _____

Other _____

Approximate number of public concert performances _____

District contest ratings: 1969, 1970, 1971. _____

Repertoire of band: marches, "light tunes", contest literature. _____

APPENDIX B

Student Judging Booklet for A Test to Measure the Ability of High School Students to Evaluate Musical Performance

by John Iltis

LEVEL I - Mark the LEAST SATISFACTORY example in intonation.

A	INTONATION
B	
Equal - both A and B are equal and well in TUNE (omit level II and III)	
Equal - both A and B are equal and OUT OF TUNE	
Don't know	

LEVEL II - Mark the MOST OUT OF TUNE instrument if any. (Fl. and Ob. on same line)

Flute - Oboe	Trumpet
Clarinet	Trombone
French Horn	French Horn
Bassoon	Tuba
More than one	More than one

LEVEL III - HOW is it out of tune?

Sharp consistently
Sharp on one or two pitches only
Flat consistently
Flat on one or two pitches only
Both sharp and flat at times

LEVEL I - Mark the example with the LEAST SATISFACTORY Tone
A Tone
B
Equal - Both A and B are equal and both are ACCEPTABLE in tone quality. (omit 2 & 3)
Equal - Both A and B are equal and NOT ACCEPTABLE in tone quality.
Don't know.

LEVEL II - Mark the instrument with the least satisfactory tone.	
Flute - Oboe	Trumpet
Clarinet	Trombone
French Horn	French Horn
Bassoon	Tuba
More than one	More than one

LEVEL III - Mark the best description of the poor tone you heard.
Fuzzy - gurgles - sizzles in tone
Unsteady - excessive vibrato or tremolo
Stuffy - dead - dull
Harsh - coarse - overpowering
Thin - weak - pinched

LEVEL I - Mark the LEAST SATISFACTORY example in Interpretation.

A	Interpretation
B	
Equal - Both A and B are equal and SATISFACTORY. (Omit level II and III)	
Equal - Both A and B are equal and UNSATISFACTORY.	
Don't know	

LEVEL II - Mark the most INCORRECT instrument in interpretation

Flute - Oboe	Trumpet
Clarinet	Trombone
French Horn	French Horn
Bassoon	Tuba
More than one	More than one

LEVEL III - Mark the most INCORRECT area of Interpretation

Note values - incorrect
Phrasing - breaths taken in the wrong places
Tempo - not in keeping with score
Style - Expression - lacks shading and general musical "feel".
Articulations - staccato - legato - slurs etc., not observed.

LEVEL I - Mark the LEAST SATISFACTORY example in Ensemble.

A	Ensemble
B	
Equal - Both A and B are Equal and SATISFACTORY in Ensemble.	
Equal - Both A and B are Equal and UNSATISFACTORY in Ensemble.	
Don't know	

LEVEL II - Mark the instrument which caused the bad example.

Flute - Oboe	Trumpet
Clarinet	Trombone
French Horn	French Horn
Bassoon	Tuba
More than one	More than one

LEVEL III - Mark the cause of the bad ensemble.

Attacks - not together
Releases - not together
Balance - some parts too loud or too soft
Rushing or dragging
Note Values - not correct in some parts

LEVEL I - Mark the LEAST SATISFACTORY example in Technique	
A	Technique
B	
Equal - Both A and B are equal and are acceptable in technique.	
Equal - Both A and B are equal and are not acceptable in technique.	
Don't know	

LEVEL II - Mark the instrument LEAST SATISFACTORY in technique.	
Flute - Oboe	Trumpet
Clarinet	Trombone
French Horn	French Horn
Bassoon	Tuba
More than one	More than one

LEVEL III - Mark the MOST OBVIOUS technical error you heard.
Occasional "missed" or "muffed" note
Many "missed"or "muffed" notes
Lack of ease in playing
Slow tongue
Ornaments not accurate

Literature Containing the Excerpts Used in A Test to Measure the Ability of High School Students to Evaluate Musical Performance
by John Iltis

Woodwind:

Arnold, Malcomb, Three Shanties for Woodwind Quintet

Danzi, Franz, Blaserquintette B-Dur, Opus 56, No. 1

Reicha, Anton, Blaserquintette Es-Dur, Opus 8, No. 2

Stamitz, Karl, Blaserquartette Es-Dur, Opus 8, No. 2

Brass:

Bozza, Eugene, Suite Pour Two Trompettes, Cor, Trombone and Tuba

Childs, Barney, Variations Sur Une Chanson De Canotier

Couperin, Francois, Fugue Sur Les Jeux D'Anches from Messe Pour Les Paroisses

Pezel, Johann, Sonata No. 2 from Hora Decima

Pezel, Johann, Sonata No. 12

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[45]Iltis, "The Construction and Validation of a Test.," pp. 32-33.