

AN INVESTIGATION OF THE INTERRELATION OF  
PERSONALITY TRAITS, MUSICAL APTITUDE  
AND MUSICAL ACHIEVEMENT

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Problem: The problem of this investigation was to determine the extent to which students' specific personality traits associate with musical achievement and musical aptitude. A subordinate problem was to investigate the relationship between students' personality traits and the incidence of their use of the Musical Aptitude Profile "in doubt" response.

Procedure: The sample population was comprised of two hundred sixty-nine seventh grade students. The subjects were administered three standardized tests as criteria measures--the Jr.-Sr. High School Personality Questionnaire, Form A (HSPQ); the Iowa Tests of Music Literacy, Level One (ITML); and the Musical Aptitude Profile (MAP).

After calculating zero-order intercorrelation matrices, the HSPQ, ITML, and MAP subtest scores were submitted to a principal components analysis and a varimax factor rotation (Analysis One). A principal components analysis and a varimax factor rotation were also performed on the HSPQ, ITML, and MAP "in doubt" response variables

(Analysis Two). For the purpose of corroborating the results of the principal components analyses, both sets of data were submitted to a maximum likelihood factor analysis and varimax factor rotation.

Results: The principal components Analysis One and varimax factor rotation of HSPQ, ITML, and MAP variables resulted in six factors which accounted for fifty-eight percent of the total variance. Factor One was the only factor to include a personality variable (Intelligence) with musical achievement and musical aptitude variables. Factors Two, Three, and Four included only personality scale loadings. Factors Five and Six included only loadings of MAP and ITML variables. The maximum likelihood analysis and varimax factor rotation confirmed the six principal components factors.

The principal components Analysis Two and varimax factor rotation of HSPQ, ITML, and MAP "in doubt" response variables resulted in five factors which accounted for fifty-six percent of the total variance. Factor One was comprised of the MAP "in doubt" response variables. Factors Two, Three, Four, and Five replicated factors found in the principal components Analysis One. The

maximum likelihood analysis and varimax factor rotation of the data confirmed the five factors of the principal components analysis.

Conclusions: On the basis of the data collected in this investigation, it may be concluded that specific personality dimensions of public school students are not systematically associated with objective measures of musical achievement or musical aptitude. Further, the data suggest that there is no association between students' personality characteristics and incidence of their optional use of the MAP "in doubt" response.

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## Chapter I

### PURPOSE OF THE STUDY

#### Introduction

The nature of the interrelation of musical aptitude, musical achievement, and personality traits has commanded slight attention in the literature dealing with the psychology of music. The results of the few extant studies suggest that, in general, musicians exhibit distinctive psychological traits.

Because of a dearth of researched information, many stereotyped notions about musicians and their personalities have developed and flourished over the years. Frequently, references made to the personalities of musicians are generalizations without basis in fact. Carl Seashore, writing of musical temperament stated, "[it] is characterized by the fact that it represents a life of impulse and feeling, extreme sensitivity and capacity for a high degree of specialization. The musician is often found to be

impractical. . . ." <sup>1</sup> Music education texts typically include such undocumented statements as, "The very musical child inherits a general high grade personality." <sup>2</sup>

Recent developments have made it possible to study better the interaction of personality dimensions, musical potential, and musical achievement. For example, musical achievement was formerly considered to be the same as musical aptitude, and the two terms were often used interchangeably. Gordon has demonstrated that it is now possible to clarify musical aptitude as emphasizing musical potential and to specifically identify musical achievement as acquired musical skill or knowledge. <sup>3</sup> This resulted from the development of a dependable standardized musical aptitude test. The Musical Aptitude Profile <sup>4</sup> has been

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<sup>1</sup>Carl E. Seashore, Psychology of Music (New York: McGraw-Hill Book Co., 1938), 174-175.

<sup>2</sup>James L. Mursell and Mabelle Glenn, Psychology of School Music Teaching (New York: Silver Burdett Co., 1938), 38.

<sup>3</sup>Edwin Gordon, A Three-Year Longitudinal Predictive Validity Study of the Musical Aptitude Profile, Vol. 5: Studies in the Psychology of Music (Iowa City: University of Iowa Press, 1967).

<sup>4</sup>Edwin Gordon, Musical Aptitude Profile (Boston: Houghton Mifflin Co., 1965).



shown in studies by Brown,<sup>5</sup> Fosha,<sup>6</sup> Gordon,<sup>7</sup> Hatfield,<sup>8</sup> Tarrell,<sup>9</sup> to be a highly valid predictive measure of musical success and a useful diagnostic instrument. Likewise, group personality tests and musical achievement tests which function with very acceptable validity for use in experimental research are also presently available.

#### Purpose of the Study

An important objective of most sciences is to describe a variety of data and observations by placing them within a few basic categories. After the development of these basic categories, further research may be facilitated.

Factor analysis is an analytical technique for

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<sup>5</sup>Merrill Brown, "An Investigation of the Optimum Length of Musical Aptitude Profile Subtests" (Unpublished Ph.D. dissertation, University of Iowa, 1967).

<sup>6</sup>R. Leon Fosha, "A Study of the Concurrent Validity of the Musical Aptitude Profile" (Unpublished Ph.D. dissertation, University of Iowa, 1964).

<sup>7</sup>Gordon, Three-Year Longitudinal Study, op. cit.

<sup>8</sup>Warren G. Hatfield, "An Investigation of the Diagnostic Validity of the Musical Aptitude Profile with Respect to Instrumental Music Performance" (Unpublished Ph.D. dissertation, University of Iowa, 1967).

<sup>9</sup>Vernon V. Tarrell, "An Investigation of the Validity of the Gordon Musical Aptitude Profile" (Unpublished Ph.D. dissertation, University of Iowa, 1964).

identifying variables in a given domain which tend to cluster together. It is particularly useful for describing existing relationships and/or lack of such relationships when a large number of variables comprise a psychological construct.

The purpose of this study was to investigate the nature of the relationship of personality to overall musicality. Factor analysis techniques were utilized. The investigation was primarily of theoretical interest.

#### Problem of the Study

The specific problem of this study was to ascertain the extent to which specific personality traits are associated with musical aptitude and musical achievement. A subordinate problem was to investigate whether or not the incidence of use of the "in doubt" response on the Musical Aptitude Profile is associated with certain personality traits.<sup>10</sup> It is possible that students, because of their particular personality characteristics, might tend to excessively use the "in doubt" response and thus facilitate an invalid estimate of their musical aptitude.

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<sup>10</sup>The "in doubt" response is explained in the following description of the Musical Aptitude Profile.

### Description of Criteria

#### The Musical Aptitude Test

The Musical Aptitude Profile is a standardized tape recorded battery of seven subtests.<sup>11</sup> The three main divisions and corresponding subtests are 1) Tonal Imagery: Melody (T<sub>1</sub>), Harmony (T<sub>2</sub>); 2) Rhythm Imagery: Tempo (R<sub>1</sub>), Meter (R<sub>2</sub>); and 3) Musical Sensitivity: Phrasing (S<sub>1</sub>), Balance (S<sub>2</sub>), Style (S<sub>3</sub>). Test directions and practice items are included on the tape recording. Separate percentile norms for grades four through twelve are provided for each of the seven subtests, the three main division totals, and the composite score.

All test items are short musical passages composed by the author and performed by professional string musicians. A student's knowledge of historical facts or theoretical terminology is not measured so as to further emphasize aptitude rather than achievement testing.

Students are given the choice of marking one of two answers or an "in doubt" (?) response for each of the MAP items. The "in doubt" response is suggested for use

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<sup>11</sup>Gordon, Musical Aptitude Profile, op. cit.

when the student feels he does not know the answer to an item. Its use, therefore, discourages guessing and increases the validity of the test.<sup>12</sup>

The split-halves reliability coefficient reported in the test manual for the MAP composite score is .93 for seventh grade students.<sup>13</sup> The reliabilities of the three main divisions range from .86 to .87, and the separate subtest reliabilities range from .73 to .81. MAP is unique among musical aptitude tests because it has been validated with a three-year longitudinal study in which a predictive validity coefficient of .75 for success in public school music was reported.<sup>14</sup>

#### The Musical Achievement Test

The Iowa Tests of Music Literacy is a tape recorded objective musical achievement test which requires approximately one hour to administer.<sup>15</sup> Six levels of the test

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<sup>12</sup>Edwin Gordon, Manual, Musical Aptitude Profile (Boston: Houghton Mifflin Co., 1965), 50.

<sup>13</sup>Ibid., 63.

<sup>14</sup>Gordon, Three-Year Longitudinal Study, op. cit., 35.

<sup>15</sup>Edwin Gordon, Iowa Tests of Music Literacy, Level One (To be published by the University of Iowa, 1970).

have been developed with each level increasing in content difficulty. Level One, because it seemed most appropriate, was chosen for use in this investigation.

The format of Level One is the same as for all levels. The two main sections, Tonal Concepts and Rhythmic Concepts, are each subdivided into three subtests: Aural Perception, Reading Recognition, and Notational Understanding. The Aural Perception subtest of the Tonal Concepts requires students to designate whether or not an item is in the major or minor mode. The second tonal subtest, Reading Recognition, asks the students to designate whether or not the musical notation on the answer sheet is what he hears performed on the recording. The last tonal subtest, Notational Understanding, requires the student to notate what he hears performed on the tape recording. The given notation of the items on the answer sheet includes some blank choices to be filled in by the students. The rhythmic subtest, Aural Perception, requires the students to determine whether or not an item is in duple or triple meter. The second and third rhythmic subtests correspond in structure to the second and third tonal subtests but are concerned, of course, with rhythmic pattern notation.

Scores are provided for the total test, the two main sections, and the six subtests. Each of the 210 musical items is a brief tonal or rhythmic pattern composed by the test author. Directions and practice exercises are provided on the recording.

Preliminary research on the battery has indicated that the reliability coefficients for the subtests range from .60 to .70 and from .80 to .90 for the composite score for public school students.<sup>16</sup> The experimental validity of the test battery is still in the developmental stage.<sup>17</sup> The test content is based on the psychology of current conceptual learning pertaining to how children learn music. Emphasis is on sequential development of aural and literacy skills.

### The Personality Inventory

#### The Jr.-Sr. High School Personality Questionnaire

is a standardized instrument which measures a set of

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<sup>16</sup>Warren C. Swindell, "An Investigation of the Adequacy of Content and Difficulty Levels of the Iowa Tests of Music Literacy" Unpublished Ph.D. dissertation, University of Iowa, 1970.

<sup>17</sup>James Mohatt, "A Study of the Validity of the Iowa Tests of Music Literacy" Unpublished Ph.D. dissertation in progress, University of Iowa.

fourteen factorially pure independent dimensions of personality.<sup>18</sup> Form A of the four available equivalent A, B, C, and D forms was employed in this study. It may be administered to a group or to an individual. The HSPQ is comprehensive. Cattell states, "It includes all of the more adequately research-demonstrated dimensions of personality from the general personality sphere."<sup>19</sup>

Ten items are included for each of the fourteen scorable traits. Students are given three response choices for each of the 142 items. (The total number of items includes a non-scored "buffer" item as the first and last question asked.) The traits are referred to by common and technical names plus an alphabetical symbol. The dimensions may be briefly described as follows:

- A. Reserved to Outgoing
- B. Less intelligent to More intelligent
- C. Affected by feelings to Emotionally stable

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<sup>18</sup>Raymond B. Cattell, Jr.-Sr. High School Personality Questionnaire, Form A (Champaign, Illinois: Institute for Personality and Ability Testing, 1963).

<sup>19</sup>Raymond B. Cattell and Mary D. L. Cattell, Handbook for the Jr.-Sr. High School Personality Questionnaire (Champaign, Illinois: Institute for Personality and Ability Testing, 1969), 5.

- D. Phlegmatic to Excitable
- E. Obedient to Assertive
- F. Sober to Happy-go-lucky
- G. Expedient to Conscientious
- H. Shy to Venturesome
- I. Tough-minded to Tender-minded
- J. Vigorous to Doubting
- O. Placid to Apprehensive
- Q<sub>2</sub>. Group-dependent to Self-sufficient
- Q<sub>3</sub>. Undisciplined self-conflict to Controlled
- Q<sub>4</sub>. Relaxed to Tense

Each trait is defined by its extremes. For example, a student who received a low score on dimension A would be described as "Reserved" or if a high score was received he would be described as "Outgoing". Neither a high or low score is necessarily "good" or "bad". Scores in the middle range are considered to be average.

The author discusses reliability as a type of test consistency.

The reliability form of consistency is the degree of agreement of a test with itself between two administrations. In what we should specifically call the dependability coefficient ( $r_d$ ), it is re-administered after so brief a time interval that the trait itself is assumed not to have changed (by maturation, learning, or fluctuation).<sup>20</sup>

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<sup>20</sup>Ibid., 9.