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A correlative study of musical aptitude and music appreciation as measured by the Seashore measures of musical talents and the Fisher measurements of musical appreciation

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Thesis

A CORRELATIVE STUDY OF MUSICAL APTITUDE AND MUSIC APPRECIATION AS MEASURED BY THE SEASHORE MEASURES OF MUSICAL TALENTS AND THE FISHER MEASUREMENTS OF MUSICAL APPRECIATION

by

Allan S. Kane

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submitted in partial fulfillment of the
requirements for the degree of
Master of Music Education

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Approved by

First Reader. Kenneth G. Kelley . . . .
Professor of Music Education

Second Reader . Keith D. Snyder . . . . .
Asst. Professor of Music Education

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To his wife, Rhoda, the writer would like to express deep appreciation for her earnest and untiring efforts, which greatly assisted in the successful completion of this study.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

CHAPTER I

INTRODUCTION

Nature and Scope of the Problem

Statement of the Problem: It is the purpose of this study to determine the degree of correlation between musical aptitude and music appreciation as measured by the Seashore Measures of Musical Talents and the Fisher Measurements of Musical Appreciation, in an effort to find whether there are any implications which may be derived from this study which might affect the teaching of general music and music appreciation in the public schools.

Scope of the Problem: The data used in this study has been gathered from three towns - Reading, Massachusetts, Needham, Massachusetts, and West Hartford, Connecticut - and includes all grades on the secondary level (7 - 12), plus an adult education group. A total of fifteen classes have been tested, to provide the statistical data on which this study is based.

Definition of Terms

Music: Music has been defined as follows:

> "Music is an art capable of establishing and imposing all the conditions of a distinctive emotion, a distinctive way of feeling, but in the absence of the object or circumstance that gives rise to that way of feeling in

> ordinary life. It is capable of doing this because of the expressive means it employs. It uses a medium, the medium of tone, which in itself gives rise to profound, far-reaching and commanding emotional and organic effects." 1/

In effect, then, music is an expressive art.

Musical Aptitude: Musical aptitude is considered to be a combination of various separate talents for the perception of differences and emphases in separate elements used in musical expression.

> "By musical talents we mean specific capacities or abilities involved in the hearing, appreciation, and performance of music." 2/

Music Appreciation: Since music is essentially an expressive art, then "musical appreciation becomes fundamentally the responsiveness to the expressiveness of music". 3/ Mursell states, "There is only one

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1/ Mursell, James L. - Education for Musical Growth - 1948 - Ginn and Co.- New York - Page 175

2/ Seashore, Carl E., Lewis, Don, Saetveit, Joseph G. - Manual of Instructions and Interpretations for the Seashore Measures of Musical Talents (1939 Revision) - Educational Department, RCA Victor Division, Radio Corporation of America - Camden, New Jersey - Page 3

3/ Fisher, William R. - The Construction and Validation of an Instrument to Measure Musical Appreciation - 1949 - Unpublished Doctor's Dissertation - Boston University - Page 2 possible basis for musical discrimination, and that is responsiveness to the constitutive values of the art of music". 1/ The most recent and probably the most explicit definition of music appreciation is that of Dr. William R. Fisher:

> "Music appreciation can be defined as that reaction to a musical stimulus that sublimates the emotions, ideals and thoughts of the individual; such reaction involves the recognition and interpretation of the mood, associations, imagery, and rhythm of the music, combined with a feeling for the timbre of instruments, and a background of factual knowledge." 2/

Justification of the Study

The ultimate goal in the teaching of music should be to create an awareness and an appreciation of music. Mursell states that it should be "the development of musical responsiveness which is the essence of musical growth". 3/ It is the purpose of this study to find how great a degree of native musical aptitude is involved in the appreciation of

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1/ Mursell, James L. - Op. cit. - Page 174

2/ Fisher, William R. - Op. cit. - Page 1

3/ Mursell, James L. - Op. cit. - Page 150 or responsiveness to music by measuring both these factors as they occur in some four hundred pupils and establishing correlations to determine any significant trends as the two factors occur together.

Design of the Study

This study can be divided into the following steps, each of which will be described in a later chapter:

a. An investigation of previous research, experimentation and testing in the fields of musical aptitude and music appreciation.

b. An analytical description of the Seashore Measures of Musical Talents, reviewing their content, method of administration, and interpretation of norms.

c. Testing of approximately four hundred people of a grade range of seventh to twelfth grades.

d. An analytical description of the Fisher Measurements of Musical Appreciation, reviewing their content, method of administration, and interpretation of norms.

e. Administering the Fisher Measurements of Musical Appreciation to the same four hundred people mentioned in c.

f. An analysis of resulting data including a coefficient of correlation obtained by the Pearson Product-Moment formula.

g. An interpretation of results, and suggestions for further research.

CHAPTER II

REVIEW OF PREVIOUS RESEARCH

Music in the public schools is still a comparatively new subject, and in many places is considered to be of less importance in the curriculum than other so-called "standard" subjects. Because of this situation, more research, and research that is scientific in nature is necessary to prove the worth and importance of music.

> "The lack of experimental studies in music education has been recognized by authorities for many years, but there has not been a significant amount of attention given to this deficiency....Scientific study of school music teaching is a necessity if music educators are to have grounds to justify their department and their methods and procedures." 1/

One method of achieving this is through the use of standardized tests, because through this medium we may put our arguments on a more scientific basis.

Although testing in music education has not kept pace with testing in other fields of education, there are many instruments which are suitable for use in the public schools. A review of some of these is considered to be pertinent to this study.

Aptitude Tests in Music

Drake Test of Musical Talent: This instrument is divided into four tests dealing with musical memory, interval discrimination, retentivity, and intuition, all of which are considered to be tests of musical capacity.

1/ Weigand, J. J. - "The Scientific Approach to Music Teaching" - Music Educators Journal - November-December, 1946

1. Music Memory Test - This test consists of twenty-four melodic exercises. Each melody is played on the piano, and the pupils answer by indicating changes in key, time, and repetition of the original melody.

2. Interval Discrimination - In this test, the pupils are required to discriminate between two pairs of intervals, and tell whether one is larger or smaller than the other. There are eighty items in this test.

3. Retentivity - This test consists of twenty items which measure absolute pitch, and includes memory of single tones.

4. Intuition - This test consists of seventy-two items. The pupil is to judge , from a playing of two phrases, whether the second phrase does or does not satisfactorily answer the first phrase. 1/

Schoen Tests of Musical Feeling and Understanding: This instrument is divided into three tests measuring relative pitch, tonal sequence, and rhythm, and is considered by the author to be a test of "general musicianship".

1/ Schoen, Max - The Psychology of Music - 1940 - Ronald Press Co. - New York - Pages 171-172

1. Relative Pitch Test - This test consists of sixty pairs of intervals, and requires the student to decide the relative distance between two pitch intervals which occur in sequence.

2. Tonal Sequence Test - This test consists of four two-phrase melodies from standard musical compositions. Each first-phrase of the melodies is followed by four second-phrases, one of which is the original, and the other three of an inferior quality. The student is required to evaluate the four end-phrases, and is judged by his ability to assign the highest value to the original end-phrase.

3. Rhythm Test - This test consists of twenty-five pairs of rhythmic phrases, where the second phrase of each pair is slightly changed. The student is asked to determine whether the second phrase in each pair is the same as or different from the first phrase. 1/

Kwalwasser Tests of Melodic and Harmonic Sensitivity: This instrument tries to determine the affective response of the individual to music. The test of melodic sensitivity is intended to measure ability to distinguish between good and bad melodic progressions. The test of harmonic sensitivity is intended to measure ability to distinguish between good and bad harmonic progressions. 2/

1/ Ibid - Pages 175-176

2/ Kwalwasser, Jacob - Kwalwasser Tests of Melodic and Harmonic Sensitivity - 1926 - Victor Talking Machine Co. - Camden, New Jersey

<u>Kwalwasser-Dykema Music Tests</u>: This instrument is divided into ten tests dealing with tonal memory, quality discrimination, intensity discrimination, tonal movement, time discrimination, rhythmic discrimination, pitch discrimination, melodic taste, pitch imagery, and rhythm imagery.

1. <u>Tonal Memory</u> - This test consists of twenty-five pairs of tonal patterns. In each pair the student is required to tell whether the second pattern is the same as or different from the first pattern.

2. <u>Quality Discrimination</u> - This is a test of sensitivity to timbre. In it a short theme is played twice, and the student must indicate whether the second playing was on the same or on a different instrument.

3. <u>Intensity Discrimination</u> - In this test, single tones and chords are sounded with a slight difference in intensity; the pupil must indicate whether the second playing is louder or softer than the first.

4. <u>Tonal Movement</u> - Here tonal patterns of four notes are played, with a fifth note being necessary for completion. The student must indicate whether that fifth note should be above or below the fourth tone.

5. <u>Time Discrimination</u> - This is measured by the playing of series of three tones, of which the first and the third are of equal length, and the second variable. The student must indicate whether or not each tone of the three-tone series is the same or different in length.

6. Rhythmic Discrimination - This is measured by paired rhythmic patterns, and the student must indicate whether the second pattern, as compared with the first, was the same or different.

7. Pitch Discrimination - In this test, a tone is sustained for three seconds, and the student is asked to decide whether or not there was a change of pitch during the duration of the tone.

8. Melodic Taste - In this test, two melodies are played successively; the first phrase of each of the two melodies is the same, but the second phrases are different. Here the student must indicate which of the two final phrases is more appropriate to the first phrase.

9. Pitch Imagery - This is measured by using melodic patterns in notation, and the student is required to indicate whether they are the same as or different from those played on the phonograph.

10. Rhythm Imagery - This is measured by using rhythmic patterns in notation, and the student is required to indicate whether or not the rhythmic patterns heard on the phonograph are the same as the ones on the printed page. 1/

1/ Mursell, James L. and Glenn, Mabelle - The Psychology of School Music Teaching - 1938 - Silver-Burdett Co. - New York - Pages 335-336

Seashore Measures of Musical Talent: This instrument is divided into six tests dealing with pitch, loudness, rhythm, time, timbre, and tonal memory.

1. Pitch - This test consists of fifty pairs of tones. The student must indicate whether, in each pair, the second tone is higher or lower than the first.

2. Loudness - This test consists also of fifty pairs of tones which differ in loudness or strength. In each pair, the student must indicate whether the second tone is stronger or weaker than the first.

3. Rhythm - This test consists of thirty pairs of rhythmic patterns. The student must indicate whether the second rhythmic pattern is the same as or different from the first rhythmic pattern of each pair.

4. Time - This test consists of fifty pairs of tones which differ in length. In each pair, the student must indicate whether the second tone is longer or shorter than the first.

5. Timbre - This test consists of fifty pairs of tones. In each pair, the student must indicate whether the second tone is the same as or different from the first in timbre or tone quality.

6. Tonal Memory - This test consists of thirty short series of tones played twice. In the second playing, one note is changed.

The student must indicate by number which note in each series has been changed during the second playing. 1/

Achievement Tests

Adler Music Appreciation Tests: This instrument consists of six sets of musical compositions in each of two series. Each composition has four different versions varying in excellence. The student is asked to indicate the best and the poorest forms, judging on the basis of his enjoyment of the music. This test is claimed to be a measure of musical preference. 2/

Kwalwasser Test of Musical Information and Appreciation: This instrument is entirely a paper and pencil test, and in reality is a test of musical information and knowledge. It includes sections dealing with history, biography, instrumentation, and musical form. 3/

1/ Seashore, Carl E., Lewis, Don, Saetveit, Joseph G. - Op. cit. - Pages 10-15

2/ Adler, M. J. - "Music Appreciation: An Experimental Approach to Its Measurement" - Archives of Psychology - No. 110 - 1929

3/ Kwalwasser, Jacob - Op. cit. - Pages 90-98

Fisher Measurements of Musical Appreciation: This instrument is divided into five tests dealing with mood reaction, association and imagery, rhythmic response, timbre of instruments, and knowledge. All the various tests employ items of the multiple-choice type, and recorded music is used for the first four tests.

1. Mood Reaction - This test consists of eighteen items. The student is asked to indicate which of the four words assigned to each item best describes how the music makes him feel.

2. Association and Imagery- This test also consists of eighteen items. Here the student must indicate which phrase of the four descriptive phrases assigned to each item best describes what the music suggested to him.

3. Rhythmic Response - Again, this test consists of eighteen items. Here the student must indicate which of the four descriptive words or phrases assigned to each item best describes what the music suggested to him.

4. Timbre of Instruments - Again, this test consists of eighteen items. Here the student must indicate which of the four families or single instruments mentioned with each item is the one he heard.

5. Musical Knowledge - This test consists of one hundred and twenty multiple-choice items concerning widely varied phases of

musical knowledge. It is entirely a paper and pencil test. 1/

Conclusions from a Survey of Previous Related Studies

Although much work has been done in the fields of musical aptitude and music appreciation, and although there are many instruments designed to measure these factors, it seems advisable to the writer to make a study concerning the correlation of musical aptitude and appreciation in an effort to find the degree of aptitude necessary for a related degree of achievement in appreciation.

In choosing instruments for use in this study, the two most important factors that should be considered are reliability and validity. By reliability we mean the efficiency with which a test measures what it does measure. By validity we mean the extent to which a test measures what it purports to measure.

Taking the above and other factors, such as administrability and economy, into consideration, the Seashore Measures of Musical Talents and the Fisher Measurements of Musical Appreciation were chosen for this study. The Seashore Measures of Musical Talents have been in use for a great many years.

1/ Fisher, William R. - The Construction and Validation of an Instrument to Measure Musical Appreciation - Unpublished Doctorate Dissertation - Boston University - 1949 and in 1939 were revised to increase their efficiency. The work done in constructing this instrument is considered to be one of the most extensive research programs ever undertaken for the purpose of isolating the elements of native capacity in a special field. 1/ According to the author's own statement,

> "These measures present the following characteristics: they are based on a scientific analysis of musical appreciation and performance; they deal with elements which function in all music; they are standardized for content so that alternate or new series are not needed; they give quantitative results which may be verified to a high degree of certainty; they are economical in that expensive instruments are replaced by phonograph records; they may be used with any language and at any racial or cultural level; they are simple and as nearly self-operative as possible; they are designed for group measurements; they are interpreted in terms of established norms.

> "They are called measures to distinguish them from the ordinary paper and pencil tests and because they are patterned on principles of accurate measurement with scientific instruments in the laboratory. They are based upon two fundamental laws of scientific measurement. The first is that the factor under observation must be isolated in order that we may know exactly what we

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1/ Greene, Harry A., Jorgensen, Albert N., Gerberich, J. Raymond - Measurement and Evaluation in the Secondary School - 1943 - Longmans, Green and Co. - New York - Page 435 are measuring. This factor is varied under control while all other factors are kept constant. Thus in measuring the sense of time, we vary duration only, keep all the other factors constant, and avoid complex situations.

"The second principle maintains that the conclusions to be drawn must be limited specifically to the implications of the factor which has been measured under control.

"The measures are adapted primarily for use in the regular music class or for special surveys. They may be used first in the fifth grade, since this is the first age at which group measurements can be made satisfactorily." 1/

The validity of this instrument may best be described by the author:

"The validity of these measures must be interpreted in terms of the extent to which they function in the actual musical situation. They are relatively exact measures of capacity. It is assumed that musicians must be able to hear differences in pitch, loudness, time, and timbre, which are the four fundamental media of all music. Rhythm and memory are less specific but very significant. Each measure indicates capacity for hearing with precision the characteristics of tone representing the elements." 2/

1/ Seashore, Carl E., Lewis, Don, Saetveit, Joseph G. - Op. cit. - Pages 1-2

2/ Ibid - Page 18

Another factor to be considered in choosing an instrument is reliability. There seems to be no over-all coefficient of reliability for the entire test, but in the process of standardization many coefficients of reliability have been determined on various grade levels for various sub-tests. These coefficients of reliability range from a low of .62 to a high of .89 .

The achievement test chosen for use in this study is the Fisher Measurements of Musical Appreciation. This is a new and as yet unpublished test, having been completed in 1949. It seems to be something new and entirely different in the testing of music appreciation. This test is not merely a paper and pencil test, but takes into consideration factors which are apparently those which add to appreciation of music. This test was standardized on approximately one thousand students ranging from the seventh grade through the college level. The reliability coefficient of this test was found to be .93 , and the validity coefficient .82 . These are unusually high coefficients, and for this reason, and the reasons previously cited, this test was chosen for use in this study.

CHAPTER III

ADMINISTRATION OF SEASHORE MEASURES OF MUSICAL TALENTS AND THE FISHER MEASUREMENTS OF MUSICAL APPRECIATION

Fisher Measurements of Musical Appreciation

Method of Administration: This test is divided into two distinct sections which are administered separately. The first four sub-tests are given entirely through the use of recordings, which include the directions to the student. All music used in these recordings is played by actual instruments. The students have an answer sheet on which they may indicate their answers by crossing out the letter which corresponds to the word or phrase of their choice. The fifth sub-test is entirely a paper and pencil test, and covers the full range of musical knowledge. This test is answered also by crossing out the letter which corresponds to the word or phrase of their choice.

Interpretation of Norms: There are three types of norms available for use with this test: percentile score norms, Z score norms, and T score norms. For purposes of this study, because they are considered to be best for secondary school usage, the percentile score norms were chosen. These percentile scores are assigned on the basis of the totals of the raw scores achieved in the entire test. A percentile score is "a percentage indicating the standing of an individual, having a given score in some homogeneous group, or the percentage of individuals having scores equal to or lower than a given score in some defined group". 1/

Seashore Measures of Musical Talents

Method of Administration: This test is administered entirely through the use of phonograph records. The music recorded on these records is not played by actual instruments, but is done electrically so as to achieve the highest possible degree of control. Directions for taking the test, however, must be given to the students by the person administering the test. The students have an answer sheet on which they may indicate their answers by the use of one letter, which is generally the first letter of the word which describes the answer. (Example: In the pitch test, the students write the letter H if the second tone is Higher, or the letter L if the second tone is Lower.)

This test is divided into two series, each of which measures the same talents. Series A is designed for use with unselected groups, as in the schoolroom, or in general group surveys. This series

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1/ Durost, Walter N. - The Measurement Notebook - 1949 - Page 108 furnishes a general dragnet for the discovery and rating of six different talents. The B Series is designed for testing of musical groups or individuals, as in the selection for musical organizations, admission to music schools, the assignment to musical instruments, or in the search for causes of failure in music. 1/ This latter series, although more diagnostic, is considered to be too difficult for general usage, and so for the purposes of this study, Series A was chosen.

Interpretation of Norms: The norms for this test are divided into three groups: one set each for grades five and six, seven and eight, and anything above that grade level. These norms are given in what is called "decile ranks". A decile is "the scores corresponding to percentile ranks of ten, twenty, thirty, forty, etc., to ninety inclusive". 2/ Rank 1 corresponds to the top ten percentile ranks; rank 2 to the second ten percentile ranks; and so on through rank 10. These decile ranks are assigned on the basis of the raw scores achieved in each sub-test, and there are complete sets of norms for each individual sub-test.

1/ Seashore, Carl E., Lewis, Don, Saetveit, Joseph G. - Op. cit. - Pages 4-5

2/ Durost, Walter N. - Op. cit. - Page 103

CHAPTER IV

METHODS OF PROCEDURE

Selection of Groups

One of the chief factors necessary for the success of this study was that of obtaining an adequate sampling. By sampling we mean, "the process of selecting a limited number of cases which will be representative of the large group from which they are chosen." 1/ It was decided for the purposes of this study that approximately four hundred students should be tested by both the Seashore Measures of Musical Talents and the Fisher Measurements of Musical Appreciation, in order to provide the data on which this study is based. This sampling was obtained in the towns of Needham, Massachusetts, Reading, Massachusetts, and West Hartford, Connecticut.

In Needham, Massachusetts, the following classes were tested:

Junior High School	Senior High School
1 eighth grade vocal music class	2 twelfth grade music appreciation classes
1 ninth grade girls' chorus	
1 junior band (members in grades 7, 8, 9)	

1/ Greene, Harry A., Jorgensen, Albert N., Gerberich, J. Raymond - Op. cit. - Page 649

In Reading, Massachusetts, the following classes were tested:

Junior High School	Senior High School
1 eighth grade general music class	1 girls' glee club (members in grades 10, 11, 12)
	1 music appreciation class (members in grades 10, 11, 12)

In West Hartford, Connecticut, the following classes were tested:

Junior High School	Adult Groups
6 seventh grade general music classes	1 adult education group (evening school)
2 eighth grade general music classes	

From this combination of seventeen classes, ranging in grade level from seventh through adult, a sampling of 453 cases was obtained.

It was impossible to obtain a sampling in a full range of intelligence scores, but from information provided by the teachers and supervisors of these classes, it was found that these classes supplied an average and adequate representation of secondary school students.

Administration of Tests

The Seashore Measures of Musical Talents were administered to the classes used for this study during the last week of November, 1949, and the first week of December, 1949. They were given in the regular classrooms, and during the regular sessions of the school day.

The Fisher Measurements of Musical Appreciation were administered to the same classes during the period between January 9, 1950, and March 27, 1950. This test, also, was given in the regular classrooms, and during the regular sessions of the school day.

To obtain the data required for the culmination of this study, it was decided originally to obtain a sampling of four hundred students. However, because the tests had to be administered in several sessions, and, taking into consideration the chance of pupil absence, and misinterpretation of directions so as to make their papers useless, it was decided to test approximately 450 students. This, however, was not a sufficient number, for the reasons cited above, and so this study is actually based on 341 students.

Method of Correlation

The Seashore Measures of Musical Talents are a combination of six sub-tests measuring various factors which are considered to be inherent qualities of native musical aptitude. Norms are given for each individual sub-test, but there are none available for the test as a whole. Although it is recognized that these factors are separate and distinct qualities, and although the scores obtained in these various factors give a picture or "profile" of these qualities, there are no norms available which give any indication of the over-all scope of musical aptitude as measured by this instrument. For the purposes of this study, and in order to determine the degree of correlation between musical aptitude and music appreciation, as measured by the Seashore Measures of Musical Talents, and the Fisher Measurements of Musical Appreciation, it was necessary to find some way of determining an approximate percentile score for the combination of the six sub-tests of the Seashore battery.

The norms which are given for the various sub-tests of the Seashore Measures of Musical Talents are given in what is called "decile ranks". As has previously been defined, a decile is "the scores corresponding to percentile ranks of ten, twenty, thirty, forty, etc., to ninety inclusive". 1/ To obtain an approximate

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1/ Durost, Walter N. - Op. cit. - Page 103

percentile score from the combination of these decile scores, the following procedure was used:

1. The decile scores of each sub-test were totaled.
2. This total was divided by six, the number of sub-tests involved.
3. The resulting quotient was multiplied by ten.
4. This product was subtracted from one hundred, which gave an approximate percentile score.

EXAMPLE: 1. Decile scores:

Pitch	-	7
Loudness	-	6
Rhythm	-	2
Time	-	4
Timbre	-	3
Tonal Memory	-	3
		25

2. 25 ÷ 6 = 4.16 = 4.2
3. 4.2 x 10 = 42
4. 100 minus 42 = 58 (percentile rank)

In the process of correlation, these percentile ranks were grouped into step-intervals large enough to absorb any differences in the over-all picture given by this process as opposed to the individual sub-test profile.

The Pearson Product-Moment Coefficient of Correlation indicated by r, is a single numerical index which expresses the extent to which the pairs of corresponding measures of two variables tend to deviate similarly from their respective arithmetic means. The values of r may vary all the way from $+1.0$, indicating perfect positive relationship, through all the possible decimals to 0 (zero), indicating no relationship whatever, to -1.0 , indicating a perfect negative relationship. 1/

The calculation of the Pearson Product-Moment Coefficient of Correlation involves the solution of the following formula:

$$r = \frac{\frac{\Sigma xy}{N} - c_x c_y}{\sigma_x \sigma_y},$$

in which r is the coefficient of correlation, N the number of cases, σ_x the standard deviation (in steps) of the distribution on the X-axis, σ_y the standard deviation (in steps) of the distribution on the Y-axis, c_x the correction on the X-axis, c_y the correction on the Y-axis, and Σxy the sum of the products of the deviations of each measure from the central tendency of the X- and the Y-axes. 2/

1/ Greene, Harry A., Jorgensen, Albert N., Gerberich, J. Raymond - Op. cit. - Page 555

2/ Ibid - Page 557

CHAPTER V

RESULTS OF CORRELATION

Analysis of Results

In order to critically comment on the data resulting from the testing of the 341 students used in this study, it will be necessary and advantageous to break down the results into small sections. For this purpose, tables showing the frequency and distribution of scores in each test, plus their corresponding medians, means, and standard deviations, have been constructed. Table I gives this information for the entire sampling. The following tables give the same information for each individual grade. A normal percentile chart based on the entire sampling is also shown in order to give a definite picture of these results.

TABLE I

FREQUENCY AND DISTRIBUTION OF PERCENTILE SCORES FOR ENTIRE SAMPLING

Score	Seashore f	Fisher f
96 - 100		4
91 - 95		9
86 - 90	1	16
81 - 85	5	16
76 - 80	11	14
71 - 75	12	19
66 - 70	16	19
61 - 65	31	28
56 - 60	34	12
51 - 55	41	19
46 - 50	33	12
41 - 45	38	29
36 - 40	23	23
31 - 35	25	30
26 - 30	20	29
21 - 25	20	14
16 - 20	11	11
11 - 15	12	13
6 - 10	3	11
1 - 5	5	13

N - 341

	Seashore	Fisher
Median	- 48.05	45.55
Mean	- 46.2	48.45
S. D.	- 17.2	25.0

The preceding table shows the frequency and distribution for the entire sampling. It is interesting to note that the mean of 46.2 for the Seashore test is 3.8 percentile points away from an expected mean of 50.0 . The mean of 48.5 for the Fisher test is only 1.55 away from the expected mean. These differences are very slight.

Thirteen students, or 4% of the group, attained higher scores in the achievement test than any attained in the aptitude test. The highest score on the Seashore is between 86 and 90. This score was attained by only one student. In the Fisher test, there is a full range of scores.

A study of the following normal percentile chart reveals the fact that the distribution of scores for the Seashore test, with the exception of the extreme upper and lower sections, closely approximates a normal curve. On this chart, a normal curve is represented by a straight line. The line which represents the curve for the Fisher test is much more skewed than that of the Seashore test. By skewed we mean "the tendency of a distribution to depart from symmetry or balance around the mean. Skewness may be positive or negative, the direction of the skewness being indicated from the direction in which the long tail of the curve points." 1/

1/ Durost, Walter N. - Op. cit. - Page 110

By Arthur S. Otis

School City

Variable I	S…
Variable II	

Variabl…

Score intervals	Freq-'ncies
96-100	
91-95	
86-90	1
81-85	5
76-80	11
71-75	12
66-70	16
61-65	31
56-60	34
51-55	41
46-50	33
41-45	38
36-40	23
31-35	25
26-30	20
21-25	20
16-20	11
11-15	12
6-10	3
1-5	5
Median	48.

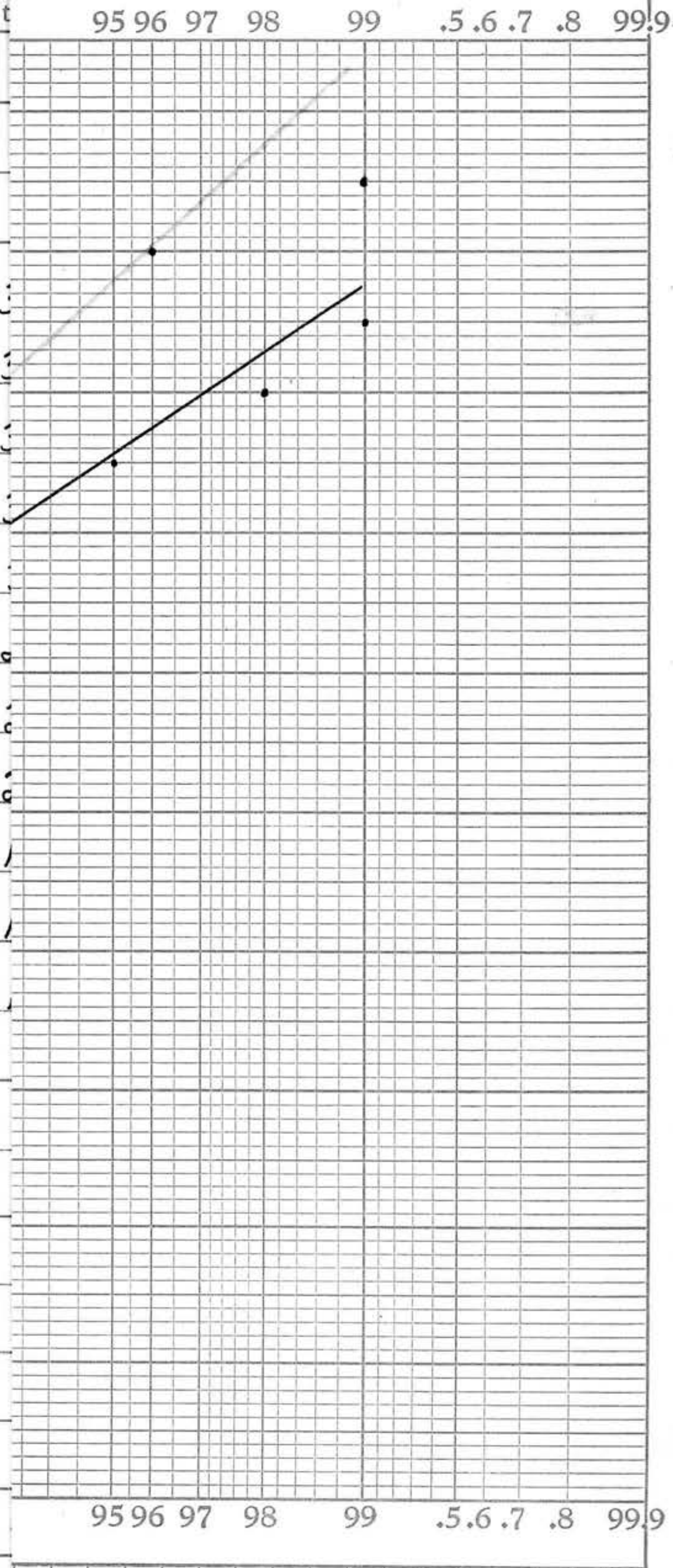

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TABLE II

FREQUENCY AND DISTRIBUTION OF PERCENTILE
SCORES FOR GRADE SEVEN

Score	Seashore f	Fisher f
96 - 100		1
91 - 95		
86 - 90		10
81 - 85	5	8
76 - 80	6	5
71 - 75	7	6
66 - 70	7	11
61 - 65	21	14
56 - 60	12	6
51 - 55	21	11
46 - 50	22	3
41 - 45	19	12
36 - 40	8	10
31 - 35	9	11
26 - 30	3	12
21 - 25	2	8
16 - 20	3	6
11 - 15	3	6
6 - 10	2	5
1 - 5		5

N - 150

	Seashore	Fisher
Median	- 51.95	46.0
Mean	- 51.45	47.95
S. D.	- 15.4	24.1

Grade seven represents the largest single group included in the over-all sampling. A study of Table II reveals that the mean of 51.45 for the Seashore test is 5.25 percentile points above that of the mean for the entire sampling. The mean of 47.95 for the Fisher test is .50 percentile points lower than that of the entire sampling.

The range of scores on the aptitude test is not nearly as great as the range for the achievement test. It should be noted that eleven students, or 7.3% of the group, attained higher scores in the Fisher test than any attained in the Seashore test. Five students, or 3.3% of the group, attained scores lower in the Fisher test than in the Seashore test.

TABLE III

FREQUENCY AND DISTRIBUTION OF PERCENTILE
SCORES FOR GRADE EIGHT

Score	Seashore f	Fisher f
96 - 100		2
91 - 95		2
86 - 90		2
81 - 85		1
76 - 80	3	1
71 - 75	3	2
66 - 70	2	5
61 - 65	1	5
56 - 60	9	1
51 - 55	4	1
46 - 50	3	1
41 - 45	8	5
36 - 40	3	2
31 - 35	2	2
26 - 30	1	4
21 - 25	3	3
16 - 20		1
11 - 15		
6 - 10		1
1 - 5		1

N - 42

	Seashore	Fisher
Median	- 52.65	56.0
Mean	- 50.55	53.5
S. D.	- 14.75	25.05

A study of Table III reveals that the mean for the Seashore test of 50.55 is 4.35 percentile points above that of the mean for the entire sampling. The mean of 53.5 for the Fisher test is 5.05 percentile points above that of the entire sampling.

The range of scores on the aptitude test is not nearly as great as the range for the achievement test. It should be noted that seven students, or 17% of the group, attained higher scores in the Fisher test than any attained in the Seashore test. Three students, or 7% of the group, attained scores lower in the Fisher test than any attained in the Seashore test.

TABLE IV

FREQUENCY AND DISTRIBUTION OF PERCENTILE SCORES FOR GRADE NINE

Score	Seashore f	Fisher f
96 - 100		
91 - 95		3
86 - 90		3
81 - 85		4
76 - 80	1	5
71 - 75	1	3
66 - 70	3	
61 - 65	5	2
56 - 60	5	1
51 - 55	8	4
46 - 50	3	4
41 - 45	6	5
36 - 40	5	6
31 - 35	2	8
26 - 30	8	4
21 - 25	3	1
16 - 20	3	1
11 - 15	4	
6 - 10		3
1 - 5	3	3

N - 60

	Seashore	Fisher
Median	- 42.65	45.0
Mean	- 40.85	44.6
S. D.	- 19.95	26.55

A study of Table IV reveals that the mean of 40.85 for the Seashore test is 5.35 percentile points lower than the mean for the entire sampling. The mean of 44.6 for the Fisher test is 3.85 percentile points lower than that of the entire sampling.

Again the range of scores on the aptitude test is not nearly as great as the range for the achievement test. Ten students, or 16.6% of the group, attained higher scores in the Fisher test than any attained in the Seashore test. Only two students, or 3.3% of the group, attained scores above the 70th percentile rank in the Seashore test.

TABLE V

FREQUENCY AND DISTRIBUTION OF PERCENTILE
SCORES FOR GRADE TEN

Score	Seashore f	Fisher f
86 - 90		1
81 - 85		
76 - 80		1
71 - 75		
66 - 70		
61 - 65	1	
56 - 60	2	1
51 - 55	1	1
46 - 50		
41 - 45	1	2
36 - 40	1	1
31 - 35		2
26 - 30	3	1
21 - 25	2	
16 - 20		
11 - 15	1	1
6 - 10		1

N - 12

	Seashore	Fisher
Median	- 31.0	41.0
Mean	- 38.0	43.0
S. D.	- 16.0	22.65

Table V reveals that the number of students in grade ten that were used in this study is only twelve. However, it is interesting to note that the mean of 38 for the Seashore test is 8.6 percentile points lower than for the whole group, and the mean of 43 for the Fisher test is 5.45 percentile points lower than for the entire sampling. These facts should not be given too much weight because of the very limited size of the group.

TABLE VI

FREQUENCY AND DISTRIBUTION OF PERCENTILE SCORES FOR GRADE ELEVEN

Score	Seashore f	Fisher f
81 - 85		1
76 - 80		
71 - 75	1	2
66 - 70	2	
61 - 65	2	1
56 - 60	1	
51 - 55	1	1
46 - 50	1	
41 - 45	2	2
36 - 40	1	
31 - 35	2	1
26 - 30		3
21 - 25	1	
16 - 20	2	1
11 - 15	1	3
6 - 10	1	1
1 - 5	1	3

N - 19

	Seashore	Fisher
Median	- 42.25	28.5
Mean	- 40.35	31.45
S. D.	- 21.55	25.3

A study of Table VI reveals that the number of students in grade eleven that were used for this study is only nineteen. Because of this, the findings concerning this group should not be given too much weight. It is interesting to note, however, that the mean of 40.35 for the Seashore test is 5.85 percentile points lower than that of the whole group, and the mean of 31.45 for the Fisher test is 17 percentile points lower than that of the entire sampling.

TABLE VII

FREQUENCY AND DISTRIBUTION OF PERCENTILE
SCORES FOR GRADE TWELVE

Score	Seashore f	Fisher f
96 - 100		1
91 - 95		4
86 - 90		
81 - 85		2
76 - 80	1	2
71 - 75		6
66 - 70	1	1
61 - 65	1	5
56 - 60	4	2
51 - 55	5	1
46 - 50	4	4
41 - 45	2	3
36 - 40	5	4
31 - 35	7	3
26 - 30	4	4
21 - 25	9	2
16 - 20	2	1
11 - 15	3	3
6 - 10		
1 - 5	1	1

N - 49

	Seashore	Fisher
Median	- 34.9	50.3
Mean	- 36.8	53.4
S. D.	- 15.3	24.55

A study of Table VII reveals that the mean of 36.8 for the Seashore test is 9.4 percentile points lower than that of the mean for the entire sampling. However, the mean of 53.4 for the Fisher test is 4.95 percentile points above that of the entire sampling.

The range of scores for the Seashore test is not nearly as great as the range for the Fisher test. It should be noted that only three students, or 6.1% of the group, attained scores on the aptitude test above the 60th percentile rank.

The range of scores for the achievement test is complete. It should be noted that seven students, or 14.6% of the group, attained higher scores in this test than any attained in the Seashore test.

TABLE VIII

FREQUENCY AND DISTRIBUTION OF PERCENTILE
SCORES FOR ADULT GROUP

Score	Seashore f	Fisher f
86 - 90	1	
81 - 85		
76 - 80		
71 - 75		
66 - 70	1	2
61 - 65		1
56 - 60	1	1
51 - 55	1	
46 - 50		
41 - 45		
36 - 40		
31 - 35	3	3
26 - 30	1	1
21 - 25		
16 - 20	1	1

N - 9

	Seashore	Fisher
Median	- 35.15	35.15
Mean	- 45.75	44.65
S. D.	- 21.3	18.25

A study of Table VIII reveals that the number of students in the adult group that were used for this study is only nine. Because of this, the findings concerning this group should not be given too much weight. It is interesting to note, however, that the mean of 45.75 for the Seashore test is .45 percentile points lower than that of the whole group, and the mean of 44.65 for the Fisher test is 3.8 percentile points lower than that of the entire sampling.

TABLE IX

BIVARIATE DISTRIBUTION OF SEASHORE MEASURES OF MUSICAL TALENTS AND

FISHER MEASUREMENTS OF MUSICAL APPRECIATION FOR ENTIRE SAMPLING

Fisher

Seashore	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	81-85	86-90	91-95	96-100	f
-100 96																					
-95 91																					
-90 86													1								1
-85 81					1					1			1			1		1			5
-80 76							1		3	1	1		1			1		1	1	1	11
-75 71						2		2	1	1		1	2			1	1	1			12
-70 66	1		1		1		1		1			1		2	1	1	3	2		1	16
-65 61	1				2	2	4	2	3	1	3	2	5	3	1		2	2	1		34
-60 56			1		1	2	1	3	2		2	2	1	4	4	2-	3	2	3		33
-55 51	1	1	1	1		3	7	4	4		6	1	3	3	3		1	1	1	1	42
-50 46	3	1	1	1		1	4	3	1	1	2	1	3	3	4	1	1	1	1	1	34
-45 41	1	3	2	4	3	3	2	1	4	1	2	1	3	2	1	1	1	2	1		38
-40 36						3	1	2	5	3		1	3	1	1	2	1				23
-35 31			3	2	3	3	2	1	1	1	3		1	2			1	1			24
-30 26			1		1	3	3	3			1	2	1		1	2		1			19
-25 21	1	2	1	2		4		1	2				2		3	1	1				20
-20 16		1	2		2	1	1	1	1							1					10
-15 11	3	1				1	3		1								1	1	1		12
-10 6		1		1																	2
- 5 1	2	1				1				1											5
f	13	11	13	11	14	29	30	23	29	11	20	12	27	20	19	14	16	16	9	4	341

Result of Correlation

The two sets of scores which appear in Table IX were correlated, and the Pearson Product-Moment "r" obtained. As has been previously described, the formula used for the computation of this correlation is as follows:

$$r = \frac{\frac{\sum xy}{N} - c_x c_y}{\sigma_x \sigma_y}$$

The result of this formula shows "r" to be .31 , **with a probable error of .03 .**

A further examination of Table IX reveals a very wide and unbalanced distribution. Many students achieved low scores on the aptitude test and comparatively high scores on the achievement test, which accounts for the low correlation. There are, however, comparatively few students who achieved high scores on the aptitude test and low scores on the achievement test.

Interpretation and Significance of Results

After computation of the data by the Pearson Product-Moment formula, a correlation coefficient of .31 was obtained. This is a very low correlation, and is considered to have only 5% of forecasting efficiency. 1/ As such, it would seem that the statistics indicate

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1/ Greene, Harry A., Jorgensen, Albert N., Gerberich, J. Raymond - Op. cit. - Page 563 that there is a negligible correlation between aptitude, as measured by the Seashore Measures of Musical Talents, and achievement in appreciation, as measured by the Fisher Measurements of Musical Appreciation.

This low coefficient of correlation would seem to strengthen the cause for music education in the public schools. It has been argued by various educators that music should not be given as much importance and time in the public schools as other "standard" subjects, because music requires a definite and specific aptitude. The data gathered for the purposes of this study seem to indicate that those with a high degree of aptitude generally attain a high degree of achievement. Also, many of those with a low degree of aptitude seem to attain a comparatively high degree of achievement. This would seem to indicate that music appreciation and other general music courses might be taught successfully to most interested students on the secondary level. These students, with or without a high degree of aptitude, may benefit greatly from these courses.

CHAPTER VI

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Summary

The purpose of this study was to determine the degree of correlation between musical aptitude and music appreciation as measured by the Seashore Measures of Musical Talents and the Fisher Measures of Musical Appreciation. The data used in this study was gathered from Reading, Massachusetts, Needham, Massachusetts, and West Hartford, Connecticut - and includes all grades on the secondary level (7 - 12), plus an adult education group. A total of fifteen classes was tested. The data obtained from this survey was analyzed statistically, and the following conclusions were reached:

1. The correlation between musical aptitude and music appreciation was shown to be negligible.

2. Those students attaining a high score in the aptitude test generally attained a comparatively high score in the achievement test.

3. Those students attaining a low score in the aptitude test generally attained a comparatively high score in the achievement test.

The results of this study seem to indicate that music appreciation and general music courses should no longer be restricted to a specific few who have a high degree of aptitude in music. An analysis of the data gathered in this study would seem to indicate that most students may benefit by a study of music on the secondary level.

Suggestions for Further Research

1. A correlation study between another reliable aptitude test and the Fisher Measurements of Musical Appreciation might be of interest.

2. A correlation study between the Fisher Measurements of Musical Appreciation and a standardized intelligence test would be valuable.

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ABSTRACT

Problem

To determine the degree of correlation between musical aptitude and music appreciation as measured by the Seashore Measures of Musical Talents and the Fisher Measurements of Musical Appreciation.

Scope and Limitations of the Study

The data used in this study has been gathered from three towns, and includes all grades on the secondary level (7 - 12), plus an adult education group. A total of fifteen classes, which included approximately 450 students, were tested.

Procedure

The above-named classes were tested with the Seashore Measures of Musical Talents in December, 1949. These same classes were later tested with the Fisher Measurements of Musical Appreciation. A Pearson Product-Moment coefficient of correlation was obtained from the results of the above tests.

Results and Conclusions

The Pearson Product-Moment "r" was found to be .31 . This indicates a negligible correlation. From this coefficient of correlation it was concluded that most students on the secondary level could benefit by a study of music appreciation or general music.