1965

Response to Music and Its Relation to Personal and Social Adjustment

Mary Frederick Arnold
Loyola University Chicago

RESPONSE TO MUSIC AND ITS RELATION TO PERSONAL AND SOCIAL ADJUSTMENT

by

Sister Mary Frederick Arnold, C.S.J.

A Thesis Submitted to the Faculty of the Graduate School of Loyola University in Partial Fulfillment of the Requirements for the Degree of Master of Arts

February

1965

Life

Sister Mary Frederick Arnold, C.S.J. was born in San Diego, California in 1930. After graduating from Our Lady of Peace Academy in San Diego, she entered the Novitiate of the Sisters of Saint Joseph of Carondelet in Los Angeles, California. She obtained her Bachelor of Arts Degree from Mount Saint Mary's College, Los Angeles, in 1956, and until 1961, taught in the Los Angeles Archdiocese. Since 1961, sister has been pursuing graduate work at Loyola University, Chicago.

Acknowledgements

The writer wishes to express her gratitude to Dr. Frank Kobler of the Psychology Department at Loyola for his encouragement and helpful suggestions in carrying out this project.

Thanks are also extended to the students who participated in the research for so generously giving of their time.

Finally, sister is deeply indebted to the sisters of her community, without whose help and sacrifices this work would not have been possible.

TABLE OF CONTENTS

LIST OF TABLES

Chapter I

Statement of the Problem

It is the opinion of many psychologists today that the study of perceptual activity provides a basic approach to the understanding of personality and interpersonal relations. The way one perceives reality depends not only on the nature of that reality, but on the unique interpretation given to it by the individual. Each person structures his environment and incorporates it into his personality according to the meaning it has for him, and this structuring depends to a great extent on the individual's attitudes and habit systems.

A great number of studies have attempted to investigate various perceptual approaches to the study of personality, and all have seemed to come to the same general conclusion that the individual perceives in the world about him what he wants to see or is able to see and that he responds in terms of his own motives, feelings, and convictions in so far as they are affected by the stimulus material. He does not react to a stimulus per se, but to his experience of it.

Now one means of studying perceptual activity is through an individual's aesthetic sensitivity. While pictures and inkblots have been employed for some years as projective devices reflecting

an individual's perception, it is only recently that aesthetics has come to play a more prominent role. Investigators are finding that people's preferences and interpretations in both music and art can be fruitful indications of personality differences. It might be, too, that these areas will bring to light broader differences among individuals, for being means of communication, they offer a situation close to the interpersonal one. It was in the area of interpersonal relations and perception of the social environment that Brunner (1) found the most striking variances among people.

There are different ideas, however, as to how the problem of aesthetic sensitivity might be approached in music. Some feel as does Lifton (21) that an aesthetic response reflects the properties of the stimulus as it causes "feelings, ideas, desires, etc. to be experienced by the perceiver." Others, however, maintain that music does not arouse the emotion, but rather, the individual perceives what the composer is trying to convey. Pratt (25) implies that what the "lover of art discovers in his objects of admiration are qualities which . . . are projections of his own inner self." He reflects that what transpires is not the same as the "idea" of an emotion, and that the music does not necessarily "arouse" the emotion, but rather, it stimulates the listener to "understand" the message or emotion "conveyed" by the music.

The present study aimed to investigate a perceptual approach to personality through the medium of affective responses to music. It set out to determine first of all whether interpretation of music depends, as some claim, on the stimulus material. It attempted to answer such questions as whether musical interpretation is conditioned by culture or whether it is, rather, projected by the individual listener, whether the way one responds to music reflects his attitudes toward himself and toward his environment, whether well-adjusted children interpret music in the same way as those poorly adjusted to their surroundings, whether there are sex differences in interpreting music, and whether intelligence or training influences musical interpretation. The answers to such questions should give us a clearer insight into the function of perception in personality development and perhaps provide us with an instrument for the assessment of personality. Music is one aspect of communication, and an understanding of its interpretation by different individuals may give a valuable lead to "meaning" in other areas of experience.

In the light of previous observation, it seems that personal and social adjustment are largely determined by the way an individual interprets his environment. This, in turn, is dependent on the person's attitudes and feelings. To test this notion, the following research hypothesis was established: The manner in which an individual interprets music is a reflection of his personal and social adjustment. More specifically, it would be

expected that individuals scoring high in personal and social adjustment would interpret their environment favorably and would be more inclined to hear expressions of love, hope, joy, and courage in the music than those who are less well-adjusted. Those, on the other hand, who are poorly adjusted would be expected to interpret their environment unfavorably and to hear more expressions of hate, despair, sorrow, and fear than well-adjusted S's. It was also hypothesized that well adjusted S's tend to interpret their environment more objectively than do poorly adjusted S's, hence their responses are expected to be more "usual."

Previous studies seemed to point to the fact that the more determinate the structure, the more important it was in detecting how the music was perceived. Since personality factors are more prominent in ambiguous and unfamiliar perceptual encounters, an attempt was made in this study to use music stimuli that were relatively unfamiliar to the subjects. We thus hoped to eliminate some of the effects of "cultural conditioning." To avoid the effect of the inconsistencies within clusters of adjectives found in previous investigations, this study only required subjects to identify broad emotional categories expressed by the music.

Chapter II

Review of the Related Literature

A number of studies have attempted to investigate musical interpretation. Some have placed more emphasis on the structure of the music itself, while other more recent studies have been inclined to view individual differences in perception.

Hevner (18) made one of the first systematic attempts to discover the relation between musical structure and emotions. She prepared a group of eight clusters of adjectives which she arranged on a mood circle. The mood quality within any one cluster was assumed to be identical, and the similarity of mood steadily decreased around the circle to the opposite cluster. Subjects were asked to check as many of these adjectives as could be applied to the musical selection played, and an analysis of responses showed that the musical structure (ie. mode, rhythm, harmony, melody) significantly affected perception. Subjects tended to respond similarly to the various selections. The major mode suggested "happy," "graceful," "merry," and "playful" responses while the minor mode elicited "sad," "dreamy," and "sentimental" responses. Firm rhythms were characterized as "vigorous" and "dignified" while flowing rhythms had a "happy,"

"graceful," "dreamy," or "tender" character.

While Hevner found relative agreement among S's on the basic emotional categories she proposed, her musical selections were "structured" in such a way that "cultural conditioning" seemed to play a vital role in the responses elicited. Our society has frequently tended to associate sadness and sentimentality with slow, minor progressions, while happiness and playfulness have been expressed in a light major mode (12). It might also be noted that Hevner's clusters were found to be somewhat inconsistent and unreliable when used in later studies (3, 11). These will be discussed.

Farnsworth (11) followed up Hevner's study in order to investigate the validity of her instrument. He used 200 subjects and 56 musical phrases, each of which kept reasonably well to a single mood. Subjects were asked to check as many adjectives as seemed appropriate to the music or to add others if they felt they were needed. The rank correlation for the adjectives was found and it was studied to learn the degree of consistency within clusters and the mood similarities between clusters. The circular position for the clusters was found unsatisfactory due to lack of high correlations between adjoining groups. Clusters were also found to lack internal consistency. The adjectives were rearranged into nine groups which, in Farnsworth's study, gave a more reliable picture.

It is questionable whether this new arrangement was actually

a better instrument, or whether the greater consistency found was a function of the particular selections played. A number of the selections used would seem to be characterized by more than one mood and there was no way provided to show which mood was predominant. Another objection might be raised here for the substitution of a new instrument. It is quite possible that the consistency was a function of the subjects' way of expressing themselves. Since these were all from the same school, it would be well to test the list using a variety of different subjects.

Campbell (3) likewise found that musical selections clearly expressed certain emotional categories to a great majority of her subjects. In investigating emotional patterns in music, Campbell first chose seven general categories: gayety, joy, yearning, sorrow, calm, assertion, and tenderness. Then she selected musical compositions to illustrate each one. These selections were made on the basis of what critics had said and her own judgment. Three series of seven musical selections were used, and in each series, the subjects were told that one piece would be played to illustrate each emotional category. Two of these series included folk songs while the third was made up of classical compositions.

For the first series of folk songs, there was response agreement of between 58.7% and 98.7% for all except the category of "yearning." In the second series of folk songs, the agreement was somewhat lower with three of the categories, "yearning,"

"sorrow," and "calm" falling considerably below 55%. Agreement to other selections in this series ranged from 55% to 95%. For the series of classical pieces, agreement ranging from 53.4% to 93.1% was found for all but the categories of "yearning" and "sorrow" which were considerably lower. In general, the agreement of responses to classical music was somewhat lower than agreement to the folk songs. The author cites as possible reasons for the lack of agreement observed in this study the facts that certain categories of expressiveness may not have been given in the selections used, that the selections in the three series may have varied in their ability to express the emotion for which they were chosen, that the selections may have expressed more than one emotional category, that certain of the categories were too similar to distinguish them, that the definition of the categories may not have been sufficiently clear, or that greater musical sensitivity may have been required on the part of the S's. The reviewer would like to offer another possibility. i.e., that the few differences observed were due to individual differences in the perceivers. Musical training had little relevance as a factor influencing decisions in this study.

While considerable agreement was found as to the expressiveness of the musical selections used here, it is questionable that this "forced" method of responding gives a true picture of what the subjects actually heard. It did not allow for real individual differences, and seemed to be "structured" toward confirming

the investigator's hypothesis.

Worthy of note in this study was Campbell's observation that broad fundamental emotions were recognizable in music, but that sub-categories were not distinguishable. This would seem to indicate a semantic differential that was irrelevant to the emotional tenor conveyed by the music.

It can be observed in all three of these studies that although certain musical compositions are placed into mood categories, they do not invariably arouse the moods in terms of which they have been described. What is to account for these individual differences?

More recently, Sopchak (32) made a study of affective responses to music. Not satisfied with the theory that emotional responses were due to the music itself, he set out to see whether greater individual differences might not be observed when subjects were allowed to respond to the music freely, and whether these might not be related to personality factors in the individual. Sopchak used fifteen selections including those of a classical and popular nature as well as folk tunes. Employing a check list similar to Campbell's but allowing for freedom of response, he found, unlike many previous investigators, that his subjects were unable to agree upon the emotion expressed. Wide individual differences in the affective quality evoked by the music were observed, and Sopchak attributed these differences to variations in the makeup of the individuals. Less variability

from subject to subject was noted in the popular music than in the classical selections, but it was questionable whether the subjects were responding here to the music "per se" or to the "words" which were familiar to them. Finding a significant relationship between the Ss' mood and their responses, Sopchak recommended using a similar technique as an auditory projective device for understanding personality.

This seems to be a worthy recommendation, but there appear to be certain flaws in the device used. Sopchak assumed that an individual who made several checks under an emotional category was more influenced by the music than someone who only made one check mark. In the light of Campbell's previous findings (3), this may well be the effect of a semantic differential or even of inconsistency in the sub-categories rather than of strength of the emotion expressed. "Jealousy" and "anxiety," for example, were considered in the same category. Would all S's think of them as "going together"? Could the same not be said of other examples such as "cruelty" and "teasing" or of "yearning" and "regret"?

In a further study, Sopchak (33) investigated the relation between M.M.P.I. scores and responses to music. Using the same checklist and musical selections as in the previous work, he calculated a "music feeling" score for each emotional category. This score, based on the total number of checks in each cluster, was correlated with each of the nine scales on the M.M.P.I. and

a number of low but significant correlations were observed. On the D scale, men showed a positive correlation with responses of love, eroticism, jealousy, and cruelty and a negative correlation with calm. Women high on the D scale tended also to be low in response to calm. The Pd scale was positively correlated with calm, yearning, and eroticism for men. Women high on the Sc scale were also high in responses to sorrow and solemnity, while men high on this scale were high in responses to wonder but low in responses to joy.

Sopchak does not venture to assert why the M.M.P.I. scales should be related to particular music feeling scores. It seems that the device he used is as yet an inadequate measurement of "music feeling" and as such, the inconsistency among clusters continues to be a variable obscuring possible psychological significance. The study is certainly a step in the right direction, however.

While the studies mentioned heretofore investigated various affective responses to music, others delved into aesthetic choices and their relationship to the individual personality.

Cattell and his associates, supported by the Music Research Foundation, conducted a three-year study at the University of Illinois to see if there was a tendency for certain kinds of music to be systematically related to different personality structures. Hypothesizing that musical choices were determined by personality factors, Cattell and others (5, 6, 7) developed a

diagnostic instrument to be used for purposes of assessment. A number of selections were played and the subject stated for each whether he liked it, was indifferent to it, or disliked it. Using the method of factor analysis to determine which responses went together, Cattell found significant relations between preferences for particular aspects of music and his "Sixteen Personality Factor Questionnaire." In this study, it was found that psychotics in contrast to normals preferred music that was sad, slow, and simple. They tended to avoid brightly colored music in favor of clear harmonic progressions.

Cattell identified eleven factors in this study, a number of which correlated with scales on the "Sixteen Personality Factor Questionnaire." Factor 2 correlated with Q4 on the personality questionnaire (the measure of stability vs. tenseness) with an r of -.52. The relation of factor 4 with the M factor on the questionnaire (a measure of conventionality vs. eccentricity) was an r of +.60. On both of these scales, normals were distinguished from psychotics at the .01 level. Other high correlations were observed between a number of music preference factors and personality factors. Factors 1 and 8 on the music scale correlated with an r of -.65 and +.70 respectively with factor I on the personality inventory (a measure of toughness vs. sensitiveness). Factor 3 correlated +.68 with H (the measure of timidity vs. adventurousness) and factor 5 correlated .60 with O (the measure of confidence vs. insecurity).

It would seem that Cattell's hypothesis is well worth further investigation. If what an individual seeks or avoids in music as in other environmental influences reveals his personality, this may well prove a simple and effective instrument for personality assessment. At present, however, further refinement of Cattell's instrument is necessary. Retest reliability after two months has only ranged from .38 to .58, and only eight of the original factors held up when the test was cross-validated. It would seem that preferences shift rapidly or that they are not clear-cut, hence they would be too unreliable an indication of personality. The musical renditions used by Cattell might well have been improved upon too. All pieces were played on the piano whether they were written for this instrument or not. It may be that the subjects were expressing their dislikes for the particular version rather than for the music itself.

Fisher and Fisher (13) sought to determine if it was feasible to hypothesize a relationship between one phase of personality and musical preferences. The aspect of personality which held particular interest for them was insecurity, and this they measured by having the subjects "describe a vague picture" and by having them "draw a person." For the musical preference test, four composers were chosen and two selections from each were used. One of these was a relatively calm and quiet piece while the other was exciting and dramatic. Subjects indicated which of the two selections in each pair they liked best, and results

were compared with the degree of insecurity. Those with marked signs of insecurity tended to show an over-enthusiasm or an over-restrictedness of response. Well-adjusted S's were the "middle of the roaders." The authors concluded that musical preferences were influenced by personal needs and difficulties in the same way that many other reactions were. They felt that preferences in music could be the dynamic outcome of an attempt to deny certain fears or to compensate for them. While results of this study look promising, the small number of musical selections used does not give us conclusive evidence as to the validity of such measures. The extension of this research might well prove helpful.

It is frequently observed that preferences for well-known music are greatly influenced by age and culture. Fisher (14), in another study, set out to discover whether the differences in preference were "learned" or whether they represented a more general difference between the groups. For such an investigation, he chose classical music that was unfamiliar to the subjects, and the five selections used were all played by a full orchestra. Three different age groups of children from professional and upper middle class families as well as from slum areas were used. Subjects were asked to rank the order of their choice for the five compositions and surprisingly similar results were observable between different cultural groups. Though there were slight differences between age groups in preferences, their likenesses

were more outstanding than their few divergencies. Since age and culture do not seem to contribute significantly to preferences in an unstructured musical setting, this further raises the question of whether the differences that do arise might not be attributable to individual personalities as such.

Keston and Pinto (20) likewise sought out differences in personality structure as related to preferences in music. They used a predetermined level of musical sophistication on which serious classical music held the top level, and popular music took the bottom rank. S's were asked to rank each of four musical exerpts for thirty separate groups. It was found in this study that the most important factors influencing the level of sophistication of musical preferences were analytical thinking, music recognition, and training in music. "Intellectual Introversion" correlated highly with sophistication level.

Now, while a study such as this might have value in testing musical interest, it would seem to be rather an unstable personality measure. "Correct answers" are based on social judgments, and these change continually. Moreover, who is to be judge of what music is more "sophisticated"?

Studies mentioned thus far have dealt with associative responses to music or the way in which music has stimulated the thought processes. Still another approach to the problem has been the study of emotional responses, or the ways in which music has been used to arouse various moods in the subject.

Capurso and associates (4) made an extensive investigation of the effects of music on patients. Musical selections characterizing various moods were chosen by a number of music teachers. The pieces were played for a group of college students who likewise placed them in a mood category and those selections showing less than 50% agreement of mood among the students were disregarded. The remaining number have been used on various patient groups in an effort to arouse the particular mood which the music typifies. Results have met with relative success, though statistical evidence is still wanting. This study has met with some criticism (35) for its assumption that emotion resides in the music rather than in the individual, but in view of Capurso's criteria for selecting the particular music he used, this criticism would not seem to be completely justified. Capurso made use of the "cultural determinants" of music, and as such, his selections were more "structured" than those used in the present study.

The power of music to influence the mood of the listener has been recognized for centuries, but due to the complexities of the human person, it has been extremely difficult to do scientific research in uncovering what the factors are that contribute to this phenomenon. Most studies done in this area have relied on introspective reports for an interpretation of the mood elicited. Recently, in an attempt to obtain more quantitative data and to understand better the quality of response, several studies

have investigated the physiological behavior of individuals while listening to music.

Zimny and Weidenfeller (46, 47) used measures of G.S.R. and heart rate seeking to find differences when music designated as exciting, neutral, or calming was played. They made the assumption that G.S.R. and heart rate were physiological manifestations of emotional responses. Presumably a decrease in electrical skin resistance and an increase in heart rate would accompany emotional excitation. A similar device had been used by Henkin (16) in investigating the relationship between physiological response patterns and the melodic and rhythmic characteristics of music.

The reactions of eighteen college students to three musical selections by Dvorak, Chopin, and Bach, previously judged to be exciting, neutral, and calming were studied by Zimny and Weidenfeller. No significant differences in heart rate were observed on exposure to the sound stimuli, but the G.S.R. measure yielded differences significant at the .05 level or better between the exciting and calming music and between the exciting and neutral music. The differences between responses to neutral and calming music were not significant.

These same two investigators made a similar study of the effect of music upon the emotional level of psychotic patients (44). Dvorak's "First Movement of the New World Symphony" and Bach's "Air for the G String," two of the works used in the previously mentioned study were employed here to elicit exciting and

calm reactions respectively. No neutral stimulus was used in this particular research. The G.S.R., used as a measure of change, showed significant differences with both depressive and schizophrenic patients between skin resistance measures elicited during the playing of the two selections of music. The exciting music produced a decrease in skin resistance in both samples. Most of the results were significant at the .0005 or .005 level. It was rather interesting to note that the exciting music did not produce as much change in electrical resistance in psychotics as it had in normals in a previous study. This fact would suggest the psychotic patient's reduced emotional contact with reality. Also of interest was the observation that the depressive patients showed greater variability of response to exciting music than did the schizophrenic patients. This would suggest the reduced response to emotional stimulation that is a result of the patient's attempt to "shut out" emotionally provoking situations while at the same time being affected by them.

These studies using the G.S.R. would seem to give more objective measures in support of the fact that music and the emotions are closely related. They open the way for other investigations of bodily responses as a support for introspective reports.

In general, then, research in the area of musical perception and related personality factors has followed three main lines of thought. One group of studies has attempted to place emphasis

on the structure of the music as a factor influencing perception. Hevner (17, 18), Farnsworth (11), and Campbell (3) were the pioneers in this area. Their studies aimed more toward showing the universality of the musical language by using selections that elicited fairly constant responses. Not all of the pieces used, however, yielded such consistent results, and this observation led to a second line of investigation.

Here, individual differences in perception rather than group trends were studied. Sopchak (32, 33) used an affective check list similar to that employed in the three previously mentioned studies, but with the intention of relating the responses to individual personality variables. Individual differences were also studied in relation to preferences in music by Cattell and associates (5, 6), Fisher and Fisher (13, 14), and Keston and Pinto (20). In general, these studies showed differences between stable and poorly adjusted subjects, age and culture having little bearing on preferences.

The third approach to the study of the relation between music and the emotions has been to study the emotional responses per se. Music characterizing various moods was predetermined in these studies, and an attempt was made to elicit the desired emotional responses in the subjects. Capurso and associates (4) have worked in this area from an introspective point of view while Zimny and Weidenfeller (44, 46, 47) have tried to show some of the physiological concomitants of responses to music.

In view of the evidence that has been observed in these investigations, it would seem that responses to music are closely tied to an individual's motivations, either affecting them or being affected by them. Hence their study should serve as a promising mode for personality assessment as well as for treatment. Yet very little recent work has been done in this area.

In some of the studies that were reviewed here, "cultural conditioning" seemed to play an important role, in that a number of the musical selections were familiar to the subjects. Also, in studies employing check lists, a number of inconsistencies were found within clusters of adjectives where long lists were used. Investigations of musical preferences have been somewhat more objective, but the reliability and validity of the tests used for such studies leave much to be desired, and their capacity to tell us much about the individual is quite limited.

In line with the evidence that has been gleaned from these studies, however, and with a view to clarify further the relationship between personality factors and affective responses to music, the present study was undertaken.

The California Test of Personality was used as an outside criterion for the assessment of personality since this test is considered one of the better paper-and-pencil tests for the appraisal of adjustment in children (30, 31).

This test was designed to "identify and reveal the status of certain highly important factors in personality and social

adjustment" (39). Geared to five successive developmental levels, it consists of two parts tapping how an individual thinks and feels about himself and how he functions as a social being. The items in the test are not geared to elicit reactions to situations which are right or wrong, but to discover how an individual feels about them (40). There are, thus, twelve components to the test, measuring self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, freedom from withdrawing tendencies, nervous symptoms, social standards, social skills, anti-social tendencies, family relations, school relations, and community relations.

Originally published in 1939, the California Test of Personality was developed from a study of over one thousand adjustment situations that children and youth were called upon to face both in and out of school (41). These were classified into sixteen groups. After the items for the test were selected, a group of teachers and principals were asked to state which items in their judgment were the best indicators of adjustment and which should be dropped. About 100 pupils on each level were then asked to respond to the items and to say which ones they felt they could or could not answer accurately or preferred not to answer. As a check on validity, teachers answered the items for the students they knew well and their results were compared with those of the students. The internal consistency of the items was then determined by a bi-serial r. Analysis of the items

showed that many of them had been wrongly classified. These were put under appropriate headings in the final draft, and a number of the items of the original group were dropped. The original sixteen categories were reduced to twelve and the test was then standardized on over 1000 pupils in the Los Angeles area. The instrument was criticized on a number of grounds (27, 34), the foremost being lack of data on validity, dubious data on reliability, and inadequacy of the normative population. The references in the manual to validity and reliability were quite vague, and numerical data were absent in many cases.

In an effort to remedy these factors, the test was revised in 1953. The revised form also made the two forms at all levels equivalent by matching items on the basis of difficulty, discriminative power, and internal consistency.

The revised test showed a marked improvement in normative data, and further information on the reliability and validity of the test was included in the manual. The reliability for the five different questionnaires was calculated by the Kuder-Richardson formula. For the intermediate form used in this study, the reliability for the total adjustment score was .96 while scores in personal and social adjustment yielded reliability coefficients of .93 and .94 respectively. The sub-scale reliabilities were less significant and likely could not be used for individual diagnosis in view of the large standard errors of measurement. These calculations were made on the basis of 1136

testees from various parts of the country. Other normative data for the intermediate form of the test were based on 2812 students in grades seven through ten in schools in Massachusetts, Pennsylvania, Washington, Wisconsin, and California. The cases sampled constituted a normal distribution of mental ability and typical age-grade relationship. About 85% were Caucasian, and the rest were Negro, Mexican, and other minority groups.

Some of the intercorrelations between sub-test scores have been found to be quite high (39), indicative of the fact that a number of the sub-tests measure the same aspects of personality. It follows, then, that the two main areas of personal and social adjustment correlate highly, yielding a Pearson r of +.74. Thus, many of the factors in social adjustment are also relevant to an individual's self-acceptance.

"An instrument is valid if it accomplishes the . . . purposes for which it is designed" (39). The California Test of Personality was designed with an effort to demonstrate face validity, the items being selected on the basis of psychologists', teachers', and principals' judgments as well as the pupils' responsiveness to the items. A number of studies have attempted to establish additional validity data. Some of the more pertinent ones will be mentioned here.

Scandrette (26) made a study of sixty-eight eighth grade students, asking them to list two girls and two boys with whom they would like to work on a science project. The number of

times the individual students were chosen ranged from 0 to 13. Those receiving one or no choices (N = 18) were then compared with those chosen five or more times (N = 24). When the two groups were given the California Test of Personality, the total score differentiated significantly between them with a critical ratio of 3.25. Four of the self-adjustment scales (sense of personal worth, feeling of belonging, freedom from withdrawing tendencies, and sense of personal freedom) and one of the social adjustment scales (school relations) differentiated significantly between the two groups.

While this study seems to give good evidence of validity from peer ratings, there are factors other than "adjustment" as such which could result in one's being chosen to work on a science project. It is quite probable that intelligence was considered, at least to some extent, when the subjects made their choices. But again, in light of the particular sub-scales that differentiated between the groups, it would seem that a greater degree of intelligence would enable the individual to feel more competent in these areas.

Smith (31) made an extensive investigation of the concurrent validity of six personality and adjustment tests for children, comparing their results with teacher nominations of well- and poorly adjusted children and with peer nominations of the classmates they liked and those with whom they didn't get along. Thirty-seven sixth grade classes from the public schools in

Minnesota were included in the sample. The California Test of Personality was found to differentiate significantly between the different levels of adjustment as designated by teachers and peers. The total, personal, and social adjustment scores were nearly all significant at the .01 level. Product-moment correlations for subtests in this study ranged from .66 to .75 supporting previous notions that the tests measure relatively the same thing. Since this validity was established in a different age population than the one used in the present study, and a different form of the test was used, caution must be used in generalizing the results. However, the study does give a comprehensive picture of how the test compares with other instruments at the sixth grade level, and due to the comparability of reliabilities among the different levels of the California test, these results would seem to warrant consideration.

Some sex differences have been found on the responses to the test. Bonney (2) did a study with a fourth grade group, and while a different test level was used than that employed in the present study, the results seem significant enough again to warrant consideration. In this comparative study of boys' and girls' responses, the girls had a higher mean score in total adjustment. The girls also had a higher mean score than the boys in all but two of the subscales, those measuring a sense of personal freedom and freedom from withdrawing tendencies. While there was a significant difference shown in only one sub-scale,

that measuring social skills, a number of the differences approached statistical reliability.

The conclusion drawn from this study was that boys were more difficult to manage in the classroom than girls, and teachers were advised to reconsider programs for socialization for boys. One would wonder on the other hand, however, if certain subtests of the scale are not "loaded" to elicit higher scores for girls than for boys. That is, it appears that a number of the items are more accepted from a feminine orientation than from a masculine orientation. This is subject to further investigation.

In view of the evidence, the California Test of Personality seems to be one of the most valid instruments designed for the assessment of adjustment in children. Hence it was chosen as a criterion in this study. There are, of course, certain limitations to the test as there are in other questionnaires. Changing attitudes, lack of self-knowledge, degree of one's desire to be honest, and language difficulties cannot be tapped, and hence might produce discrepancies in the responses. But the validity of the test seems sufficiently high to warrant its use in research.

Chapter III

The Procedure

The Subjects. The subjects chosen for the experiment were fifty boys and fifty girls who were eighth grade pupils of a middle class parish school in Chicago. The subjects were volunteers, the age range being 13-6 to 15-5. The mean age of the group was 14.1 and the standard deviation was .48.

The Method. The subjects were given the California Test of Personality (Intermediate form AA) in order to get a measure of personal and social adjustment for each individual. The subjects were encouraged to answer the questions frankly in view of the fact that the material would be used for research purposes and would not reflect on them personally.

The subjects were asked to specify on a sheet of paper the number of years (to the nearest half year) that they had taken lessons on a musical instrument. They were then given a list of broad emotional categories including love and hate, hope and despair, joy and sorrow, and courage and fear. The categories were defined by the experimenter and each subject received a copy of the definitions so that he might refer to it during the course of the experiment. A copy of these mood categories with their respective definitions may be found in Appendix I.

In the selection of the sound stimuli, an attempt was made to use classical music as opposed to popular or folk music. It was believed that this would more likely provide an "ambiguous" or unfamiliar setting for the subjects and would lessen the effect of a "cultural response." An effort was made also to use selections from various periods in history and to put equal emphasis on major and minor modes, on fast and slow tempos, and on consonant and disonant harmonies. All selections were taken from the Reader's Digest "Music of the World's Great Composers" and "Festival of Light Classical Music."

A preliminary experiment was conducted in an effort to determine how adequately the pieces selected covered the range of emotions and how suitable they were for eliciting a variety of responses. Thirty seventh graders with an equal representation of boys and girls were used in this study. They were asked to listen to thirty-five selections of music (see Appendix II) and to note the mood conveyed by each. Those selections in which fifty per cent or more of the subjects agreed on the mood were discarded for the present study since they did not elicit a sufficient variety of responses to be considered ambiguous. Thirty of the original selections were found suitable in that they elicited less than 50% agreement on any one mood category. These were retained for the present study.

The records used in the present experiment are listed in Appendix III. Approximately sixteen to twenty-four measures of

each of these selections were taped, and two feet of tape were used to separate each selection from the one following it. The pieces were randomized in order to avoid a "serial effect" or a carry-over of mood. This was carried out by numbering each selection and then drawing the numbers by lot for the order of presentation.

The musical selections were played and the subjects were instructed to check the emotional category that was suggested by each piece. They were given directions as follows:

> You have before you a list of mood categories. I am going to play for you a number of musical selections and I would like you to listen to each selection carefully. Decide which mood you feel is conveyed by each and circle this mood on the sheet of paper before you. There are no right or wrong answers; I am simply interested to know if music is a universal language as many believe, or if different people hear different things. Are there any questions?

Time was then given to answer any questions the subjects had and the examiner continued:

> You will also notice the numbers one to five listed on your sheet of paper for each selection. After you have listened to each piece, I would like you to state your attitude toward it on a five point scale: 5, like a lot; 4, like a little; 3, indifferent; 2, dislike a little; 1, dislike a lot. Circle the number that best describes your attitude toward each particular selection.

The latter instructions were given in order to determine whether preferences were related to certain emotional responses, and whether these, in turn, were related to factors of adjustment. Since an individual frequently tends to seek what he likes and

to avoid what he dislikes, this should shed light as to whether an individual's personality is revealed by what he seeks or avoids.

In analyzing the results, an effort was first made to determine whether the interpretation of the music was primarily a function of the stimulus by tabulating the responses given by each subject to each selection of music.

The California Test of Personality was scored for personal adjustment, social adjustment, and total adjustment, and the number of responses to each mood category for each subject were tallied. Then the scores on the personality test were correlated with the total number of responses for each mood category on the check list.

The mean number of responses for each mood category was also calculated separately for boys and girls in order to determine whether there were any significant preferences for a particular mode of response for these groups.

Preferences for the various mood categories were correlated with adjustment to determine whether an individual's likes and dislikes were related to his perception of the environment. The mean value of the intensity of preference for each mood category was used as a measure here, and the relation was found between this value and the total adjustment score on the California Test of Personality.

The Spearman rank correlation coefficient was used as a

measure of relationship between the variables in all of these areas since the assumption of an ordinal scale but not necessarily one of a normal distribution could be made (29). A correlation significant at the .05 level was required for acceptance of the research hypothesis.

On the basis of the frequency of each response per hundred, each mood for each selection was assigned a value of "usualness," similar to that used by Kent and Rosanoff in their Word Association Test (19). This value was arrived at by calculating the percent of S's responding to each mood category for the thirty selections. All values were expressed as decimals and multiplied by one hundred to avoid having to work with the decimal point. The subjects were scored for "usualness" of response as a measure of how much they perceived the external stimulus similarly to others. Thus, a score of 50 on one piece would mean that the individual heard the same expression of mood as 50% of the group did; a score of 15 would mean he agreed with only 15% of the group in what he heard.

In order to compare those who were well-adjusted with those who were more poorly adjusted, the boys and girls scoring above the 50th percentile on the California Test of Personality were matched with those scoring below the 50th percentile on the basis of sex, intelligence, and age. This was done in an effort to minimize these variables. The individuals were matched one for one with a three point difference in I.Q. and a six-month

difference in age allowable. The Otis-Beta I.Q. measure on the subjects was obtained five months prior to the present study. The median values for "usualness" of response of well-adjusted and the poorly adjusted groups were compared, and the Mann-Whitney U Test was used to test the significance of the difference between these two groups. Since there was no basis for making the assumption that the scores were normally distributed, it was necessary to use a nonparametric measure, and the Mann-Whitney Test has been found to be the most useful alternative to the parametric t test (19).

Chapter IV

The Results

The responses given by each subject were tabulated and the frequencies for each mood category are presented in Table 1.

Table 1

Responses of 100 Subjects

to Emotional Categories

Musical selection	love	hate	hope	despair	joy	sorrow	courage	fear
1	2	2	15	35	3	6	16	21
2	29	0	27	6	22	12	2	2
3	20	1	24	6	29	6	13	1
4	8	3	20	12	20	5	16	16
5	18	1	4	18	0	55	1	3
6	7	1	8	3	53	0	28	0
7	3	13	9	14	7	3	18	33
8	21	2	22	15	1	37	0	2
9	31	0	21	12	14	13	7	2
10	5	5	8	28	0	25	2	27
11	5	6	14	9	18	2	34	12
12	1	4	10	2	42	0	35	6

Table 1 (Continued)

Responses of 100 Subjects

to Emotional Categories

Musical selection	love	hate	hope	despair	joy	sorrow	courage	fear
13	27	2	7	28	2	32	1	1
14	2	21	13	3	11	1	31	18
15	11	13	17	18	1	8	6	26
16	36	0	31	2	21	3	5	2
17	0	51	0	7	2	0	6	34
18	46	1	9	8	10	24	2	0
19	7	4	17	28	3	35	2	4
20	43	0	19	9	15	9	4	1
21	2	1	11	5	46	1	34	0
22	1	5	13	14	12	6	7	42
23	23	3	21	16	10	15	11	1
24	6	7	7	27	1	23	2	27
25	30	1	33	4	7	10	14	1
26	6	3	15	19	22	14	8	13
27	1	14	15	4	9	2	20	35
28	0	29	2	13	1	2	8	45
29	5	2	23	18	7	30	7	8
30	3	0	8	1	51	0	37	0

throughout the range of response frequencies and preferences for the different emotional categories, so training was not considered as an important factor in determining responses.

Percentile scores for adjustment as measured by the California Test of Personality were calculated and results for each subject are presented in Appendix V.

When these scores were ranked and correlated with the ranked responses to the various mood categories, a number of relationships were observed. Table 3 presents these findings.

Table 3

Correlations between Adjustment and Mood Categories

(N = 100)

Mood category	Total adjustment	Personal adjustment	Social adjustment
Love	.22*	.22*	.13
Hate	-.04	-.08	-.04
Hope	-.12	-.18	-.08
Despair	.03	.01	.05
Joy	.04	.03	.05
Sorrow	.02	-.04	.05
Courage	-.09	-.24*	-.12
Fear	.09	.04	.04

* Significant at .05 level

The correlations were generally low, only three of them being significant at the .05 level.

Since it was observed that there were considerable differences between responses of girls and boys, separate correlations were made for the two groups between mood responses and total adjustment. The correlations, as presented in Table 4, were again low.

Table 4

Sex Differences in the Correlation of Affective Responses with Adjustment

Mood category	Boys	Girls
Love	.23	.19
Hate	-.05	-.05
Hope	-.06	-.19
Despair	.01	.05
Joy	.11	-.04
Sorrow	.14	-.12
Courage	-.41*	.00
Fear	.03	.13

* Significant at .05 level

Each subject's degree of preferences for selections (i.e., like a lot, etc.) were tallied and grouped into the mood cate-

gories which they heard. An "average preference score" was then calculated for each mood category, and these values were correlated with total adjustment as indicated by the California Test of Personality. The observed relationships are seen in Table 5.

Table 5

Correlations between Adjustment and Music Preferences

Mood category	Correlation	Mood category	Correlation
Love	.05	Joy	.23*
Hate	.17	Sorrow	.02
Hope	.21*	Courage	.19
Despair	.07	Fear	.04

* Significant at .05 level

The correlation between adjustment and preference for music suggesting hope or joy was significant at the .05 level for the total group. Courage was also positively correlated with adjustment, the relationship approaching statistical significance.

Since there were considerable sex differences and individual differences within the group in relation to I.Q. and personality factors, it was decided to match the groups of well- and poorly adjusted subjects on the basis of intelligence, age, and sex in order to provide more adequate controls.

On the basis of the matching technique, thirty-four high scoring subjects on the California Test of Personality were selected for comparison with thirty-four youngsters scoring low in adjustment. Appendix VI lists the subjects and the criteria data.

In testing for differences, it was found that the better-adjusted subjects tended to perceive the stimulus more objectively and without distortion. That is, they heard the music with a higher degree of similarity to group norms than did the more poorly adjusted subjects. Employing the Mann-Whitney U Test for significance of differences between the two groups, a U of 396 with a μ_u of 578 and a σ_u of 81.09 were found. These results yielded a z of 2.58 which was significant at the .01 level. Thus, the second hypothesis that well-adjusted S's respond to music in a more "usual" way than do poorly adjusted S's was confirmed.

Chapter V

Discussion

On the basis of the foregoing results, it seems evident that when an ambiguous and unfamiliar musical stimulus is presented to a group of subjects, they tend to interpret it quite differently. But upon what this difference rests is open to discussion.

In considering the frequency of responses to the various emotional categories, it is rather striking to note that only the frequency of hearing "love" in the musical selections was correlated significantly with total and personal adjustment for the whole group, while responsiveness to courage was negatively correlated with personal adjustment to a significant degree for boys.

Correlations for love, hate, and joy were in the expected directions, while those for the other categories were not. In view of this evidence, particularly considering the significant negative correlation between response to courage and personal adjustment, it would seem that other factors besides one's perception of his environment in a favorable or unfavorable light are operating here. Since other explanations for the results must be sought, it might be speculated that an individual's in-

terpretations are partly a function of what he is lacking from his environment and partly a function of how he is satisfied by his environment. The present study does not make clear how much each of these factors is operating. It may be that this is different for different individuals.

In view of the fact that love is almost universally considered the most basic need for the human being, it is not surprising that well-adjusted individuals are more "atuned" to love in their environment than are the more poorly adjusted children.

When one considers the significant negative correlation of adjustment with responsiveness to courage, particularly among the boys in the group, it would seem that well-adjusted S's do not feel the "need" for courage in the face of obstacles as much as do those with poorer adjustment. The high response to courage among the poorly adjusted individuals would appear, then, to be a compensatory device.

When preferences for music suggesting the various mood categories are considered in relationship to adjustment, one observes that the degree of adjustment is significantly correlated with the degree of preference for music suggesting hope and joy. These correlations are low, however. In view of the fact that frequency of response was not significantly correlated for these categories, it would seem that while the better adjusted subjects do not have a need to perceive hope and joy significantly more than their confreres whose adjustment is poorer, they are more

accepting of the positive stimulus when it is presented to them.

Response to the positive emotional categories used in this study was significant, though small. The negative categories seemed to suggest more ambiguous results, however. Considering the fact that the subjects, in general, tended to respond more frequently to the positive emotions, it may be that this fact was a function of the inadequate provision in the selections used for music suggesting the negative categories. It might be advisable in a future study to select music that is less ambiguous in its "message," thus to get a better balance of positive and negative responses.

Though it was not feasible within the present design to investigate this factor, it is possible that the ambiguity in responding to the negative emotions was related to the fact that the poorly adjusted subjects tended to over-respond or to under-respond to the categories, either perceiving their environment significantly in terms of negative emotions, or being unwilling to accept them when they did perceive them. Fisher and Fisher (13) found a similar result in their study.

When controls were set up for intelligence and age factors, the degree of "usualness" of response was found to distinguish significantly the better adjusted children from the more poorly adjusted. However, while this may be a helpful device in evaluating groups, it has little significance in predicting individual cases due to the wide variability. Perhaps if one were to use a

similar procedure, while employing music more geared toward eliciting a particular response, the deviations from the "expected" response would be more meaningful. This remains a work for future study.

Chapter VI

Summary and Conclusions

The purpose of this study was to determine whether affective responses to music were related to the stimulus as such, or whether they were rather a function of individual differences as seen in the light of personal and social adjustment.

Previous studies had indicated that preferences and interpretations of music could be fruitful indications of personality differences. These studies followed three main lines of research. Hevner (17, 18), Farnsworth (11), and Campbell (3) emphasized musical structure as a determinant of perception. Individual differences were studied by Sopchak (32, 33), Cattell and associates (5, 6), Fisher and Fisher (13, 14), and Keston and Pinto (20). A third approach used music that was geared to elicit a predetermined mood. Capurso and associates (4) worked in this area from an introspective point of view, while Zimny and Weidenfeller (44, 46, 47) attempted to demonstrate the physiological concomitants of responses to music.

The present study was undertaken to clarify further the relationship between personality factors and affective responses to music. Fifty boys and fifty girls were given the California Test of Personality and their adjustment scores were correlated

with their frequency of response and preference for eight emotional categories. Those ranking high in adjustment were matched with those ranking low, on the basis of sex, age, and intelligence, and the "usualness" of responses or objectivity of responses for the two groups was compared.

Upon completion of the study, the following conclusions were reached:

1. When ambiguous and unfamiliar musical selections were played, there was less than fifty per cent agreement of responses to all but three of the selections. Thus, the music, of itself, did not determine the responses.

2. Adjustment was found to be positively correlated to the frequency of response to "love" and negatively correlated to the frequency of response to "courage" for the total group.

3. Better-adjusted subjects tended to prefer music suggesting hope and joy to a significantly higher degree than did the more poorly adjusted subjects.

4. There was a significant trend for the better-adjusted subjects to be more "objective" in their interpretation of music than those poorly adjusted.

These results seem to confirm other findings that there are individual differences in people affecting their perception of auditory stimuli. A number of questions on the nature of these differences, however, still remain open, and there is need for further research in this area.

It has been suggested in this study that well-adjusted S's tend to hear musical stimuli more objectively than do poorly adjusted S's. It might be well, then, in a future study to select music suggestive of a particular mood and to investigate deviations from "perceptual norms." This might help to limit some of the factors involved in "choice" and to make for a more controlled study.

References

1. Blake, R. R. & Ramsey, G. V. Perception: an approach to personality. New York: Ronald Press, 1951.

2. Bonney, M. E. Sex differences in social success and personality traits. Child Develpm., 1944, 15, 63-79.

3. Campbell, E. G. Basal emotional patterns expressible in music. Amer. J. Psychol., 1942, 55, 1-17.

4. Capurso, A., Fisichelli, V., Gilman, L., Guthuil, E., Wright, J. T., & Paperte, F. Music and your emotions. New York: Liveright, 1952.

5. Cattell, R. B., & Anderson, J. C. The measurement of personality and behavior disorders by the I.P.A.T. Music Preference Test. J. appl. Psychol., 1953, 37, 446-454.

6. Cattell, R. B., & Saunders, D. R. Musical preferences and personality diagnosis: I. A factorization of one hundred and twenty themes. J. soc. Psychol., 1954, 39, 3-24.

7. Cattell, R. B. Personality and motivation structure and measurement. New York: World Book Co., 1957.

8. Clark, W. W. Measurement in personality. Education, 1941, 61, 620-622.

9. Ellis, D. S., & Brighouse, G. The effects of music on respiration and heart rate. Amer. J. Psychol., 1952, 65, 39-47.

10. Estvan, F. J., & Estvan, E. W. The child's world: his social perception. New York: G. P. Putnam's Sons, 1959.

11. Farnsworth, P. R. A study of the Hevner Adjective List. J. aesth. art crit., 1954, 13, 97-103.

12. Farnsworth, P. R. The social psychology of music. New York: Dryden Press, 1958.

13. Fisher, S., & Fisher, R. L. The effects of personal insecurity on reactions to unfamiliar music. J. soc. Psychol., 1951, 34, 265-273.

14. Fisher, R. L. Preferences of different age and socio-economic groups in unstructured musical situations. J. soc. Psychol., 1951, 33, 147-152.

15. Henkin, R. I. A factorial study of the components of music. J. Psychol., 1955, 39, 161-181.

16. Henkin, R. I. The prediction of behavior response patterns to music. J. Psychol., 1957, 44, 111-127.

17. Hevner, K. Expression in music: a discussion of experimental studies and theories. Psychol. Rev., 1935, 42, 186-204.

18. Hevner, K. Experimental studies in the elements of expression in music. Amer. J. Psychol., 1936, 48, 246-268.

19. Kent, G. H., & Rosanoff, A. J. A study of association in insanity. Amer. J. Insan., 1910, 67, 317-390.

20. Keston, M. J., & Pinto, I. M. Possible factors influencing musical preferences. J. genet. Psychol., 1955, 86, 101-113.

21. Lifton, W. M. The role of empathy and aesthetic sensitivity in counseling. J. counsel. Psychol., 1958, 5, 267-274.

22. Lundin, R. W. An objective psychology of music. New York: Ronald Press, 1953.

23. Meyer, L. B. Emotion and meaning in music. Chicago: Univ. of Chicago Press, 1956.

24. Meyer, L. B. Meaning in Music and information theory. J. aesth. art crit., 1957, 15, 412-424.

25. Pratt, C. C. The design of music. J. aesth. art crit., 1958, 17, 251-258.

26. Scandrette, O. C. Classroom choice status related to scores on components of the California Test of Personality, J. educ. Res., 1954, 48, 291-296.

27. Schaffer, L. F. The California Test of Personality. In Buros, O. K. (Ed.) The third mental measurements yearbook. New Brunswick: Rutgers Univ. Press, 1949.

28. Schoen, M. The psychology of music. New York: Ronald Press, 1940.

29. Seigel, S. Nonparametric statistics for the behavioral sciences. New York: McGraw-Hill, 1956.

30. Sims, V. M. The California Test of Personality. In Buros, O. K. The fifth mental measurements yearbook. New Brunswick: Rutgers Univ. Press, 1959.

31. Smith, L. M. The concurrent validity of six personality and adjustment tests for children. Psychol. Monogr., 1958, 72, No. 4, 1-30.

32. Sopchak, A. L. Individual differences in response to different types of music in relation to sex, mood, and other variables. Psychol. Monogr., 1955, 69, No. 11.

33. Sopchak, A. L. Relation between MMPI scores and musical projective test scores. J. clin. Psychol., 1957, 13, 165-168.

34. Spencer, D. The California Test of Personality. In Buros, O. K. (Ed.) The third mental measurements yearbook. New Brunswick: Rutgers Univ. Press, 1949.

35. Taylor, I. A., & Paperte, F. Current theory and research in the effects of music on human behavior. J. aesth. art crit., 1958, 17, 251-258.

36. Thorpe, L. P. Personality and life. New York: Longmans, Green, 1941.

37. Thorpe, L. P. Personality tests. In Winn, R. B. (Ed.) Encyclopedia of child guidance. New York: Philosophical Library, 1943, 293-299.

38. Thorpe, L. P. Personality development: a functional view. Education, 1943, 63, 583-584.

39. Thorpe, L. P., Clark, W. W., & Tiegs, E. W. California Test of Personality manual. Monterey: California Test Bureau, 1953.

40. Tiegs, E. W. Tests and measurements in the improvement of learning. Boston: Houghton-Mifflin, 1939.

41. Tiegs, E. W., Clark, W. W., & Thorpe, L. P. The California Test of Personality. J. educ. Res., 1941, 35, 102-108.

42. Tiegs, E. W. Measuring personality status and social adjustment. Education, 1943, 63, 631-635.

43. Van Steenberg, N. I.P.A.T. Music Preference Test of Personality. In Buros, O. K. (Ed.) Fifth mental measurements yearbook. New Brunswick: Rutgers Univ. Press, 1959.

44. Weidenfeller, E. W., & Aimny, G. H. Effects of music upon G.S.R. of depressives and schizophrenics. J. abnorm. soc. Psychol., 1962, 64, 307-312.

45. Witkin, H.A. et al. Personality through perception. New York: Harper, 1954.

46. Zimny, G. H., & Weidenfeller, E. W. Effects of music upon G.S.R. of children. Child Develpm., 1962, 33, 891-896.

47. Zimny, G. H., & Weidenfeller, E. W. Effects of music upon G.S.R. and heart rate. Amer. J. Psychol., 1963, 76, 311-314.

Appendix I

Mood Categories

Love:	inspired by a spirit of deep affection, fondness, warmth of feeling, and benevolence
Hate:	inspired by a spirit of animosity, antipathy or strong dislike and aversion
Hope:	inspired by a spirit of trust or longing and desire for the possession or enjoyment of an object
Despair:	inspired by a spirit of hopelessness, desperation or frustration over the inability to obtain an object
Joy:	inspired by a spirit of rejoicing or exulting, a strong feeling of pleasure or gladness, the expression of happiness
Sorrow:	inspired by a spirit of grief, sadness, regret, and depression
Courage:	inspired by a spirit of bravery and fearlessness or a vigorous determination and fortitude in the face of obstacles
Fear:	inspired by a spirit of anxiety, apprehensiveness, fright, or dread of prevailing circumstances or of threatening harm

Preferences

5 Like a lot
4 Like a little
3 Indifferent
2 Dislike a little
1 Dislike a lot

Appendix II

Musical Selections for Preliminary Study

Composer	Title
Berlioz	Roman Carnival Overture
Verdi	La Forza del Destino: Overture
Rimski-Korsakov	Russian Easter Overture
Bach	Brandenburg Concerto
Frank	Symphony in D Minor
Sibelius	The Swan of Tuonela
Haydn	Symphony #94 in G
Pierne	March of the Little Lead Soldiers
Mozart	Symphony #40
Brahms	Academic Festival Overture
Liszt	Les Preludes
Handel	Water Music Suite
Dukas	The Sourcerer's Apprentice
Tchaikowsky	Symphony #6
Beethoven	Symphony #3
Dvorak	Carnival Overture
Weber	Invitation to the Dance
Rossini	Semiramide: Overture
Ravel	La Valse
Grieg	Peer Gynt Suite #1
Mendelssohn	Fengal's Cave Overture
Stravinsky	The Rite of Spring
Chopin	Les Sylphides
Borodin	Overture to Prince Igor
Debussy	Petite Suite: En Bateau
Schumann	Symphony #3
Gounod	Funeral March of a Marionette
Smetana	The Moldau
Wagner	Tristan and Isolde
Auber	Overture to the Crown of Diamonds
Saint-Saens	Dance Macabre
Strauss	Till Eulenspiegel's Merry Pranks
Mussorgsky	Night on the Bare Mountain
Schubert	Symphony #8 (B Minor)
Glinka	Russian and Ludmilla

Appendix III

Musical Selections for Present Study

Composer	Title
Verdi	La Morza del Destino: Overture
Rimski-Korsakov	Russian Easter Overture
Bach	Brandenburg Concerto
Frank	Symphony in D Minor
Sibelius	The Swan of Tuonela
Mozart	Symphony #40
Brahms	Academic Festival Overture
Liszt	Les Preludes
Handel	Water Music Suite
Dukas	The Sourcerer's Apprentice
Tchaikowsky	Symphony #6
Beethoven	Symphony #3
Weber	Invitation to the Dance
Rossini	Semiramide: Overture
Ravel	La Valse
Grieg	Peer Gynt Suite #1
Stravinsky	The Rite of Spring
Chopin	Les Sylphides
Borodin	Overture to Prince Igor
Debussy	Petite Suite: En Bateau
Schumann	Symphony #3
Gounod	Funeral March of a Marionette
Smetana	The Moldau
Wagner	Tristan and Isolde
Auber	Overture to the Crown of Diamonds
Saint-Saens	Dance Macabre
Strauss	Till Eulenspiegel's Merry Pranks
Mussorgsky	Night on the Bare Mountain
Schubert	Symphony #8 (B Minor)
Glinka	Russian and Ludmilla

Appendix IV

Sample Sheet for Subject's Responses

1.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
2.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
3.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
4.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
5.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
6.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
7.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
8.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
9.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
10.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
11.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
12.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
13.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
14.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
15.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
16.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
17.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
18.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
19.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
20.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5

21.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
22.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
23.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
24.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
25.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
26.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
27.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
28.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
29.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5
30.	love	hate	hope	despair	joy	sorrow	courage	fear	1	2	3	4	5

Appendix V

Percentile Ranks for Adjustment

Subject	Total adjustment	Personal adjustment	Social adjustment
1G	98	95	99
2G	95	95	95
3G	90	70	95
4G	80	90	80
5G	80	70	90
6B	70	80	70
7G	70	60	90
8G	70	60	90
9G	70	60	80
10G	70	60	90
11G	70	40	98
12G	70	60	80
13G	70	50	90
14B	60	60	70
15B	60	60	70
16B	60	50	70
17B	60	60	60
18B	60	50	60
19B	60	60	50
20B	60	60	50
21B	60	40	70
22B	60	50	60
23B	60	70	40
24G	60	50	80
25G	60	50	70
26G	60	50	70
27G	60	70	40
28G	60	60	60
29G	60	50	60
30G	60	50	60
31B	50	40	70
32B	50	50	60
33B	50	50	60
34B	50	60	40

Subject	Total adjustment	Personal adjustment	Social adjustment
35B	50	40	60
36B	50	40	50
37B	50	70	30
38B	50	60	30
39G	50	30	70
40G	50	40	70
41G	50	30	70
42G	50	40	60
43G	50	50	50
44G	50	40	60
45B	40	60	30
46B	40	50	30
47B	40	40	40
48B	40	30	50
49G	40	40	50
50G	40	40	50
51G	40	20	70
52G	40	40	50
53G	40	20	70
54G	40	40	50
55G	40	50	30
56G	40	20	60
57G	40	30	40
58G	40	40	30
59B	30	20	60
60B	30	20	40
61B	30	30	30
62B	30	30	30
63B	30	40	20
64B	30	30	30
65B	30	20	40
66B	30	30	20
67B	30	20	30
68G	30	30	40
69G	30	30	30
70G	30	30	30
71G	30	10	50
72G	30	20	30
73B	20	20	30
74B	20	10	40
75B	20	10	30
76B	20	10	20
77B	20	20	20
78G	20	10	40

Subject	Total adjustment	Personal adjustment	Social adjustment
79G	20	10	30
80G	20	20	30
81G	20	5	40
82B	10	10	20
83B	10	20	10
84B	10	20	10
85B	10	30	2
86B	10	10	10
87G	10	10	20
88G	10	10	20
89G	10	5	20
90G	10	2	20
91G	10	10	5
92B	5	5	10
93B	5	5	5
94B	5	5	10
95B	5	2	10
96B	5	1	10
97B	5	2	10
98G	5	2	20
99B	2	2	5
100B	2	1	10

Appendix VI

Matched Groups for Comparing "Usualness" of Response

Well-adjusted				Poorly-adjusted			
Subject	I.Q.	Age	Score	Subject	I.Q.	Age	Score
2G	117	14-4	28.0	81G	116	13-11	28.0
4G	123	14-3	30.0	51G	125	14-0	20.0
7G	114	14-2	24.0	54G	112	13-8	25.0
8G	119	13-9	28.0	80G	118	13-10	22.5
9G	121	14-5	24.5	49G	119	14-3	21.0
11G	110	14-4	26.0	57G	108	14-7	22.0
12G	111	13-11	28.5	78G	108	14-1	22.5
13G	117	13-8	28.5	72G	118	13-6	24.0
24G	123	14-3	23.5	50G	120	14-4	27.5
25G	100	14-5	27.5	98G	101	14-1	22.5
29G	107	14-0	21.0	88G	106	13-9	19.5
39G	104	13-9	28.5	52G	106	13-9	19.5
40G	100	13-11	21.0	55G	99	14-3	23.0
41G	131	14-0	28.0	70G	129	13-8	26.0
42G	118	13-7	20.5	91G	118	13-7	27.0

Well-adjusted				Poorly-adjusted			
Subject	I.Q.	Age	Score	Subject	I.Q.	Age	Score
43G	115	13-8	29.0	56G	113	14-1	25.0
44G	124	13-7	28.0	58G	122	13-6	22.0
6B	114	15-3	14.0	60B	111	14-11	25.0
14B	120	13-9	23.0	100G	122	13-7	19.0
15B	108	14-3	31.0	86B	111	14-3	22.5
16B	116	13-7	24.0	95B	118	13-7	21.5
18B	117	14-4	29.0	92B	118	14-11	22.0
19B	107	14-3	27.0	62B	105	14-9	15.5
20B	103	14-1	25.0	66B	100	14-7	20.5
21B	93	14-9	15.5	46B	92	14-9	25.5
22B	113	13-6	18.0	73B	116	13-6	28.0
23B	107	14-3	25.0	45B	105	14-1	29.5
31B	112	13-11	21.5	82B	111	13-6	22.0
32B	110	14-3	25.5	99B	112	14-0	19.5
34B	118	14-0	19.5	76B	119	13-8	18.5
35B	119	13-10	27.0	96B	119	13-10	20.0
36B	99	14-3	27.5	77B	98	14-3	16.5
37B	99	15-0	24.0	85B	100	14-9	14.0
38B	115	14-2	24.0	61B	114	13-11	25.5

APPROVAL SHEET

The thesis submitted by Sister Mary Frederick Arnold, C.S.J. has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

December 25, 1964
Date

Frank J. Kobler
Signature of Advisor