AN INVESTIGATION OF THE EFFECTS OF GUIDED LISTENING
UPON INSTRUMENTAL MUSIC PERFORMANCES OF
JUNIOR COLLEGE STUDENTS

DISSERTATION

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By

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This study was an investigation of the effects of guided listening upon instrumental music performances of junior college students. The study also sought to discover possible significant relationships between perception and performance variables.

The sample was composed of thirty-one brasswind and woodwind students from a junior college in east central Wyoming. These students were randomly assigned to experimental (N = 16) and control (N = 15) groups. The experimental group was enrolled in a guided-listening program entitled The Experience of Music. Selected materials from this program were employed. The control group received no treatment.

The perception variables utilized in this study were rhythm, melody, harmony-counterpoint, tone color, and form. The performance variables used were interpretation, tone, rhythm-continuity, intonation, tempo, and articulation.

The testing instruments were selected music perception tests supplied with The Experience of Music, and the Abeles Music Performance Rating Scale. The perception tests were
scored by awarding the numeral one for each correct response. A panel of five judges evaluated music performances. Both perception and performance test reliability coefficients were estimated by Hoyt's Analysis of Variance procedure. Reliability estimates for perception scores ranged from a high of .88 for total scores to a low of .53 for the subtest scores on tone color. Mean interjudge reliability estimates for performance scores ranged from a high of .92 for total scores to a low of .80 for subtest scores on tone.

The results of the analyses of covariance indicated no significant differences between adjusted means of the experimental- and control-group scores on the performance variables interpretation, tone, intonation, tempo, and articulation. The results indicated significant differences between adjusted means of scores on the performance variables rhythm-continuity and total performance—the adjusted means of the control group were significantly larger than those of the experimental group.

The correlational analyses of the data indicated that significant positive relationships existed between the perception variable rhythm and the performance variable tone; the perception variable melody and the performance variable intonation; the perception variable harmony-counterpoint and the performance variables rhythm-continuity, intonation, and articulation; the perception variable tone color and the
performance variables interpretation, tone, rhythm-continuity, intonation, tempo, articulation, and total performance; the total perception variable (subtest scores summed) and the performance variables interpretation, tone, rhythm-continuity, intonation, articulation, and total performance (subtest scores summed). The correlational analyses indicated that nonsignificant positive relationships existed between the perception variable form and each of the performance variables. The perception variable tone color had a stronger relationship with each performance variable than did any of the other perception variables.

It was concluded that the guided listening program was ineffective in improving music performances of junior college students. It was recommended that (a) this study be replicated utilizing string, voice, and piano students, (b) an experimental study be made to investigate the effects of music theory instruction upon music performance, (c) an experimental study be made to investigate the effects of music history instruction upon music performance, and (d) an investigation be made of the Abeles performance constructs interpretation, tone, rhythm-continuity, intonation, tempo, and articulation, in an effort to ascertain ways in which expression of these constructs may be improved.
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CHAPTER I

INTRODUCTION

Background and Significance of the Study

In 1970 Madsen and Madsen wrote,

The area of performance appears to be the major concern for many within the teaching profession. Most of what constitutes music education is the teaching and learning of performance skills. The necessary prerequisite for performance is listening.

Leonhard and House suggested that

listening should be an active perceptual process integral to all musical activity. Listening is the basic musical activity and it rightly pervades all others.

listening skills are basic to the development of performance skills (2, pp. 136-37).

The above quotations from the literature suggest that listening skills are basic to music performance. A survey of the literature reveals that listening skills may include aural perception of identifiable elements of music (2, p. 136). Further, certain elements of music performance have been identified (1, p. 49).

A survey of college catalogs reveals that introductory music courses (sometimes referred to as music literature
or music appreciation courses) and music performance courses are firmly established as music offerings. College music educators and students are involved with both courses.

The call for the integration of all aspects of music study by advocates of the comprehensive musicianship concept of teaching and learning music is a reaction against the traditional fragmentation of the college music curriculum. These music educators believe that the college music curriculum should be integrated to enable students to synthesize music material and to see relationships in all that they do. Further, they believe that the source of all music study should be the literature of music (6, 7).

Madsen and Madsen feel that

... many of the old concepts of the relatedness of historical perspectives, music performance, composition, and "appreciation" need to be examined. Does the assimilation of historical knowledge really improve performance?" (3, p. 43)

The questions posed in this study were: (a) Does the study of music materials designed to improve listening skills have a significant effect upon music performance? (b) Do significant relationships exist between the aural perception of music elements and music performance elements?

A survey of the literature reveals that studies have been made of either music perception (aural perception of music elements) or music performance (solo and ensemble music performance), or a combination of both. Studies of
music perception and music performance sought to discover possible significant effects of music performance on music perception. This study was an attempt to ascertain possible significant effects of guided listening upon instrumental music performances of junior college students.

Subject of the Study

The subject of this study was the effects of guided listening upon instrumental music performances of junior college students.

Purposes of the Study

The purposes of this study were to answer the following questions:

1. Does the study of selected materials (5), presented in Appendix A, aimed at improving students' aural perception of the music elements rhythm, melody, harmony-counterpoint, tone color, and form significantly affect music performance as measured by the total Abeles Music Performance Rating Scale (1, p. 49), shown in Appendix B?

2. Does the study of selected materials aimed at improving students' aural perception of the music elements rhythm, melody, harmony-counterpoint, tone color, and form significantly affect scores on each of the following music performance elements: (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) tempo, and
(f) **articulation** as measured by the appropriate subtests of the **Abeles Music Performance Rating Scale**?

**Subpurpose of the Study**

1. What are the interrelationships of the constructs of music perception proposed by Reimer and Evans (5) and the constructs of music performance proposed by Abeles (1)?

**Research Hypotheses**

1. Students who study the selected materials of **The Experience of Music** (5) will achieve a significantly higher adjusted posttest group mean on the **Abeles Music Performance Rating Scale** than those who do not study the selected materials of **The Experience of Music**.

2. Students who study the selected materials of **The Experience of Music** will achieve a significantly higher adjusted posttest group mean than those who do not study the selected materials of **The Experience of Music** on measures of the following music performance variables: (a) **interpretation**, (b) **tone**, (c) **rhythm-continuity**, (d) **intonation**, (e) **tempo**, and (f) **articulation**.

3. There is a significant positive correlation between scores on the music perception variable **rhythm** and scores on the following music performance variables:

   A. Interpretation

   B. Tone
C. Rhythm-Continuity
D. Intonation
E. Tempo
F. Articulation
G. Total Performance

4. There is a significant positive correlation between scores on the music perception variable melody and scores on the following music performance variables:
   A. Interpretation
   B. Tone
   C. Rhythm-Continuity
   D. Intonation
   E. Tempo
   F. Articulation
   G. Total Performance

5. There is a significant positive correlation between scores on the music perception variable harmony-counterpoint and scores on the following music performance variables:
   A. Interpretation
   B. Tone
   C. Rhythm-Continuity
   D. Intonation
   E. Tempo
   F. Articulation
   G. Total Performance
6. There is a significant positive correlation between scores on the music perception variable tone color and scores on the following music performance variables:
   A. Interpretation
   B. Tone
   C. Rhythm-Continuity
   D. Intonation
   E. Tempo
   F. Articulation
   G. Total Performance

7. There is a significant positive correlation between scores on the music perception variable form and scores on the following music performance variables:
   A. Interpretation
   B. Tone
   C. Rhythm-Continuity
   D. Intonation
   E. Tempo
   F. Articulation
   G. Total Performance

8. There is a significant positive correlation between scores on the total music perception variable and scores on the following music performance variables:
   A. Interpretation
   B. Tone
C. Rhythm-Continuity
D. Intonation
E. Tempo
F. Articulation
G. Total Performance

9. There is a significant positive correlation between combinations of the music perception variables rhythm, melody, harmony-counterpoint, tone color, and form and scores on the following music performance variables:
   A. Interpretation
   B. Tone
   C. Rhythm-Continuity
   D. Intonation
   E. Tempo
   F. Articulation
   G. Total Performance

Definition of Terms

1. The elements of music are rhythm, melody, harmony-counterpoint, tone color, and form.

2. The terms structure of music, artistic content of works of art, aesthetic elements, and constructs of music perception are synonymous with the elements of music.

3. The term music performance means the audible recreation on a musical instrument of the notation and other symbols (e.g., dynamics) of the music score.
4. The term **total performance** is a variable generated by summing subtest scores of the performance variables *interpretation, tone, rhythm-continuity, intonation, tempo,* and *articulation.*

5. The term **aesthetic** refers to the perception of the elements of music as expressive of music.

6. **Music appreciation** is the apprehension and enjoyment of, and responsiveness to, the structural elements of music.

7. **Aesthetic sensitivity** "is the ability to (1) perceive the artistic content of works of art, and (2) to react feelingfully to this content" (4, p. 9).

8. **Music perception** is the apprehension of the structural elements of music.

9. The term **total perception** is a variable generated by summing subtest scores of the perception variables *rhythm, melody, harmony-counterpoint, tone color,* and *form.*

10. **Interpretation** is a concept of a music score as expressed by its performance.

11. **Aural perception** is the apprehension, through the sense of hearing and without the visual aid of the music score, of the structural elements of music.

12. The terms **listening** and **listening skills** mean the ability to perceive aurally the structural elements of music.
13. The constructs of music performance are interpretation, tone, rhythm-continuity, intonation, tempo, and articulation. Each construct is characterized by descriptive terms or phrases in Appendix B.
CHAPTER BIBLIOGRAPHY


CHAPTER II

REVIEW OF RELATED LITERATURE

Literature relevant to this study is categorized as follows: (a) aural perception of music, (b) music performance, and (c) music appreciation and music performance.

Aural Perception of Music

Trabue (33, pp. 545-61) was an early researcher who used tests of a standardized nature for obtaining measurements of aesthetic judgment. Among other conclusions, Trabue concluded that music appreciation is apparently a highly specialized trait, although it seems remarkably susceptible to cultivation. Forty-four years later Reimer concluded that "for every person sensitiveness to the artistic content of works of art can be nurtured, developed, refined, deepened. In other words, aesthetic sensitivity can in large measure be taught" (27, p. 9).

In 1967, Reimer concluded a curriculum research study. In the report resume, Reimer stated:

This research produced and tried a syllabus for junior and senior high school general music classes. . . . The major objective of the course is to develop the ability to have aesthetic experiences of music. Such experiences are considered to contain two essential behaviors--aesthetic perception and aesthetic reaction. The course materials are designed
to systematically improve the ability to perceive the aesthetic content of music, in a context which encourages feelingful reaction to the perceived aesthetic content (27).

Reimer reported that the aesthetic position adopted for this course maintains that

... the meaning of a work of art is contained in the work's content of aesthetic elements. In music these elements are tone color, melody, rhythm, harmony, texture and form. ... Perceiving the aesthetic elements in a work of art and reacting to their expressiveness constitute aesthetic experience. ... To teach for aesthetic experiences of music is to teach for the structure of music (27, p. 40).

Regarding listening, Reimer stated

... musical perception is considered to be an objective, measurable phenomenon, while musical reaction is considered to be a subjective, ineffable, and inherently unmeasurable phenomenon. The entire course has been designed to influence musical perception in a way which encourages deeper and more satisfying musical reaction. It becomes of vital importance, then, to evaluate for musical perception (27, p. A-12).

The implication regarding the evaluation of musical perception is better explicated in another source. In Reimer's words

... it is not possible to teach directly for aesthetic reaction. But since the quality of the reaction depends upon the quality of the perception, aesthetic reaction can be indirectly influenced by the improvement of aesthetic perception (26, p. 381).

It appears that the evaluation of musical perception indirectly evaluates musical reaction.

According to Standifer (32, p. 125), Reimer's project assistant, students at both the junior and senior high school levels who were enrolled in the general music course
developed by Reimer (27) had much greater gains in music perception, as measured by Reimer's Music Perception Tests, than did students who received traditional music instruction in a general music course. Generally, the results of the study indicated that adopting a theoretical position concerning the structure of music and implementing a course of study in general music consistent with the adopted theory were effective in raising the level of student music perception. "Even the mere enjoyment of music or dramatic presentation is enhanced if we know more of the subject matter of the art and learn to discriminate the various elements in its structure" (4, p. 362).

Bailey (3) developed a test of listening skill for use with general college students. Test items, based upon opinions of experienced teachers and a panel of recognized authorities, were reviewed by these teachers and panelists before they were incorporated into trial forms of the listening test. The final form of the test was constructed of sixty items and was administered to 768 general college students in thirteen colleges. The reliability of the total test was .867. Test content included the following music constructs: (a) tonality; (b) melody, rhythm, and meter; (c) texture; (d) media of performance (timbre); (e) expressive devices; (f) structure; and (g) style. Among other findings, Bailey (3, pp. 111-12) found significant differences between means of scores earned on his listening test by undergraduate
music majors and undergraduate nonmusic majors. Music majors scored significantly higher (.01 level) than nonmusic majors. Also, a significant relationship between music experience and listening skill was reported.

McCarthy (20) conducted a study (N=360) to test the effects of high school band, chorus, and orchestra participation upon students' ability to perceive aesthetic elements in selected recorded music. McCarthy designed an original Test of Musical Perception by which he might measure analytic awareness of rhythm, melody, harmony, form, and timbre. McCarthy (20, p. 97) reported that perception scores for experimental groups (participation in band, chorus, and orchestra) were significantly higher than for control groups (nonparticipation) at the .01 level.

Reimer and Evans (28) developed a music appreciation course for college students aimed at improving aural perception of music elements and increasing sensitivity to music. The course materials included textbook, recordings, and perception tests. They were designed to encourage aural interaction with theoretical constructs of music. Neither validity nor reliability for the perception tests was reported. Marchand (21), utilizing The Experience of Music (28) as a text within a music appreciation course, reported a significant gain (p. < .001; N=11) in college students' music perception as measured by certain subtests of the Colwell
Music Achievement Tests (5). Reliability of the Music Achievement Tests for college students was established by Colwell (6) at .94.

Smith (31) implemented an experimental study designed to compare an aural identification and development system with a typical method for developing music listening skills. Aural identification was defined as "an overt discriminate response to a musical presentation involving two or more themes" (31, p. 9). Aural development referred to "the process by which the aural identification response continues in the discrimination of permutated and mutated thematic material" (31, p. 9). Typical method referred to "a presentation based upon a passive response from the student" (31, p. 10). The study utilized two hundred three college students who were mostly undergraduates. Among other conclusions, Smith (31, pp. 43-44) found that (a) the development of music listening skills, utilizing a symphonic composition, seems to be significantly obtainable within a short period of time; (b) at the undergraduate level, there appears to be no difference between the observed listening skills of music majors and other majors; and (c) students who participate in an undergraduate music-major program do not appear necessarily to develop music listening skills to a significant degree.

Marciniak (22) investigated possible relationships between the levels of music perception and music performance
attained by selected high school bands. The criterion was music perception. The contest ratings earned by the selected bands were considered measures of music performance. For music perception measures, Marciniak used the standardized Schimke Test of Music Perception (29) which was created for senior high school music performance groups. Music perception, as defined for this study, required the listener to perceive the details of the most prominent element of music and, to a great extent, the element responsible for the expressive quality of an excerpt from a musical composition. A nonsignificant relationship was found between music perception and music performance (22, pp. 71-72).

Hoover (16) conducted a study which was an investigation of experimental research related to listening to the complex phenomenon of music, rather than to isolated elements of music. Among other implications, Hoover (16, pp. 129-30) found the following: (a) certain types of discrimination, such as timbre, can be learned by preschool children; (b) there was little relationship between listening skills and I.Q., socioeconomic status, academic grades, or musical ability; (c) high school and college students showed more acceptance of serious art music than other students; and (d) those students who had experienced a variety of contacts with music were more successful in tests of discrimination.
Trabue (33) and Reimer (27) agreed that sensitivity to music structure (artistic content) can be improved in individuals. According to Standifer (32), the program Reimer developed for junior and senior high school students did improve music perception.

Bailey found that listening skills of undergraduate music majors were significantly superior to those of undergraduate nonmusic majors, whereas Smith (31) found no difference in observed listening skills. Bailey (3) and Hoover (16) found that music experience and listening are related while Smith reported that undergraduate music majors, who presumably have music experience, do not inevitably develop music listening skills. McCarthy (20) reported that high school band, chorus, and orchestra participation did have a significant effect upon students' aural perception, and Marciniak (22) found no significant relationship between aural perception and music performance (band contest ratings). Smith concluded that listening skills may be developed within a short period of time, and Hoover found little relationship between listening skills and I.Q., socioeconomic status, academic grades, or musical ability.

Reimer and Evans (28) developed a music appreciation program for college students aimed at improving aural perception of music elements and increasing sensitivity to music. The materials were designed to encourage aural interaction with theoretical constructs of music. Marchand (21)
found a significant gain in the music perception of college students as a result of using the Reimer and Evans program.

The review of the preceding literature suggests the following: (a) the issue of possible differences between the listening skills of music and nonmusic majors remains unresolved; (b) total agreement concerning the relationship between music experience and listening skills has not been reached; (c) participation in music-performing groups aids listening skills; (d) aural perception and music performance (band contest ratings) are not related significantly; (e) listening skills may be developed within a short period of time; (f) there appears to be little relationship between listening skills and I.Q., socioeconomic status, academic grades, or music ability; and (g) listening skills seem amenable to improvement by utilizing an instructional program of guided listening aimed at improving these skills.

Music Performance

Watkins (35) developed an objective measure of music performance for cornet which was the first major step toward measuring instrumental music performance objectively. The only published examples of objective instrumental music performance tests are the Watkins-Farnum Performance Scale (36) and the Farnum String Scale (10). The performance scale was based upon the Watkins study previously cited and was copyrighted in 1954. Items to be scored correct or incorrect
included pitch errors, time errors, change-of-time errors, expression errors, slur errors, rests, holds and pauses, and repeats. The performance criteria may not adequately sample total music performance; thus, the performance scale seems limited. The performance constructs tone and intonation, for example, used as evaluative criteria in some music performance tests, are not listed as performance criteria in this instrument.

The official wind instrument solo adjudication form, copyrighted by the National Interscholastic Music Activities Commission (NIMAC) (24), contains seven constructs of music performance as criteria for wind instrument performance evaluation. These performance constructs are tone, intonation, technique (includes articulation and rhythm), interpretation (includes expression), musical effect (includes fluency), other factors (choice of music, stage presence, appearance), and memorizing (when required). The NIMAC form, as apparently do other forms, seems to define performance by the items included for evaluation.

Gutsch (14) attempted to measure music performance objectively by employing a test composed of one hundred rhythmic problems. Students sight-read the rhythmic exercises and were scored correct or incorrect on each problem. The criteria categories evaluated were note values, ties, and rests. The instrument was administered to pupils in the fifth grade
or above in Mississippi. Adjudicators consisted of a testing
team from the University of Mississippi or various high school
instructors. The data from this investigation yielded an
equivalent form reliability coefficient of .92 with seventy-
seven students, and an interrater reliability coefficient of
.99 between different panels of judges. Since the complexity
of music performance appears to extend beyond the sight-
reading of rhythmic exercises, it might be hazardous to state
that the results of this test alone give an indication of
total music performance.

Hatfield (15) investigated the diagnostic validity of
the Musical Aptitude Profile (MAP) (12) for determining the
individual musical strengths and weaknesses of college-level
instrumental music students. Hatfield composed several selec-
tions to use in testing music performance abilities. A five-
point rating scale was utilized for evaluating tape-recorded
performances; and, considering that only two judges were
employed, quite high reliabilities (e.g., .91 for composite
scores) were established (15, p. 36). One hundred five
members of the South Dakota State University Bands composed
the sample. The general performance abilities tested were
tonal-creative abilities, rhythmic abilities, and abilities
related to musical sensitivity. The results indicated that
MAP Tonal Imagery subtests correlated highest with tonal and
creative abilities, and MAP Musical Sensitivity subtests
correlated highest with abilities related to musical sensitivity (15, pp. 50-51). It was concluded that MAP scores can be useful as objective aids in adapting instruction to meet the individual needs and abilities of instrumental music students (15, p. 52).

Young (37) conducted a study (N=51) which examined the relative and combined power of three types of standardized tests to predict success in an elementary school instrumental music program. Criterion Test Three contained the instrumental music performance characteristics of Young's study. Performance scores were obtained for performance of familiar music, sight-reading, and improvisation. A seven-point rating scale was used for evaluation, and a composite score was generated by summing subtest scores (37, pp. 27-29). The performance characteristics were tonal accuracy, rhythmic accuracy, and musical expressiveness. Expressiveness was defined as including consistency of tempo, dynamics, slurring, articulation, style, and facility (37, p. 115). The combined interreliability coefficient of .98 for all three judges indicated substantial agreement among their ratings (37, p. 45). Young (37, p. 77) found that Criterion Test Three was predicted equally well by either a combination of all three predictor tests (Musical Aptitude Profile (12), Lorge-Thorndike Intelligence Test, Level Two (19), Iowa Tests of Basic Skills (ITBS) (18), or by the MAP and ITBS pair.
Young further found that "the addition of the intelligence test to either MAP or ITBS, or to the MAP and ITBS pair, did not improve significantly the predictions afforded from these tests" (37, p. 77).

The purpose of the Owen (25) study was to develop a means for evaluating student music performance in auditions for festival bands in Texas which would minimize the inconsistencies of subjective judgment. The constructs of music performance evaluated were tone, pitch, rhythm, technical accuracy, musicality, and sight-reading (25, p. 100). Seventy-seven students were ranked by their scores; and interjudge reliability among three judges, measured by analysis of the rank order, was significant at the .01 level of confidence (25, p. 59). Among other conclusions, Owen (25, pp. 77-79) found that, when rating music performances, either numerical or verbal descriptors of music performance may be used with equal confidence.

Diehl and Radocy (7, pp. 299-306) conducted a study involving computer-assisted instruction and instrumental music. The program was based on the rationale that aural concepts of instrumental music performance and instrumental performance achievement are related. This assumption was supported by correlation data reported in the following study. Diehl and Zeigler (8, pp. 1-11), concentrating upon the performance areas of phrasing, articulation, and rhythm, conducted a study
involving computer-assisted instruction, aural models of performance, criterion-referenced measures, and intermediate-level instrumentalists. The \( t \) test for related measures indicated that group gains on the listening and performance scores were statistically significant below the .001 level of confidence \((N=25)\). A Pearson product moment correlation coefficient of \(.59\) \((p. < .002)\) between listening and performance scores (based on pretest data) supported the hypothesis that aural concepts of instrumental music performance and instrumental performance achievement are related. Data were submitted to analysis of variance to estimate interjudge reliability of the judges' scores on the performance measures. Data included scores of four judges on 450 excerpts. The reliability coefficient for the pretest performances was .93 and for posttest performances .86.

Abeles (2) examined a technique for developing music performance rating scales. Music performance was conceptualized as being multidimensioned, and items for the scales were selected by factor analysis. Ninety-four statements describing clarinet performance were collected from twenty-five experts and a literature search. These statements were transformed to items and placed upon a five-option response scale to be used by instrumental music teachers in rating one hundred sample performances by junior high school clarinetists. The resulting evaluations were factor-analyzed to
determine the structure of clarinet performance. Abeles reported

The five items most highly loaded on each of the six resulting factors were selected to define subscales of a thirty-item clarinet performance rating scale. The resulting rating scale was used to evaluate three different sets of ten performances. The interjudge reliability of the rating scale was estimated from these administrations. In order to examine criterion-related validity of the rating scales, a global criterion measure was constructed by having judges rate the thirty performances by a paired-comparison procedure. Both zero-order and multiple correlation coefficients between the rating scale and the criterion measures were obtained.

The three major results of the study were a rating scale based on a six-factor structure of clarinet performance including interpretation, tone, rhythm-continuity, intonation, tempo, and articulation; high interjudge reliability estimates for both the total score (>.90) and scale scores (> .60) for each of the three groups of judges, evaluating three different sets of ten performances; and criterion-related validity coefficients greater than .80 for each of the three different sets of performances.

The results of the investigation suggest that the facet-factorial approach to scale construction can be effective for constructing rating scales to measure music performance. The rating scale for the evaluation of clarinet performance demonstrated both high inter-judge reliability and high criterion-related validity (1, pp. 230-31).

Abeles maintained

The scales developed in this study are intended to differentiate among individuals on the auditory aspects of music performance and include measures of interpretation and expression. The measuring instrument developed attempts to measure music performance with a rating scale rather than a performance test of specific content, and therefore can be applied to any musical selection (2, p. 15).

Abeles (2, p. 37) determined that the six performance traits generated in his study were factorially different. Abeles (2, p. 69) concluded that the instrument developed
would seem appropriate for taxonomizing music performance in general, since none of the factors generated seem to relate solely to clarinet performance characteristics.

Fiske (11) was interested in determining whether trumpet performances are rated differently by brass specialists than by nonbrass specialists, and whether the performances are rated differently by wind instrument specialists than by nonwind specialists. Sixty-four performances by thirty-two high school trumpeters were evaluated by fourteen judges--seven brass specialists and seven nonbrass specialists. A comparison of judge groups indicated no significant differences in ratings between brass and nonbrass specialists. When the ratings of wind and nonwind judges were compared, the trait "technique" was found to be rated significantly different below the .05 level (11, p. 26). Findings of the study appeared to indicate that for "selection-rejection" situations, only the rating "overall" is necessary, whereas for diagnostic purposes it seems appropriate to evaluate separate traits. The rating "overall" needs to be tested independently from separate traits. The study seems to support the assumption that competent musicians are equally capable of rating trumpet performances when the object of adjudication is student selection. The performance traits rated were intonation, rhythm, interpretation, technique, and "overall." A five-option rating scale ranging from very poor to excellent was utilized for evaluation.
Vasil (34) attempted to discover whether there is agreement between a panel of experts' ratings for live performances and the same performances recorded on tape. Performance of thirty-three high school clarinetists were evaluated by seven judges. For the rating instrument, Vasil selected Abeles' Rating Scale and added a seventh trait, "overall." An eighth item, "total," was generated by summing scores for the seven traits. A five-point rating scale was used. Vasil (34, pp. 53-54) concluded that (a) reasonable reliability between music performance adjudicators may be obtained by using five judges (Guilford states, "There is usually much to be gained by adding the first two or three raters, but not much after reaching five" (13, p. 397); (b) the amount of music performed for reliable evaluation may be, to a substantial degree, of shorter duration than a complete movement; and (c) cassette-quality recorded performances are satisfactory for evaluation purposes since no "important" changes in rank order occurred when judges ranked live performances and the same performances recorded on cassette audio tape.

It was the purpose of the Engelhardt (9) study to ascertain whether levels of achievement in the required courses--Music Theory, English, and Music History and Literature--at Morehead State University might act as predictors of achievement in the major performing medium. The sample population was composed of one hundred forty-four students whose
major emphasis was music and who received the baccalaureate degree from Morehead State University between 1968 and 1971. Among other conclusions, Engelhardt (9, p. 74) concluded that achievement in Music History and Literature appeared to be the best single predictor of achievement in performance. Engelhardt further concluded that (a) achievement in English was almost as strong a predictor for performance as achievement in Music History and Literature, and (b) the combination of achievement in English and Music Theory provided the best model among combined models for the prediction of achievement in performance (9, pp. 74-75). The grades utilized in this study appeared to extend over a three-year period; the possible instability of these grades was not discussed. Further, the title of the Music History and Literature course seemed to imply emphasis upon music as historical product rather than perceptual interaction with music. Engelhardt did not clarify this. Replication at Morehead State University and other institutions was recommended. It was further recommended that a study be made of the objectives, content, and procedures pertinent to the courses employed in the study and their relationship to the various performing media at Morehead State University (9, pp. 76-77).

The Watkins-Farnum Performance Scale and Gutsch's rhythmic exercises attempt to measure music performance objectively. Items are scored correct or incorrect. Since music
performance appears to extend beyond that which these instruments measure, both instruments seem inadequate.

Hatfield concluded that MAP scores can be useful as objective aids in adapting instruction to meet the individual needs and abilities of instrumental music students.

Young found that music performance, as defined in his study, was predicted equally well by either a combination of all three predictor tests utilized, or by the MAP and ITBS pair. The addition of the intelligence test as a predictor did not improve predictive value significantly.

Owen concluded that when rating music performances, either numerical or verbal descriptors may be used with equal confidence.

Deihl and Zeigler found a significant relationship between aural concepts of instrumental music performance and instrumental performance achievement.

Abeles determined that the six performance traits generated in his study, and appearing on his music performance rating scale, were factorially different. It was concluded that the instrument developed would seem appropriate for taxonomizing general music performance.

Fiske's study seemed to support the assumption that competent musicians are equally capable of rating trumpet performances when the object of adjudication is student selection.
Vasil concluded that (a) reasonable reliability may be obtained by utilizing five adjudicators; (b) for reliable evaluation, music performed may be of substantially shorter duration than a complete movement; and (c) cassette-quality recorded performances are satisfactory for evaluation purposes.

Engelhardt (9, p. 74) concluded that achievement in Music History and Literature appeared to be the best single predictor of achievement in performance.

The review of the preceding music performance literature suggests that (a) since music performance appears to extend beyond the performance dimensions measured by the Watkins-Farnum Performance Scale and Gutsch test, these instruments seem inadequate for music performance evaluation; (b) MAP scores can be useful for adapting instruction to individuals and for predicting performance achievement when combined with ITBS scores; (c) when rating music performances, either numerical or verbal descriptors may be used with equal confidence; (d) aural concepts of instrumental music performance and instrumental performance achievement are significantly related; (e) the music performance constructs on Abeles' Rating Scale are factorially different; (f) Abeles' instrument would be satisfactory for taxonomizing general music performance; (g) competent musicians are equally capable of rating trumpet performances when the object of adjudication
is student selection; (h) reasonable reliability may be obtained by utilizing five adjudicators; (i) for reliable evaluation, music performed may be of shorter duration than a complete movement; (j) cassette-quality recorded performances are satisfactory for evaluation purposes; and (k) achievement in Music History and Literature may be a satisfactory predictor of music performance achievement.

Music Appreciation and Music Performance

From experiments utilizing college students and faculty members, Schoen concluded that "the conditions for artistic musical responsiveness are the same as those for artistic musical rendition. The true music-lover and the musical artist differ not in kind but only in degree" (29, p. 142).

Commenting on the nature of growth in musical experience, Mursell maintained that

. . . musical growth depends altogether upon study of and dealing with music itself and upon differentiating the constituents which determine its significant expressiveness. . . . Music undoubtedly does have great emotion-arousing effectiveness . . . but it has such an effect not simply because of its content but because of its organization. Without organization, music would simply cease to be. So, progressively more adequate grasp of musical organization is the very heart and center of progressively more adequate appreciation. And appreciation, properly understood, expresses itself not only in listening but also in performing (23, pp. 150-52).

Charles Leonhard, relating music performance and appreciation, stated, "The performer, be he a child or a mature
artist, who can shape a phrase so that it has feelingful import has developed appreciation of music" (17, p. 331).

It appears that performers who appreciate music express their appreciation of music in their performances. Since the Reimer and Evans program, *The Experience of Music*, seems designed to develop appreciators of music, it follows, then, that if the program is effective, performers who study selected materials of *The Experience of Music* should express their appreciation of music in their performances. Further, it appears that performances of students who study these materials should be superior to performances of those who do not study them. Since, after careful research, *Abeles' Rating Scale* was factorially constructed to measure music performance, it appears safe to assume that it satisfactorily measures performer appreciation of music as expressed in music performances.
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6. __________, Professor of Music, University of Illinois, Urbana-Champaign, 1974. Personal correspondence.


CHAPTER III

METHODS AND PROCEDURES

The purposes of this chapter are to (a) present a rationale for the selection of music performance materials, (b) present a rationale for the selection of music appreciation materials, (c) discuss the organization of the music appreciation materials, (d) discuss the student-selection process and describe the groups selected, (e) discuss pretreatment audio-taping procedures, (f) identify the treatments, (g) discuss the collection of music perception data, (h) discuss posttreatment audio-taping procedures, and (i) present a rationale for the selection of judges and rating instrument for the collection of music performance data.

Selection of Music Performance Materials

In the spring of 1974, a search was begun for woodwind literature to be utilized in this study. Literature from the baroque, classical, romantic, and twentieth-century periods was reviewed. Two selections, which were considered to be appropriate for woodwind and brasswind soloists, were chosen for testing.

Ten students who were not returning to Casper Community College in the fall were employed in the test. Instruments
represented ranged from flute to tuba. The ten students were allowed forty-five minutes for preparation of the selections which were then recorded on cassette audio tape. An evaluation of the performances seemed to indicate that the music selections (a) satisfactorily discriminated a range of abilities from poor to excellent, (b) seemed to provide a reasonable challenge for college-level performers while not appearing to be too difficult technically, (c) seemed to be "playable" by the instruments utilized in the test, and (d) did not appear to be so lengthy they might cause performers and adjudicators to become fatigued.

The pilot-tested performance selections were adopted for use in this current study. The selections were adaptations of the following wind solos:

1. "Fantasy Piece Number One" (Appendix C) by Robert Schumann, Opus 73.

2. "Morceau De Concert" (Appendix C) by Camille Saint-Saens, Opus 94.

Both pieces are from the romantic period although stylistic period was not a determinant in their adoption. Selection number one was originally written for clarinet (4, p. 629); selection number two was originally written for French horn (4, p. 369). Both selections were transposed to suitable keys for the musical instruments used in this study. This transposition procedure was utilized in the Watkins-Farnum Performance Scale (15).
Selection and Organization of Music Appreciation Materials

During the spring and summer of 1974, a review of music appreciation materials was implemented. The purpose of this review was to select materials for guided listening that included textbook, recordings, and tests which had been coordinated. It was hoped that a coordinated program of guided listening, if such a program could be found, would include perception tests; and it was felt that these tests, if constructed by the textbook author, should have high content validity. Further, since in this study the terms listening and listening skills were to be defined as the ability to aurally perceive structural elements of music, music materials which emphasized aural perception of music structure rather than music history and the lives of composers were sought.

Music materials reviewed included (a) The Enjoyment of Music (10), (b) An Introduction to Music (3), (c) An Introduction to Music (5), (d) The Musical Experience (7), (e) Music Appreciation (8), (f) The Art of Listening (2), (g) Listen (9), and (h) The Experience of Music (13). The Experience of Music was chosen for the guided listening facet of this study since recordings and tests were available and were coordinated with the text, emphasis was placed upon aural perception of music structure, and the perception tests appeared to have high content validity.
The music appreciation course of study entitled The Experience of Music is organized as follows:

1. The textbook, specifically designed to coordinate with and complement the recordings and listening charts, immediately correlates textbook material with listening examples—conceptual understanding and perceptual development working together, each dependent upon and strengthening the other.

2. The concentration charts provide detailed analyses of the excerpts, movements, and entire recorded works. Organized like the textbook, the book of charts begins with the study of music elements—rhythm, melody, harmony—counterpoint, tone color, and form—and then focuses attention upon the various historical styles, synthesizing all the previously studied elements so that the music is heard for the interrelations of the elements.

3. The perception charts are instruments for testing music perception. They require students to make conscious decisions about what they hear. Selected perception charts were the sources used for evaluation in this study. They are objective tests of aural perception.

4. The record library consists of one set of fourteen long-playing records and one set of seven. These recordings are correlated with both the textbook and the listening charts.
The selected course content of *The Experience of Music* utilized in this study is presented in Appendix A. Since it was not the intent in this study to measure student ability to make stylistic discriminations, certain chapters were not included in the selected course content. Chapters excluded were those treating the musical literature of the middle ages and renaissance, the baroque era, the classic period, the twentieth century, and music of other cultures. Inasmuch as the music performance selections adopted for use in this study were from the romantic period, it seemed appropriate to include, as part of the selected materials studied, music literature of the romantic period treated in Chapter Twelve of *The Experience of Music*.

Selection of Students and Description of Groups

All students from a small, finite population of sixteen brasswind and seventeen woodwind students enrolled in music performance classes at Casper Community College in east central Wyoming during the fall semester of 1974 were randomly assigned to experimental and control groups by using a table of random numbers. The experimental group was composed of seventeen students, and the control group contained sixteen students. Due to work and schedule problems, two students (one from the experimental group, and one from the control group) were unable to participate in this study. Thus, the
sample of students who did participate numbered thirty-one, distributed as follows: (a) sixteen students in the experimental group and (b) fifteen students in the control group.

The following information was based upon student profiles (Appendix D).

1. Based upon American College Testing (ACT) Program standard composite scores, the experimental-group mean was 21.5 with a standard deviation of 3.75, and the control-group mean was 19.13 with a standard deviation of 5.51. Three low scores affected the mean and standard deviation of the control group. By way of comparison, based upon freshman standard composite scores on the ACT Test at public colleges and universities, the national mean was 20.0 with a standard deviation of 5.6 (11, p. 24).

2. Nine experimental- and nine control-group students each received from college faculty one thirty-minute private lesson per week involving the instrument upon which they performed as a function of this study.

3. The experimental group was composed of eleven freshmen and five sophomores; the control group was composed of ten freshmen and five sophomores.

4. The experimental group contained nine women and seven men; the control group contained eight women and seven men.
5. The experimental group was made up of six music majors and ten nonmusic majors; the control group was made up of five music majors and ten nonmusic majors.

6. The experimental group consisted of eight brasswind and eight woodwind students; the control group consisted of eight brasswind and seven woodwind students.

7. Based upon the total number of years of instrumental music experience prior to this study, the experimental-group mean was 5.5 with a standard deviation of 1.5, and the control-group mean was 5.3 with a standard deviation of 1.382. During the term of this study the music experiences of both groups appeared to be equal.

It was judged that, for the purposes of this study, randomization had satisfactorily equalized both groups.

Audio Taping of Pretreatment Music Performances

Forty-five minutes prior to recording, each student received the music selections to be recorded. During this time period, students practiced the selections. To avoid possible bias, music performances were coded with numbers. Performances were taped, utilizing the following equipment:

1. Sony Stereo Cassette-Corder (Model TC-124)
2. Two Sony Condenser Microphones (Model ECM-21)
3. Pickering Stereo Headphone (Model PH-4955)
4. Sony Cassette Recording Tape (ultrahigh-frequency)
Taped and coded pretreatment music performances of all students in the study were stored for posttreatment evaluation during playback.

Treatment Groups

The control group received no treatment. The experimental group was enrolled in an introductory music appreciation course entitled *The Experience of Music*; the study of the selected materials of *The Experience of Music* constituted the experimental group treatment. An outline of the course content appears in Appendix A.

In order to maintain maximum control and enhance the possibility of equal learning opportunity for all experimental-group students, the following plan was implemented:

1. Students met as a group for twelve fifty-minute periods.

2. Appropriate reading assignments in the textbook were reinforced by class lectures, followed by music listening which was coordinated with the text.

3. Deviation from this lecture-listening plan necessarily occurred when music perception testing was implemented.
Collection of Music Perception Data

The music perception tests provided with The Experience of Music (13) appear to measure the objectives of this guided-listening program. A survey of the literature suggests that aural perception of music elements should be the primary goal of the music listener. An examination of the materials of The Experience of Music seems to indicate that the authors have structured this learning system in such a manner that aural perception of music elements is a primary goal. The music perception tests of The Experience of Music propose to measure the trait aural perception. The perception tests used in this study propose to measure the aural perception of rhythm, melody, harmony-counterpoint, tone color, and form. College music faculty consulted have supported the contention that the music perception tests have content validity. "Where the objectives and the evaluative tools are derived from the same source, the content validity should be high" (6, p. 31). In consideration of the preceding, selected music perception tests (Appendix E) supplied with The Experience of Music (13) were utilized for the collection of music perception data.

The perception tests were scored by awarding the numeral one for each correct response. All data were transferred by key punch to computer cards for data processing.

Reliability estimates for perception test scores are reported in Table II.
Audio Taping of Posttreatment Music Performances and Randomization of Recorded Performances

The taping of posttreatment music performances of all students in the study followed explicitly the procedures outlined for the taping of pretreatment music performances. Coded, recorded pretreatment and posttreatment performances were randomized onto magnetic tape so that the judges who evaluated these performances were ignorant of pretreatment and posttreatment performances. Also, judges did not know whether performances were rendered by students in the control or experimental group.

Selection of Judges and Rating Instrument for Collection of Music Performance Data

To avoid possible bias, five judges employed in the Billings, Montana area were selected to evaluate music performances. Four judges held master of music degrees, and one judge held a doctor of education degree with a major in music education. The panel of judges contained three woodwind and two brasswind specialists. One woodwind and one brass judge were employed at the college level while the remaining judges were employed at the secondary level. Each judge was paid for his service.

An examination of the performance elements (traits or characteristics) found on the NIMAC Adjudication Form (12) and the Abeles Rating Scale (Appendix B) suggests that the
Abeles form is essentially consistent with the elements found on the NIMAC form. Vasil (14, p. 24) supports this observation. The lack of total agreement appears to be more a result of semantic differences than of basic conceptions. Abeles (1, p. 16) utilized his evaluation form with junior high school clarinetists and Vasil (14, p. 21) used the same form with senior high school clarinetists. Since Abeles (1, p. 69) concluded that his rating scale seemed appropriate for taxonomizing music performance in general, it seemed reasonable to suppose that the Abeles Rating Scale could be utilized successfully for music performance evaluation at the college level. It appeared that adjudicators, utilizing these scales, could assign scores to brasswind and woodwind music performances from any population sample. In consideration of the foregoing—and since Abeles (1, p. 68) reported high interjudge reliability estimates for both the total score (>.90) and scale scores (> .60), and criterion-related validity coefficients greater than .80—his music performance evaluation form was used for the collection of music performance data.

Whybrew (16, p. 194) suggests that five different levels for each performance element may be utilized for scoring each performance. The number one represents the lowest level of performance quality and the number five the highest level. Whybrew (16, p. 195) questions the value of using intermediate numerical values.
Judges were given the following written instructions regarding the use of the rating scales.

1. Each performance element is to be rated from 1 through 5, with 1 representing the lowest level of performance ability and 5 the highest level.

2. The full range of numerical values is to be used to avoid a clustering of scores around the middle values.

3. Intermediate numerical values are not to be used.

4. The descriptive terms and phrases under each performance element are intended to be descriptive of the element being rated. Only the performance element itself is to be rated.

5. Summation of your scores is not to be made; this will be done for you.

To establish the range of performance abilities judges might expect to hear, each judge, immediately prior to adjudication, was required to listen to examples of a poor and a superior performance. Each performance had been selected from the collection of sixty-two performances and dubbed onto magnetic recording tape. This procedure was implemented to guide evaluations.

All data were transferred by key punch to computer cards for data processing.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

PRESENTATION AND INTERPRETATION OF DATA

The purposes of this chapter are to (a) present interjudge reliability estimates for pretest and posttest performance subtest and total scores, (b) present reliability estimates for perception subtest and total scores, (c) present data relevant to hypotheses one through nine, and (d) interpret the data.

Data were treated as interval measures since numerical values between scores (i.e., 1 to 2, 2 to 3, etc.) were assumed to be equal. Therefore, statistical assumptions appropriate to interval data were made.

All data were transferred by key punch to computer cards and, using the appropriate statistical program for each reliability coefficient and hypothesis, an IBM 360 Model 50-512K computer was used for calculations.

Reliability Estimates

Both interjudge reliability of the performance tests and reliability of the music perception tests were estimated by the Hoyt (6, pp. 153-60) Analysis of Variance procedure.

\[ r_{xx} = \frac{\text{MS}_{\text{individuals}} - \text{MS}_{\text{remainder}}}{\text{MS}_{\text{individuals}}} \]
Where $MS_{\text{individuals}} = \text{mean square of deviations from the individual's means},$

$MS_{\text{remainder}} = \text{mean square of deviations left over after item variation and individual variation have been removed.}$

Table I indicates the reliability estimates among five judges for pretest and posttest performance scores.

TABLE I
INTERJUDGE RELIABILITY ESTIMATES FOR PRETEST AND POSTTEST PERFORMANCE TEST SCORES

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<table>
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<tr>
<td>Total Pretest</td>
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<tr>
<td>Total Posttest</td>
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<td>Total Mean</td>
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<td>Interpretation Mean</td>
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<td>Tone Posttest</td>
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<td>Rhythm-Continuity Pretest</td>
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<td>Articulation Mean</td>
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While all the reliability estimates are acceptable, the mean for total equals .92 and represents a larger coefficient value than those estimated for the subtest means. This appears to support the results of the studies of Campbell (3), Fiske (5), and Vasil (10) since they found generalized measures to be more reliable than measures of individual traits.
This study seems to corroborate the work of Abeles (1) since in both studies (a) the interjudge reliability estimates for total scores exceeded .90, (b) the interjudge reliability estimates for subtest scores exceeded .60, and (c) the interjudge reliability estimates for tone and intonation were low when compared to the other estimates. The Abeles (1, p. 27) study, as did this study, utilized the Hoyt (6, pp. 153-60) Analysis of Variance procedure to estimate interjudge reliability coefficients for performance scores.

The reliability estimates listed in Table I seem to lend credence to the Abeles contention that his rating scale should be satisfactory for "taxonomizing music performance in general, as none of the factors seem to reflect idiosyncratic clarinet characteristics" (1, p. 69). Excepting double-reed instruments, this current study utilized all of the wind instruments commonly found in the concert bands of today.

Reliability estimates for the selected perception tests of The Experience of Music (8) are listed in Table II.

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<th>TABLE II</th>
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<tr>
<td>RELIABILITY ESTIMATES FOR PERCEPTION TEST SCORES</td>
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<tr>
<td>Tone Color</td>
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<tr>
<td>Form</td>
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</table>
Since reliability estimates for the perception tests utilized in this study are neither listed by the publisher nor found in the literature, no direct comparisons can be made. Leonhard and House state

If a test is being used for individual measurement, the reliability coefficient obviously must be higher than if it is being used for group measurement. Although testing authorities are reluctant to give specific guides to reliability coefficients, there seems to be consensus on the soundness of the following prescription:

- **.85-.99** high to very high; of value for individual measurement and diagnosis
- **.80-.84** fairly high; of some value in individual measurement and highly satisfactory for group measurement
- **.70-.79** rather low; adequate for group measurement but of doubtful value in individual measurement
- **.50-.69** low; inadequate for individual measurement but of some value in group measurement
- below **.50** very low; inadequate for use

Additionally, the reliability estimate of .88, reported in this study for total perception test scores, does compare favorably with the reliability estimate of .867 reported by Bailey (2, p. 107) for his listening skill total test which was developed utilizing general college students. Both studies employed the Hoyt (6, pp. 153-60) Analysis of Variance procedure to estimate test reliability.

Hypotheses One and Two

Throughout this study, the level of significance below which a null hypothesis was rejected was set arbitrarily at the .05 level.
For hypotheses one and two, the test of the null hypothesis of equal adjusted posttest group means with pretest performance scores used as the covariate was obtained by the analysis of covariance. The analysis of covariance was calculated by the North Texas State University Computing Center.

Table III illustrates the results of the analysis of covariance for total performance scores. Raw scores are presented in Appendix F.

**TABLE III**

| Summary Table for the Analysis of Covariance for Total Performance Scores (N = 31) |
|---------------------------------|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                 | Pre-test Mean                  | S.D.             | Post-test Mean  | S.D.             | Mean Gain       | Adjusted Mean   | F               | P               |
| Experimental                   | 78.00                          | 26.26            | 84.62           | 30.51            | 6.62            | 80.05           | 7.40            | .02             |
| Control                        | 69.27                          | 16.27            | 87.07           | 21.46            | 17.80           | 91.94           | ..              | ..              |

An examination of Table III reveals the following:

1. The experimental group pretest mean was higher than that of the control group while the posttest mean was lower.

2. Although the mean gains suggested improvement in total performance for both groups, the mean gain of the control group was substantially greater than that of the
experimental group. This larger mean gain was reflected in the adjusted means and F value.

Since the adjusted means of the two groups differed significantly, the null hypothesis of equal adjusted posttest group means was rejected. Research hypothesis one, which states that students who study the selected materials of The Experience of Music (Appendix A) will achieve a significantly higher adjusted posttest group mean on measures of the total Abeles Music Performance Rating Scale (Appendix B) than those who do not study these materials, was rejected.

Table IV depicts the results of the analysis of covariance for interpretation scores. Raw scores are presented in Appendix F.

<table>
<thead>
<tr>
<th>TABLE IV</th>
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<tr>
<td>SUMMARY TABLE FOR THE ANALYSIS OF COVARIANCE FOR INTERPRETATION SCORES (N = 31)</td>
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<thead>
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<th></th>
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<th>S.D.</th>
<th>Post-test Mean</th>
<th>S.D.</th>
<th>Mean Gain</th>
<th>Adjusted Mean</th>
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<td>13.12</td>
<td>5.93</td>
<td>1.87</td>
<td>12.38</td>
<td>3.39</td>
<td>.08</td>
</tr>
<tr>
<td>Control</td>
<td>9.73</td>
<td>3.88</td>
<td>13.33</td>
<td>4.63</td>
<td>3.60</td>
<td>14.13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An examination of Table IV discloses the following information.
1. The experimental group pretest mean was higher than that of the control group while the posttest mean was lower.

2. Although the mean gains suggested improvement for both groups in the performance construct interpretation, the mean gain difference between the groups was not significant as reflected by the adjusted means and F value. The small F value indicates that the differences between the unadjusted means for the posttest were due largely to the effects of the pretest (4, p. 297). This suggests that the performer's expression of the performance construct interpretation did not change appreciably from pretest to posttest.

Since the adjusted means of the two groups did not differ significantly, the null hypothesis of equal adjusted posttest group means was retained. Research hypothesis 2-A, which states that students who study the selected materials of The Experience of Music will achieve a significantly higher adjusted posttest group mean on measures of the performance variable interpretation than those who do not study these materials, was rejected.

Table V shows the results of the analysis covariance for tone scores. Raw scores are presented in Appendix F.

An examination of Table V reveals the following:

1. The experimental group pretest mean was higher than that of the control group while the posttest mean was lower.
2. Although the mean gains suggested modest improvement for both groups in the performance construct \textit{tone}, the mean gain difference between the groups was not significant as reflected by the adjusted means and F value. The small F value indicates that the differences between the unadjusted means for the posttest were due largely to the effects of the pretest (4, p. 297). This suggests that the performer's expression of the performance construct \textit{tone} did not change appreciably from pretest to posttest.

Since the adjusted means of the two groups did not differ significantly, the null hypothesis of equal adjusted posttest group means was retained. Research hypothesis 2-B, which states that the students who study the selected materials of \textit{The Experience of Music} will achieve a significantly higher adjusted posttest group mean on measures of the performance variable \textit{tone} than those who do not study these materials, was rejected.
Table VI illustrates the results of the analysis of covariance for rhythm-continuity scores. Raw scores are presented in Appendix F.

**TABLE VI**

**SUMMARY TABLE FOR THE ANALYSIS OF COVARIANCE FOR RHYTHM-CONTINUITY SCORES**

(N = 31)

<table>
<thead>
<tr>
<th></th>
<th>Pre-test Mean</th>
<th>S.D.</th>
<th>Post-test Mean</th>
<th>S.D.</th>
<th>Mean Gain</th>
<th>Adjusted Mean</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental</strong></td>
<td>11.12</td>
<td>5.08</td>
<td>11.69</td>
<td>6.21</td>
<td>.57</td>
<td>10.71</td>
<td>11.08</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>9.20</td>
<td>3.78</td>
<td>13.27</td>
<td>4.70</td>
<td>4.07</td>
<td>14.30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An examination of Table VI discloses the following:

1. The experimental group pretest mean was higher than that of the control group while the posttest mean was lower.

2. Although the mean gains suggested improvement for both groups in the performance construct rhythm-continuity, the mean gain of the control group was greater than that of the experimental group. This larger mean gain was reflected in the adjusted means and F value.

Since the adjusted means of the two groups differed significantly, the null hypothesis of equal adjusted posttest group means was rejected. Research hypothesis 2-C, which states that students who study the selected materials of The
Experience of Music will achieve a significantly higher adjusted posttest group mean on measures of the performance variable rhythm-continuity than those who do not study these materials, was rejected.

Table VII depicts the results of the analysis of covariance for intonation scores. Raw scores are presented in Appendix F.

TABLE VII
SUMMARY TABLE FOR THE ANALYSIS OF COVARIANCE FOR INTONATION SCORES
(N = 31)

<table>
<thead>
<tr>
<th></th>
<th>Pre-test Mean</th>
<th>S.D.</th>
<th>Post-test Mean</th>
<th>S.D.</th>
<th>Mean Gain</th>
<th>Adjusted Mean</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>14.31</td>
<td>4.54</td>
<td>15.19</td>
<td>4.76</td>
<td>.88</td>
<td>14.91</td>
<td>.82</td>
<td>.38</td>
</tr>
<tr>
<td>Control</td>
<td>13.67</td>
<td>2.41</td>
<td>15.53</td>
<td>3.36</td>
<td>1.86</td>
<td>15.81</td>
<td>.  ..</td>
<td>..</td>
</tr>
</tbody>
</table>

An examination of Table VII reveals the following:
1. The experimental group pretest mean was higher than that of the control group while the posttest mean was lower.
2. Although the mean gains suggested modest improvement for both groups in the performance construct intonation, the mean gain difference between the groups was not significant as reflected by the adjusted means and F value. The small F value indicates that the differences between the unadjusted
means for the posttest were due largely to the effects of the pretest (4, p. 297). This suggests that the performer's expression of the performance construct intonation did not change appreciably from pretest to posttest.

Since the adjusted means of the two groups did not differ significantly, the null hypothesis of equal adjusted posttest group means was retained. Research hypothesis 2-D, which states that students who study the selected materials of The Experience of Music will achieve a significantly higher adjusted posttest group mean on measures of the performance variable intonation than those who do not study these materials, was rejected.

Table VIII illustrates the results of the analysis of covariance for tempo scores. Raw scores are presented in Appendix F.

| TABLE VIII |
| SUMMARY TABLE FOR THE ANALYSIS OF COVARIANCE FOR TEMPO SCORES (N = 31) |

<table>
<thead>
<tr>
<th></th>
<th>Pre-test Mean</th>
<th>S.D.</th>
<th>Post-test Mean</th>
<th>S.D.</th>
<th>Mean Gain</th>
<th>Adjusted Mean</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>11.20</td>
<td>3.52</td>
<td>14.07</td>
<td>4.72</td>
<td>2.87</td>
<td>15.40</td>
<td>.</td>
<td></td>
</tr>
</tbody>
</table>
An examination of Table VIII discloses the following:

1. Both pretest and posttest means of the experimental group were higher than pretest and posttest means of the control group.

2. Although the mean gains suggested modest improvement for both groups in the performance construct tempo, the mean gain difference between the groups was not significant as reflected by the adjusted means and F value. The small F value indicates that the differences between the unadjusted means for the posttest were due largely to the effects of the pretest (4, p. 297). This suggests that the performer's expression of the performance construct tempo did not change appreciably from pretest to posttest.

Since the adjusted means of the two groups did not differ significantly, the null hypothesis of equal adjusted posttest group means was retained. Research hypothesis 2-E, which states that students who study the selected materials of The Experience of Music will achieve a significantly higher adjusted posttest group mean on measures of the performance variable tempo than those who do not study these materials, was rejected.

Table IX depicts the results of the analysis of co-variance for articulation scores. Raw scores are presented in Appendix F.
TABLE IX
SUMMARY TABLE FOR THE ANALYSIS OF COVARIANCE
FOR ARTICULATION SCORES
(N = 31)

<table>
<thead>
<tr>
<th></th>
<th>Pre-test Mean</th>
<th>S.D.</th>
<th>Post-test Mean</th>
<th>S.D.</th>
<th>Mean Gain</th>
<th>Adjusted Mean</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>12.06</td>
<td>4.67</td>
<td>13.88</td>
<td>5.37</td>
<td>1.82</td>
<td>13.20</td>
<td>3.21</td>
<td>.09</td>
</tr>
<tr>
<td>Control</td>
<td>10.73</td>
<td>2.99</td>
<td>14.27</td>
<td>4.31</td>
<td>3.54</td>
<td>14.98</td>
<td>..</td>
<td>..</td>
</tr>
</tbody>
</table>

An examination of Table IX reveals the following:

1. The experimental group pretest mean was higher than that of the control group while the posttest mean was lower.

2. Although the mean gains suggested improvement for both groups in the performance construct articulation, the mean gain difference between the groups was not significant as reflected by the adjusted mean and F value. The small F value indicates that the differences between the unadjusted means for the posttest were due largely to the effects of the pretest (4, p. 297). This suggests that the performer's expression of the performance construct articulation did not change appreciably from pretest to posttest.

Since the adjusted means of the two groups did not differ significantly, the null hypothesis of equal adjusted posttest group means was retained. Research hypothesis 2-F, which states that students who study the selected materials of The
Experience of Music will achieve a significantly higher adjusted posttest group mean on measures of the performance variable articulation than those who do not study these materials, was rejected.

An examination of the summary tables for the analyses of covariance reveals that the scores of the experimental group indicated greater variability than scores of the control group.

Hypotheses Three, Four, Five, Six, Seven, and Eight

To test the null hypothesis of zero correlation between perception and performance variables, Pearson product moment correlation coefficients between these variables were calculated by the North Texas State University Computing Center.

Table X discloses the Pearson product moment correlation coefficients between perception and performance variables. Raw scores are presented in Appendix F.

The significant correlation coefficient between rhythm and tone suggested that there were components in the aural perception of rhythm which significantly related to the performer's expression of the performance construct tone. Since this correlation coefficient was significant, the null hypothesis of zero correlation between these variables was rejected. Research hypothesis 3-B, which states that there is a significant positive correlation between rhythm and
tone, was retained. The null hypotheses of zero correlation between rhythm and (3-A) interpretation, (3-C) rhythm-continuity, (3-D) intonation, (3-E) tempo, (3-F) articulation, and (3-G) total performance were retained.

TABLE X

PEARSON PRODUCT MOMENT CORRELATION COEFFICIENTS BETWEEN PERCEPTION AND PERFORMANCE VARIABLES (N = 16)

<table>
<thead>
<tr>
<th>Perception Variables</th>
<th>Rhythm</th>
<th>Melody</th>
<th>Harmony Counterpoint</th>
<th>Tone Color</th>
<th>Form</th>
<th>Total Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretation</td>
<td>.30</td>
<td>.27</td>
<td>.40</td>
<td>.54*</td>
<td>.14</td>
<td>.44*</td>
</tr>
<tr>
<td>Tone</td>
<td>.50*</td>
<td>.29</td>
<td>.42</td>
<td>.59**</td>
<td>.08</td>
<td>.50*</td>
</tr>
<tr>
<td>Rhythm-Continuity</td>
<td>.37</td>
<td>.18</td>
<td>.37</td>
<td>.68**</td>
<td>.10</td>
<td>.44*</td>
</tr>
<tr>
<td>Intonation</td>
<td>.40</td>
<td>.48*</td>
<td>.44*</td>
<td>.60**</td>
<td>.06</td>
<td>.56*</td>
</tr>
<tr>
<td>Tempo</td>
<td>.17</td>
<td>.22</td>
<td>.32</td>
<td>.56*</td>
<td>.005</td>
<td>.36</td>
</tr>
<tr>
<td>Articulation</td>
<td>.27</td>
<td>.31</td>
<td>.48*</td>
<td>.51*</td>
<td>.16</td>
<td>.47*</td>
</tr>
<tr>
<td>Total Performance</td>
<td>.34</td>
<td>.30</td>
<td>.42</td>
<td>.60**</td>
<td>.10</td>
<td>.48*</td>
</tr>
</tbody>
</table>

*Significant below the .05 level, one-tailed test.

**Significant below the .01 level, one-tailed test.

The significant correlation coefficient between melody and intonation suggested that there were components in the
aural perception of melody which significantly related to the performer's expression of the performance construct intonation. Since the correlation coefficient was significant, the null hypothesis of zero correlation between these variables was rejected. Research hypothesis 4-D which states that there is a significant positive correlation between melody and intonation was retained. The null hypotheses of zero correlation between melody and (4-A) interpretation, (4-B) tone, (4-C) rhythm-continuity, (4-E) tempo, (4-F) articulation, and (4-G) total performance were retained.

The significant correlation coefficients between harmony-counterpoint and (a) intonation, and (b) articulation suggested that there were components in the aural perception of harmony-counterpoint which significantly related to the performer's expression of the performance constructs intonation and articulation. Since these correlation coefficients were significant, the null hypotheses of zero correlation between these variables were rejected. Research hypotheses 5-D and -F, which state that there are significant positive correlations between harmony-counterpoint and (a) intonation and (b) articulation, were retained. The null hypotheses of zero correlation between harmony-counterpoint and (5-A) interpretation, (5-B) tone, (5-C) rhythm-continuity, (5-E) tempo, and (5-G) total performance were retained.
The significant correlation coefficients between tone color and (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) tempo, (f) articulation, and (g) total performance suggested that there were components in the aural perception of tone color which significantly related to the performer's expression of all these performance constructs. Since these correlation coefficients were significant, the null hypotheses of zero correlation between these variables were rejected. Research hypotheses 6-A, -B, -C, -D, -E, -F, and -G, which state that there are significant positive correlations between tone color and (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) tempo, (f) articulation, and (g) total performance, were retained.

The nonsignificant correlation coefficients between form and (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) tempo, (f) articulation, and (g) total performance suggested that there were no components in the aural perception of form which significantly related to the performer's expression of all these performance constructs. Since these correlation coefficients were nonsignificant, the null hypotheses of zero correlation between these variables were retained. Research hypotheses 7-A, -B, -C, -D, -E, -F, and -G, which state that there are significant positive correlations between form and (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) tempo, (f) articulation, and (g) total performance, were rejected.
The significant correlation coefficients between total perception and (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) articulation, and (f) total performance suggest that there were components in the total perception variable which significantly related to the performer's expression of the performance constructs interpretation, tone, rhythm-continuity, intonation, articulation, and total performance. Since these correlation coefficients were significant, the null hypotheses of zero correlation between these variables were rejected. Research hypotheses 8-A, -B, -C, -D, -F, and -G, which state that there are significant positive correlations between total perception and (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) articulation, and (f) total performance, were retained. The null hypothesis of zero correlation between total perception and tempo was retained.

The intercorrelations among the perception variables are reported in Appendix G. As can be observed, the intercorrelations ranged from a low of .26 to a high of .81. Melody and tone color were more closely related to the total perception variable than the other variables, while form had the least relationship.

The intercorrelations among the performance variables also are reported in Appendix G. The intercorrelations among the performance variables indicated higher degrees of relationship among these variables than were observed
for the perception variables. The strong relationships between total performance and the other performance variables are consistent with the findings of Abeles (1, p. 58). The variable interpretation was more closely related to the generated variable total performance than were the other performance variables.

Hypothesis Nine

To test the null hypothesis of zero correlation between combinations of the perception variables and each performance variable, multiple correlation coefficients were calculated by the North Texas State University Computing Center. An additive program was used. Raw scores are presented in Appendix F.

Correlations between five perception variables and the performance variable interpretation are illustrated in Table XI.

As determined by a one-tailed test, all multiple correlation coefficients were statistically significant below the .05 level (9, p. 301). The value of these coefficients suggests that there were components in the perception variables which, when combined, significantly related to the performer's expression of interpretation. The addition of rhythm and harmony-counterpoint to tone color negligibly strengthened the relationship while the addition of form and melody failed to increase the magnitude of R. Generally, the multiple
TABLE XI

CORRELATIONS BETWEEN FIVE PERCEPTION VARIABLES AND THE PERFORMANCE VARIABLE INTERPRETATION
(N = 16)

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>R*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone Color</td>
<td>.54</td>
<td>.54</td>
</tr>
<tr>
<td>Rhythm</td>
<td>.30</td>
<td>.55</td>
</tr>
<tr>
<td>Harmony-Counterpoint</td>
<td>.40</td>
<td>.56</td>
</tr>
<tr>
<td>Form</td>
<td>.14</td>
<td>.56</td>
</tr>
<tr>
<td>Melody</td>
<td>.27</td>
<td>.56</td>
</tr>
</tbody>
</table>

*The multiple correlation on each line includes the variables named in the same and preceding lines.

correlation coefficients indicated stronger relationships than did the simple correlation coefficients between the perception variables and the performance variable interpretation.

Correlations between five perception variables and the performance variable tone are exhibited in Table XII.

As determined by a one-tailed test, all multiple correlation coefficients were statistically significant below the .025 level (9, p. 301). The value of these coefficients suggests that there were components in the perception variables which, when combined, significantly related to the performer's expression of tone. The addition of form, rhythm, and melody to tone color negligibly strengthened the
TABLE XII

CORRELATIONS BETWEEN FIVE PERCEPTION VARIABLES AND THE PERFORMANCE VARIABLE TONE 
(N = 16)

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>R*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone Color</td>
<td>.59</td>
<td>.59</td>
</tr>
<tr>
<td>Form</td>
<td>.08</td>
<td>.61</td>
</tr>
<tr>
<td>Rhythm</td>
<td>.50</td>
<td>.63</td>
</tr>
<tr>
<td>Melody</td>
<td>.29</td>
<td>.64</td>
</tr>
<tr>
<td>Harmony-Counterpoint</td>
<td>.42</td>
<td>.64</td>
</tr>
</tbody>
</table>

*The multiple correlation on each line includes the variables named in the same and preceding lines.

relationship while the addition of harmony-counterpoint failed to increase the magnitude of R. Generally, the multiple correlation coefficients indicated stronger relationships than did the simple correlation coefficients between the perception variables and the performance variable tone.

Correlations between five perception variables and the performance variable rhythm-continuity are presented in Table XIII.

As determined by a one-tailed test, all multiple correlation coefficients were statistically significant below the .005 level (9, p. 301). The value of these coefficients suggests that there were components in the perception variables which, when combined, significantly related to the
TABLE XIII
CORRELATIONS BETWEEN FIVE PERCEPTION VARIABLES AND
THE PERFORMANCE VARIABLE RHYTHM-CONTINUITY
(N = 16)

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>R*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone Color</td>
<td>.68</td>
<td>.68</td>
</tr>
<tr>
<td>Form</td>
<td>.10</td>
<td>.69</td>
</tr>
<tr>
<td>Rhythm</td>
<td>.37</td>
<td>.70</td>
</tr>
<tr>
<td>Melody</td>
<td>.18</td>
<td>.70</td>
</tr>
<tr>
<td>Harmony-Counterpoint</td>
<td>.37</td>
<td>.70</td>
</tr>
</tbody>
</table>

*The multiple correlation on each line includes the variables named in the same and preceding lines.

The performer's expression of rhythm-continuity. The addition of form and rhythm to tone color negligibly strengthened the relationship, while the addition of melody and harmony-counterpoint failed to increase the magnitude of R. Generally, the multiple correlation coefficients indicated stronger relationships than did the simple correlations between the perception variables and the performance variable rhythm-continuity.

Correlations between five perception variables and the performance variable intonation are exhibited in Table XIV.

As determined by a one-tailed test, all multiple correlation coefficients were statistically significant below the .01 level (9, p. 301). The value of these coefficients
TABLE XIV

CORRELATIONS BETWEEN FIVE PERCEPTION VARIABLES AND THE PERFORMANCE VARIABLE INTONATION
(N = 16)

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>R*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone Color</td>
<td>.60</td>
<td>.60</td>
</tr>
<tr>
<td>Melody</td>
<td>.48</td>
<td>.64</td>
</tr>
<tr>
<td>Form</td>
<td>.06</td>
<td>.72</td>
</tr>
<tr>
<td>Rhythm</td>
<td>.40</td>
<td>.72</td>
</tr>
<tr>
<td>Harmony-Counterpoint</td>
<td>.44</td>
<td>.72</td>
</tr>
</tbody>
</table>

*The multiple correlation on each line includes the variables named in the same and preceding lines.

suggests that there were components in the perception variables which, when combined, significantly related to the performer's expression of intonation. The addition of melody and form to tone color negligibly strengthened the relationship, while the addition of rhythm and harmony-counterpoint failed to increase the magnitude of R. Generally, the multiple correlation coefficients indicated stronger relationships than did the simple correlation coefficients between the perception variables and the performance variable intonation.

Correlations between five perception variables and the performance variable tempo appear in Table XV.
TABLE XV

CORRELATIONS BETWEEN FIVE PERCEPTION VARIABLES AND THE PERFORMANCE VARIABLE TEMPO
(N = 16)

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>R*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone Color</td>
<td>.56</td>
<td>.56</td>
</tr>
<tr>
<td>Rhythm</td>
<td>.17</td>
<td>.62</td>
</tr>
<tr>
<td>Form</td>
<td>.005</td>
<td>.66</td>
</tr>
<tr>
<td>Melody</td>
<td>.22</td>
<td>.67</td>
</tr>
<tr>
<td>Harmony-Counterpoint</td>
<td>.32</td>
<td>.67</td>
</tr>
</tbody>
</table>

*The multiple correlation on each line includes the variables named in the same and preceding lines.

As determined by a one-tailed test, all multiple correlation coefficients were statistically significant below the .025 level (9, p. 301). The value of these coefficients suggests that there were components in the perception variables which, when combined, significantly related to the performer's expression of tempo. The addition of rhythm, form, and melody to tone color negligibly strengthened the relationship while the addition of harmony-counterpoint failed to increase the magnitude of R. Generally, the multiple correlation coefficients indicated stronger relationships than did the simple correlation coefficients between the perception variables and the performance variable tempo.
Correlations between five perception variables and the performance variable articulation are revealed in Table XVI.

**TABLE XVI**

**CORRELATIONS BETWEEN FIVE PERCEPTION VARIABLES AND THE PERFORMANCE VARIABLE ARTICULATION**

(N = 16)

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>R*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone Color</td>
<td>.51</td>
<td>.51</td>
</tr>
<tr>
<td>Harmony-Counterpoint</td>
<td>.48</td>
<td>.55</td>
</tr>
<tr>
<td>Rhythm</td>
<td>.27</td>
<td>.56</td>
</tr>
<tr>
<td>Form</td>
<td>.16</td>
<td>.57</td>
</tr>
<tr>
<td>Melody</td>
<td>.31</td>
<td>.57</td>
</tr>
</tbody>
</table>

*The multiple correlation on each line includes the variables named in the same and preceding lines.*

As determined by a one-tailed test, all multiple correlation coefficients were statistically significant below the .05 level (9, p. 301). The value of these coefficients suggests that there were components in the perception variables which, when combined, significantly related to the performer's expression of articulation. The addition of harmony-counterpoint, rhythm, and form to tone color negligibly strengthened the relationship while the addition of melody did not increase the magnitude of R. Generally, the multiple correlation coefficients indicated stronger relationships...
than did the simple correlation coefficients between the perception variables and the performance variable articulation. Correlations between five perception variables and the total performance variable are presented in Table XVII.

**TABLE XVII**

**CORRELATIONS BETWEEN FIVE PERCEPTION VARIABLES AND THE TOTAL PERFORMANCE VARIABLE**

(N = 16)

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>R*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone Color</td>
<td>.60</td>
<td>.60</td>
</tr>
<tr>
<td>Form</td>
<td>.10</td>
<td>.62</td>
</tr>
<tr>
<td>Melody</td>
<td>.30</td>
<td>.63</td>
</tr>
<tr>
<td>Rhythm</td>
<td>.34</td>
<td>.64</td>
</tr>
<tr>
<td>Harmony-Counterpoint</td>
<td>.42</td>
<td>.64</td>
</tr>
</tbody>
</table>

*The multiple correlation on each line includes the variables named in the same and preceding lines.

As determined by a one-tailed test, all multiple correlation coefficients were statistically significant below the .025 level (9, p. 301). The value of these coefficients suggests that there were components in the perception variables which, when combined, significantly related to the performer's expression of total performance. The addition of form, melody, and rhythm to tone color negligibly strengthened the relationship while the addition of harmony-counterpoint failed to increase the magnitude of R. Generally, the
multiple correlation coefficients indicated stronger relationships than did the simple correlation coefficients between the perception variables and the total performance variable.

Since all multiple correlation coefficients were statistically significant below the .05 level, the null hypothesis of zero correlation between combinations of the perception variables and each performance variable was rejected.

Research hypothesis nine, which states that there are significant positive correlations between combinations of the perception variables rhythm, melody, harmony-counterpoint, tone color, and form, and each of the performance variables (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) tempo, (f) articulation, and (g) total performance, was retained.
CHAPTER BIBLIOGRAPHY


CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

The purposes of this chapter are to (a) present a summary of this study; (b) present results which are based upon, and limited to, the data which has been presented and interpreted in this study; (c) discuss the results, observations, and implications of this study; (d) discuss the generalizability of this study; (e) present the conclusion of this study; and (f) make recommendations based upon the implications of this study.

Summary

This study was an investigation of the effects of guided listening upon instrumental music performances of junior college students. The study also sought to discover possible significant relationships between perception and performance variables.

The review of the literature suggested the following: (a) the issue of possible differences between the listening skills of music and nonmusic majors remains unresolved; (b) total agreement concerning the relationship between music experience and listening skills has not been reached; (c) participation in music performing groups aids listening
skills; (d) aural perception and music performance (band contest ratings) are not related significantly; (e) listening skills may be developed within a short period of time; (f) there appears to be little relationship between listening skills and I.Q., socioeconomic status, academic grades, or musical ability; (g) listening skills seem amenable to improvement by utilizing an instructional program of guided listening aimed at improving these skills; (h) since music performance appears to extend beyond the performance dimensions measured by the Watkins-Farnum Performance Scale (11) and Gutsch (5) test, these instruments seem inadequate for music performance evaluation; (i) MAP (3) scores can be useful for adapting instruction to individuals and for predicting performance achievement when combined with ITBS (8) scores; (j) when rating music performances, either numerical or verbal descriptors may be used with equal confidence; (k) aural concepts of instrumental music performance and instrumental performance achievement are significantly related; (l) the music performance constructs on Abeles' Rating Scale (1, p. 49) are factorially different; (m) Abeles' instrument would seem satisfactory for taxonomizing general music performance; (n) competent musicians are equally capable of rating trumpet performances when the object of adjudication is student selection; (o) reasonable reliability may be obtained by utilizing five adjudicators; (p) for reliable
evaluation, music performed may be of shorter duration than a complete movement; (q) cassette-quality recorded performances are satisfactory for evaluation purposes; (r) achievement in Music History and Literature may be a satisfactory predictor of music performance achievement; (s) performers who appreciate music express their appreciation of music in their performances; and (t) Abeles' Music Performance Rating Scale, presented in Appendix B, satisfactorily measures performer appreciation of music.

The sample was composed of thirty-one brasswind and woodwind students from a junior college in east central Wyoming. These students were assigned randomly to experimental (N=16) and control (N=15) groups. The experimental group was enrolled in a guided listening program entitled The Experience of Music (9). The control group received no treatment.

The perception variables utilized in this study were rhythm, melody, harmony-counterpoint, tone color, and form. The performance variables used were interpretation, tone, rhythm-continuity, intonation, tempo, and articulation.

The testing instruments were selected music perception tests (Appendix E), supplied with The Experience of Music, and the Abeles Music Performance Rating Scale (Appendix B). The perception tests were scored by awarding the numeral one for each correct response. A panel of five judges evaluated
music performances. Both performance and perception test reliability coefficients were estimated by the Hoyt (6, pp. 153-60) Analysis of Variance procedure. Mean interjudge reliability estimates for performance scores ranged from a high of .92 for total scores to a low of .80 for the subtest scores on tone. Reliability estimates for perception scores ranged from a high of .88 for total scores to a low of .53 for the subtest scores on tone color.

Results

The following results were based upon the interpretation of the data.

1. The mean interjudge reliability estimates (Table I) for scores on the performance variables total performance (.92), interpretation (.90), tone (.80), rhythm-continuity (.90), intonation (.83), tempo (.85), and articulation (.84) were adequate for group measurement.

2. The reliability estimates (Table II) for scores on the perception variables total perception (.88), rhythm (.60), melody (.82), harmony-counterpoint (.58), tone color (.53), and form (.78) were adequate for group measurement.

3. The results of the analyses of covariance indicated no significant differences between adjusted means of the experimental- and control-group scores on the performance variables interpretation, tone, intonation, tempo, and articulation. The results indicated significant differences
between adjusted means of scores on the performance variables **rhythm-continuity** and **total performance**—the adjusted means of the control group were significantly larger than those of the experimental group.

4. The significant positive correlation coefficient between **rhythm** and **tone** suggested that there were components in the aural perception of **rhythm** which significantly related to the performer's expression of the performance construct **tone**.

5. The significant positive correlation coefficient between **melody** and **intonation** suggested that there were components in the aural perception of **melody** which significantly related to the performer's expression of the performance construct **intonation**.

6. The significant positive correlation coefficients between **harmony-counterpoint** and (a) **intonation** and (b) **articulation** suggested that there were components in the aural perception of **harmony-counterpoint** which significantly related to the performer's expression of the performance constructs **intonation** and **articulation**.

7. The significant positive correlation coefficients between **tone color** and (a) **interpretation**, (b) **tone**, (c) **rhythm-continuity**, (d) **intonation**, (e) **tempo**, (f) **articulation**, and (g) **total performance** suggested that there were components in the aural perception of **tone color** which significantly
related to the performer's expression of all these performance constructs.

8. The nonsignificant positive correlation coefficients between form and (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) tempo, (f) articulation, and (g) total performance suggested that there were no components in the aural perception of form which significantly related to the performer's expression of all these performance constructs.

9. The significant positive correlation coefficients between total perception and (a) interpretation, (b) tone, (c) rhythm-continuity, (d) intonation, (e) articulation, and (f) total performance suggested that there were components in the total perception variable which significantly related to the performer's expression of all these performance constructs.

10. The perception variable tone color had a stronger relationship with each performance variable than did any of the other perception variables.

11. The intercorrelations among the performance variables indicated higher degrees of relationship among these variables than were observed for the perception variables.

12. The significant positive multiple correlation coefficients between combinations of the perception variables and each performance variable suggested that there were
components in the aural perception variables which, when combined, significantly related to the performer's expression of each performance variable.

Discussion

The following discussion is based upon the results of this study.

1. The interjudge reliability estimates for performance scores presented in Table I tend to corroborate the work of Abeles (1) since in both studies the total score estimate exceeded .90 and subtest score estimates exceeded .60. Further, the mean reliability estimates for tone and intonation in both studies were low when compared to the other estimates. This implies that there was less agreement among judges on the individual traits tone and intonation than on interpretation, rhythm-continuity, tempo, and articulation.

2. Since the interjudge reliability estimates for performance scores reported were adequate for group measurement, they appear to support the contention of Guilford (4, p. 397) and Vasil (10, pp. 53-54) that reasonable reliability among music performance adjudicators may be obtained by using five judges.

3. The rather high interjudge reliability estimates for performance scores presented in Table I seemed to support the Vasil (10, pp. 53-54) conclusions that (a) the amount of music performed for reliable evaluation may be, to a
substantial degree, of shorter duration than a complete movement, and (b) cassette-quality recorded performances are satisfactory for evaluation purposes.

4. Since the interjudge reliability estimates for performance scores reported were acceptable for group measurement, it appears that the Abeles Music Performance Rating Scale was a satisfactory instrument for evaluating junior college music performances as played on a variety of wind instruments, excepting double reeds, commonly utilized in concert bands. The reliability estimates presented in Table I, then, seem to lend credence to Abeles' contention that his rating scale should be satisfactory for "taxonomizing music performance in general, as none of the factors seem to reflect idiosyncratic clarinet characteristics" (1, p. 69).

5. The reliability coefficients (Table II) estimated in this study for scores on the perception variables were adequate for group measurement. It is hoped that in the future authors and publishers of guided-listening materials not only coordinate these materials but report the validity and reliability of accompanying tests.

6. Although the primary intent of this study was to investigate the effects of guided listening upon instrumental music performances of junior college students, the study incidentally tested the ability of selected materials of The Experience of Music (Appendix A) to improve instrumental
music performances of junior college students. Since the results of the analysis of covariance generally favored the control group, the results of this study could not support the notion, suggested by the literature previously reviewed, that student study of selected materials of *The Experience of Music*, a guided-listening program designed to improve listening skills and increase sensitivity to music, tends to improve instrumental music performances of junior college students, as adjudicated by a panel of judges using the Abeles *Music Performance Rating Scale* (Appendix B). This implies that (a) conclusions and postulations concerning the value of listening and music appreciation for music performance which were reviewed previously are questionable, (b) aural perception of music constructs did not necessarily lead to appreciation of music, and (c) while the selected perception tests of *The Experience of Music* did measure aural perception of music constructs, the study of the selected materials did not appear to develop appreciators of music as expressed in performances measured by the Abeles *Music Performance Rating Scale*. An inspection of the raw scores presented in Appendix F indicates that experimental-group students did aurally perceive, in varying degrees, the music constructs used in this study. The perception of music constructs by these students apparently either did not lead to their becoming appreciators of music, or appreciators of music do not necessarily express their appreciation in their performances.
7. Among the perception variables, **tone color** exhibited the strongest degree of relationship with all performance variables. This suggested that whatever components were present in the aural perception of **tone color** significantly related to the music performance constructs of the Abeles Rating Scale and to the generated total performance variable. However, the reliability estimate (.53) for **tone color** was low; thus, the **total perception** variable with a reliability estimate of .88 had a more stable relationship with the performance variables. **Total perception** was significantly related to all performance variables except tempo. Both the **total perception** variable and **total performance** variable were generated by summing appropriate subtest scores. These two generated variables were significantly correlated below the .05 level (Table X). Further, the reliability estimates of .92 (Table I) for **total performance** and .88 (Table II) for **total perception** indicated that measures on these generated variables were reasonably stable and, according to Leonhard and House (7, p. 398), of value not only for group measurement, but for individual measurement and diagnosis as well. Both the stability of the measures on **total performance** and **total perception**, and the significant correlation between the two, imply that measures on these variables may be more useful for purposes of prediction than measures on the subtest variables which appeared to be less stable.
8. The high intercorrelations (Appendix G) among the performance variables apparently had no deleterious effect upon the study. Also, the high intercorrelations may not reflect a problem with Abeles' instrument. Two possible explanations appear to be that (a) a "halo" effect might have been present which caused judges to transfer perceived competency or incompetency on one performance construct to others, and (b) student competency or incompetency on one performance construct did transfer to other constructs.

9. An examination of the multiple correlation coefficients presented in Tables XI through XVII reveals that tone color, since it was the primary variable selected by the computer in all instances, was more strongly related to all performance variables than the other perception variables. As previously noted, the reliability coefficient (.53) for tone color in this study was low, rendering this subtest valueless for individual measurement and diagnosis and barely acceptable for group measurement. The addition of other variables to tone color did not appreciably increase the magnitude of R.

Since virtually all members of a small, finite population of brasswind and woodwind students, enrolled in performance classes at Casper College during the fall of 1974, were participants in this study, it seems safe to assume that these participants were representative of the population of
brasswind and woodwind students similarly enrolled at that time. There are no known reasons for believing that the sample investigated differed in significant ways from a much larger population of junior college students. However, "there remains the possibility that the effects validly demonstrated hold only for the unique population from which the experimental and control groups were jointly selected" (2, p. 19). Therefore, careful consideration is recommended when extrapolating results beyond the sample of this study. "We will learn how far we can generalize an internally valid finding only piece by piece through trial and error of generalization efforts" (2, p. 19).

Conclusion

It was concluded that the study of selected materials of the guided-listening program, The Experience of Music (9), was ineffective in improving instrumental music performances of junior college students.

Recommendations

It is recommended that

1. Authors and publishers of music appreciation materials coordinate textbook, recordings, and tests.

   A. These materials should be designed to encourage aural perception of music elements and their interaction.
B. Tests which accompany these materials should be standardized, and validity and reliability coefficients should be reported.

2. An investigation be made of the "halo" effect upon the evaluation of music performance, and suggestions be made as to what may be done to reduce its effect.

3. This study be replicated utilizing string, voice, and piano students.

4. An experimental study be made to investigate the effects of music theory instruction upon music performance.

5. An experimental study be made to investigate the effects of music history instruction upon music performance.

6. An investigation be made of the Abeles music performance constructs interpretation, tone, rhythm-continuity, intonation, tempo, and articulation, in an effort to ascertain ways in which expression of these constructs may be improved.
CHAPTER BIBLIOGRAPHY


APPENDIX A

SELECTED COURSE CONTENT OF THE EXPERIENCE OF MUSIC

Accompanying materials include the textbook, appropriate recordings, concentration charts, and perception charts.

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APPENDIX B

THE ABELES MUSIC PERFORMANCE RATING SCALE

1 represents the lowest level of performance quality and the number 5 represents the highest level of performance quality. Circle appropriate number for each item.

1. INTERPRETATION

   a. Effective musical communication.
   b. The interpretation was musical.
   c. The piece was played in character.
   d. Played with musical understanding.
   e. Played with traditional interpretation.

2. TONE

   a. Thin tone quality.
   b. Played with a natural tone.
   c. There was a lack of tonal color.
   d. The quality of the tone was rich.
   e. Sounded shallow.

3. RHYTHM-CONTINUITY

   a. Uneven rhythm.
   b. Smoothness in execution.
   c. Melodic continuation.
   d. Insecure technique.
   e. The rhythm was distorted.

4. INTONATION

   a. Played out of tune.
   b. Flat in low register.
   c. The intonation was good.
   d. Played overall flat.
   e. Tended to be flat.

5. TEMPO

   a. Played too fast.
   b. Seemed to drag.
   c. Hurried repeated notes.
   d. Played too slowly.
   e. Rushed.

6. ARTICULATION

   a. Squeaked.
   b. Free from tonguing noise.
   c. Attacks and releases were clean.
   d. Tonguing produced thunkie sound.
   e. Accents were played as indicated.

JUDGE .................................................. TOTAL .................................

Student Number ........................................
APPENDIX C
MUSIC PERFORMANCE SELECTIONS
FANTASY-PIECE
Adaptation

Bb Clarinet

Robert Schumann
Opus 73, No. 1

(d = 80)

Delicate and with expression

\[ \text{Bb Clarinet} \]

\[ \text{Robert Schumann} \]

\[ \text{Opus 73, No. 1} \]
MORCEAU DE CONCERT
Adaptation

C. Saint-Saens
Opus 94

F Horn

Allegro moderato
APPENDIX D

STUDENT PROFILE

NAME

HOME TOWN

CASPER ADDRESS

CASPER PHONE

MAJOR AT CASPER COLLEGE

MAJOR INSTRUMENT

PREVIOUS EXPERIENCE (Years)

CIRCLE ONE:

GRADE LEVEL

FRESHMAN

SOPHOMORE

PRIVATE LESSONS PER WEEK

0

1

LENGTH OF LESSONS (Minutes)

30

60

SEX

MALE

FEMALE

ACT STANDARD COMPOSITE SCORE


Correct answers are underscored.

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- moderate triple meter staccato
- regular beat some accents patterns repeated
- moderate staccato all short notes triple meter
- strong beat pattern heard before all legato some accents
- legato patterns not repeated
- changes to legato moderate staccato triple meter
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</table>

**Melody**

- Measure 1: Major, several cadences, steps.
- Measure 29: Major, steps, no cadences, mostly upward.
- Measure 61: Major, short motives, same melody as call 1, several cadences, voice ends melody on tonic (key) tone.
<table>
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<th>Call</th>
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<td>block chords only</td>
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<td></td>
<td>chords change slower</td>
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<td>block chords only</td>
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*Harmony and counterpoint*
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<td>43</td>
<td>blending colors melody in low register contrasting colors</td>
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<tr>
<td>48</td>
<td>blending colors melody in high register thin</td>
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Harmony and counterpoint
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<td><strong>main theme in cellos</strong>&lt;br&gt;accompaniment in winds and <strong>pizzicato</strong> strings&lt;br&gt;active accompaniment much</td>
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<tr>
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<td><strong>theme in violas and flutes</strong>&lt;br&gt;accompaniment in winds&lt;br&gt;active accompaniment</td>
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<td><strong>horn begins theme</strong>&lt;br&gt;theme treated homophonically&lt;br&gt;density of section is thin, thick, thin</td>
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<td>4</td>
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<td><strong>flute and oboe prominent</strong>&lt;br&gt;oboe becomes prominent&lt;br&gt;generally upper register&lt;br&gt;<strong>pizzicato</strong>-cello accompaniment</td>
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<td></td>
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**Tone color**
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<td>73</td>
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<tr>
<td>80</td>
<td>18</td>
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</tbody>
</table>

- **strings and woodwinds prominent**
- **static and simple**
- **thick**
- **no accents**
- **strings and upper winds prominent**
- **oboe has countermelody**
- **no string *tremolo***
- **no dynamic changes**

- **woodwinds prominent**
- **accompaniment in *tremolo strings***
- **theme in clarinet**
- **string countermelody**

- **fragments of theme played in contrasting colors**
- **bassoon prominent**

- **pizzicato-string accompaniment**
- **strings and woodwinds alternate**
- **strings *pizzicato***
- **violins have theme**
- **winds and strings accompany**

- **flutes and horn have theme**
- **no imitation used**

**Tone color**

- **brasses prominent**
- **active and complex**
- **thin**
- **some accents**
- **strings alone prominent**
- **bassoon has countermelody**
- **some string *tremolo***
- **some sudden dynamic changes**
- **brasses prominent**
- **accompaniment in woodwind block chords**
- **theme in oboe**
- **woodwind block chords**
- **theme in cello**

- **o boe prominent**
- **bowed-string accompaniment**
- **strings and brasses alternate**
- **strings bowed**
- **cellos have theme**
- **only strings accompany**

- **no**
- **violins and flutes have theme**
- **short points of imitation follow**
- **many contrasting colors**
<table>
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</tbody>
</table>

|         |      | no theme, hymnlike texture |
|         |      | brasses and woodwinds have block chords |
|         |      | thick |
|         |      | active and complex |
|         |      | woodwinds and strings prominent |
|         |      | thin |
|         |      | no |
|         |      | ends |
|         |      | thicker |
|         |      | woodwinds prominent |
|         |      | cymbals accompany |
|         |      | clarinet added at end |
|         |      | general to end |
|         |      | oboe added at end |

Tone color
measure | call
---|---
1  | introduction and section A
26 | A repeated section B
37 | return to A B section C
45 | return to A B C section D
59 | return to A B C D section E
76 | coda

form
<table>
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<th>Call</th>
<th>Measure</th>
<th>Call</th>
<th>Measure</th>
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<td>2 A repeated section B</td>
<td>3 A repeated B</td>
<td>4 A repeated B</td>
<td>A A A A sonata-allegro</td>
<td>A B B B fugue</td>
<td>A B C D strophic</td>
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Outline of this form is: A A A A A B B B A B C D A B A C

This form is: Sonata-allegro Fugue Strophic Rondo
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<td>B</td>
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**Form**
Outline of this form is:

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section B  
return of B  
nsection A varied  
section C

A A A  
A A B  
A B A  
A B C
APPENDIX F

RAW SCORES FOR TOTAL MUSIC PERFORMANCE
(Maximum Possible Score = 150)
(N = 31)

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*Nonmusic major who received no private lesson per week.
**Nonmusic major who received one thirty-minute private lesson per week.
***Music major who received one thirty-minute private lesson per week.
# RAW SCORES FOR INTERPRETATION

(Maximum Possible Score = 25)

(N = 31)

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*Nonmusic major who received no private lesson per week.

**Nonmusic major who received one thirty-minute private lesson per week.

***Music major who received one thirty-minute private lesson per week.
RAW SCORES FOR TONE  
(Maximum Possible Score = 25)  
(N = 31)

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**Nonmusic major who received one thirty-minute private lesson per week.
***Music major who received one thirty-minute private lesson per week.
RAW SCORES FOR RHYTHM-CONTINUITY
(Maximum Possible Score = 25)
(N = 31)

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*Nonmusic major who received no private lesson per week.
**Nonmusic major who received one thirty-minute private lesson per week.
***Music major who received one thirty-minute private lesson per week.
RAW SCORES FOR INTONATION
(Maximum Possible Score = 25)
(N = 31)

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*Nonmusic major who received no private lesson per week.
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***Music major who received one thirty-minute private lesson per week.
RAW SCORES FOR TEMPO  
(Maximum Possible Score = 25)  
(N = 31)

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| 2*** | 21 | 2*** | 24 | 2* | 17 | 3** | 22 |
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| 4* | 18 | 5*** | 19 | 4* | 14 | 2* | 16 |
| 5*** | 17 | 7*** | 18 | 5*** | 12 | 4* | 16 |
| 6** | 16 | 9*** | 16 | 6* | 12 | 10** | 16 |
| 7*** | 15 | 8* | 15 | 7* | 12 | 5*** | 14 |
| 8* | 14 | 3** | 13 | 8** | 11 | 12*** | 14 |
| 9*** | 13 | 12*** | 13 | 9* | 10 | 7* | 13 |
| 10* | 13 | 6** | 12 | 10** | 10 | 8** | 12 |
| 11* | 11 | 15* | 12 | 11* | 9 | 13*** | 11 |
| 12*** | 11 | 16* | 12 | 12*** | 8 | 14*** | 11 |
| 13* | 8 | 10* | 11 | 13*** | 8 | 11* | 10 |
| 14* | 8 | 11* | 10 | 14*** | 8 | 9** | 9 |
| 15* | 8 | 13* | 8 | 15* | 5 | 15* | 6 |
| 16* | 7 | 14* | 8 | | | | |

*Nonmusic major who received no private lesson per week.  
**Nonmusic major who received one thirty-minute private lesson per week.  
***Music major who received one thirty-minute private lesson per week.
RAW SCORES FOR ARTICULATION
(Maximum Possible Score = 25)
(N = 31)

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*Nonmusic major who received no private lesson per week.
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RAW SCORES FOR AURAL PERCEPTION
(Maximum Possible Score = 221)
(N = 16)

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*Nonmusic major who received no private lesson per week.
**Nonmusic major who received one thirty-minute private lesson per week.
***Music major who received one thirty-minute private lesson per week.
### APPENDIX G

**INTERCORRELATIONS AMONG THE PERCEPTION VARIABLES**

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