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

PH.D. THESIS

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The interrelation of musical aptitude, musical achievement, and personality traits, long the subject of conversation and subjective speculation, has received comparatively little attention by researchers. In only one study, that of Schleuter ("An Investigation of the Interrelation of Personality Traits, Musical Aptitude and Musical Achievement," Ph.D. thesis, University of Iowa, 1971), has the investigator employed (1) objective measures of musical talent, (2) a heterogeneous population, and (3) statistical techniques of factor analysis.

The purpose of this study, which was primarily of theoretical interest, was to investigate, more broadly than in the Schleuter study, the interrelations between objectively measured personality traits, musical achievement, and different measures of musical aptitude. The first problem was to determine if specific personality traits are related to musical aptitude and achievement. The second problem was to determine if possible relationships between musical aptitude and personality traits differ when instruments evolving from two psychological constructs, the Gestalt and the "atomistic," are employed to measure musical aptitude. Finally, the third problem was to determine if the tendency to employ the question mark ("in doubt") response on the Musical Aptitude Profile and the Iowa Tests of Music Literacy is associated with personality dimensions.

Four standardized tests, the Musical Aptitude Profile (MAP), the Seashore Measures of Musical Talents (SMMT), the Iowa Tests of Music Literacy - Level One (ITML), and the Jr.-Sr. High School Personality Questionnaire (HSPQ), were administered to all seventh and ninth grade

students in an Iowa community. Complete sets of seventy-eight and sixty usable scores were obtained for the seventh grade and ninth grade students, respectively.

Two separate analyses were undertaken. In Analysis One, thirty-three subtests scores (seven MAP, six SMST, six ITML, and fourteen HSPQ) were employed. Means, standard deviations, and zero-order intercorrelation coefficients were calculated for all the variables. The intercorrelation coefficients of the thirty-three variables for students at each of the two grade levels were then submitted to a principal components factor analysis. A maximum likelihood factor analysis was performed on the same variables for the purpose of corroborating the principal components analysis. The factors resulting from both factor analysis procedures were submitted to orthogonal varimax rotation.

Twenty-five variables were utilized in Analysis Two--the eleven question mark subtest scores (seven MAP and four ITML), and the fourteen HSPQ dimensions employed in Analysis One. Factors were identified by procedures identical to those of Analysis One.

A total of eleven factors were identified in Analysis One. Four were interpreted as music factors, four as personality factors, and three as specific factors. That is, in no factors were personality traits clustered with musical aptitude and achievement. The maximum likelihood analysis served to confirm six of the factors identified by the principal components analysis.

In Analysis Two, five of the factors were identified as personality factors, and three of these had counterparts in Analysis One. The remaining six factors of Analysis Two were interpreted as question

mark response factors. As in Analysis One, the maximum likelihood procedure confirmed results of the principal components procedure for the first six factors of Analysis Two.

On the basis of the results of this investigation, it can be concluded that among seventh and ninth grade students, there is no systematic relationship between objectively measured personality traits and scores on either musical aptitude or musical achievement tests. Moreover, the lack of relationship between personality dimensions and musical aptitude appears to be unaffected by whether aptitude is measured by an instrument evolving from Gestalt or "atomistic" psychological constructs. The results of this study further corroborate those of the Schleuter study in that no systematic association of personality traits with propensity to employ the optional question mark response on the Musical Aptitude Profile and the Iowa Tests of Music Literacy was evidenced.

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CHAPTER I

PURPOSE OF THE STUDY

Introduction

The interrelation of musical aptitude, musical achievement, and personality traits, long the subject of conversation and subjective speculation, has received comparatively little attention by researchers. The results of most of the relevant studies which are reported in the literature are inconclusive, and frequently the procedures and criteria which have been employed are not consistent with current techniques of experimental research design.

Early attempts at a systematic study of psychological traits of musicians were based largely upon biographies and observations. Stumpf in 1898 reported, in a study of a musical prodigy, that the subject was "temperamental and restless."¹ Writing shortly after the turn of the century Feis provided more detail: in his analysis of biographical data, he found musical persons to have excessive physical activity and emotionality; and to be above average in intellectual versatility, literary and artistic interest, imagination (even to an almost pathological degree), extroversion, and leadership qualities. He noted that musical individuals tend to be good speakers, to have strong vital needs, to be physically healthy;

¹C. Stumpf, "Akustische Versuche mit Pepito Areola," Zeitschrift für Angewandte Psychologie (1898), 17.

and to enjoy eating, sexual activity and social intercourse with the opposite sex. Feis believed that more musical persons were below average in industry, punctuality, and "scientific" bent, and that they displayed a certain lack of mental balance; he also noted a liability of neurasthenia and hysteria among the musical people.²

In some studies psychoanalysis has been employed in an attempt to explain traits of musicians. In 1915 Hirschmann published a psychoanalytic study of Schubert's personality.³ Other similarly oriented analyses have followed, some in recent years. From these studies, musical genius has frequently been linked with abnormal personality traits. Kretschmer, ignoring contrary evidence, connected such genius to insanity.⁴ Diserens and Fine, basing their claim on historical observation, connected music and melancholy.⁵ In 1936 Miles and Wolf, in contrast, refused to subscribe to an assumption that high ability and achievement are associated with deviant personality. In recounting early life histories of fifty great geniuses,

²Oswald Feis, Studien über die Genealogie und Psychologie der Musiker (Wiesbaden: J. F. Bergman, 1910).

³E. Hirschmann, "Franz Schubert's Schmerz und Liebe," Internationale Zeitschrift für Psychoanalyse III (1915), 287.

⁴E. Kretschmer, The Psychology of Men of Genius (New York: Harcourt, Brace, 1931).

⁵Charles Diserens and Harry Fine, A Psychology of Music (Cincinnati, Ohio: By the Authors for the College of Music, 1939), 187-188.

they disclosed no unusual early indications of mental or emotional abnormality in their subjects.⁶ Even in the second half of the twentieth century researchers have continued to analyze personality by means of correspondence and other biographical sources. Rosenwald, employing such means in a study of the personalities of composers, described the "creative fever" as sickness; he elaborated: "Every deeply felt art is a kind of illness, is an exceptional state of the soul, is an over-excitement of the fibres. . . ."⁷

Only in a relatively small number of studies have standardized measuring instruments been utilized to compare musical aptitude and/or achievement with personality traits. In a study of school children in grades six through twelve, Wenaas found no significant correlation between musical ability scores and personality factors.⁸ Cooley reported that a difference may exist between the personality profile of the college music student and that of the randomly selected college student, but he discovered no correlation between personality characteristics and musicality nor between personality characteristics and ratings of functional musical abilities (sight-reading and performing). In the population he studied, there was no evidence that

⁶C. C. Miles and L. S. Wolfe, "Childhood Physical and Mental Health Records of Historical Geniuses," Psychological Monographs XLVII (1936), 390-400.

⁷Hans Rosenwald, "Prolegomena to a History of Musical Creativity," Music Therapy 1951, ed. E. G. Gilliland (Waukegan, Illinois: North Shore Printers, 1952), 161.

⁸Sigurd B. Wenaas, "A Study of the Relationship between Musical Ability and Various Intelligence, Scholastic and Personality Factors" (M. S. thesis, University of Idaho, 1940).

musicians were introverted, emotional, or temperamental. Cooley, however, reported ambiguous findings and questioned the validity of the instrument which he chose to assess musical talent.⁹ Kaplan used a test of musical performance and an instrument which evaluates personality by means of an interest scale yielding, among other results, six personality profiles.¹⁰ An investigation by French in 1962 was designed to compare results on a projective test of personality with those on two distinctly different types of musical capacity instruments: an omnibus test and one purporting to measure elemental perception. People scoring high on the music tests were found to project more affect responses than those who scored low.¹¹ Manifest anxiety was found by Rankin to be positively related to scores on certain measures of loudness, time, and timbre.¹²

Schleuter, in an attempt to discover possible interrelations between dimensions of personality, musical aptitude, and musical achievement, administered three objective tests to a group of seventh

⁹John C. Cooley, "A Study of the Relation between Certain Mental and Personality Traits and Ratings of Musical Abilities," Journal of Research in Music Education IX/2 (Fall, 1961), 108-117.

¹⁰Lionel Kaplan, "The Relationship between Certain Personality Characteristics and Achievement in Instrumental Music" (Ph.D. dissertation, New York University, 1961).

¹¹Elizabeth French, A Study of the Relationships of Scores Obtained on the Gaston Test of Musicality and the Seashore Measures of Musical Talent to Responses to Four Thematic Apperception Test Pictures (Educational Research Study, University of Tennessee, 1962).

¹²R. J. Rankin, "Auditory Discrimination and Anxiety," Psychological Reports XI (1962), 391-394.

grade students.¹³ The students, who were enrolled in general music classes, were assumed to represent a random sample of a population heterogeneous with respect to academic achievement as well as musical aptitude and achievement. No systematic relationships were discovered between personality traits and musical achievement or musical aptitude.

Several possible explanations for the ambiguity and inconclusiveness of data bearing on the problem of musicality and personality can be offered. Biographical accounts in which the tools of historical narrative, introspection, and retrospection are employed necessarily result in subjective conclusions, regardless of whether the purported goal is analysis of musical ability or personality. A number of studies, particularly the early ones, dealt with homogeneous populations; others were concerned with "abnormal" personality only, and the nature of the deviations from the norm were frequently poorly defined. Basic to an understanding of possible relationships between musicality and personality traits are adequate and objective definitions, valid criterion measures, and good experimental design.

Purpose of the Study

In this study, which is a modification of the Schleuter investigation,¹⁴ the same measuring instruments and statistical tools

¹³Stanley L. Schleuter, "An Investigation of the Interrelation of Personality Traits, Musical Aptitude and Musical Achievement" (Ph.D. dissertation, University of Iowa, 1971).

¹⁴Ibid.

were employed. However, for comparative purposes, subjects for the present study were selected from both the ninth grade and the seventh grade. Also, musical aptitude was assessed by two instruments; this was to permit an objective comparison of results obtained with measures evolving from contrasting definitions of musical aptitude.¹⁵ The purpose of this study, which was primarily of theoretical interest, was to investigate, more broadly than in the Schleuter study, the interrelations between objectively measured personality traits, musical achievement, and different measures of musical aptitude.

Problems of the Study

The first specific problem of the study was to determine if there are particular personality traits which are related to musical aptitude and achievement.¹⁶

The second problem was to determine if such possible relationships remain relatively constant when musical aptitude tests arising from two opposing psychological constructs, the "atomistic" and the "Gestalt," are considered.¹⁷

¹⁵The two basic types of musical aptitude tests are described in footnote 17 below.

¹⁶Aptitude and achievement, whatever the field of human endeavor, are not always easy to distinguish. An instrument designed to measure the former will also, to some extent, measure some of the latter. Similarly, because capacity will influence performance, an achievement test cannot be completely divorced from one assessing aptitude. Distinctions between aptitude and achievement can, therefore, be only relative.

¹⁷According to those who subscribe to the "atomistic" philosophical position, musical aptitude is defined as the sum of several discrete capacities; a measure of the degree of aptitude

Finally, the third problem of the study was to determine whether or not there is a systematic association of personality dimensions with the incidence of use of the question mark ("in doubt") response which is utilized in the Musical Aptitude Profile and the Iowa Tests of Music Literacy, two of the criterion tests employed in this study.¹⁸

Description of Criteria

Musical Aptitude Profile

The Musical Aptitude Profile¹⁹ has three principal sections, with each of these further divided into subtests as follows:

- I. Tonal Imagery
 - Melody
 - Harmony
- II. Rhythm Imagery
 - Tempo
 - Meter
- III. Musical Sensitivity
 - Phrasing
 - Balance
 - Style

can be obtained by testing a subject's response to isolated sounds. Gestalt psychologists hold that musical aptitude consists of inter-related capacities which can best be measured when the sound environment is structured so as to approximate a typical "musical" situation. "Atomistic" musical aptitude tests feature items in which tonal and rhythmic factors are isolated from each other; these instruments yield only subtest scores. In contrast, a test based upon Gestalt psychological principles yields total scores, where rhythmic and tonal elements are combined, as well as subtest scores.

¹⁸Explanation of the question mark response is included in the description of the Musical Aptitude Profile in the following section.

¹⁹Edwin Gordon, Musical Aptitude Profile (Boston: Houghton Mifflin Company, 1965).

MAP* is recorded on magnetic tape and requires just less than two hours to administer. Subjects are expected to listen to short, original musical selections as performed on string instruments and to compare them with musical answers. The first two sections, Tonal Imagery and Rhythm Imagery, are non-preference tests; the subject is to indicate, in the former section, whether the selection and answer are alike or different, and, in the latter, whether they are exactly the same or different. Musical Sensitivity is a preference test, and the decision must be made as to which of the two successive performances is more musical. In all cases there is also a third possible response to each item, an "in doubt" response which is to be used when the subject feels he does not know an answer; this response is designed to maintain the interest level of the subject, to discourage guessing and therefore increase the validity of the battery.

In addition to a composite score for the complete MAP battery, there are scores for each of the seven subtests and total scores for each of the three main divisions. Reliability coefficients as reported in the test manual are .93 and .95, respectively, for the composite score for seventh and ninth grade students. With those same students, reliabilities of the three main divisions range from .86 to .90, and from .73 to .83 for the subtests.²⁰ Extensive research, including a unique three-year longitudinal study, has been

*Musical Aptitude Profile

²⁰Edwin Gordon, Manual, Musical Aptitude Profile (Boston: Houghton Mifflin Company, 1965), 50.

conducted to determine the predictive validity of the test battery.²¹ Coefficients of predictive validity which have been established for MAP compare favorably with those reported for tests used for prediction of general academic or vocational success.²²

Seashore Measures of Musical Talents

The 1939 Revision of the Seashore Measures of Musical Talents²³ is divided into six sections: pitch, loudness, rhythm, time, timbre, and tonal memory. The ability to discriminate physical attributes of the sound wave was considered by Seashore and his associates to be basic to musical aptitude. Acuity of frequency discrimination is measured in the Pitch test, in which the subject is asked to listen to a phonograph record and indicate whether the second sound in each of fifty pairs of pure, overtone-free sounds is "higher" or "lower" in pitch than the first. Intensity discrimination is measured in the Loudness test by fifty similarly-arranged items; the response, describing the second sound of each pair, is to be either "stronger" or "weaker." In like manner, duration discrimination is measured by the Time test with answers to be "longer" or "shorter," and tone quality discrimination by the Timbre test, in which the second sound is either the "same" as or "different" from the first. The rhythm

²¹Edwin Gordon, A Three-Year Longitudinal Predictive Validity Study of the Musical Aptitude Profile; Studies in the Psychology of Music, Vol. V (Iowa City, Iowa: The University of Iowa Press, 1967).

²²Ibid., 89.

²³C. Seashore, D. Lewis and J. Sæetveit, Seashore Measures of Musical Talents, 1939 Revision (New York: Psychological Corporation, 1956).

and tonal memory portions of the test assess slightly more complex perceptual abilities. In the Rhythm test, the subject is to determine if the second rhythmic pattern of a pair is the "same" as or "different" from the first. The Tonal Memory test has pairs of tonal sequences consisting of either three, four, or five tones. Upon hearing the second sequence of each pair the subject is to indicate, by number, which tone in the sequence has been changed in pitch.

Reliability coefficients reported in the test manual for the six subtests range from .63 to .84 for students in grades six through sixteen.²⁴ Internal validity has been reported for the test by its senior author who has stated that when pitch discrimination, for example, has been isolated and measured with high reliability in the laboratory there is no question but that ability to discriminate pitch has been measured.²⁵ Concurrent validity, using teachers' grades as criteria, has been studied by independent researchers; correlation coefficients ranging from -.14 to .80 have been found between teachers' grades and individual subtests of the Seashore battery.²⁶

²⁴C. Seashore, D. Lewis and J. Sæstveit, Manual, 1960 Revision, Seashore Measures of Musical Talents (New York: Psychological Corporation, 1960), 7.

²⁵C. E. Seashore, "The Psychology of Music: XI," Music Educators Journal XXIV/3 (1937), 25-26.

²⁶Robert W. Lundin, An Objective Psychology of Music (New York: Ronald Press, 1953), 208.