A STUDY OF SOCIAL STATUS, PERSONALITY CHARACTERISTICS, AND MOTOR ABILITY OF MENTALLY HANDICAPPED GIRLS

by

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CHAPTER I

INTRODUCTION

Specialists in physical education have recognized the need for establishing within the total school program a physical education program that will contribute to the optimum social and personal development as well as the physical development of all children.

In an effort to meet these various needs of mentally handicapped children at the secondary level, varying situations for providing physical education experiences have evolved. In some situations the mentally handicapped pupil is excluded entirely from the physical education program. In many cases he is placed in the regular class of physical education along with his intellectually "normal" peers and provided the same activities. The mentally handicapped child may be placed in a special class of physical education for the mentally retarded.

A national survey in 1966[1] found that about the same percentages of mentally retarded were taught physical education in classes with "normal" pupils as were taught in

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[1]David K. Brace, "Physical Education and Recreation for the Mentally Retarded Pupils in Public Schools," A Digest of Findings of a National Survey supported by a grant from the Joseph P. Kennedy, Jr. Foundation (Washington, D. C. AAHPER, 1966).

separate classes. (About 40% of the mentally retarded were taught in classes separate from those for normal pupils while about 41% were taught in regular classes with normal pupils). For about 15% of the mentally retarded included in the survey, there was no formal instruction in physical education, but free play was provided.

The survey indicated strong agreement on the part of the teachers that the educable retarded pupil can be taught physical education successfully in classes with normal pupils.

Studies by Biddulph,[2] Coleman, et al.,[3] Fraleigh,[4] McCraw,[5] and Satterlee[6] give definite indication that a strong relationship exists between motor skill and achievement in play activities and personal-social adjustments among males from early grades through college years. Such

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[2]Lowell G. Biddulph, "Athletic Achievement and Personal and Social Adjustments of High School Boys," Research Quarterly, XXVI (March, 1954), 1-7.

[3]James C. Coleman, et al., "Motor Performance and Social Adjustment Among Boys Experiencing Serious Learning Difficulties," Research Quarterly, XXXIV (December, 1963), 516-617.

[4]Warren P. Fraleigh, "The Influence of Play Upon Social and Emotional Adjustment with Implications for Physical Education," Dissertation Abstract, XVI (1956), 495.

[5]L. W. McCraw and J. W. Tolbert, "Sociometric Status and Athletic Ability of Junior High School Boys," Research Quarterly, XXIV (March, 1953), 72-78.

[6]Robert Louis Satterlee, "Sociometric Analysis and Personality Adjustment," California Journal of Educational Research, VI (September, 1955), 181-184.

a relationship does not seem to exist for girls and young women beyond early years, but further study in this area is indicated. Such research could have important implications for school administrators and physical educators in planning of physical education programs for the mentally retarded children within the school population.

Statement of the Problem

This was a study of the social status, personality characteristics, and motor ability of mentally handicapped girls in regular and special classes of physical education in selected seventh and eighth grade classes in southeastern Louisiana.

Purpose of the Study

This study attempted to examine three characteristics of mentally handicapped girls in both regular and special physical education class situations, and how these characteristics related to those of mentally normal girls in their regular physical education classes. The characteristics included were social status, personality, and motor ability.

Mentally handicapped girls are very much like their intellectually normal peers in that they have basically the same desires and motives. They desire recognition from and acceptance by their peers. They, too, desire a feeling of achievement and success in their school activities. Only if schools provide the situations for satisfying these needs and desires will the mentally handicapped pupils have the

opportunity to develop to their inherent potential.

Much has been written about the contribution of physical education to the total development of the pupil. Also, there has been some speculation as to how these contributions can best be made--especially where the mentally handicapped pupil is concerned. Physical education programs in some schools have been provided for the mentally handicapped in special classes while in others these children are placed in regular classes along with their intellectually normal peers. More research is needed to study the merits of these two situations as to their contributions to the social status, personality characteristics and motor ability of those involved.

The purpose of this study was (1) to compare the social status, personality characteristics and motor ability of mentally handicapped girls in regular classes of physical education to the social status, personality characteristics and motor ability of mentally handicapped girls in special classes; (2) to compare the social status, personality characteristics and motor ability of mentally handicapped girls in both special and regular classes to the social status, personality characteristics and motor ability of intellectually normal girls in their regular classes of physical education; and (3) to examine the relationship of social status to personality characteristics and motor ability of mentally handicapped and normal girls.

Source of the Data

Both the mentally handicapped girls and normal pupils in regular classes were taken from the seventh and eighth grade physical education classes in Tangipahoa Parish in southeastern Louisiana. The mentally retarded girls were identified by the results of the Science Research Associates Mental Abilities Test administered during the last half of the 1966-1967 school year. The tests were administered under the supervision of school guidance counselors and the Parish Supervisor of Instruction.

IQ scores of eighty-five and below are generally used in the State of Louisiana to identify and classify mentally handicapped pupils in the schools. For the purpose of this study IQ scores of eighty-five and below were used to identify the mentally handicapped girls in the regular classes.

The mentally handicapped girls in special classes of physical education were obtained from Bogalusa Junior High School, Bogalusa, Louisiana and from Lakeside School, Metairie, Louisiana. These schools were selected because they were the schools nearest Tangipahoa Parish with special classes for mentally handicapped girls and because the pupils in these classes could be available for testing at the time.

Procedures and Techniques

Data were gathered during January, February, and March, 1968, on the thirty-seven mentally handicapped girls in regular classes of physical education, the thirty-four

mentally handicapped girls in special classes and eighty normal girls in regular classes of physical education.

A sociometric test was administered to all subjects in their class group to determine the social status of each pupil within that particular group. This test consisted of three questions allowing both positive and negative responses by each subject toward her classmates.

The California Test of Personality, Intermediate Series, Form AA was used to determine twelve different personality characteristics. The Interest and Activities part of this test was also administered to determine the various interests shown by the subjects and the activities in which they usually participated.

A motor ability test consisting of a throw for distance, a dash, an agility run, and a standing broad jump was administered to determine motor performance.

Subjects in this study were placed in the three class situations--mentally handicapped in special classes, mentally handicapped in regular classes, and normal girls in regular classes--primarily on the basis of their IQ score. Consequently, these three class situations were set up as three independent variables while the social status, personality characteristics, and motor ability composed the twenty-eight dependent variables.

A discriminant analysis and Cattell's r_p[7] were computed

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[7]Raymond B. Cattell, "r_p and Other Coefficients of Pattern Similarity," Psychometrika, XIV (December, 1949), 279-298.

in order to study the difference between the three class groups. The data were also processed by the Pearson product-moment correlation technique to determine the relationship between variables.

The chi square (x^2) technique was used to test the difference between the three groups on the Interest and Activity survey.

In testing the null hypotheses the level of significance was set at the .05 level.

Probable Value of the Study

The probable values of this study would be in providing information concerning the following questions:

1. Are mentally retarded girls in regular classes as socially accepted as the mentally retarded girls in special classes and as socially accepted as their intellectually normal peers?

2. Do the mentally retarded girls in regular classes show as much personal-social adjustment as the mentally retarded girls in special classes and as much personal-social adjustment as their intellectually normal peers?

3. Do the mentally retarded in special classes perform motor skills as well as the mentally retarded girls in regular classes and as well as their intellectually normal peers?

4. Is there a relationship between social status and motor ability of mentally retarded girls?

5. Is there a relationship between social status and personality characteristics of mentally retarded girls?

6. Does a relationship exist between the social status of normal girls in their physical education classes and their performance on tests of motor ability?

7. Does a relationship exist between the personality characteristics of normal girls and their social status in their physical education class?

Limitations of the Study

1. This study was limited to seventy-one mentally retarded girls, thirty-seven of whom were in regular classes and thirty-four of whom were in special classes of physical education.

2. Pre-test scores on all tests given to the mentally handicapped in this study prior to their placement in special classes may have shown changes as a result of the special class.

3. The quality of the different programs of physical education was unknown.

4. Although people do not perform at the same level each day, the subjects were given only one day to complete their motor ability tests.

5. The results of both the sociometric test and the test of personality depended upon the person's frankness and judgment in answering the questions.

6. It is not known whether every student exerted maximum effort on the motor ability test.

7. Mental ability scores were the basic criterion used to identify and classify the mentally handicapped; however, different schools included in the study used different mental ability tests.

Definition of Terms

Because of the many different definitions of terms used in the literature, the following interpretations are given as they are used throughout this paper.

Mentally handicapped and mentally retarded.--These two terms were used interchangeably since both referred to those individuals with an inadequacy of general intellectual functioning which had existed from birth or childhood.[8]

Special classes.--In this study special classes referred to those classes established especially for the mentally handicapped. The criteria used to classify pupils for these classes were determined by school administrators. The criterion for placing pupils in the special classes in this study was primarily IQ scores of eighty-five and below.

Regular classes.--These classes were made up of girls of particular grade levels assigned regardless of mental or physical abilities or disabilities.

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[8]U. S. Department of Health, Education and Welfare, Special Problems in Vocational Rehabilitation of the Mentally Retarded, Vocational Service Series No. 65-6 (Washington, D. C.: Government Printing Office, 1963), p. 4.

Chapter Summary

The general plan of the study has been presented in this initial chapter. The plan includes the following areas: a statement of the problem, an identification of purposes, the source of the data, procedures and techniques used, the probable value and limitations of this study and definitions of terms.

Literature specifically related to the different facets of this study is reviewed in Chapter II.

CHAPTER II

REVIEW OF RELATED LITERATURE

A review of literature related to the three primary phases of the study is presented in this chapter. Literature related primarily to each phase is treated in respective sections.

The first section of the review reports the opinion of authorities as to the appropriate tools and techniques for measuring social status, personality characteristics and motor ability. The studies reported in this section are not restricted to those concerned with measuring characteristics of mentally handicapped girls but include studies of normal and handicapped girls and boys as well. Very few, if any, studies differentiated between tools and techniques for measuring the social status, personality characteristics and motor ability of mentally handicapped boys and girls and those that measure these characteristics of intellectually normal pupils.

The second section of this chapter deals specifically with studies comparing the influences between regular and special class situations upon the social status, personality characteristics and motor ability of mentally handicapped pupils. The three characteristics of the mentally

handicapped in both the regular and special classes are compared with those of intellectually normal boys and girls of comparable age.

The final section of this chapter presents a review of research studies dealing with the relationships between social status, personality characteristics and motor ability.

The literature reviewed in this chapter has been arranged as follows:

I. Tools and Techniques for Measuring Social Status, Personality Characteristics and Motor Ability
   A. Social Status Measurement
   B. Motor Ability Testing
   C. Measuring Personality Characteristics
II. Influences of Regular and Special Classes upon
   A. Social Status and Personality Characteristics
   B. Motor Ability
III. Research Studies of Relationships
   A. Social Status to Motor Ability
   B. Social Status to Personality Characteristics
   C. Personality Characteristics to Motor Ability

Tools and Techniques for Measuring Social Status, Personality Characteristics and Motor Ability

A review of literature dealing with tools and techniques for measuring social status, personality characteristics and motor ability of school boys and girls is presented in this section.

Social Status Measurement

The extent to which an individual is accepted or rejected by his peers or his associates in a group has an important impact on his personal growth and development and his future life adjustment. In their study of personality characteristics and social acceptance, Kuhlen and Lee[1] indicated that at any age an acceptable social status is an important requisite for satisfactory personal and social adjustment.

Further support for the importance of social acceptance was given by Loomis and Pepinsky as they stressed that " . . . individual personalities within a group achieve fullest development of potentialities when group members spontaneously accept each other."[2]

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[1]Raymond G. Kuhlen and Beatrice J. Lee, "Personality Characteristics and Social Acceptance in Adolescence," The Journal of Educational Psychology, XXXIV (September, 1943), 321.

[2]Charles P. Loomis and Harold B. Pepinsky, "Sociometry, 1937-1948: Theory and Methods," Sociometry Monograph, No. 40 (New York: Beacon House, Inc., 1949), p. 3.

Similar support was given by Prentice who stated that " . . . a well adjusted child is most likely to be the successful child who can take her place as an effective citizen in the democratic society of today."[3]

Findings by Grunlund and Whitney[4] showed that a pupil's social acceptability has a tendency to pervade all aspects of his life sphere. This should be an incentive to teachers and other school personnel to place proper emphasis on improving the social acceptability of the pupils. Modern education must recognize the importance of social adjustment of mentally retarded individuals to their eventual success as contributing members in the society.

In studying academic requirements of jobs held by mentally retarded, Young[5] found social factors to be of much greater importance in the future success of the mentally retarded than academic abilities and achievement.

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[3]M. Erma Prentice, "An Experience in Group Dynamics," JOHPER, XXIV (October, 1953), 24.

[4]Norman E. Grunlund and Algard P. Whitney, "Relation Between Pupils' Social Acceptability in the Classroom, in the School, and in the Neighborhood," The School Review, LXIV (September, 1956), 267-271.

[5]M. A. Young, "Academic Achievement of Jobs Held by Educable Mentally Retarded in the State of Connecticut," American Journal of Mental Deficiency, LXII (1958), 792-802.

Similar results were obtained by Colmann and Newlyn,[6] Coakley,[7] and Kern and Pfaeffle.[8]

For the mentally retarded who are not likely to make contributions to or adjustment in the society by their wits, the development of social skills seems to be of utmost importance.

The sociometric techniques that are most frequently used today in the study of individual and group relations grew out of the research and philosophy of the founder and promoter of the field of sociometry, J. L. Moreno.[9] His theories, techniques, and definitions have been rephrased and used by numerous investigators in the study of social status.

Bronfenbrenner has defined sociometry as "a method for discovering, describing and evaluating social status, structure and development through measuring the extent of

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[6]R. D. Colmann and D. Newlyn, "Employment of Mentally Dull and Intellectually Normal Ex-Pupils in England," American Journal of Mental Deficiency, LXI (1957), 484-490.

[7]F. Coakley, "Study of Feebleminded Wards Employed in War Industries," American Journal of Mental Deficiency, L (1945), 301-306.

[8]William H. Kern and Heinz Pfaeffle, "A Comparison of Social Adjustment of Mentally Retarded Children in Various Educational Settings," American Journal of Mental Deficiency, LXVII (1962), 407-413.

[9]J. L. Moreno, Who Shall Survive? A New Approach to the Problems of Human Interrelations (New York: Beacon House, Inc., 1934).

acceptance or rejection between individuals in groups."[10] This definition, similar to that used by Bonney and Hampleman,[11] Cowell,[12] Heber,[13] and Todd,[14] is the one most used today.

The basis for sociometry lies in the philosophy of Moreno who stated that:

> . . . persons affect each other. The effect depends upon the personalities which are brought into relationship and the circumstances under which this relationship is created. With information sufficient for classification of the various interrelations, it is possible where situations can be controlled to place persons together in a way which would be more advantageous than the present method of chance.[15]

The fundamental technique or method of sociometry is the sociometric test. This technique defines the social

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[10]Urie Bronfenbrenner, "The Measurement of Sociometric Status, Structure, and Development," Sociometry Monograph, No. 6 (New York: Beacon House, Inc., 1945), p. 4.

[11]Merl E. Bonney and Richard S. Hampleman, Personal-Social Evaluation Techniques (Washington, D. C.: The Center for Applied Research in Education, Inc., 1962), p. 60.

[12]Charles C. Cowell, "Sociometric Techniques," Research Methods, ed. by M. Gladys Scott (Washington, D. C.: The American Association for Health, Physical Education, and Recreation, 1959), p. 122.

[13]Richard Heber, "A Manual on Terminology and Classification in Mental Retardation," American Journal of Mental Deficiency, LXIV, Monograph Supplement (September, 1959), 99.

[14]Frances Todd, "Sociometry in Physical Education," JOHPER, XXIV (May, 1953), 23-24.

[15]J. L. Moreno, "Group Method and Group Psychotherapy," Sociometry Monograph, No. 5 (New York: Beacon House, Inc., 1932), pp. 61-62.

status of an individual by measuring the extent of acceptance or rejection by the group of which he is a member or might become a member.

Moreno's[16] criteria for the sociometric test is (1) that it must be one which is specific to a particular situation; and (2) that it can be used as a basis for making changes according to the expressed wishes of the group.

The sociometric test has been used extensively in the measurement of inter-personal relations. It has provided a basis for objectively measuring an individual's acceptance, rejection, or isolation by his peers in social groups, how he feels toward others and how they feel toward him. This technique can be of help to teachers, in various educational situations, who wish to understand the personalities of their pupils.

The sociometric test has also been used extensively as an instrument for measuring social status. The reliability of this instrument depends on the size of the group, the number of choices made by each subject (or member of the group), and the kind of choice criterion used. Bonney and Hampleman[17] indicated that the correlation coefficients fall between .56 and .76, with the higher correlations resulting when there are about thirty members in the group,

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[16] Ibid.

[17] Bonney and Hampleman, Personal-Social Evaluation Techniques, pp. 65-70.

when five or more choices are made by each, and when a fairly comprehensive criterion is used, e.g. project work comparison. The stability of sociometric results has been shown by Newstetter, Feldstein and Newcomb[18] and Grunlund[19] to increase up to the use of five choices.

In constructing the sociometric test, Grunlund[20] recommends the use of negative choices or rejections only when necessary. Members of the group should be allowed rather than required to make such choices.

However, according to Bonney and Hampleman,[21] Phillips and De Vault,[22] and Bronfenbrenner,[23] negative responses or feelings of rejection are a part of one's normal everyday life and are not created just by asking

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[18]W. I. Newstetter, M. J. Feldstein, and T. M. Newcomb, Group Adjustment: A Study in Experimental Sociology (Cleveland: School of Applied Social Sciences, Western Reserve University, 1938), p. 154.

[19]Norman E. Grunlund, "The Relative Stability of Classroom Social Status with Unweighted and Weighted Sociometric Choices," Journal of Educational Psychology, XLVI (October, 1955), 345-354.

[20]Norman E. Grunlund, Measurement and Evaluation in Teaching (New York: The Macmillan Company, 1965), pp. 336-338.

[21]Bonney and Hampleman, Personal-Social Evaluation Techniques, p. 63.

[22]Beeman Phillips and M. Vere De Vault, "Relation of Positive and Negative Sociometric Valuation to Social and Personal Adjustments of School Children," Journal of Applied Psychology, XXXIX (December, 1955), 409-412.

[23]Bronfenbrenner, "Measurement of Status, Structure, and Development," pp. 4-9.

them in a test situation. The authors suggest that both positive and negative responses have distinct contributions to make in the understanding of pupil adjustments.

The literature included some differences of opinion in the assigning of weights to the choices made on the sociometric tests. It is generally accepted that social status increases with each time a member of the group is chosen by a fellow member of the group. The differences of opinion lie in the emphasis placed on the importance of first, second, third, etc., choices by an individual.

According to Grunlund,[24] there is no reasonable basis for assigning weights to the different choices. An individual may find it difficult to discriminate among his first several choices, as he may be equally attracted to several friends. On the other hand another person may have one strong preference.

For the ease of administration and computation, Breck[25] and Skubic[26] used unweighted choices in determining social status. Bonney and Fessenden[27] have designed a

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[24]Grunlund, Measurement and Evaluation in Teaching, p. 338.

[25]Sabina June Breck, "Sociometric Measurements of Status in Physical Education Classes," Research Quarterly, XXI (May, 1950), 75-82.

[26]Elvera Skubic, "A Study in Acquaintanceship and Social Status in Physical Education Classes," Research Quarterly, XX (March, 1949), 80-87.

[27]Merl E. Bonney and Seth A. Fessenden, Manual: Bonney-Fessenden Sociograph (Monterey, California: California Test Bureau, 1955).

sociograph to simplify the collection and interpretation of sociometric data. Recognizing the merits of this sociograph in interpretation of the data, it was decided that the Bonney and Fessenden Sociograph would be used for this study.

Motor Ability Testing

Identifying the components of motor ability and constructing tests that will measure these components have concerned the physical educator for years. There has been some indication by research in this area that the components involved in the sports skills or athletic ability are basically the same as those making up motor ability. General motor ability is used synonymously with general athletic ability.[28] According to McCloy and Young,[29] "general" indicates the type of motor ability basic to all motor performance that involves large ranges of movement. "Motor" refers primarily to neuromuscular, and "ability" refers to potentiality instead of achievement.

Anderson and McCloy[30] found that the important parts of general sports ability are power, ability to change

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[28]Donald K. Mathews, Measurement in Physical Education (Philadelphia and London: W. B. Saunders Company, 1958), p. 116.

[29]Charles H. McCloy and Norma D. Young, Tests and Measurement in Health and Physical Education (3rd ed.; New York: Appleton-Century-Crofts, Inc., 1954), p. 114.

[30]Theresa Anderson and Charles H. McCloy, "The Measurement of Sports Ability in High School Girls," Research Quarterly, XXII (March, 1947), 2-11.

directions, and the ability to make quick and adaptive motor responses. Similarly, the requirements of a motor ability test, according to Kammeyer,[31] are running, jumping, quick change in body direction, and hand-eye coordination. Mathews[32] stated that the important factors of motor ability are muscular strength, ability to change directions, agility, good vision, timing and coordination. Scott[33] has found that tests of strength have little value in estimating the ability of college women, while Anderson[34] and McCloy and Young[35] found strength to be an important element in motor ability.

There appears to be general agreement that the causative factors of general motor ability are speed, agility, coordination, power and strength, and that these component parts are also indicators of general sports or athletic ability. This indicates that the fundamental sports skills--running, jumping, and throwing--that are included in the track and field portion of the physical education

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[31]Shirley J. Kammeyer, "Reliability and Validity of a Motor Ability Test for High School Girls," Research Quarterly, XXVII (October, 1956), 310-315.

[32]Mathews, Measurement in Physical Education, p. 116.

[33]M. Gladys Scott, "The Assessment of Motor Abilities of College Women Through Objective Tests," Research Quarterly, X (October, 1939), 63-83.

[34]Theresa W. Anderson, "Weighted Strength Test for the Prediction of Athletic Ability in High School Girls," Research Quarterly, VII (March, 1936), 136-142.

[35]McCloy and Young, Tests and Measurement, p. 148.

program are useful as tests of motor ability. There are many studies supporting the use of these fundamental skills as tests of motor ability.

According to Brace,[36] there is probably no one single element that will measure motor ability, but a combination of these elements are necessary to measure the many components involved. He also found a higher correlation between track and field events and motor ability than between game skills and motor ability.

Anderson[37] and McCloy[38] found track and field events to be the best test of motor ability available. Espenshade[39] pointed out that common elements in active games are running, jumping, and throwing and that performance in these activities may be used as indicators of motor ability.

Studies involving tests of motor ability have made extensive use of track and field events of one combination or another. Because of the economy in administration and the high degree of objectivity and reliability, these tests have proven desirable and useful.

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[36]David K. Brace, Measuring Motor Ability (New York: A. S. Barnes and Company, 1927), p. 61.

[37]Anderson, "Weighted Strength Test," p. 137.

[38]Charles H. McCloy, Tests and Measurements in Health and Physical Education (New York: F. S. Crofts and Company, 1939), p. 295.

[39]Anna Espenshade, "Motor Development," in Science and Medicine of Exercise and Sports, ed. by Warren A. Johnson (New York: Harper and Row Publishers, 1960), p.420.

In an effort to identify the events most desirable in measuring motor ability, Brace[40] developed a series of stunt-type tests in 1927. However, his support for these stunt-type tests was later contradicted by a 1946 study that supported running, jumping and throwing to be more closely related to sports skills and athletic ability.[41]

McCloy[42] found that a strength test, along with a combination of three or four track and field events, was the most valid test of motor ability of any other combination of events. Specific test items recommended were a sprint, a throw, a broad jump and pull-ups (actual number one could do).

The standing broad jump and the fifty-yard dash have been used extensively in tests of motor ability and are highly recommended as a test of coordination, power, and strength, and as a test of speed, respectively.

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[40]Brace, Measuring Motor Ability, p. 61.

[41]David K. Brace, "Studies in Motor Learning of Gross Bodily Motor Skills," Research Quarterly, XVII (December, 1946), 247.

[42]Charles H. McCloy, "The Measurement of General Motor Capacity and General Motor Ability," Research Quarterly, VIII (October, 1934), 46-55.

The importance of arm strength to motor ability has been found in different studies by McCloy.[43, 44, 45] He found a correlation of .91 between arm strength alone and the strength of the rest of the body.

Carlson[46] found the baseball throw to be a high predictor of motor ability. It was reliable to the point of being able to predict success in any given sport. In fact, the higher the score on the test, the greater the chances for success in the sport.

The shuttle run is often used as one of the items in the battery of track and field events used to measure motor ability. Scott[47] found that a short obstacle run gave almost identical results as the long run, indicating the long run was not necessary in the test. Since the shuttle run is a type of obstacle race, it was included in this study.

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[43]Charles H. McCloy, "A Factor Analysis of Tests of Endurance," Research Quarterly, XXVII (May, 1956), 213-216.

[44]Charles H. McCloy, "The Apparent Importance of Arm Strength in Athletics," Research Quarterly, V (March, 1934), 3-11.

[45]Charles H. McCloy, "An Analytical Study of the Stunt Type Test as a Measure of Motor Educability," Research Quarterly, VIII (October, 1938), 46-55.

[46]R. L. Carlson, "A Study of the Baseball Throw as a Predictive Index of Athletic Ability" (unpublished master's thesis, University of California at Los Angeles, 1941), pp. 1-82.

[47]M. Gladys Scott, "Motor Ability Tests for College Women," Research Quarterly, XIV (December, 1943), 401-405.

There seemed to be little agreement as to the best technique of scoring the motor ability test items. It has been generally accepted that subjects should be allowed more than one trial on each of the events involved. From the investigator's own experience, however, there seems to be little need for a second or third trial on the fifty-yard dash unless there is a considerable rest period between trials. It was decided that for the standing broad jump and softball throw for distance, that three trials would be allowed and only the best score of the three recorded. The best score in two trials of the shuttle run, along with the score of the one trial in the fifty-yard dash, were used for these two items. This was in agreement with most of the evidence available.

In a study comparing reliabilities for scoring methods by McCraw and Tolbert,[48] it was found that, preferably, three trials should be allowed for the softball throw and the standing broad jump. They also found that a high coefficient of correlation was found for both the average of three trials and the best of three trials, the higher being for the average score. Because of such factors as ease of administration, economy of time, and validity, however, the best of three trials seemed to be preferred.

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[48]L. W. McCraw and J. W. Tolbert, "A Comparison of the Reliabilities of Methods of Scoring Tests of Physical Ability," Research Quarterly, XXIII (March, 1952), 73-81.

Whitley and Smith[49] recommended the use of an average of several trials on strength tests as compared to a "best" score. However, Berger and Sweney[50] found that the best test score should be used instead of the average. The latter authors indicated this depended upon the variability of scores.

Measuring Personality Characteristics

The personality characteristics of school age children have been measured by various tools and techniques. These may be in the form of oral interviews, checklists, inventories and questionnaires. Whatever the form, the tests are concerned with and developed around the most important problems of a particular age group. Most tests developed to study personality traits are constructed for chronological age rather than mental age. As a result, studies involving the personality characteristics of mentally handicapped children make use of basically the same tests as do the studies involving intellectually normal pupils. Too few studies investigating the personalities of mentally handicapped children are found in the literature.

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[49]J. D. Whitley and L. E. Smith, "Larger Correlation Obtained by Using Average Rather than 'Best' Strength Scores," Research Quarterly, XXXIV (May, 1963), 248-249.

[50]Richard H. Berger and Arthur B. Sweney, "Variance and Correlation Coefficient," Research Quarterly, XXXVI (October, 1965), 368-370.

In investigating the various techniques of studying personality characteristics Jackson[51] compared the effectiveness of the paper-and-pencil technique with that of four other techniques--the interview, experience rating, teacher rating, and parent rating--and found the paper-and-pencil technique to be superior to them all. This same investigator questioned the use of interviews since they involved so much time and effort as compared to the paper-and-pencil technique.

Ellis[52] found the questionnaire as satisfactory as the interview, and where ego questions were involved, it might produce more self-revealing data.

At Syracuse University, while comparing various techniques, it was found that the California Test of Personality correlated higher with clinical findings than any other personality test.[53] The personal-social adjustment score obtained by this test is an indication of how an individual sees himself in the social situation in contrast to the social status which is an indication of how one is seen or rated by his group.

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[51]Joseph Jackson, "The Relative Effectiveness of Paper-Pencil Tests, Interviews, and Ratings on Techniques for Personality Evaluation," Journal of Social Psychology, XXXIII (February, 1946), 35-54.

[52]Albert Ellis, "Questionnaire Versus Interview Methods in the Study of Human Love Relationships," American Sociological Review, XII (February, 1947), 541-543.

[53]California Test Bureau, Summary of Investigations Number One, California Test of Personality (enlarged ed.; Los Angeles: California Test Bureau, 1949), p. 5.

Studies by Alexandra,[54] Austin and Thompson,[55] and Kuhlen and Lee[56] found a positive relationship between social status and personality characteristics in intellectually normal pupils.

Later, Scandrette[57] found that the mean total scores on the California Test of Personality differentiated clearly between the most and the least frequently chosen pupils.

Northway[58] found that the child who directed his energy toward non-social interests was the least accepted by his group. And, according to Satterlee[59] there is a definite relationship between the appraisal of the individual and the individual's own appraisal of himself in that group.

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[54]Sister Mary Alexandra, "Personality Adjustment and Leadership," Education, LXVI (1946), 584-590.

[55]M. C. Austin and G. G. Thompson, "Children's Friendships: A Study of Basis on Which Children Select and Reject Their Best Friend," Journal of Educational Psychology, XXXIX (1948), 101-116.

[56]Kuhlen and Lee, "Personality Characteristics and Social Acceptance," p. 321.

[57]Onas C. Scandrette, "Classroom Choice Status Related to Scores on Components of the California Test of Personality," Journal of Educational Research, XLVII (December, 1953), 291-295.

[58]M. L. Northway, "Appraisal of the Social Development of Children at a Summer Camp," University of Toronto Studies: Psychological Series, No. I (1943), 429-433.

[59]Satterlee, "Sociometric Analysis and Personality Adjustment," pp. 181-184.

Influence of Regular and Special Classes upon the Social Status, Personality Characteristics and Motor Ability of Mentally Handicapped Girls

This section of the review of literature deals with the opinions of authorities as to the pros and cons of regular and special classes of physical education for the mentally handicapped. Research dealing with the influence of the two class situations upon social status, personality characteristics and motor ability of mentally handicapped boys and girls are reported since studies involving girls are extremely limited.

Social Status and Personality Characteristics

Among the mentally handicapped children placed in regular classes there seem to be those who tend to adjust while others do not. Still others seem to be on the "fringe" of the group or tend to become a part of the group by using force. According to Martin,[60] placing the mentally handicapped child in a regular class makes for a very unhappy individual. Severe emotional disturbances may develop, leading to abnormal personality traits and anti-social behavior caused by a continuous unsuccessful struggle within a class situation that is not suited to one's needs and limitations.

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[60]Frances M. Martin, "Personality Development and Social Adjustment of Mentally Retarded Children," American Journal of Mental Deficiency, XLVI (September, 1941), 94-101.

The results of a study by Heber[61] showed a significant difference in the social status of children with low, average and high IQ scores. The average IQ group had a social status score significantly higher than the low IQ group, while the high IQ group had a social status score significantly higher than the average and the low.

In his study of the social position of mentally handicapped children in regular classes, Johnson[62] found that the handicapped children were not as accepted within their class as were the typical. In fact, the handicapped were more rejected than were the borderline and the typical children in the class. The rejection of the mentally handicapped seemed to be caused by behavior that included bullying, swearing, showing off, lying, cheating and fighting on the part of the handicapped group.

Studies by Kern and Pfaeffle,[63] Cassidy and Stanton,[64]

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[61]Rich F. Heber, "The Relationship of Intelligence and Physical Maturity to Social Status of Children," The Journal of Psychology, XLVII (March, 1956), 158-162.

[62]G. Orville Johnson, "A Study of the Social Position of Mentally-Handicapped Children in the Regular Grades," American Journal of Mental Deficiency, LV (July, 1950), 80-81.

[63]Kern and Pfaeffle, "Comparison of Social Adjustment of Mentally Retarded Children," pp. 407-413.

[64]U. S. Department of Health, Education and Welfare, An Investigation of Factors Involved in the Educational Placement of Mentally Retarded Children, by V. M. Cassidy and J. E. Stanton, Office of Education Cooperative Research Project No. 943 (Washington, D. C.: Government Printing Office, 1959).

and Blatt,[65] dealing with the mentally retarded children in different school situations, found the retardates in special classes to be superior to retardates in regular classes in personality, and social and emotional adjustment.

Corder[66] found that increasing IQ scores and physical fitness through participation in physical activities did not significantly affect the social status of a group of educable mentally retarded boys. Rejection seemed to be primarily a result of personality conflict.

Allen[67] found that when mentally handicapped children were placed with normals in a camping situation, the handicapped children preferred the company of other retarded children to almost complete exclusion of the normals.

The mentally handicapped child placed in a regular class situation finds himself in a position requiring constant competition beyond his capacity, and with the probability of experiencing a great deal of failure and defeat. As a result, the regular class may increase the likelihood of the handicapped child developing negative personality

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[65]Burton Blatt, "The Physical, Personality, and Academic Status of Children who are Mentally Retarded Attending Special Classes as Compared with Children who are Mentally Retarded Attending Regular Classes," American Journal of Mental Deficiency, LXII (March, 1958), 810-818.

[66]W. Owens Corder, "Effects of Physical Education on the Intellectual, Physical and Social Development of Educable Mentally Retarded Boys," Exceptional Children, XXXII (February, 1966), 363.

[67]Robert M. Allen, "A Note on Mixed Summer Camping with Retardates and Non Retardates," Training School Bulletin, LIV (November, 1957), 50-51.

traits and unnecessary fears. Jordan and de Charmer[68] pointed out that mentally retarded children in regular classes show significantly more "fear of failure" than do the retarded children in special classes.

Motor Ability

There seems to be widespread agreement on the part of physical educators and other school personnel of the need for physical activity for the mentally handicapped to be provided in the school program. However, there seems to be considerable uncertainty as to what activities are to be provided and the environment in which they are to be presented.

In general, physical education programs have been basically the same for the mentally handicapped as for normal pupils. Fait and Kupferer[69] gave two reasons for this. First of all, there is little factual evidence to support the choice of activities for the handicapped. Secondly, the selection of activities which are provided for the mentally handicapped has been directed largely by

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[68]Thomas E. Jordan and Richard de Charmer, "The Achievement Motive in Normal and Mentally Retarded Children," American Journal of Mental Deficiency, LXIV (November, 1959), 462.

[69]Hollis F. Fait and Harriet J. Kupferer, "A Study of Two Motor Achievement Tests and Its Implications in Planning Physical Education Activities for the Mentally Retarded," American Journal of Mental Deficiency, LX (April, 1956), 729-732.

the desire of these children to be as much like children on the "outside" as possible.

The approach in research taken in recent years to determine the activities and the environment best suited to the mentally handicapped is, in part, toward identifying and studying the motor characteristics of these handicapped children. A summary of this research and its implications for placing the mentally handicapped in regular or special classes are presented here.

Beck[70] pointed out obvious subnormal physical abilities such as poor coordination and weakness in one or more extremities. These weaknesses often make the mentally handicapped incapable of competing with their normal peers. This same author also found that in the regular physical education programs there is a great deal of emphasis placed on baseball, basketball, and other highly organized games too complex for the handicapped pupils to grasp.

Difficulty shown by the mentally handicapped in performing activities requiring a series of movements and high motor coordination was demonstrated in studies by Fait and

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[70]Harry S. Beck, "Present Status of Physical Education in Special Classes for the Educable Mentally Handicapped," American Journal of Mental Deficiency, LXI (July, 1956), 117-120.

Kupferer[71] and Asmussen and Heebøll-Neilson.[72] Because of the poor motor performance on the part of the mentally handicapped and the stress and uneasiness resulting from the complexity of the movements, it is suggested that physical education programs for these handicapped pupils be varied from those offered normal school children. Activities with lower sights of achievement and of a less competitive nature are suggested.

Other studies that support a significant superiority in motor ability on the part of intellectually normal pupils when compared with mentally handicapped include those by Hayden,[73] Howe,[74] Kulcinski,[75] and Sloan.[76] These studies concluded that mentally retarded children are consistently inferior to normal children in a variety of motor

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[71]Fait and Kupferer, "Study of Two Motor Achievement Tests," pp. 729-732.

[72]Erling Assmussen and K. Heebøll-Neilson, "Physical Performance and Growth in Children: Influence of Sex, Age, and Intelligence," Journal of Applied Physiology, VIII (January, 1956), 371-380.

[73]Frank J. Hayden, Physical Fitness for the Mentally Retarded (Ontario, Canada: Metropolitan Toronto Association for Retarded Children, 1964).

[74]Clifford Howe, "A Comparison of Motor Ability Skills of Mentally Retarded and Normal Children," Exceptional Children, XXV (April, 1959), 352-354.

[75]L. E. Kulcinski, "The Relation of Intelligence to the Learning of Fundamental Muscular Skills," Research Quarterly, XVI (December, 1945), 266-276.

[76]William Sloan, "Motor Proficiency and Intelligence," American Journal of Mental Deficiency, LV (January, 1951), 394-406.

skills. There was also a significant difference in physical fitness items such as strength and endurance. On the average, retarded children have only half the strength of non-retarded and they become fatigued 30% faster.

According to Stein[77] the mentally handicapped, for the most part, have poor body mechanics, low vitality, poor motor coordination and poor functioning of the sense receptors. He suggested that a person with an inferior nervous system cannot, even by improving muscular development, attain a high degree of skill in any exercise which requires precise neuromuscular coordination. Activities most appropriate for those of limited intellectual capacity should have few rules, require very little memorization of rules, strategy or complex movement patterns.

After studying the characteristics of the mentally retarded children, Francis and Rarick[78] found their motor performance to be definitely inferior to that of normal children. In the performance of the squat thrust and the standing broad jump the mentally retarded child lagged behind the standards for normal children as much as six years. The mentally retarded were behind the normal children in running speed more than four years and in strength

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[77]Julian U. Stein, "Adequate Physical Education for the Educable Mentally Handicapped," JOHPER, XXXIII (December, 1962), 30-31, 50-51.

[78]U. S. Department of Health, Education and Welfare, Motor Characteristics of the Mentally Retarded, by Robert J. Francis and G. L. Rarick, Office of Education Cooperative Research Project No. 151 (Washington, D. C.: Government Printing Office, 1959).

tests one to three years. Other findings by the above authors indicate that the motor retardation of the educable retarded child is greater than had been previously believed. However, the findings also indicate that the motor ability of these children is organized basically the same way as in normal children and that these abilities follow similar developmental curves, but at lower levels than for normal children. This evidence suggests that the mentally retarded may profit from the same type of experiences as the normal children, but that a different approach involving more patience, more time, motivation and encouragement is probably necessary.

Studies involving handicapped children in the public schools are very limited. Especially studies dealing with motor performance level. A majority of the studies reported have involved institutionalized children. The comparisons made between the institutionalized and non institutionalized children and between institutionalized retardates and normal children are biased and the results are questionable. Sufficient data is not available to guide curriculum workers in respect to the motor needs and abilities of the mentally retarded.

Research Studies of Relationships

The final section of the review of literature is concerned with studies dealing with relationships between the three characteristics--social status, personality characteristics and motor ability--for mentally handicapped pupils in

both regular and special classes of physical education and for intellectually normal pupils. A review of the research studying these relationships is presented.

Social Status to Motor Ability

Past studies of the relationship of motor ability and social status have more often involved boys than girls. There have been too few inquiries into the role that motor ability plays in the social adjustment of secondary school girls. With boys, there appears to be a relationship between skill and achievement in motor activities and social adjustment from the early grades through college.

Jones[79] found high strength scores to be associated with social prestige, social stimulus value and personal adjustment of adolescent boys. Boys with low strength scores tended toward social difficulties, lack of status, feelings of inferiority and other personal maladjustments.

Fraleigh stated that:

> Higher levels of skill in play are related to better adjustment. Changes in adjustment have accompanied and have been caused by play experiences. Physical skill is the most important prestige trait among the child's and the adolescent boy's peer cultures. Play is the most important single area of social experience in the

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[79]Harold E. Jones, "Physical Ability as a Factor in Social Adjustment in Adolescence," Journal of Educational Research, XL (December, 1946), 287-301.

> development of children and youth, therefore it must have a great deal of influence upon the individual's evaluation of "self" and of others.[80]

In a study involving third graders, Rarick and McKee[81] found that children who scored high on a motor proficiency test were better adjusted in their school and their personal relationships than children who scored low on this test.

Elementary school boys and girls that have highly developed motor skills are generally accepted for motor activities by members of the group, while those children inferior in motor skills are often rejected by their peers. Rabin,[82] Smith and Hurst,[83] Breck,[84] Biddulph,[85]

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[80]Warren P. Fraleigh, "The Influence of Play upon Social and Emotional Adjustment with Implications for Physical Education," Dissertation Abstracts, XVI, 3 (1956), 495.

[81]Lawrence G. Rarick and Robert McKee, "A Study of Twenty Third-Grade Children Exhibiting Extreme Levels of Achievement on Tests of Motor Proficiency," Research Quarterly, XX (May, 1949), 142-152.

[82]Herbert M. Rabin, "The Relationship of Age, Intelligence and Sex to Motor Proficiency in Mental Defectives," American Journal of Mental Deficiency, LXII (November, 1957), 507-516.

[83]Judith R. Smith and John Hurst, "The Relationship of Motor Ability and Peer Acceptance of Mentally Retarded," American Journal of Mental Deficiency, LXVI (July, 1961), 81-85.

[84]Breck, "Sociometric Measurements of Status," pp. 75-82.

[85]Lowell G. Biddulph, "Athletic Achievement and the Personal and Social Adjustments of High School Boys," Research Quarterly, XXV (March, 1954), 1-7.

Coleman et al.,[86] and Walters[87] all report findings of significant relationship between motor ability and peer acceptance.

The importance of motor ability to social adjustment is indicated by the research just reported. Because of this importance the opportunity to develop motor skills should be provided for all boys and girls and not for just a specialized few. This means special programs, patience, planning, and time must be involved in order for this opportunity to be provided the mentally retarded individual. The development of motor skills could contribute considerably to the personal-social adjustment of the mentally retarded child who already has at least one strike against her.

Most of the studies of social adjustment of mentally retarded pupils make comparisons of or determine relationship between the adjustment of the mentally retarded in regular classes and the special classes. The results reported by most of these studies indicate that the social

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[86]James C. Coleman, et al., "Motor Performance and Social Adjustment," pp. 516-517.

[87]Etta C. Walters, "A Sociometric Study of Motivated and Non-Motivated Bowling Groups," Research Quarterly, XXVI (March, 1955), 107-112.

adjustment of the mentally retarded in the special class is superior to the adjustment of those in regular classes.[88, 89, 90, 91, 92]

Social Status to Personality Characteristics

The literature indicates that at any age level an acceptable social status is closely related to one's personality characteristics. Studies by Alexandra[93] and Austin and Thompson[94] have shown a positive relationship to exist between social status and intelligence and social status and personality characteristics.

Potashin[95] found that friendship, being such a pleasant and satisfying relationship, is important to adequate personality development.

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[88]Samuel A. Kirk, Educating Exceptional Children (Boston: Houghton Mifflin Company, 1962), p. 126.

[89]Blatt, "Physical, Personality and Academic Status," pp. 810-818.

[90]U. S. Department of Health, Education and Welfare, Investigation of Factors.

[91]Kern and Pfaeffle, "Comparison of Social Adjustment," pp. 407-413.

[92]Martin, "Personality Development and Social Adjustment," pp. 94-101.

[93]Alexandra, "Personality Adjustment and Leadership," pp. 584-590.

[94]Austin and Thompson, "Children's Friendships," pp. 101-116.

[95]Reva Potashin, "A Sociometric Study of Children's Friendships," Sociometry Monograph, No. 11 (New York: Beacon House, Inc., 1947), pp. 31-53.

In a study of personality characteristics by Kuhlen and Lee[96] it was found that most of these characteristics were substantially related with social acceptability. In this study the most acceptable were judged more frequently to be popular, enthusiastic, friendly, cheerful, happy and to show initiative in games and activities.

These findings supported those by Northway[97] who found that the child least accepted by his group was shy and lacked energy and enthusiasm. Also, the energy of the least accepted was directed towards non-social interests while his activities were often disturbing to his teachers and to his peers.

Personality Characteristics to Motor Performance

Studies dealing specifically with the relationship of motor ability and personality characteristics of girls are greatly limited for most studies reported have been primarily concerned with boys. The relationship between physical ability, physical fitness, physical development and personality traits were reported in studies by Wenar,[98]

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[96]Kuhlen and Lee, "Personality Characteristics and Social Acceptance," p. 321.

[97]M. L. Northway, "Social Relationships Among Pre-School Children," Sociometry, I (1943), 429-433.

[98]Charles Wenar, "Effects of Motor Handicap on Personality," Child Development, XXVII (1956), 9-15.

Johnson et al.,[99] Hanvik[100] and Bentson and Summershill.[101]

Athletic achievement made up of motor ability components such as speed, agility and co-ordination is, according to Biddulph,[102] much more important to personal and social adjustment in boys than many realize. This view is supported by Rarick and McKee[103] who found that elementary school children with a high level of motor proficiency tend to be more frequently well adjusted in school and in their personal relationships. They appear to have more wholesome and well integrated personalities than those children having low motor proficiency. There was also a tendency on the part of the children with superior motor proficiency to be more active, resourceful, attentive, calm and cooperative, while children with inferior motor proficiency showed more negative traits. The children with inferior motor skills tended to be shy and tense.

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[99]Warren R. Johnson, et al., "Personality Traits of Some Champion Athletes as Measured by Two Projective Tests: Rorschach and H-T-P," Research Quarterly, XXV (December, 1954), 484-485.

[100]Leo Hanvik, "MMPI Profile in Patients with Low Back Pain," Journal of Consulting Psychology, XV (1951), 350-353.

[101]T. B. Bentson and John Summershill, "Relation of Personal Success in Intercollegiate Athletics," Research Quarterly, XXVI (March, 1955), 8-14.

[102]Biddulph, "Athletic Achievement and Adjustment," pp. 1-7.

[103]Rarick and McKee, "Study of Children Exhibiting Achievement," pp. 142-152.

As mentioned earlier in this paper, Fraleigh[104] emphasized the importance of play activities and the feeling of achievement in play skills to personal adjustment of young boys. Physical skill is probably the most important prestige trait among adolescent boys. It seems to have considerable influence upon the boys' evaluation of "self."

In his study of the relationship of personality traits to motor ability, Merriman[105] found motor ability rather than participation in athletics to be a significant factor in the development of personality traits. This study of normal boys showed that those boys who scored in the upper 25 per cent on the Philip JCR Test also scored significantly higher than the subjects who scored in the lower 25 per cent on the measures of poise, ascendency, self-assurance and intellectual and interest modes.

According to Fait and Kupferer[106] sports and games of a highly competitive nature are generally popular in secondary physical education programs. These activities require a series of movements in which subsequent movements are built upon previous movements. When mentally retarded boys were tested on skills required in these types of

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[104]Fraleigh, "Influence of Play upon Adjustment," p. 495.

[105]J. Burton Merriman, "Relationship of Personality Traits to Motor Ability," Research Quarterly, XXXI (May, 1960), 163-173.

[106]Fait and Kupferer, "Study of Two Motor Achievement Tests," pp. 729-732.

activities there were unmistakable signs of stress and uneasiness as a result of the complexity of the movement required. These results prompted the above authors into suggesting a program of physical education for the educable mentally retarded different from that offered to normal school children.

Martin[107] reported that the mentally handicapped child placed in a regular class often develops abnormal personality traits and anti-social behavior as a result of an unsuccessful struggle within a situation unsuited to his needs and limitations.

Oliver[108] found that systematic physical conditioning exercises brought about a highly significant improvement in the physical qualities and abilities of sub-normal boys which resulted in improved mental characteristics and in improved personal relationships with others.

Since the research available dealing with the influence of motor ability on the development of personality characteristics is primarily limited to boys, we can not assume that the results of this research apply equally to girls.

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[107]Martin, "Personality Development and Social Adjustment," pp. 94-101.

[108]James N. Oliver, "The Effect of Physical Conditioning Exercises and Activities on the Mental Characteristics of Educationally Sub-Normal Boys," The British Journal of Educational Psychology, XXVIII (June, 1958), 155-165.

Chapter Summary

A review of the literature related to this study has been presented. The opinion of authorities as to the appropriate tools and techniques for measuring social status, personality characteristics and motor ability was reported. A survey of research dealing with the influences of regular and special classes upon the social status, personality characteristics and motor ability of mentally handicapped boys and girls was also presented. The chapter concluded with a review of research studies dealing with relationships between social status, personality characteristics and motor ability.

A thorough explanation of the procedures and techniques adhered to in obtaining the data is presented in Chapter III.

CHAPTER III

PROCEDURES AND TECHNIQUES

The purpose of this study was to investigate the social status, personality characteristics and motor ability of mentally handicapped girls. Consideration was given, not only to the differences in characteristics of mentally handicapped pupils found in the regular as opposed to those in special class situations, but also to the differences in characteristics found between the mentally handicapped in both situations and intellectually normal pupils of the same chronological age.

A review of the literature related to this study was presented in Chapter II and points up the fact that few studies investigating interrelationships of social status, personality characteristics and motor ability of mentally handicapped girls have been done. A great part of the research into the characteristics of mentally handicapped pupils has been done with institutionalized boys and girls. Application of the findings of this research to non-institutionalized situations was not recommended.

Since the literature does not provide separate tools for measuring social status, personality characteristics and motor ability of mentally handicapped girls but recommends

and makes use of the same tools provided for testing normal pupils, such tools were used in this study.

Procedures for Obtaining Data

The methods of obtaining the subjects and descriptions of tests and test procedures are outlined in this chapter.

The Subjects

During the fall semester of the 1967-1968 school year the names and IQ scores of all seventh and eighth grade girls in Tangipohoa Parish were obtained. The four schools with classes having the largest number of mentally handicapped girls on their rolls were chosen as the source of subjects in regular classes of physical education. All pupils with an IQ score of 85 and below were classified as mentally handicapped and included in the study.

A random sample of normal girls from the same classes was drawn for use as the intellectually normal subjects.

The subjects from the special classes for mentally handicapped were drawn from near by Bogalusa Junior High School, Bogalusa, Louisiana, and from Lakeside School, Metairie, Louisiana.

At the time of testing, subjects in the special classes had been in a special class situation from two to five years. Subjects in regular classes had been in a regular situation throughout their school experiences.

The testing procedures began the first week in January, 1968, and were completed the first week in March.

The Tests

The testing consisted of (1) a sociometric test; (2) The California Test of Personality; (3) a motor ability test; and (4) the recording of IQ score, chronological age, and height and weight of each subject. Testing procedures usually involved three days at each school. A subject absent on one or more of the testing days was tested upon her return to school. Any subject with a medical record or with obvious physical disability that would limit her participation in any physical activity was eliminated from the study. One of the normal girls was eliminated for this reason.

Pre-Test of Motor Coordination

In order to identify individuals with motor coordination difficulties serious enough to put them at a disadvantage in taking a paper-and-pencil test of any kind, the motor coordination test by Sullivan, Clark and Tiegs[1] was administered to all subjects.

The total possible score for both parts of this test was 20. A score of 10 or below indicated unsatisfactory performance which might have been due to one or more of the

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[1]Elizabeth T. Sullivan, Willis W. Clark, and Ernest W. Tiegs, Pre-Test: Vision, Hearing and Motor Coordination (Monterey, California: California Test Bureau, 1951).

following: immaturity, inadequate spatial orientation, speed unfavorable for the individual, or unsteadiness produced by emotional strain.[2]

Subjects who showed emotional "blocking" and inadequate motor control on this test were then tested individually on all other paper-and-pencil tests.

Sociometric Test

In an effort to determine each subject's social status within her class, a sociometric test was administered to all subjects in this study. The data for this were collected and recorded through the use of the Bonney-Fessenden Sociograph.[3]

A search was made of the literature to determine the factors important in the construction of the sociometric test. Bonney and Hampleman[4] found higher correlation when there were about 30 members in the group and when five or more choices were made by each. According to Newstetter, Feldstein and Newcomb,[5] and Grunlund[6] the stability of

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[2]Elizabeth T. Sullivan, Willis W. Clark, and Ernest W. Tiegs, Manual: Vision, Hearing and Motor Coordination (Monterey, California: California Test Bureau, 1955).

[3]Bonney and Fessenden, Bonney-Fessenden Sociograph.

[4]Bonney and Hampleman, Personal-Social Evaluation Techniques, p. 60.

[5]Newstetter, Feldstein, and Newcomb, Group Adjustment, p. 154.

[6]Grunlund, "Relative Stability of Classroom Social Status," pp. 345-354.

sociometric results increases up to the use of five choices. Studies by Bronfenbrenner,[7] Bonney and Hampleman,[8] Phillips and De Vault,[9] supported the use of both positive and negative responses. However, the research has given little reasonable basis for assigning weights to the different choices. For ease in administration and computation Grunland,[10] Breck[11] and Skubic[12] suggested the use of unweighted choices in determining social status. The following hypothetical situations were presented to the subjects with two questions for each situation, allowing for both positive and negative responses to be made by each subject toward her classmates:

Situation 1. Suppose you were allowed to move to another classroom for physical education and were allowed to select five girls from this class to go with you.

Question A. Which five girls would you like <u>best</u> to go with you to this new class?

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[7]Bronfenbrenner, "Measurement of Status, Structure, and Development," p. 5.

[8]Bonney and Hampleman, <u>Personal-Social Evaluation Techniques</u>, p. 65.

[9]Phillips and De Vault, "Relation of Valuation to Adjustments," pp. 409-412.

[10]Grunlund, "Relative Stability of Classroom Social Status," pp. 345-354.

[11]Breck, "Sociometric Measurements of Status," pp. 75-81.

[12]Skubic, "Study of Acquaintanceship and Social Status," pp. 80-87.

Question B. Which five girls would you like least to go with you to this new class?

Situation 2. Name your favorite sport or game. Suppose you were allowed time to participate in this sport each week during your physical education class.

Question A. Which five girls from this class would you like best to participate with you in this sport?

Question B. Which five girls from this class would you like least to participate with you in this sport?

Situation 3. Name your favorite school activity. Suppose you were given the opportunity to participate in this activity with pupils of your choice.

Question A. Which five girls from this class would you like most to join you in this activity?

Question B. Which five girls from this class would you like least to join you in this activity?

A special effort was made to keep the administrating procedures of this test as simple as possible. Because there were three situations and two responses to each of these situations, six copies of the names drawn from each class roll were provided for each girl participating in the study. The subjects were given the first list of names, the situation was described and the five positive responses were asked for. Subjects were asked not to circle their own names. After sufficient time was allowed for marking their choices the sheets were taken up. The second sheets were then given out and negative responses for the first situation were

asked for. When all subjects had marked their sheets, their second sheets were taken up. The same procedure was followed for situations two and three. Preliminary instructions made it clear to the subjects that this was not an examination on which a grade would be given.

California Test of Personality

The California Test of Personality, Intermediate Series, Form AA was administered to all subjects to determine personality characteristics. The purpose of this test is to provide data helpful in aiding individuals to develop a normal balance between personal and social adjustment. Personal adjustment, assumed to be based on feelings of personal security, and social adjustment on feelings of social security, make up the two parts of the tests. Each part is made up of six components. These components are not names for so-called general traits but are names for groupings of more or less specific tendencies to feel, think or act in specific ways. Respective components making up personal and social adjustment are as follows:[13]

A. Personal Adjustment

1. Self-Reliance
2. Sense of Personal Worth
3. Sense of Personal Freedom
4. Feeling of Belonging

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[13]Louis P. Thorp, Willis W. Clark, and Ernest W. Tiegs, Manual: California Test of Personality (Monterey, California: California Test Bureau, 1953), pp. 2-4.

5. Withdrawing Tendencies (Freedom from)

6. Nervous Symptoms (Freedom from)

B. Social Adjustment

1. Social Standards

2. Social Skills

3. Anti-Social Tendencies (Freedom from)

4. Family Relations

5. School Relations

6. Community Relations

Each component listed above consists of fifteen "yes-no" questions especially preposed for pupils in grades seven through ten.

Most of the subjects completed this test in the recommended forty-five minutes. However, additional time was given to those who needed it. This test was administered individually to those students who indicated difficulty on the pre-test of motor coordination mentioned earlier in this chapter. All subjects, except those having difficulty using them, used the I.B.M. answer sheets prepared especially for this test and followed the instructions given in the manual.[14] Subjects not able to use the I.B.M. sheets marked their answers in the test booklet.

The Interests and Activities part of this test was also administered to all subjects. The seventy-four activities included in the list vary from those which are very

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[14] *Ibid.*, pp. 21-25.

sedentary to those which involve considerable activity. They also range from activities involving individual participation to those requiring the participation of others. Information received from this survey was of four types: activities which the subject liked and engaged in; activities which she liked but did not engage in; activities which she disliked and avoided; and activities which she disliked, but for some reason did engage in.

Motor Ability

A search of the literature strongly indicated the use of track and field events for testing motor ability. As a result, the following track and field events were selected for the motor ability test: (1) the fifty-yard dash--to test for speed; (2) a standing broad jump--a combination test of coordination, power and strength; (3) a softball throw for distance--a test for strength and coordination; and (4) the shuttle run--to test for a combination of agility, balance and speed.

The four motor ability items were administered on the same day. All subjects completed one test before going on to the next to provide each a rest period between events.

In administering the fifty-yard dash two girls were timed against each other as a motivational factor. The girls were also told that they were competing against time--the most important factor. Only one trial was given for the fifty-yard dash which was recorded to the nearest tenth of a second.

The standing broad jump was explained and demonstrated to the subjects prior to the administration. Each subject was then allowed to take two practice jumps. Following the practice jumps three trials were allowed with the best jump of the three being recorded. Subjects were directed to stand with their toes just behind the take-off line. The measurement, recorded to the nearest inch, was taken from the take-off line to the part of the subject's body landing nearest the take-off point.

After giving directions for the softball throw for distance, the subjects were allowed a brief warm-up of softball throwing. Each subject was then allowed three throws, either from a running position or from a stationary stance. All three throws were marked by a small stake at the farthest point which the ball first touched the ground. The measurement was then made from the restraining line to the stake marking the longest throw. This distance was recorded to the nearest foot. Subjects on both the standing broad jump and the softball throw were tested individually.

The shuttle run was explained and demonstrated before testing began. With no practice period involved subjects were then timed in pairs. Subjects were told they were competing against time rather than their partners. The procedure for the shuttle run was that described by the AAHPER

Youth Fitness Manual.[15] Two trials were allowed and the best score recorded to the nearest tenth of a second.

Three women physical education majors assisted in the testing procedures. Complete explanations and directions were given to each before the testing program began. The assistance given by these three students for the written tests included only the distributing and collecting of test materials.

Instruments and Equipment

The following instruments were used to obtain the measurements of height, weight, and intelligence, and to measure motor performance:

(1) Scales: Most of the schools included in this study had scales of various types available for use in obtaining weight of the pupils. However, a Health-O-Meter scale was transported to each school in an effort to avoid discrepancy in weight that might be caused by different scales.

(2) Tape: A measuring rod was not available on the scales mentioned above so a tape measure was taped to the gymnasium wall. Along with this tape a wood headpiece with two faces at right angles was used to obtain the exact height measurement.

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[15] American Association for Health, Physical Education and Recreation, AAHPER Youth Fitness Test Manual (Washington, D. C.: American Association for Health, Physical Education and Recreation, 1958), pp. 8-9.

(3) Stop watches, tape measures, blocks of wood (2 by 2 by 4), mats, and softballs are pieces of equipment used in administering and measuring motor performance.

Techniques

The height and weight along with performance on the four motor ability items were measured while the subjects were wearing regulation gym suits. These uniforms, both one and two-piece, did not interfere with any measurements.

(1) Height: The height of each subject was measured while in a position with her back against a smooth wall. Each subject stood with heels in contact with the floor, arms hanging naturally and head facing straight forward. The examiner checked each girl for hair arrangements and jewelry that might prevent contact with the top of the head. One side of the wood head piece, mentioned earlier, was placed against the wall while the other side was brought down on top of the subject's head. The height measurement was read at the point where the right angle intersected the tape. Height was recorded to the nearest inch.

(2) Weight: The weight of each subject was taken on the Health-O-Meter scales and recorded to the nearest pound. Subjects were dressed in their physical education uniforms and without shoes.

(3) Mental Ability: The IQ scores for all subjects were obtained from the records of the participating schools. All IQ scores for subjects from the public schools in

Tangipahoa Parish were determined by the SRA Mental Abilities Test. The IQ scores of the subjects from Covington Junior High School were determined by the Otis Quick-Scoring Mental Ability Test. The Stanford-Binet Scale and the Wechsler Intelligence Scale were used to determine the IQ scores of subjects from Lakeside school.

(4) Chronological Age: The chronological ages were obtained from the school records and were recorded to the nearest month.

Statistical Treatment of the Data

A sociometric test, a personality and motor ability test were administered to the one hundred fifty-one subjects. The scores on the sociometric test were recorded as percentages in order to determine the acceptance and rejection score for each subject.

The scores from the three tests were put in a form that could be transferred to IBM cards and processed through a data computer machine at the University of Alabama. The height, weight, IQ and chronological ages for each subject were included in this data.

The independent variables of this study were the three class situations: (1) special classes of physical education for the mentally handicapped; (2) regular classes of physical education for the mentally handicapped; and (3) regular classes of physical education for intellectually normal girls.

The social status, personality and motor ability test scores made up the twenty-eight dependent variables. The data from these variables were statistically treated by: (1) discriminant analysis technique, (2) Cattell's[16] r_p, (3) Pearson Product-moment correlation, and (4) Chi-square (x^2).

This study was concerned primarily with comparing the differences between mentally handicapped girls in special classes, mentally handicapped girls in regular classes, and normal girls on tests of social status, personality characteristics and motor ability.

In the first part of the study the following null hypothesis was tested: mentally handicapped girls in special and regular classes of physical education and intellectually normal girls are not significantly different in their social status, personality characteristics and motor ability.

The dependent variables were treated statistically by the discriminant analysis technique and by Cattell's r_p to determine if the three groups could be distinguished from each other on the basis of these twenty-five measures.[17] The significance level of .05 was arbitrarily set for both statistical techniques and had to be shown by each before the null hypothesis could be rejected.

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[16]Cattell, "r_p and Other Coefficients of Pattern Similarity," pp. 279-298.

[17]Only twenty-five variables are included here since the two subtotals and the over-all total on the California Test of Personality were eliminated in order to avoid measuring the same variables twice.

The Interests and Activities survey part of the California Test of Personality was treated by the chi square (x^2) technique to determine the difference between the observed choices and those that were expected on the various activities in this survey. The hypothesis that no difference exists between the three groups described in this paper on their choices of activities, was tested. The significance level for rejecting this null hypothesis was arbitrarily set at the .05 level.

The second part of this study was concerned with the relationship between social status, personality characteristics and motor ability within the three groups. The following null hypotheses were tested: motor ability and personality characteristics as determined in this study will have no significant relationship to the social status of (a) mentally handicapped girls in regular classes of physical education, (b) mentally handicapped girls in special classes of physical education, and (c) intellectually normal girls in physical education classes.

The relationship between personality characteristics, motor ability and social status within the three groups was determined by the Pearson product-moment correlation (r).

The significance level of any relationship between the twenty-eight independent variables and the three dependent variables in either a positive or negative direction will be reported in this study. However, the significance level for rejecting the null hypothesis was arbitrarily set at the .05

level. A brief description of the discriminant analysis technique and Cattell's r_p technique is given in the following paragraphs.

Discriminant Analysis

Fisher,[18] in 1936, considered the problem of getting a linear combination of n variables which would, better than any other combination, discriminate between two chosen groups. The technique consists of maximizing the ratio of between-means-of-groups sum of squares to the within-groups sum of squares by the selection of the coefficients of the linear function.

Later it was demonstrated that the discriminant function is similar to other existing multivariate methods for treating two-group classification problems and other related problems.[19] This technique has also been expanded for consideration of more than two groups with the statistical and mathematical procedures outlined by Cooley and Lohner[20] and Tiedeman *et al*.[21]

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[18]Ronald A. Fisher, "The Use of Multiple Measurements in Taxonomic Problems," Annals of Eugenics, VII (September, 1936), 179-188.

[19]Ronald A. Fisher, "The Statistical Utilization of Multiple Measurements," Annals of Eugenics, VIII (August, 1938), 376-386.

[20]William W. Cooley and Paul R. Lohner, Multivariate Procedures for the Behavioral Sciences (New York: John Wiley, 1962).

[21]David E. Tiedeman, Phillip J. Rulon, and Joseph G. Bryan, "The Multiple Discriminant Function--A Symposium," Harvard Educational Review, XXI (1951), 71-95.

Fisher[22] pointed out that the difference between the group-means on the discriminant function is proportional to Hotelling's[23] T^2 and to Mahalanobis'[24] D^2 which is a measure of the distance between two groups. The significance of these relationships will be indicated later in the interpretation of the results.

The significance of the difference between the groups obtained by means of the discriminant function may be tested by means of a variance-ratio test--commonly the Z or F test. The procedure for this is described by Li.[25] The advantages of the multivariate approach of the discriminant function as compared with the univariate F-tests are indicated by Kroll and Petersen.[26, 27]

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[22]Fisher, "Statistical Utilization of Measurements," pp. 376-386.

[23]Harold Hotelling, "The Generalization of Student's Ratio," Annals of Mathematical Statistics, II (August, 1931), 360-378.

[24]Prasanta C. Mahalanobis, "Analysis of Race-Mixture in Bengal," Journal of the Asiatic Society of Bengal, New Series, XXIII (1927), 301-333.

[25]C. C. Li, Introduction to Experimental Statistics (New York: McGraw-Hill, Inc., 1965), p. 406.

[26]Walter Kroll and Kay H. Petersen, "Personality Factor Profiles of Collegiate Football Teams," Research Quarterly, XXXVI (December, 1965), 433-440.

[27]Walter Kroll and Kay H. Petersen, "Study of Values Test and Collegiate Football Teams," Research Quarterly, XXXVI (December, 1965), 441-447.

Cattell's r_p

Cattell's pattern similarity index operates upon data which have first been converted to standard scores with respect to each element or dimension of the pattern in order to give equal weight to each of the variables. It then operates on the individual difference of the two patterns with respect to each and every category, and expresses the result in terms of some distribution expected from chance alone.[28]

Chapter Summary

This chapter has described how the subjects for the study were obtained; has listed and described the various tests and pieces of equipment used in gathering the data; and has identified the statistical tools and procedures for treating these data.

The null hypotheses that were stated in various parts of this chapter will be presented in the first part of Chapter IV. The presentation and analysis of the statistical computations also will be included.

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[28]Cattell, "r_p and Other Coefficients of Pattern Similarity," p. 285.

CHAPTER IV

FINDINGS AND INTERPRETATIONS

The purpose of this study was to investigate the social status, personality characteristics and motor ability of mentally handicapped girls in regular and special classes of physical education. Data for this study were gathered on the following variables: social status, personality characteristics and motor ability. The three groups regarded as independent variables were (1) mentally handicapped girls in regular classes of physical education; (2) mentally handicapped girls in special classes of physical education; and (3) intellectually normal girls in regular classes of physical education. Throughout this chapter these three groups will be referred to as: MHR (mentally handicapped girls in regular classes); MHS (mentally handicapped girls in special classes); and normal (normal girls in regular classes). The dependent variables were made up of measurements included in the social status, personality characteristics and motor ability tests. The following null hypotheses were stated:

Null Hypotheses

(1) Mentally handicapped girls in special and regular classes of physical education and intellectually normal

girls are not significantly different in their social status, personality characteristics and motor ability.

(2) The three groups of subjects do not differ significantly in their choices on the Interests and Activities survey.

(3) Motor ability and personality characteristics as measured in this study have no significant relationship to the social status of (a) mentally handicapped girls in special classes, (b) mentally handicapped girls in regular classes, and (c) normal girls.

The .05 rejection level was selected as the limits for rejecting the null hypotheses. Mention will be made of smaller correlations but they will not be considered significant enough to reject the null hypotheses.

Comparison of Test Scores for the Three Groups

Social status, personality, and motor ability tests were administered to all subjects in the three groups. The social status included a percentage score of choices received, mutual choices, rejections received, and mutual rejections. The California Test of Personality was used to determine personality characteristics. This test was divided into two parts with each part containing six components. The data for this test included subtotals for each part and an over-all total. The motor ability test included the following items: (1) fifty-yard dash; (2) a shuttle run; (3) a standing broad jump; and (4) the softball throw

for distance. In computing the discriminant function and Cattell's r_p only twenty-five dependent variables were used. The two subtotals and the over-all total in the California Test of Personality were omitted. This was to avoid the possibility of measuring the same variables twice.

A discriminant analysis was performed to determine if the three groups could be distinguished from each other on the basis of the twenty-five measures described above. The coefficients of the discriminant function and the mean values for each group are shown in Tables 1 and 2 respectively.

A generalized Mahalanobis D^2 of 550.236 was obtained. The significance of D^2 was evaluated by the technique of x^2 approximation using 60 degrees of freedom. The x^2 values required at the .05 and .01 levels were 79.1 and 88.4 respectively.

The significance of the discriminant function was also evaluated by the process described by Li.[1] The F obtained was approximately 165 with 1 and 5 degrees of freedom. This was significant at the .01 level. (Formulae for this technique are found in the appendix).

The efficiency by which the discriminant function significantly separated the three groups was demonstrated by an evaluation of classification functions for each case. By this process an individual's score index is compared with

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[1]Li, Introduction to Experimental Statistics, p. 406.

TABLE 1

Group Means and Standard Deviations for Twenty-five Dependent Variables for Mentally Handicapped Girls in Regular Classes of Physical Education, Mentally Handicapped Girls in Special Classes of Physical Education, and Intellectually Normal Girls in Regular Classes of Physical Education

Variables	MHR*		MHS**		Normal***	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
I.Q.	77.16	6.88	77.91	13.49	102.49	10.64
Chronological Age	13.87	.68	14.73	.87	13.19	.67
Height	62.38	2.48	62.88	2.98	61.32	2.92
Weight	113.16	21.42	113.12	30.55	103.35	21.78
Choices Received	12.43	11.15	29.32	21.05	18.80	13.32
Mutual Choices	5.73	4.30	7.32	5.16	7.72	4.43
Rejections Received	23.32	17.50	27.97	20.62	13.47	14.80
Mutual Rejections	5.24	4.36	7.03	4.00	3.35	3.64
Self-reliance	7.73	2.70	8.97	2.70	8.99	4.46
Sense of Personal Worth	9.03	3.59	9.44	3.20	10.37	3.20
Sense of Personal Freedom	9.38	3.28	9.50	3.13	10.90	7.35
Feeling of Belonging	10.84	3.70	11.15	2.99	12.04	2.95
Withdrawing Tendencies	6.84	3.82	7.00	3.71	8.32	3.42
Nervous Symptoms	8.35	3.28	9.88	3.18	9.80	3.64

TABLE 1--Continued

Variables	MHR*		MHS**		Normal***	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Social Standards	11.32	1.48	12.35	2.12	12.39	2.00
Social Skills	10.54	1.86	10.38	2.15	10.60	2.17
Anti-social Tendencies	9.76	2.78	9.41	3.17	10.34	6.33
Family Relations	9.62	3.16	4.97	3.79	10.26	3.71
School Relations	8.27	2.91	9.85	2.72	9.96	2.61
Community Relations	10.41	3.06	11.74	2.19	11.96	2.61
Pre-Test of Motor Coordination	14.35	3.89	15.59	3.47	15.86	3.35
Fifty-yard Dash	8.98	.96	9.14	1.56	8.39	.80
Shuttle Run	12.11	1.28	12.92	2.75	11.46	1.28
Standing Broad Jump	54.81	9.13	52.62	8.77	61.29	7.31
Softball Throw	72.14	18.19	63.71	20.56	76.14	19.12

*Mentally handicapped girls in regular classes of physical education
**Mentally handicapped girls in special classes of physical education
***Normal girls in regular classes of physical education

TABLE 2

The Coefficient of the Discriminant Function of Each of Twenty-five Variables for Mentally Handicapped Girls in Regular Classes of Physical Education, Mentally Handicapped Girls in Special Classes of Physical Education, and Normal Girls in Regular Classes of Physical Education

Variables	Groups		
	MHR*	MHS**	Normals***
I.Q.	1.235	1.274	1.473
Chronological Age	27.616	30.123	26.467
Height	11.602	11.607	11.446
Weight	-1.226	-1.265	-1.219
Choices Received	.099	.343	.135
Mutual Choices	- .791	-1.297	- .864
Rejections Received	- .543	- .525	- .520
Mutual Rejections	3.507	3.744	3.328
Self-Reliance	-2.139	-2.101	-2.228
Sense of Personal Worth	- .882	-1.082	- .860
Sense of Personal Freedom	- .003	.027	- .017
Feeling of Belonging	.285	.362	.459
Withdrawing Tendencies (Freedom from)	- .368	- .430	- .257
Nervous Symptoms (Freedom from)	1.315	1.381	1.261
Social Standards	-1.143	- .873	-1.021
Social Skills	4.630	4.353	4.376
Anti-Social Tendencies (Freedom from)	.202	.109	.206
Family Relations	- .287	- .266	- .471
School Relations	- .644	- .534	- .607
Community Relations	- .924	- .678	- .616
Pre-Test: Motor Coordination	2.606	2.810	2.610
50-Yard Dash	17.626	17.225	17.317
Shuttle Run	6.784	7.318	6.919
Standing Broad Jump	.789	.677	.899
Softball Throw	.403	.375	.404

*Mentally handicapped girls in regular classes of physical education
**Mentally handicapped girls in special classes of physical education
***Normal girls in regular classes of physical education

that of a group's score index. In this study each individual's score index was compared with each of the three group score indices and a decision reached as to which group the individual was most like. Each individual was then assigned to the group with which he was most similar. The results, presented in Table 3, were based on the total three-group analysis.

TABLE 3

Classification Matrix: Maximum Likelihood Classification of Individuals

Group Membership	Predicted Group Membership			
	MHR*	MHS**	Normals***	Total
MHR* (N=37)	34	2	1	37
MHS** (N=34)	2	32	0	34
Normal*** (N=80)	3	0	77	80

*Mentally handicapped girls in regular classes of physical education
**Mentally handicapped girls in special classes of physical education
***Normal girls in regular classes of physical education

This table shows that in the MHR group there were only 3 incorrect classifications as opposed to 34 correct ones, a percentage of 92 for correct classifications. For the MHS group there were only 2 incorrect classifications and 32 correct ones, or 94 per cent correct. In the normal

groups there were only 3 incorrect classifications as opposed to 77 correct ones, a percentage of 96 for correct classifications. Thus, the number of correct classifications for the three groups was 143 or 95 per cent, and the number of incorrect classifications was 8 or about 5 per cent.

The raw score data for the three groups were also treated by Cattell's pattern similarity index (r_p). This technique was applied after the data had been converted into Z-scores with respect to each element in order to give equal weight to each of the variables. Cattell's r_p operates on the individual difference of the groups with respect to each and every category. In this technique if all group means fell on top of each other, the r_p would equal to ± 1.00. Cattell's r_p are shown in Table 4. The negative coefficients in this table indicate that the groups were different and in all three cases the differences were significant at the .01 rejection level. Cattell's r_p strongly supported the significant difference between groups found by the discriminant analysis technique.

The difference between the three groups on the twenty-five variables was distinctly demonstrated by these results. Therefore, the null hypothesis of no difference between the three groups was rejected at the required .05 level.

Discriminating Variables

By examining the Z-scores used in Cattell's r_p the variables most influential in differentiating between the

TABLE 4

Cattell's Indexes of Pattern Similarity for Comparisons Among Two Groups of Mentally Handicapped Girls and One Group of Intellectually Normal Girls

Groups*	Coefficients	P
MHR and MHS	-0.669	0.01
MHR and Normals	-0.836	0.01
MHS and Normals	-0.882	0.01

*MHR: Mentally handicapped girls in regular classes of physical education

MHS: Mentally handicapped girls in special classes of physical education

Normals: Intellectually normal girls in regular classes of physical education

groups were determined. The Z-scores for the three groups are shown in the profiles in Figures 1 and 2. These profiles of standard scores indicate that the groups differed significantly on several variables. These variables are presented below.

Weight.--The MHR and the MHS were not significantly different as far as weight was concerned. However, there was a significant difference, at the .01 level, between the MHR and the normals and between the MHS and the normals. Both groups of retardates were heavier than the normal girls.

Choices received.--All three groups differed significantly at the .01 level on the part of the sociometric

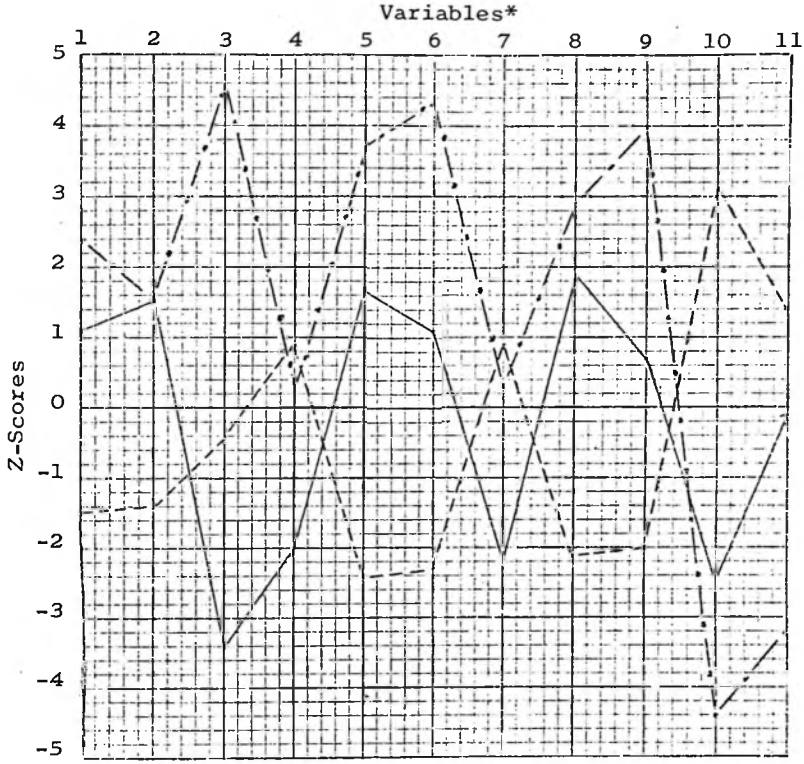

Figure 1.--Z-Score Profile Comparing the Three Groups on Height, Weight, Social Status and Motor Ability.

———— Mentally Handicapped Girls in Regular Classes of Physical Education

—·—·— Mentally Handicapped Girls in Special Classes of Physical Education

-------- Normal Girls in Regular Classes of Physical Education

*1. Height
2. Weight
3. Choices Received
4. Mutual Choices
5. Rejections Received
6. Mutual Rejections
7. Pre-Test of Motor Coordination
8. Fifty-yard Dash
9. Shuttle Run
10. Standing Broad Jump
11. Softball Throw

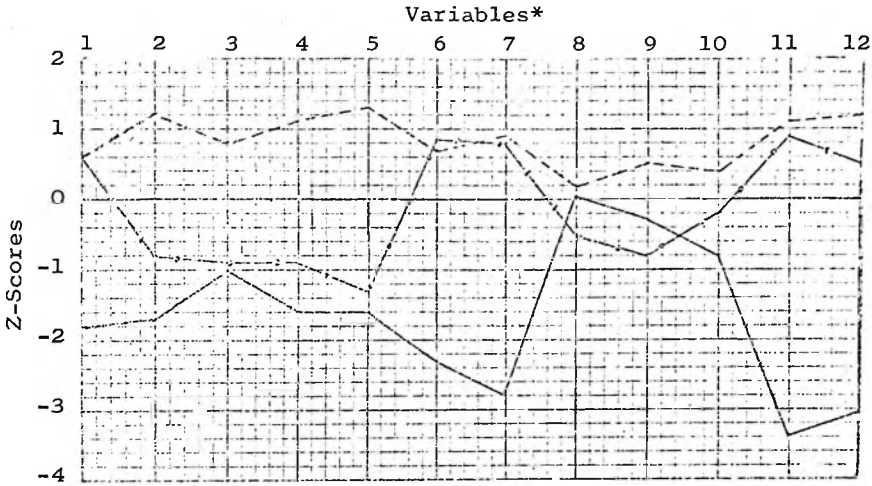

Figure 2.--Z-Score Profile Comparing the Three Groups on Personality Characteristics.

———— Mentally Handicapped Girls in Regular Classes of Physical Education

—·—·—·— Mentally Handicapped Girls in Special Classes of Physical Education

-------- Normal Girls in Regular Classes of Physical Education

*1. Self-Reliance
2. Sense of Personal Worth
3. Sense of Personal Freedom
4. Feeling of Belonging
5. Withdrawing Tendencies (Freedom from)
6. Nervous Symptoms (Freedom from)
7. Social Standards
8. Social Skills
9. Anti-Social Tendencies (Freedom from)
10. Family Relations
11. School Relations
12. Community Relations

test determining choices received. The MHR were significantly less socially accepted by their peers than were the MHS and the normals. The normals were significantly less socially accepted than the MHS. As a result, the MHS were significantly more socially accepted by their peers than were either of the other two groups.

Mutual choices.--The number of mutual choices recorded for the MHR were significantly less than those received by the MHS and the normals. The difference between the MHR and MHS was significant at the .05 level while the difference between the MHR and the normals was significant at the .01 level. The MHS and the normals did not differ significantly in the number of mutual choices received.

Rejections received.--The MHR and the MHS were rejected significantly more than were the normals. The significant difference in the number of rejections received in both cases was at the .01 level. There was no significant difference between the rejection scores of MHR and MHS.

Mutual rejections.--All three groups differed significantly at the .01 level in mutual rejections with the normals receiving less mutual rejections and the MHS receiving the most.

The components of the personal adjustment half of the California Test of Personality appeared to differentiate between the groups more than the social adjustment half. The items in which the three groups differed significantly are shown in Figure 2 and presented as follows:

Self-reliance.--The MHS and the normals were more self-reliant than the MHR. This difference was significant at the .05 level. The MHS and normals did not differ significantly on this item.

Sense of personal worth.--The normal girls indicated a significantly (.05 level) greater sense of personal worth than did both the MHR and the MHS. The latter two groups did not differ significantly from each other on this item.

Feeling of belonging.--Again, both groups of retardates (MHR and MHS) showed a feeling of belonging that was significantly less (.05 level) than the group of normals. The two groups of retarded subjects did not differ significantly from each other on this item.

Withdrawing tendencies.--Freedom from withdrawing tendencies characterized the normal girls more so than the MHS and the MHR. The difference between the MHR and normals was significant at the .01 level while the difference between the MHS and normals was significant at the .05 level.

Nervous symptoms.--The MHR were characterized by more nervous symptoms than were the MHS or the normal girls. The difference here was at the .01 level. However, there was no significant difference between the MHS and the normals.

Only two of the components of the social adjustment part of the personality test seemed to contribute to the significant differences between the three groups. These are as follows:

School relations.--The MHS and the normal girls scored significantly higher (at the .01 level) on school relations than did the MHR girls. There was no significant difference in school relations between the MHS and normal subjects.

Community relations.--Again, the MHR subjects scored significantly lower on the community relations section than did the MHS and normal subjects. The difference was significant at the .01 level. However, the scores of the MHS and normal girls were relatively close with no significant difference.

All subjects were tested on five motor activities. One of these activities was the pre-test of motor coordination, the other four made up the motor ability test (Figure 1). These tests discriminated between the groups as follows:

Pre-test of motor coordination.--The normals and the MHS scored the highest on this test and were significantly higher than the MHR. The difference between the MHR and MHS was significant at the .05 level while the difference between the MHR and normals was significant at the .01 level.

Fifty-yard dash.--A high score on this event indicates poor performance because time is used as the measure. The negative Z-scores represent the group that scored best. As a result, the profile shows the normals scored significantly better than both the retarded groups. The

difference was significant at the .01 level. However, the two groups of retarded subjects did not score significantly different on the 50-yard dash.

Shuttle run.--As with the 50-yard dash, high scores on the shuttle run indicated poor performance because of the speed factor. Consequently, the negative Z-scores represent the best time on the shuttle run. As seen in the profile, the slowest performance characterized the MHS subjects with the best performance shown by the normals. The performance by the MHR fell almost midway between. The differences between the MHR and normals and between the MHS and normals were significant at the .01 level; while between the MHR and the MHS the difference was significant at the .05 level.

Standing broad jump.--The best performance on the standing broad jump was given by the normals. The performance by this group was significantly (at the .01 level) better than the two groups of retarded subjects. There was no significant difference in performance between the two groups of retardates.

Softball throw.--Again, the normals scored highest on this motor skill. The difference between the normals and the MHS was significant at the .01 level, between the MHR and MHS at the .01 level, but between the normals and the MHR there was no significant difference.

Comparison of Group Responses to the Interests and Activities Survey

The Interests and Activities Survey included with the California Test of Personality was administered to all 151 subjects. Each pupil was instructed to mark the activities that she liked and those she actually engaged in. The results were totaled and recorded for each group as follows:

(1) activities both disliked and avoided

(2) activities liked but not engaged in

(3) activities not liked but for some reason engaged in

(4) activities both liked and engaged in

The chi square (x^2) technique was used to compare the groups as to their responses to the seventy-four activities listed in the survey. The frequency of modal responses for each of the three groups in all four categories are shown in Table 5.

When all three groups were compared on all four types of responses, a x^2, with 6 degrees of freedom, significant at the .05 level, was found. With this significant difference found among the three groups, a x^2 test was made, taking one group at a time versus each other group.

The x^2 obtained between the MHR and the MHS was 6.93, with three degrees of freedom. The difference was significant at the .10 level but not at the required .05 rejection level. The x^2's obtained between the MHR and the normals

TABLE 5

Observed and Expected Modal Responses on Interests and Activities Survey of Mentally Handicapped Girls in Regular Classes of Physical Education, Mentally Handicapped Girls in Special Classes of Physical Education, and Normal Girls in Regular Classes of Physical Education

Groups	Type of Responses							
	Disliked And Avoided		Liked But Not Engaged In		Disliked But Engaged In		Liked And Engaged In	
	O	E	O	E	O	E	O	E
MHR*	16	15	10	7	1	1	10	14
MHS**	16	14	8	6	2	1	8	13
Normals***	30	33	8	14	2	3	40	30

*Mentally handicapped girls in regular classes of physical education

**Mentally handicapped girls in special classes of physical education

***Normal girls in regular classes of physical education

and between the MHS and the normals were 9.58 and 10.35 respectively. The degrees of freedom for each comparison were 3 and the resulting significance for both was at the .05 level.

An examination of Table 5 shows that there were more normal girls whose modal response fell in the category of activities both liked and engaged in; and fewer normal girls whose modal response fell in the category of activities both disliked and avoided.

Both the groups of handicapped girls tended toward higher modal responses to activities they liked but did not participate in. Modal responses for all three groups were relatively low in the activities that were disliked but for some reason were engaged in.

Within the seventy-four different activities listed in the Interests and Activities survey were those activities involving individual participation and those requiring the participation of others (or group participation). Engaging in individual activities excessively may suggest withdrawing tendencies on the part of the mentally handicapped, and/or rejection of these handicapped girls on the part of their normal peers. Consequently, the three groups were compared as to their responses to individual versus group activities.

An over-all x^2 test was made to determine the difference, if any, in responses by the three groups to the individual-type activities. The observed and expected

modal responses used for this calculation are shown in Table 6. The x^2 obtained was 10.41 with 6 degrees of freedom. This difference was significant at the .10 level but not at the required .05 rejection level. Neither were there significant differences found between the groups when each was compared with each of the other groups.

The modal responses in Table 6 indicated a tendency on the part of both the MHR and the MHS to be interested in individual activities in which they do not participate. The responses of the normal girls, however, tended to be toward individual activities they both liked and participated in. The three groups tended to have similar responses to the other two categories for individual-type activities.

The process used to compare the three groups' modal responses to individual activities was also applied to study their modal responses to group-type activities. An over-all x^2 of 10.18, with 3 degrees of freedom, was found among the three groups. This difference was significant at the .10 level but not at the required .05 rejection level. Neither were there significant differences found between the groups when each one was compared with each of the other two.

The modal responses given in Table 7 indicated that the MHR disliked and avoided more of the group activities than did either the MHS or the normals. The two groups of mentally handicapped girls also indicated they liked more group activities than they actually engaged in. The normals, in

TABLE 6

Observed and Expected Modal Responses to Individual-Type Interests and Activities of Mentally Handicapped Girls in Regular Classes of Physical Education, Mentally Handicapped Girls In Special Classes of Physical Education, and Normal Girls in Regular Classes of Physical Education

Groups	Type of Responses							
	Disliked And Avoided		Liked But Not Engaged In		Disliked But Engaged In		Liked And Engaged In	
	O	E	O	E	O	E	O	E
MHR*	16	16	9	6	1	2	11	13
MHS**	15	15	9	6	2	1	8	12
Normals***	34	34	8	14	3	3	35	29

*Mentally handicapped girls in regular classes of physical education

**Mentally handicapped girls in special classes of physical education

***Normal girls in regular classes of physical education

TABLE 7

Observed and Expected Modal Responses to Group-Type Interests and Activities of Mentally Handicapped Girls in Regular Classes of Physical Education, Mentally Handicapped Girls in Special Classes of Physical Education, and Normal Girls in Regular Classes of Physical Education

Groups	Type of Responses							
	Disliked And Avoided		Liked But Not Engaged In		Disliked But Engaged In		Liked And Engaged In	
	O	E	O	E	O	E	O	E
MHR*	19	15	8	7	1	1	9	14
MHS**	12	13	10	7	2	1	10	13
Normals***	29	31	11	16	2	3	38	30

*Mentally handicapped girls in regular classes of physical education

**Mentally handicapped girls in special classes of physical education

***Normal girls in regular classes of physical education

comparison, tended to both like and participate in more group-type activities than did the mentally handicapped girls.

On the basis of the results produced by the chi square test for differences between groups, the hypothesis of no difference among the three groups in their responses to the Interests and Activities survey was neither fully accepted or rejected.

Relationships Between Social Status, Personality Characteristics and Motor Ability

The Pearson product-moment correlation technique was used to determine the relationship between the social status, personality characteristics and motor ability for each of the three groups treated separately. For this part of the study the subtotals and over-all total in the California Test of Personality were used making a total of twenty-eight variables.

Social status in this study was composed of four components: choices received, mutual choices, rejections received and mutual rejections. Motor ability was determined by each subject's performance on four motor activities: fifty-yard dash, shuttle run, standing broad jump, and soft-ball throw. There were fifteen components making up the California Test of Personality. These components are listed in Chapter III. The IQ, chronological age, height, weight and the results of the pre-test of motor coordination were recorded and used for comparative purposes.

Mentally Handicapped Girls in Regular Classes of Physical Education

The product-moment correlation coefficients (r) for the social status and personality characteristics of the MHR are listed in Table 8. The number of choices received under social status was related to four of the personal adjustment items of the personality test and to the total personal adjustment score. These items--self-reliance, sense of personal worth, feeling of belonging, and freedom from withdrawing tendencies and nervous symptoms--were all positively related (at the .05 level) to the number of choices received. A high positive relationship (at the .01 level) also existed between the score on total personal adjustment and the number of choices received.

The mutual choices and mutual rejections were recorded in the data because of their possible usefulness in grouping or class placement on the basis of sociometric tests. Significant positive r's (at the .05 level) were found between the number of mutual choices and a sense of personal worth and a feeling of belonging. There was a slight (.10 level) positive relationship found between the number of mutual choices and freedom from withdrawing tendencies. There were no significant relationships found between the number of rejections and any of the personality characteristics. Neither were there any significant correlations found between the number of mutual rejections and the personality items.

TABLE 8

Product-Moment Correlations Between Social Status and Personality Characteristics of Thirty-seven Mentally Handicapped Girls in Regular Classes of Physical Education

Personality Characteristics	Social Status			
	Choices Received	Mutual Choices	Rejections Received	Mutual Rejections
Self-reliance	.337[b]	.194	.022	-.011
Sense of personal worth	.447[a]	.334[b]	.003	.040
Sense of personal freedom	.241	.207	-.206	-.197
Feeling of belonging	.387[b]	.387[b]	-.256	-.156
Withdrawing tendencies (Freedom from)	.375[b]	.320[c]	-.097	-.003
Nervous symptoms (Freedom from)	.080	-.001	-.081	-.176
TOTAL: Personal Adjustment	.443[a]	.177	-.132	-.063
Social standards	.205	.043	-.036	-.093
Social skills	.138	.109	.057	-.055
Anti-social tendencies (Freedom from)	-.024	-.112	-.185	-.199
Family relations	.223	.054	-.296[c]	-.195
School relations	.339[b]	.195	-.205	-.227
Community relations	-.125	.080	-.116	-.047
TOTAL: Social Adjustment	.179	.091	-.225	-.162
TOTAL: Personal-Social Adjustment	.363[b]	.262	-.199	-.148

[a]Significant at .01 level
[b]Significant at .05 level
[c]Significant at .10 level

The correlation coefficients between the social status components and the motor ability items for the MHR are shown in Table 9.

Performance on the fifty-yard dash[2] and the softball throw were positively related to the number of choices and rejections received. However, the only significant relationship was between the performance on the fifty-yard dash and choices received.

There were slight positive correlations between the number of mutual choices and the fifty-yard dash and the softball throw. However, these were not significant at the required .05 level.

From Table 10, giving the r's for personality characteristics and motor ability, there was only one significant positive relationship indicated. This relationship, at the .05 level, was between community relations and the fifty-yard dash.

The null hypothesis of no relationship between social status, personality characteristics and motor ability of the MHR was neither accepted nor rejected on the basis of the results produced by the product-moment correlation technique.

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[2]Negative signs are necessary to show positive correlations when dealing with speed factors (fifty-yard dash and shuttle run).

TABLE 9

Product-Moment Correlations Between Social Status and Motor Ability of Thirty-seven Mentally Handicapped Girls in Regular Classes of Physical Education

Motor Ability	Social Status			
	Choices Received	Mutual Choices	Rejections Received	Mutual Rejections
Pre-Test: Motor Coordination	.197	.205	.205	-.028
50-Yard Dash	-.351[b]	-.293[c]	-.293[c]	-.090
Shuttle Run	-.217	-.179	-.179	-.038
Standing Broad Jump	.240	.188	.188	.143
Softball Throw	.281[c]	.292[c]	.292[c]	.105

[b]Significant at .05 level
[c]Significant at .10 level

TABLE 10

Product-Moment Correlations Between Motor Ability and Personality Characteristics for Mentally Handicapped Girls in Regular Classes of Physical Education

Personality Characteristics	Motor Ability			
	50-Yard Dash	Shuttle Run	Standing Broad Jump	Softball Throw
Self-reliance	-.120	.006	-.016	-.035
Sense of Personal Worth	-.137	.077	-.094	.204
Sense of Personal Freedom	.167	.144	-.009	.059
Feeling of Belonging	.029	.147	-.096	.212
Withdrawing Tendencies (Freedom from)	.057	.035	-.058	.072
Nervous Symptoms (Freedom from)	.114	-.018	-.099	-.125
TOTAL: Personal Adjustment	.024	.116	-.063	.128
Social Standards	-.135	.010	.177	-.013
Social Skills	-.103	.071	-.121	.265
Anti-social Tendencies (Freedom from)	.277	.102	-.235	-.103
Family Relations	.172	.223	.081	.148
School Relations	.023	.232	.068	.137
Community Relations	.382[b]	.144	-.246	.002
TOTAL: Social Adjustment	.201	.215	-.081	.101
TOTAL: PERSONAL-SOCIAL ADJUSTMENT	.111	.159	-.094	.111

[b]Significant at the .05 level

Mentally Handicapped Girls in Special Classes of Physical Education

The four components of social status were correlated with the fifteen personality characteristics within the MHS group. The coefficients for these correlations are given in Table 11. As indicated in the table, the number of choices received was negatively related, at the .01 level, to the score on family relations. There was a slight positive relationship found between the rejection score and family relations and a sense of personal worth. However, these were not significant at the required .05 level. A significant (at the .01 level) positive relationship was shown between the number of mutual rejections and the degree of self-reliance while a significant (at the .05 level) negative correlation was found between the number of mutual choices and the family relations score. The number of mutual rejections was also related slightly to a sense of personal worth. This relationship was not significant.

The four motor ability test items were also correlated with the four social status components. The product-moment coefficients are shown in Table 12.

A positive correlation significant at the .01 level was found between the number of choices received and broad jumping ability. A slight positive relationship was also found between the ability to execute the shuttle run and the number of choices received.

TABLE 11

Product-Moment Correlations Between Social Status and Personality Characteristics of Thirty-four Mentally Handicapped Girls in Special Classes of Physical Education

Personality Characteristics	Social Status			
	Choices Received	Mutual Choices	Rejections Received	Mutual Rejections
Self-reliance	.092	.431[a]	-.138	.020
Sense of personal worth	-.026	.066	-.218	-.221
Sense of personal freedom	-.239	-.023	.314[c]	.318[c]
Feeling of belonging	.079	.083	-.205	-.114
Withdrawing tendencies (Freedom from)	-.179	-.027	.081	.002
Nervous symptoms (Freedom from)	-.018	.026	-.016	-.145
TOTAL: Personal Adjustment	-.103	.103	-.030	-.030
Social standards	-.123	.114	-.090	.088
Social skills	-.179	-.009	-.032	.002
Anti-social tendencies (Freedom from)	-.113	-.071	.213	.190
Family relations	-.451[a]	-.336[b]	.275[c]	.078
School relations	.014	.016	-.078	-.108
Community relations	-.026	-.057	-.021	-.127
TOTAL: Social Adjustment	-.234	-.116	.103	.044
TOTAL: Personal-Social Adjustment	-.194	-.190	.063	-.063

[a]Significant at .01 level
[b]Significant at .05 level
[c]Significant at .10 level

TABLE 12

Product-Moment Correlations Between Social Status and Motor Ability of Thirty-four Mentally Handicapped Girls in Special Classes of Physical Education

Motor Ability	Social Status			
	Choices Received	Mutual Choices	Rejections Received	Mutual Rejections
Pre-Test: Motor Coordination	.138	-.439[a]	.152	-.379[b]
50-Yard Dash	-.158	.313[c]	-.233	.155
Shuttle Run	-.299[c]	.340[b]	-.288[c]	.226
Standing Broad Jump	.418[a]	-.206	.400[a]	.059
Softball Throw	.145	-.041	.080	.055

[a]Significant at .01 level
[b]Significant at .05 level
[c]Significant at .10 level

Performance on the shuttle run was found to be negatively related (at the .05 level) to the number of rejections received. There was also a negative relationship, significant at the .01 level, between the rejection score and the pre-test of motor coordination. (Although the test was not part of the motor ability test per se, it is used here for comparative purposes.) There was a slight negative r between the number of rejections received and performance on the fifty-yard dash. The r was significant at the .01 level. A negative relationship, at the .05 level, was also found between performance on the pre-test of motor coordination and the number of mutual rejections.

The correlations between the motor ability and personality characteristics within the MHS group are recorded in Table 13. The r's in this table show there was a positive relationship, significant at the .05 level, between performance on the motor coordination test and a sense of personal worth and a feeling of belonging. A slight positive relationship was also found between performance on the motor coordination test and freedom from withdrawing tendencies.

There was only a slight positive r between performance on the fifty-yard dash and school relations. A negative relationship significant at the .01 level was found between performance on the standing broad jump and the total personality score. Performance on the softball throw was highly related to the degree of freedom from nervous symptoms. This was a negative correlation significant at the

TABLE 13

Product-Moment Correlations Between Personality Characteristics and Motor Ability of Mentally Handicapped Girls in Special Classes of Physical Education

Personality Characteristics	Motor Ability				
	Pre-Test Motor Coordi-nation	50-Yard Dash	Shuttle Run	Standing Broad Jump	Softball Throw
Self-Reliance	.264	-.092	-.135	-.073	-.097
Sense of Personal Worth	.416[a]	.151	.193	-.210	-.223
Sense of Personal Freedom	-.104	.121	.116	.202	-.043
Feeling of Belonging	.366[b]	-.053	.141	-.129	-.019
Withdrawing Tendencies (Freedom from)	.283[c]	.081	.108	-.154	-.131
Nervous Symptoms (Freedom from)	-.065	.221	.185	-.242	-.502[x]
TOTAL: Personal Adjustment	.245	.097	.135	-.216	-.218
Social Standards	-.058	.172	-.007	.037	-.015
Social Skills	.079	.100	.122	-.201	-.179
Anti-Social Tendencies (Freedom from)	.005	.104	.170	-.197	-.127
Family Relations	.073	.053	.093	-.154	.095
School Relations	.186	.305[c]	.143	-.263	-.175
Community Relations	-.146	.269	.256	-.212	-.183
TOTAL: Social Adjustment	.045	.216	.179	-.235	-.114
TOTAL: PERSONAL-SOCIAL ADJUSTMENT	.160	.235	.227	-.456	-.254

[x]Significant at .001 [b]Significant at .05
[a]Significant at .01 [c]Significant at .10

.001 level.

The null hypothesis of no relationship between social status, personality characteristics and motor ability of the MHS was neither completely accepted nor rejected on the basis of the results produced by the product-moment correlation technique.

Normal Girls in Regular Classes of Physical Education

The data collected on the normal girls were treated by the product-moment correlation technique to determine the relationship of the twenty-eight variables within this group. The coefficients for the social status and personality characteristics are shown in Table 14.

The figures in this table did not show any correlations significant at the required .05 level. However, there was a slight relationship between the number of choices received and a sense of personal worth and freedom from anti-social tendencies. There was also a relationship (at the .10 level) shown between the number of rejections received and family relations. The number of mutual rejections were also slightly related to self-reliance.

The product-moment correlations between social status and motor ability for normal girls are recorded in Table 15.

The ability to execute the softball throw had a high positive relationship (at the .001 level) to the number of choices received on the social status test. A positive relationship at the .10 level was also found between the number

TABLE 14

Product-Moment Correlations Between Social Status and Personality Characteristics of Eighty Normal Girls in Regular Classes of Physical Education

Personality Characteristics	Social Status			
	Choices Received	Mutual Choices	Rejections Received	Mutual Rejections
Self-reliance	.007	.020	.125	.214[c]
Sense of personal worth	.210[c]	.134	-.047	-.068
Sense of personal freedom	.014	.064	.020	.029
Feeling of belonging	.070	.027	.118	.067
Withdrawing tendencies (Freedom from)	-.027	-.065	.071	.029
Nervous symptoms (Freedom from)	-.040	-.013	.044	.012
TOTAL: Personal Adjustment	.076	.018	.070	-.001
Social standards	.165	.131	-.081	-.177
Social skills	.136	.031	-.011	-.109
Anti-social tendencies (Freedom from)	.199[c]	.103	-.040	-.056
Family relations	-.082	-.107	.192[c]	.089
School relations	-.040	.000	.168	.088
Community relations	.136	.096	.006	.007
TOTAL: Social Adjustment	.020	-.025	.105	-.010
TOTAL: Personal-Social Adjustment	.056	.002	.091	-.006

[a]Significant at .01 level
[b]Significant at .05 level
[c]Significant at .10 level

TABLE 15

Product-Moment Correlations Between Social Status and Motor Ability of Eighty Intellectually Normal Girls in Regular Classes of Physical Education

Motor Ability	Social Status			
	Choices Received	Mutual Choices	Rejections Received	Mutual Rejections
Pre-Test: Motor Coordination	.167	.096	-.038	-.116
50-Yard Dash	-.178	-.200[c]	.034	.128
Shuttle Run	-.143	-.119	.110	.156
Standing Broad Jump	.167	.192[c]	.009	-.071
Softball Throw	.363[x]	.226[b]	-.097	-.113

[x]Significant at .001 level
[a]Significant at .01 level
[b]Significant at .05 level
[c]Significant at .10 level

of mutual choices recorded and performance on the fifty-yard dash and the standing broad jump. The number of mutual choices was positively related (at the .05 level) to performance on the softball throw.

A study was made of the relationship between the motor ability and personality characteristics of normal girls. The correlation coefficients are shown in Table 16. The pre-test of motor coordination appeared highly related to many of the items of the personality test. The items that had a significant positive relationship to performance on the motor coordination test were: sense of personal worth (.001 level), freedom from withdrawing tendencies (.05 level), freedom from nervous symptoms (.01 level), total personal adjustment (.001 level), social standards (.01 level), social skills (.05 level), family relations (.01 level), school relations (.01 level), total social adjustment (.001 level) and total personal-social adjustment (.001 level).

A slight positive correlation was shown between the pre-test score and self-reliance, feeling of belonging and freedom from anti-social tendencies. These relationships were not significant at the required .05 level, however.

Performance on the fifty-yard dash was positively related, but not significantly, to freedom from nervous symptoms and social standards.

Significant positive relationship at the .05 level was found between performance on the standing broad jump and social standards. A negative r significant at the .05 level

TABLE 16

Product-Moment Correlations Between Motor Ability and Personality Characteristics of Normal Girls in Regular Classes of Physical Education

Personality Characteristics	Motor Ability				
	Pre-Test Motor Coordination	50-Yard Dash	Shuttle Run	Standing Broad Jump	Softball Throw
Self-Reliance	.209[c]	.148	.131	-.107	.021
Sense of Personal Worth	.373[x]	-.017	.025	.064	.069
Sense of Personal Freedom	.119	.028	-.086	.044	.165
Feeling of Belonging	.203[c]	-.105	.004	.076	.076
Withdrawing Tendencies (Freedom from)	.220[b]	-.034	.100	-.116	-.053
Nervous Symptoms (Freedom from)	.344[a]	-.189[c]	-.105	-.062	-.276[b]
TOTAL: Personal Adjustment	.389[x]	-.092	.008	.006	-.027
Social Standards	.318[a]	-.194[c]	-.170	.266[b]	.108
Social Skills	.224[b]	-.054	.070	.082	.097
Anti-Social Tendencies (Freedom from)	.193[c]	-.063	-.091	.117	.077
Family Relations	.295[a]	-.135	-.001	.116	-.132
School Relations	.354[a]	-.080	.079	.018	-.185[c]
Community Relations	.304[a]	-.043	.047	.010	.023
TOTAL: Social Adjustment	.428[x]	-.121	.016	.127	-.074
TOTAL: PERSONAL-SOCIAL ADJUSTMENT	.433[x]	-.012	.013	.061	-.049

[x]Significant at .001 level
[a]Significant at .01 level
[b]Significant at .05 level
[c]Significant at .10 level

was found between throwing ability and freedom from nervous symptoms. A negative r was also found between throwing ability and school relations but was not significant.

On the basis of the results found by applying the product-moment correlation technique, the null hypotheses of no relationship between social status, personality characteristics and motor ability of intellectually normal girls was neither accepted nor rejected.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The primary purpose of this study was to investigate the differences among the mentally handicapped girls in regular classes of physical education (MHR), mentally handicapped girls in special classes of physical education (MHS), and intellectually normal girls (Normals) as to their social status, personality characteristics and motor ability. It was also the purpose of this study to examine the relationship of social status to personality characteristics and motor ability in each of the three class situations: MHR, MHS and Normals. The hypotheses tested were (1) mentally handicapped girls in regular and special classes of physical education and intellectually normal girls are not significantly different in their social status, personality characteristics and motor ability, (2) the MHR, MHS and normal girls do not differ significantly in their choice of activities listed in the Interests and Activities section of the California Test of Personality, and (3) motor ability and personality characteristics will have no significant relationship to the social status of the MHR, MHS and normal girls.

Summary

Measures of social status, personality characteristics and motor ability were taken on seventy-one mentally handicapped and eighty intellectually normal junior high school girls. A sociometric questionnaire built around three class situations with both positive and negative responses was administered to all subjects. The results were recorded on the Bonney-Fessenden Sociograph. The social status scores for each girl included percentage scores on four components: choices received, mutual choices, rejections received and mutual rejections.

The California Test of Personality, composed of both personal and social adjustment components, was administered as a test for twelve different personality characteristics. A battery of motor activities that included tests of speed, coordination, strength, power, balance and agility was also administered to test for motor ability.

The MHR, MHS and normal groups made up the independent variables, while the twenty-five (twenty-eight for product-moment correlations) components of the sociometric, personality and motor ability tests composed the dependent variables.

Computations by means of the data processing machine at the University of Alabama were made to obtain the discriminant function, Cattell's r_p, x^2 values and Pearson product-moment correlation coefficients. The discriminant function and Cattell's r_p served to compare the differences

between the three groups (MHR, MHS and Normals) as to social status, personality characteristics and motor ability. The x^2 technique was used to compare the differences between the groups on their choice of and participation in the activities listed in the Interests and Activities survey. And, the correlation coefficients obtained showed the relationships between social status, personality characteristics and motor ability in each group.

Summary of Differences Between Groups

The social status, personality characteristics and motor ability scores of two groups of mentally handicapped girls (MHR and MHS) and a group of normal girls were scrutinized through a discriminant analysis and a maximum-likelihood classification and by Cattell's pattern similarity index. Significance of the Mahalanobis' D^2 obtained through the discriminant analysis was evaluated by Rao's[1] technique of x^2 approximation and by Li's[2] variance-ratio test. Both the x^2 and the F tests of difference between the three groups were significant at the .01 level.

The maximum likelihood classification shown in Table 3, Chapter IV, represents the correct and incorrect classifications of each of the 151 subjects into one of the three class situations--MHR, MHS and Normals. The total number

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[1]C. R. Rao, Advanced Statistical Methods in Biometric Research (New York: John Wiley, 1952).

[2]Li, Introduction to Experimental Statistics, p. 406.

of correct classifications was 143 or 95 per cent with only 8 incorrect classifications or about 5 per cent.

Cattell's index, r_p, was also applied to the data obtained on all three groups. A difference between each group when compared with each of the other groups was significant at the .01 level. A profile of the three groups was constructed using standard scores (Z-scores) and a comparison between group means on all variables was made.

There was a significant age and weight difference between the groups for the Normals were significantly younger and weighed less than both the MHR and the MHS.

The three groups differed significantly on components of social status. The MHS were more socially accepted by their peers than were the MHR or the Normals. The MHR scored the lowest on social acceptance. Social rejection percentages were significantly higher for the MHR than for the MHS or the normal girls. However, the difference in rejections received by the MHS and by the Normals was not significant. These findings agree in part with those by Allen,[3] Martin,[4] Johnson,[5] Kern and Pfaeffle,[6] Cassidy and

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[3]Allen, "A Note on Mixed Summer Camping," pp. 50-51.

[4]Martin, "Personality Development," pp. 94-101.

[5]Johnson, "A Study of Social Position," pp. 80-81.

[6]Kern and Pfaeffle, "A Comparison of Social Adjustment," pp. 407-413.

Stanton,[7] and Blatt.[8]

The mutual choices recorded for the three groups indicated a much lower percentage for the MHR girls than for either the MHS or normal girls. The MHR girls also scored higher on mutual rejections than either of the other two groups.

A significant difference was evident between the retardates and the normal girls on many of the personal-social adjustment components of the test of personality. The MHR girls scored lower on the measure of self-reliance than did either the MHS or the Normals. There was a close similarity on this item between the Normals and the MHS subjects. The same was true for the scores on freedom from withdrawing tendencies. The Normals indicated more freedom from these tendencies than either the MHR or the MHS. Withdrawing tendencies also characterized the MHR more so than the MHS.

The normal girls scored more favorably on freedom from nervous symptoms and a sense of personal worth than did both the groups of retarded girls. The scores for the MHR on these two items were least favorable.

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[7]U. S. Department of Health, Education and Welfare, An Investigation of Factors, pp. 7-15.

[8]Blatt, "The Physical, Personality and Academic Status of Children," pp. 810-818.

More desirable family and school relations were indicated for the Normals and MHS by their scores on these two items. Both these groups scored significantly higher than the MHR.

On the four tests of motor ability the normal girls performed significantly higher than did both groups of mentally handicapped. On tests for speed (fifty-yard dash) and on a combination test of power, strength and coordination (standing broad jump), the performance by the mentally handicapped girls in both groups closely resembled each other. Motor performance by the MHS as measured by the shuttle run (test for agility, balance and speed) and the softball throw (strength and coordination test) was poorer than the performance by the MHR and Normals. These findings agree in part with those by Hayden,[9] Howe,[10] Kulcinski,[11] Sloan,[12] Stein,[13] and Francis and Rarick.[14]

The Interests and Activities part of the California Test of Personality was administered to all subjects so that a comparison between the groups could be made as to the

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[9]Hayden, Physical Fitness for the Mentally Retarded.

[10]Howe, "A Comparison of Motor Skills," pp. 352-354.

[11]Kulcinski, "The Relation of Intelligence to Learning," pp. 266-276.

[12]Sloan, "Motor Proficiency and Intelligence," pp. 394-406.

[13]Stein, "Adapted Physical Education," pp. 30-31.

[14]U. S. Department of Health, Education and Welfare, Motor Characteristics of Mentally Retarded, pp. 25-27.

activities each group: (1) both disliked and avoided; (2) liked but not engaged in; (3) not liked but for some reason engaged in, and (4) both liked and engaged in.

An over-all significant difference, using the x^2 technique, was found between the three groups on all four modal responses. A significant difference was also found between the normal girls and both groups of retardates. There was no significant difference, however, between the modal responses of the MHR and the MHS.

Certain tendencies were evident from the comparisons mentioned above. One of these was that both groups of retardates indicated interest in many activities in which they did not participate. There was a tendency for normal girls to be both interested in and participate in more activities than the retardates. The Normals were also likely to dislike and to avoid fewer activities than did the retardates. And, finally, the three groups were relatively similar in their modal responses to activities disliked but for some reason engaged in.

The seventy-four activities in the survey were classified into two categories: (1) activities designed for individual involvement (activities one through forty-six), and (2) activities requiring group participation (activities forty-seven through seventy-four).

The x^2 test was employed to test the difference between group modal responses to the individual-type activities. Each group was also compared with each of the other

two groups on all four types of responses to individual-type activities. The x^2 obtained in each comparison was not significant.

There were certain trends, however, that were evident in these comparisons. Specifically, both the MHR and the MHS seemed to be interested in individual activities in which they did not participate. This was not true for the Normals. The normal girls tended to like and participate in individual-type activities.

When the modal responses to group-type activities were compared among the three groups, there were no significant differences found. There was a tendency for the MHR to avoid more of the group-type activities than did either the MHS or the Normals. Both groups of retardates indicated they were interested in more group activities than they actually participated in. The Normals, in comparison, tended to both like and participate in group activities to a greater extent than did the retardates.

Summary of Relationships Between Variables Within Each Group

In addition to comparing the differences between the three groups on items of social acceptance and rejection, personal-social adjustment and motor ability, the product-moment correlation technique was applied to the data in order to study any relationship that might exist between these items (social status, personality characteristics and motor ability) within each group.

For the mentally handicapped girls in regular classes, two items of social status--the number of choices received and mutual choices--were positively related to items of personal-social adjustment. The items significantly related were self-reliance, sense of personal worth, feeling of belonging, total personal adjustment, school relations and total personal-social adjustment. There were no significant relationships between items of social rejection and personality characteristics. Social status measured by choices received was also related to the fifty-yard dash. The only significant relationship found between the tests of motor ability and personality characteristics was a negative relationship between the fifty-yard dash and community relations.

With the exception of this last relationship these findings support in part those by Jones,[15] Rarick and McKee,[16] Smith and Hurst,[17] Breck,[18] Biddulph,[19]

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[15]Jones, "Physical Activity as a Factor," pp. 187-201.

[16]Rarick and McKee, "A Study of Twenty Third-Grade Children," pp. 142-152.

[17]Smith and Hurst, "The Relationship of Motor Ability," pp. 81-85.

[18]Breck, "A Sociometric Measurement of Status," pp. 75-82.

[19]Biddulph, "Athletic Achievement," pp. 1-7.

Alexandra,[20] Austin and Thompson,[21] and Northway.[22] However, it must be pointed out that many of these studies were limited to boys only or to pre-school boys and girls.

There were few items of social status, personality characteristics and motor ability of the MHS group that were significantly related. Of these, the number of choices received and mutual choices were negatively related to family relations. Mutual choices were also related to the shuttle run and the pre-test of motor coordination. A positive relationship was found between the number of mutual choices and self-reliance; between the number of choices received and performance on the standing broad jump; and between the number of rejections received and the standing broad jump.

Motor ability items that were significantly related to the personality test items included a negative relationship between the throw for distance and freedom from nervous symptoms and between performance on the standing broad jump and total personal-social adjustment. Positive correlations were found between the pre-test of motor coordination and a sense of personal worth and a feeling of belonging.

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[20]Alexandra, "Personality Adjustment and Leadership," pp. 584-590.

[21]Austin and Thompson, "Children's Friendships," pp. 101-106.

[22]Northway, "Personality and Sociometric Status," pp. 429-433.

The product-moment correlations found when the normal girls were studied indicated that relationships between the social status and personality characteristics were not significant. In social status and motor ability, positive correlations were found between the number of choices received and performance on the softball throw and between mutual choices and the softball throw.

For the Normals, just as for the MHS, there was a negative relationship between throwing ability and freedom from nervous symptoms, plus a slight negative relationship between throwing ability and school relations.

The pre-test of motor coordination was positively related to many of the personality characteristics. In this relationship all items of social adjustment were included and all items of personal adjustment except a sense of personal freedom. The many relationships found between the pre-test of motor coordination and the items of personal-social adjustment for the Normals were not found in the other two groups--the MHR or the MHS.

Conclusions

A summary of findings has been presented in the first part of this chapter. Specific conclusions as a result of the findings of this investigation are presented in the following section.

Differences Between Groups

A study was made of the differences in performance between the MHR, MHS and normal girls on tests of social status, personality characteristics and motor ability. Within the limitations of this study, the following conclusions, as to the differences between groups, were drawn:

I. The social status, personality characteristics and motor ability of mentally handicapped girls in regular classes of physical education are different from the social status, personality characteristics and motor ability of (1) mentally handicapped girls in special classes of physical education and (2) intellectually normal girls in regular classes of physical education. The mentally handicapped girls in special classes of physical education were also different from the normal girls in these characteristics.

On the bases of the highly significant difference found between the three groups by both the statistical techniques used, the hypothesis of no difference is rejected.

The data indicated that there were specific items that discriminated between the three groups significantly more than the others. These items are as follows:

A. Social Status:

1. Social acceptance.--The mentally handicapped girls in special classes were more frequently chosen by their peers (who were also mentally handicapped) while the

mentally handicapped in regular classes were the least chosen. When mutual choices are involved, again, the MHS scored higher than the MHR and about the same as the normal girls.

2. Social rejection.--Both the MHS and the MHR were socially rejected by their peers significantly more than were the normal girls.

B. Personality Characteristics:

1. Self-reliance.--The MHR were not as self-reliant as either the MHS or the Normals. The Normals and the MHS were similar on this item.

2. Sense of personal worth.--Both groups of mentally handicapped girls indicated a lack of a sense of personal worth when compared with normal girls.

3. Feeling of belonging.--Neither of the two groups of mentally handicapped seemed to have a strong feeling of belonging.

4. Freedom from withdrawing tendencies.--Here again, the two groups of mentally handicapped girls indicated a high degree of withdrawing tendencies while the normal girls were more free from these tendencies.

5. Freedom from nervous symptoms.--The mentally handicapped girls in regular classes of physical education seemed to have more nervous symptoms than either the mentally handicapped in special classes or the normal girls.

6. School relations.--Having poorer school relations was more typical of the MHR than of the MHS or the Normals.

7. Community relations.--Having poor community relations was more typical for the MHR than for the MHS and more typical for the MHS than for the Normals.

C. Motor Ability:

1. Fifty-yard dash.--Performance on the fifty-yard dash was much poorer for the MHS and the MHR than for the normal girls.

2. Shuttle run.--The normal girls performed best on the shuttle run while the MHS were the poorest as indicated by the time recorded for each group.

3. Standing broad jump.--The two groups of mentally retarded subjects did not differ a great deal on their execution of the broad jump but both differed considerably from the performance by the Normals.

4. Softball throw.--The MHS threw the shortest distance on the softball throw while there was very little difference between the MHR and the Normals.

D. Other items in which the groups differed significantly were:

1. Pre-test of motor coordination.--The lowest scores on this item were by the MHR. There was very little difference in scores between the MHS and the Normals.

2. Weight.--The two groups of mentally handicapped girls were heavier than the normal girls.

3. Chronological age.--The MHS girls were the oldest and the normals the youngest.

II. Group responses to the Interests and Activities survey: all subjects responded to the seventy-four activities in one of four different ways. A significant difference among the groups was found when all three were compared on all four responses. A significant difference was also found between the Normals and the MHS and between the Normals and the MHR. The difference between the MHR and the MHS was not significant.

The seventy-four activities were either group-type or individual-type activities. The MHR, MHS and normal girls were also compared to each other as to their interest and participation in the group or individual activities. The differences found between the group responses to both types of activities were not significant.

As a result of these findings, the null hypothesis of no difference between the three groups on their interest and participation in the different activities can neither be accepted nor rejected by the investigator.

Although no significant differences were found, there was some indication that the MHR were more interested and participated in more individual activities than did the MHS or the normal girls. When given the opportunity to choose, the MHR tended to avoid the group activities in favor of individual ones. The MHR even indicated a lack of interest for the group activities in which they participated.

Relationships Between Variables Within the Groups

The relationships between social status, personality characteristics and motor ability within each group were investigated and the following conclusions drawn:

III. Significant relationships were found between some of the items of the personality and motor ability tests and items of social status in all three groups studied. However, since all items of social status, personality characteristics and motor ability were not significantly related to each other when all three groups were treated individually, the null hypothesis of no relationship could be neither rejected nor accepted.

A. The following items of social status of the MHR were positively related to personality characteristics and motor ability.

1. The number of choices received were related to self-reliance, sense of personal worth, freedom from withdrawing tendencies, feeling of belonging, total personal adjustment, school relations and total personal-social adjustment.

2. The number of mutual choices was related to sense of personal worth, a feeling of belonging and freedom from withdrawing tendencies.

3. Rejections received were slightly related to family relationships.

4. The number of choices received was related to performance on the fifty-yard dash and the softball throw.

5. The number of mutual choices was slightly related to performance on the fifty-yard dash and the softball throw.

6. The number of rejections received was related to performance on the softball throw and fifty-yard dash.

B. The following items of social status of the MHR were negatively related to items of personality and motor ability tests:

1. Number of rejections received was related to family relations.

2. Performance on the fifty-yard dash was related to community relations.

C. Items of social status, personality characteristics and motor ability of MHS that were positively related are as follows:

1. The number of mutual choices was related to self-reliance.

2. The number of choices received was related to performance on the standing broad jump (and slightly related to performance on the shuttle run).

3. The number of rejections received was related to the standing broad jump.

4. Performance on the pre-test of motor coordination was related to a sense of personal worth, a feeling of belonging, and slightly to freedom from withdrawing tendencies.

D. The items of social status, personality characteristics and motor ability of the MHS that were negatively related are as follows:

1. The number of choices received was related to family relations.

2. The number of mutual choices was related to family relations and the shuttle run.

3. The number of mutual rejections was related to performance on the pre-test of motor coordination.

4. Performance on the standing broad jump was related to total personal-social adjustment.

5. Performance on the softball throw was related to freedom from nervous symptoms.

E. The items of social status, personality characteristics and motor ability of normal girls that are positively related are as follows:

1. The number of choices received was related to the performance on the softball throw.

2. The number of mutual choices received was related to the softball throw.

3. Performance on the pre-test of motor coordination was related to a sense of personal worth, freedom from withdrawing tendencies, freedom from nervous

symptoms, total personal adjustment, social standards, social skills, family relations, school relations, community relations, total social adjustment and total personal-social adjustment.

4. Performance on the standing broad jump was related to social skills.

F. The only negative relationship between the social status, personality characteristics and motor ability of normal girls was between the throw for distance and freedom from nervous symptoms.

Recommendations

As a result of this study, a number of implications and recommendations for further study are presented. The implications are as follows:

(1) If physical education has as its objectives personal-social development and social adjustment, then situations that best provide for realizing these objectives should be established. Special classes of physical education for mentally handicapped girls seem to be more promising for achieving these objectives than are regular class situations.

(2) If participation in group-type activities has potential for social, personal and physical development of the mentally handicapped girls, this potential may best be realized when group experiences are provided for in special class situations.

(3) More emphasis should be placed on the development of motor skills of mentally handicapped girls in special classes of physical education.

Studies that will provide pertinent information to the following questions are recommended:

(1) What are other important factors that contribute to the social status of the mentally handicapped girls in the public schools and how do these factors contribute?

(2) What are the most desirable and beneficial methods and techniques for teaching the mentally handicapped girls in regular classes of physical education? in special classes of physical education?

(3) What are the long-range effects of regular and special physical education classes on the physical, emotional and personal-social development of the mentally handicapped girl?

(4) Are physical education programs for the mentally handicapped girls given the same amount of attention as are programs for normal girls?

a. Are programs planned and directed by a physical education specialist?

b. Are the special classes as well equipped with space, equipment and supplies as are the classes for normal girls?

c. Is the time allowed for special classes of physical education at least comparable to that for regular classes?

APPENDIX

FORMULAE FOR OBTAINING VARIANCE RATIO (F)[1]

$$\text{Variance Ratio (F)} = \frac{N - p - 1}{(N-2)p} t^2$$

$$\text{Degrees of Freedom (df)} = \frac{p}{N - p - 1}$$

N = Number of Subjects in all Groups (151)

p = Number of Variables (25) in Discriminant Analysis

t^2= Generalized Mahalanobis D^2 (550.236)

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[1]C. C. Li, Introduction to Experimental Statistics (New York: McGraw-Hill Book Company, 1966), p. 406.

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