



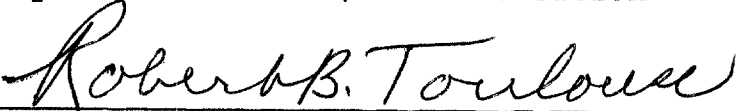
THE RELATIONSHIP OF BODY CATHEXIS AND MOTOR  
PERFORMANCE IN JUNIOR HIGH SCHOOL GIRLS  
OF THREE ETHNIC GROUPS

APPROVED:

  
\_\_\_\_\_  
Major Professor

  
\_\_\_\_\_  
Minor Professor

  
\_\_\_\_\_  
Director of the Department of Health,  
Physical Education, and Recreation

  
\_\_\_\_\_  
Dean of the Graduate School

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This investigation is concerned with the problem of determining whether or not a significant relationship exists between body cathexis and motor performance in junior high school girls. In addition, the study investigates whether or not there are significant differences among Negro, white, and Mexican-American girls and seventh-, eighth-, and ninth-grade girls in body cathexis and motor ability performance.

Sources of data were 117 girls enrolled in Mann Junior High School of Abilene, Texas, in the spring semester of 1971. The Secord-Jourard Body Cathexis Scale and the Scott Motor Ability Test were administered to the subjects to obtain scores for statistical treatment. The body cathexis scale consists of 43 items concerning various parts and processes of the body. Subjects were asked to rate each item according to a "1" to "5" scale, with the lower number indicating extreme dissatisfaction and the higher number representing extreme satisfaction. The total of all items represented the Body Cathexis Score. The Scott Motor

Ability Test includes three components--an obstacle race, a basketball throw for distance, and a standing broad jump. A composite score on the motor ability test was derived by weighting of each item.

Statistical treatment of data included application of the Pearson Product-Moment Zero order method of correlation to determine the relationship between body cathexis and motor performance. A two-factor analysis of variance and Duncan's Multiple Range Test were calculated to ascertain whether or not differences existed among ethnic groups and grade levels in body cathexis scores and composite motor ability scores.

Results revealed no significant correlation between body cathexis scores and motor ability scores and no significant differences among ethnic groups and grade levels in body cathexis. In motor ability performance, Negroes were superior to whites and Mexican-Americans, and ninth-, and eighth-graders surpassed seventh-graders to a statistically significant degree.

Conclusions based on the results are as follows:

1. There appears to be no significant relationship between body cathexis and motor performance as measured by the instruments of the study.

2. There are no significant differences among ethnic groups and grade levels in body cathexis scores.

3. Negroes are superior to whites and Mexican-Americans in performance on the Scott Motor Ability Test.

4. Ninth- and eighth-graders are better performers than seventh-graders on the Scott Motor Ability Test.

Recommendations resulting from the study are as follows:

1. Similar studies using male subjects or older female subjects should be undertaken.

2. A similar study utilizing another measure of motor performance should be conducted.

3. Further investigation concerning variables affecting body cathexis and physical and cultural differences of ethnic groups should be undertaken.

4. A comparative study of body image and body cathexis should be conducted. J. C.

THE RELATIONSHIP OF BODY CATABOLISM AND MOTOR  
PERFORMANCE IN JUNIOR HIGH SCHOOL GIRLS  
OF THREE ETHNIC GROUPS

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Jane Bedford, B. S.

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## CHAPTER I

### INTRODUCTION

The twentieth century has witnessed the discovery of many phenomena by psychologists in their attempt to understand the complexities of human behavior. Not among the least of these discoveries is the phenomenon of body cathexis or body satisfaction. In a recent article Hunt and Weber stated "the disciplines of psychology, neurology, and psychiatry recognize the role of body attitudes and feelings in behavior and personality" (5, p. 3).

Freud may have contributed the greatest impetus to the development of the body cathexis concept. Early in his writings he expressed a feeling that fundamental to the development of the individual's ego was differentiation of a body image and development of a cathexis concerning this image. Freud asserted that "the ego is first and foremost a body ego" (3, p. 31).

Jourard and Secord described body cathexis as "the degree of satisfaction reported by a person with aspects of his own body" (6, p. 243). Body cathexis may have an important influence upon the behavioral aspects of the



individual if it is one of the fundamental experiences in each person's life. An individual lives in constant awareness of his body and probably derives some measure of satisfaction or dissatisfaction from this corporeal cognizance. The implication of body awareness and the body cathexis phenomenon to the field of physical education was recognized by Schilder:

We know comparatively little about our body as long as it is not in motion. Only by movement and new contacts with the outside world will the knowledge about our body increase (10, p. 114).

During the maturation process the individual's body undergoes various changes, the most obvious of which occur during the period of adolescence. The body plays an essential role in the consciousness of the adolescent and may well be an influential focal point during this critical period in a young person's life. Gordon (4, pp. 273-274) purports that adolescence is not only a time of achieving sexual maturity and physical size, but also a period of painful reassessment of the self. One area of "agonizing reappraisal" centers around the adolescent's body. In his need for acceptance and identification with his peer group, the adolescent who deviates from his peers

or falls short of his personal idealized hopes concerning his body can develop a generally adverse self-concept.

It is generally agreed that any program in education is more effective if it is based on the general nature, needs, and characteristics of the students. Teachers in today's classrooms frequently find themselves working with students from diverse racial or ethnic groups, whose cultural backgrounds are often greatly different from their own (9, p. 310). This situation very likely presents a challenge to the teacher who honestly seeks to serve the best interests of all students. Franz Boas has claimed:

If the teacher is to fulfill his function satisfactorily he should be familiar with all the cross currents of our social life in order to prepare the youth with whose education he is charged to meet adequately the manifold conflicts to which he will be exposed (1, p. 20).

The teacher who has a knowledge of the similarities and differences of the various ethnic groups with whom he is associated should be better equipped to discharge his educational responsibilities and to handle the contingencies which may arise in a multi-ethnic classroom.

Knowledge of the similarities and differences of students is particularly important in the area of physical education. Physical educators should recognize the part

this area of education can play in the development of a realistic, integrated body cathexis in adolescents through a well-constructed program of movement and activity. Before this can be accomplished certain information is necessary. Does a student's body cathexis affect his ability to perform motor tasks? Are there any differences between racial or ethnic groups in body awareness or cathexis? These are some of the questions to which answers have been sought in this investigation. The physical education program in the secondary school is most effective when based upon an understanding of the general nature and characteristics of the adolescent group it serves and of the social environment of today's youth. It is hoped that this study will be able not only to increase understanding of body cathexis and its relationship to motor performance, but also to indicate any similarities or differences in this relationship within a multi-ethnic social milieu.

#### Statement of the Problem

This study sought to determine the relationship of body cathexis and motor performance in junior high school girls. Further, this study investigated whether or not significant differences exist in body cathexis and motor

performance among Negro, white, and Mexican-American girls.

#### Purposes of the Study

The purposes of this study were:

1. To compare the body cathexis of junior high school girls to their performance on a motor ability test.
2. To determine whether or not differences exist among Negro, white, and Mexican-American girls in cathexis of the body and performance on a motor ability test.
3. To determine whether or not differences exist among seventh-grade, eighth-grade, and ninth-grade girls in body cathexis and performance on a motor ability test.

Specifically, the following null hypotheses were tested:

1. There will be no significant relationship between body cathexis and performance on a motor ability test among junior high school girls.
2. There will be no significant differences among Negro, white, and Mexican-American girls in body cathexis.
3. There will be no significant differences among seventh-grade, eighth-grade, and ninth-grade girls in body cathexis.

4. There will be no significant differences among Negro, white, and Mexican-American girls in performance on a motor ability test.

5. There will be no significant differences among seventh-grade, eighth-grade, and ninth-grade girls in performance on a motor ability test.

#### Definition of Terms

The following definitions were pertinent to this study:

1. Junior high school--"This is the intermediate school which is designed to carry the pupil over from the content and techniques that are typical of the elementary school to those which characterize the senior high school. . . . The school usually includes grades seven, eight, and nine" (8, p. 309).

2. Body cathexis

a. Theoretically--"By body cathexis is meant the degree of feeling of satisfaction or dissatisfaction with the various parts or processes of the body" (11, p. 343).

b. Operationally--Body cathexis, as utilized in this study, was represented by the scores obtained on the Secord-Jourard Body Cathexis Scale.

### 3. Motor performance

a. Theoretically--"Motor performance has been described as observable human behavior characterized by voluntary, task-centered movement" (2, p. 27).

b. Operationally--Motor performance in this study was represented by the scores obtained on the Scott Motor Ability Test.

#### Limitations of the Study

This study was subject to the following limitations:

1. A total of 117 girls attending Mann Junior High School of Abilene, Texas, during the spring semester of 1971 were utilized as subjects. All subjects were members of the physical education classes of the school

2. Subjects were divided into groups according to ethnic characteristics, with 39 girls comprising a Negro group, 39 girls in a white group, and 39 girls in a Mexican-American group.

3. The ethnic groups were subdivided according to grade level so that each ethnic group was comprised of thirteen seventh-grade girls, thirteen eighth-grade girls, and thirteen ninth-grade girls.

### Sources of Data

The human sources of data were 117 girls attending Mann Junior High School of Abilene, Texas, during the spring semester of 1971. Scores of the subjects derived from a body cathexis self-rating scale and a motor ability test were used as data.

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## CHAPTER II

### REVIEW OF RELATED LITERATURE

The literature reviewed in this chapter was selected principally with regard to its relationship to the investigation. Studies in the area of body attitudes and related subjects were reviewed in addition to investigation in the domain of racial comparison with emphasis on physical attributes and performance.

Research studies in the area of body attitudes have not been extensive, and, of those in existence, few have been conducted with reference to physical performance. Research has been limited also in the realm of racial comparison of physical factors.

For convenience and clarity in narration, studies related to the investigation were divided into two categories: (1) body attitudes and related aspects and implications the body cathexis phenomenon has for educators and particularly physical educators, (2) comparison of races with regard to physical attributes. Studies are presented under each of these categories.

## Body Attitudes

Studies in the area of body attitudes have encompassed an assortment of subjects. Many of the existing experiments have attempted to discover and delineate exactly what factors influence the development of body attitudes by the individual.

Sugerman and Haronian (25) completed a study to determine the relationship between body type and sophistication of body concept or image. Body type of 102 male college students was assessed using Sheldon's revised method of somatotyping and Parnell's method of phenotyping. According to these two methods, each subject was typed either endomorphic or Fat, mesomorphic or Muscular, or ectomorphic or Linear. Sophistication of body concept was determined by scoring of human figure drawings produced by the subjects. Results of the study indicated that endomorphy was related negatively ( $p < .02$  Sheldon,  $.01$  Parnell) and mesomorphy positively ( $p < .01$  Sheldon,  $.01$  Parnell) to sophistication of body concept. Ectomorphy manifested no significant relationship to body concept sophistication.

Schonbuch and Schell (22) compared the ability of 20 normal weight, 20 overweight, and 20 underweight college

men to estimate their own body appearance from a graduated series of pictured physiques. Subjects in both underweight and overweight groups in the study made inaccurate estimations of body appearance significantly more often than normal weight subjects. Both groups tended to overestimate body size and shape, a result which prompted the researchers to advance an interesting supposition. They speculated that in our society obese individuals operate on the basis of contrast, in that they exaggerate the extent of their obesity, while underweight individuals operate on the basis of assimilation, in that they minimize their deviation from the normal weight. It was suggested that this variance occurs as a result of cultural pressures which place less stigma on leanness than on obesity.

Jourard and Secord investigated the theory that actual size of body parts determines the degree of satisfaction male college students feel toward their bodies. Correlations were computed between body measurements and a rating of body cathexis or satisfaction. A significant relationship was found and reported as follows:

. . . the findings reveal that cathexis for body characteristics pertaining to 'masculinity' is related to the size of relevant body parts. Large size is apparently a desired quality among males, and its presence or absence leads

to contrasting feelings toward related aspects of the male body (16, p. 184).

Seemingly, the popular stereotype of the ideal male as a tall, broad-shouldered, muscular man has had a definite effect upon the body image of young men.

In an experiment similar to the previous one but with 60 female college students as subjects, Jourard and Secord (15) proposed that significant correlations exist between cathexis ratings of certain body parts and the actual measured size of the parts. Findings of the study supported the hypothesis. It was also hypothesized that cathexis ratings for body parts vary in direct relation to the amount of deviation of the parts from self-ratings of ideal measurements. The hypothesis was upheld for all five parts studied--height, weight, bust, waist, and hips. Conclusions revealed that there does exist a cultural stereotype of the ideal dimensions of the female figure, and that these dimensions are smaller than actual body measurements with the exception of the bust measurement.

In an investigation by Cremer and Hukill involving 102 women college students, it was proposed that the greater the divergence from socially-accepted prototypes in body conformation or size, the greater would be the difference

between real and perceived body contour outline. Findings of the study supported the hypothesis, and recommendations were made for investigation of the hypothesis in weight and figure control programs. The authors stated:

Inability to delineate the body contour lines with some measure of preciseness seems to indicate a level of resistance to the acceptance of gross body size which might predict failure . . . in a formal weight control program (5, p. 37).

Fisher (10) explored the differences in body image between males and females as related to contrasts in style of life and role in the culture in a multipartite study. In the first part 60 men and 83 college women were asked to examine their images in a full-length mirror while wearing a set of disorting lenses and report any changes they could perceive in body parts. Results of the study showed a significant tendency for men to detect changes more often than women in one body part, the legs. The researcher felt that this strongly suggested the possibility that the female in our society has anxiety feelings about her legs and does not feel sufficiently secure about them to report a visual transformation of them. This anxiety was felt to be a reflection of the limiting role in mobility that our culture places on the female. She has been taught that

movement in space, which is closely related to the legs, is hazardous for the female.

The second part of this study tested this supposition. Fisher advanced and investigated the hypothesis that since women assign less prominence to their legs in the body schema, they have a relatively smaller degree of physiological activation of the legs in relation to upper body sectors than men. Subjects in the study were 120 men and 150 women, in addition to 117 boys and 113 girls, age seven through seventeen. The adult group supported the hypothesis completely and the youth group partially.

Another part of this study concerned investigation of assumptions which have been made by our society that women are less content with their bodies than men and are less capable of developing a realistic, articulated body concept. Using 274 college men and 290 college women as subjects, Fisher administered Rorschach ink blot stimuli and computed Barrier Scores for each individual by totaling the responses in which protective, containing, decorative, or covering functions of the periphery were emphasized. Barrier Scores were felt to be indicative of a clear-cut perception of the body as a well-differentiated sector equated with the self. A Penetration Index was computed

by counting all responses in which boundary of the percept was described as open, trespassed, bypassed, or destroyed. Penetration Scores were thought to indicate vaguely defined and hazy body contour outlines. Findings of the research revealed that women had significantly higher Barrier Scores and Barrier-minum-Penetration scores than men, indicating that women manifested the more definite body boundaries.

Fisher has completed numerous other studies using the Barrier and Penetration indices as instruments for the measurement of articulation and demarcation of body boundaries. Singly and in collaboration with other researchers, he has explored the relationship between body concept and personality, learning, and sensation patterns.

Fisher and Cleveland (9) compared Barrier and Penetration Scores with various personality and personal preference factors of individuals. Using 29 women and 58 men college students as subjects, they discovered that individuals with a high Barrier Score, indicating boundary definiteness or articulation, were significantly more involved in athletics and exhibited a greater aspiration level than low Barrier scorers. They also displayed a tendency to feel that other persons deceptively conceal real intentions behind a

facade. The investigators concluded that the body image boundary variable may be representative of a basic personality dimension.

In another study involving 25 men and 67 women college students, Fisher (7) hypothesized that the greater the individual's awareness of his body, the greater would be his tendency to retain or remember body-related words from a list of both body and non-body words. Body awareness was determined by totaling the number of body references reported by subjects when asked to list twenty things of which they were most conscious at the moment. Subjects were then requested to study a list of 20 words, half of which were body-related and half non-body related. After a minute of study they were asked to recall as many words as possible. A significant positive relationship was found between the body prominence score and the inclination to remember body-related words.

Fisher and Fisher (8) undertook studies testing the relationship of body image boundary definiteness to sensation patterns from interior and exterior body regions. It was found that subjects who had more demarcated body image boundaries, as demonstrated by a high Barrier score, tended



to attribute prominence to body exterior rather than interior in reporting body sensations.

Curran and Frosch (6) conducted a study in which adolescent male patients with non-psychotic behavior disorders were examined to determine attitudes toward their bodies and body parts. Responses to interview questions indicated an unwillingness on the part of most subjects to tamper with their body images by isolating individual parts for scrutiny.

Secord and Jourard (23) attempted to determine whether or not a relationship exists between low body cathexis or satisfaction and anxiety demonstrated by unusual autistic preoccupation with injury, disease, and pain. Using 45 male and 43 female college students as subjects, they computed body cathexis using a rating scale of body parts. Body anxiety was determined by totaling the number of body responses by subjects to a word-association test using homonyms which have both body (especially pain and injury) and non-body connotations. The hypothesis that there is a significant relationship between low body cathexis and body anxiety was sustained.

McConnell and Daston (18) administered inkblot tests to acquire Barrier and Penetration indices from 24 pregnant

women. Results indicated a definite increase in penetration fantasies, which decreased significantly when tests were re-administered following delivery. It was concluded that attitudes toward pregnancy appear to be significantly related to the manner in which one evaluates one's body and to the extent of invulnerability of body image boundaries.

Secord and Jourard investigated the supposition that body cathexis is related integrally to self-concept, although distinguishable as a separate component of self-concept. In a study using 45 male and 43 female college students they compared scores on a 46-item body cathexis scale with scores on a similar 55-item self-cathexis scale and reached the following conclusions:

One of the most significant results is the demonstration that the body and the self tend to be cathected to the same degree. This supports the hypothesis that valuation of the body and the self tend to be commensurate (23, p. 346).

Johnson (14) conducted a study with men and women college students which cross-validated Secord and Jourard's findings that attitude toward self is influenced by attitude toward body. Johnson also detected a moderate inverse relationship between opinion of the body and number of somatic complaints. Those subjects with a low opinion of

their bodies tended generally to report a higher number of somatic symptoms.

Secord and Jourard (23) also sought to prove that negative feelings concerning the body are related to general feelings of insecurity concerning the self. In a study involving 88 male and female college students, the investigators compared body cathexis scores of the subjects with scores on the Maslow Test of Psychological Security-Insecurity. In support of the hypothesis it was concluded that a significant correlation exists between negative body attitudes and insecurity.

A study concerning body concept and its relationship to self-concept was carried on by Zion using 200 college freshmen women as subjects. Self-concept was measured by the Index of Adjustment and Values constructed by Robert E. Bills. Body attitude was determined by the rating on a scale of sixty physical traits. The following conclusions were reached:

Results of this study indicate that there is a significant linear relationship between self-concept and body concept in most of the dimensions measured. It appears that the security one has in one's body is related to the security with which one faces one's self and the world (28, p. 495).

Armstrong and Armstrong (1) hypothesized that there would be a positive correlation between body image Barrier Scores and performance on a physical fitness test by 182 high school boys and girls. A significant relationship was found among the female group, but no significant correlation for the males. The test battery included treadmill running, sit-ups, push-ups, and an agility test.

Vincent and Dorsey (26) investigated the relationship between body image as determined by three different instruments and two calculations of physiological performance--cardiovascular endurance and muscular strength. The first was measured by a revision of the Harvard Step Test and the latter by a dominant hand grip strength test on a grip dynamometer. Subjects of the research sample were 50 male college students. Of the six possible relationships among the three body image tests and the two physiological performance tests, only the Secord Homonym Test with the grip strength test was statistically significant.

Yeatts and Gordon (27) conducted a study to determine the relationship between a physical factor of self-image and physical fitness scores among seventh-grade boys and girls, part of whom had experienced previous instruction in physical education by a specialist, and some who had

received no previous specialized instruction. Results of the study indicated that students who had been involved in a physical education program scored higher on a physical fitness test and were more accurate in self-estimation of body-concept than those who had experienced no such program.

#### Comparison of Races

The amount of research in the area of racial comparison of physical attributes has not been extensive. Early studies have been concerned primarily with differences in bodily proportions.

Steggerda and Petty (24) compared anthropometric measurements of white and Negro college women and discovered that the Negroes exceeded the whites in span, lower arm length, and linear measurements of appendages. Whites had a greater trunk length than Negroes, but the Negro trunk was more V-shaped.

Metheny (19) investigated differences in 47 different anthropometric measurements related to stature among 51 Negro and 51 white male subjects. The Negroes exceeded the whites in weight, arm length, forearm length, hand length, leg length, lower leg length, foot length and

width, shoulder breadth, chest depth and width, neck girth, and limb-girths. The whites surpassed the Negroes in sitting height, total fat, hip width, and ilium width. Upon examination of the differences in these measurements with regard to mechanical and physiological principles, it was felt that the Negroes should be the superior performers in athletic activities because of sturdier construction, greater musculature, and longer limbs which possess greater leverage.

Lambeth and Lanier (17) made a study of racial differences in speed of reaction time, using 30 Negro and 30 white boys twelve years of age. Results showed no significant differences in speed of simple manual movement.

Harmon (11) used the Miles Reaction Time Board to study speed of simple reaction time of pre-school children of Negro, Italian, Mexican, Jewish, and Indian extraction. No significant differences were reported among the groups.

Hipple (12) investigated racial differences between early adolescent Negro and white boys in speed of motor response and muscular tension. The findings of the first part of the research showed no significant differences between Negroes and white in reaction time, movement time, and muscular tension. In the second part of the study a

motivational factor was added to the test, and results showed a significant increase in speed of response and muscular tension among the whites but no significant increase among Negroes.

A study conducted by Berger and Paradis (3) involved two racial groups consisting of 30 white and 30 Negro seventh-grade boys who were matched according to age and socioeconomic level. The groups were compared in relation to performance on a seven-item fitness test. The Negro boys exceeded the whites significantly on the three items involving running and on the composite score.

In an investigation involving third-, fourth-, and fifth-graders, Hutinger (13) compared 402 Negro and 390 white children of both sexes in ability to perform the 35-yard dash. The Negro girls were significantly faster than white at all three grade levels. Negro boys were faster to a significant degree at two grade levels.

Barker and Ponthieux (2) investigated the relationship of a physical fitness measure and race, using 633 fifth- and sixth-grade Negro and white pupils of both sexes. Among the boys the Negroes significantly exceeded whites in pull-ups, shuttle run, standing broad jump, 50-yard dash, softball throw, and 600-yard run-walk. No significant

difference was found in the sit-ups. Among the girls the whites were superior in the pull-ups, no significant difference was noted in the sit-ups, and the Negroes surpassed the whites in the remaining five items.

Using the same fitness test Ponthieux and Barker (20) again identified racial differences between Negro and white boys and girls aged ten to twelve. The findings of the research revealed no significant difference among the boys in the sit-ups and shuttle run, while the Negro boys were significantly superior in the remaining five components. Among the girls the whites surpassed the Negroes in pull-ups and sit-ups, there was no difference in the broad jump, and the Negroes exceeded the whites in the other four components.

Burdeshaw (4) tested 13 Negro and 44 white college women in motor ability, buoyancy, and beginning swimming performance. Results indicated that the white group was more buoyant and significantly better in swimming performance, while the Negro group was superior in performance on the Scott Motor Ability Test.

Rhodes (21) also compared Negro and white pre-school children and university students in a motor ability test involving needle threading, stylus tapping, and other



simple manual skills. Findings of the study indicated no significant differences between the two races in performance at either age level.

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## CHAPTER III

### PROCEDURES IN THE DEVELOPMENT

#### OF THE STUDY

The problem of this study was to investigate through experimentation whether or not a significant relationship exists between body cathexis and motor performance in junior high school girls. The study further sought to determine whether or not any similarities or differences in body cathexis and motor performance occur among Negro, white, and Mexican-American girls and among seventh-grade, eighth-grade, and ninth-grade girls.

#### Preliminary Procedures

As an introductory part of this study literature in the areas of body attitudes and racial comparison of physical factors was surveyed. Previous studies related to the present study were reviewed and utilization was made of relevant information from these studies.

#### Selection of the Subjects

The subjects in the study were 117 junior high school girls enrolled in physical education classes at Mann

Junior High School, Abilene, Texas, during the spring semester of 1971. The subjects were divided into three groups according to ethnic characteristics, with 39 girls comprising the Negro group, 39 girls in the white group, and 39 girls in the Mexican-American group. The ethnic groups were also sub-divided according to grade level so that each ethnic group included thirteen seventh-grade girls, thirteen eighth-grade girls, and thirteen ninth-grade girls. In all groups and sub-groups with the exception of seventh-grade Negro girls, the class enrollment exceeded the desired number of subjects. In each of these cases inclusion in the experimental group was made by the use of random selection. Students whose age was as much as two years above the usual age for their grade level were excluded from the study.

#### Selection of the Tests

The selection of tests for this study was governed by the objectives of the study, the review of literature, and availability of facilities and equipment. The criteria used for the selection of tests were validity, reliability, objectivity, and ease of administration. The three-item

battery of the Scott Motor Ability Test (1, pp. 344-348) was selected and administered to measure motor performance.

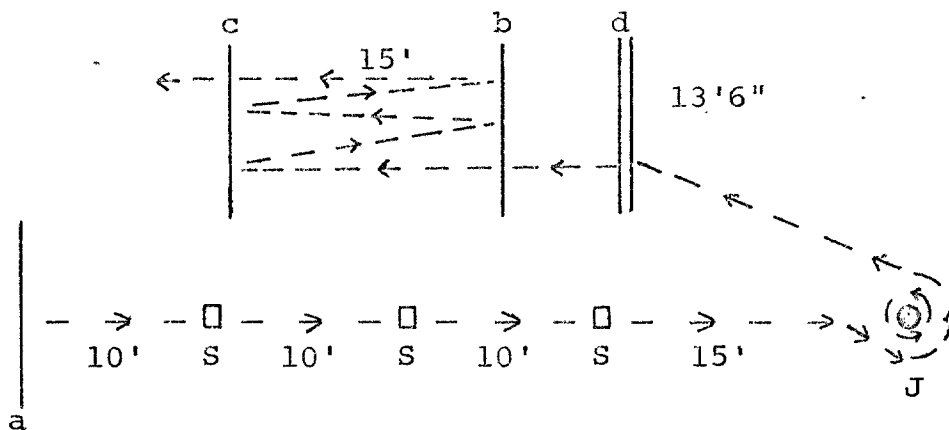
The instrument of measurement selected for determination of body cathexis was the Secord-Jourard Body Cathexis Scale (2, pp. 343-344). Permission to utilize the test in the study was secured from the authors. In addition, permission was received to delete from the 46-item scale three items which it was felt were not applicable to the age level of the subjects or which required explanation. These items are "sex activities," "sex (male or female)," and "elimination."

#### Description of the Tests

The three-item battery of the Scott Motor Ability Test includes an obstacle race, a basketball throw for distance, and a standing broad jump. An explanation of each item is as follows:

1. Obstacle Race

The space needed is 55 feet by 12 feet; equipment needed, three jump standards and a cross bar at least 6 feet long; lines on the floor.



- a = starting line.  
 b = line for shuttle.  
 c = finish line.  
 d = cross-bar (18 inches high).  
 J = jump standard.  
 S = spot on floor (12 x 18 inches).

— — — — = path of runner

Distance from end of cross-bar to line of inner sides of spots, 4 feet 4 inches.

#### Description:

Start in a back-lying position on the floor with the heels at line a. On the signal, Ready, Go! get up and start running toward J. As you come to each square on the floor, step on it with both feet. Run twice around J, turn back to d, go under the cross bar, get up on the other side, run to line c and continue running between line b and c until you come to c for the third time. The score is the number of seconds (to the nearest .1 second) that is required to run the course (1, pp. 344-345).

#### 2. Basketball Throw for Distance

Space needed is about 80 feet long and 20 feet wide, a throwing line marked about 8 feet from one end of the course and parallel lines every 5 feet beginning 15 feet in front of the throwing line.



Description:

Start anywhere you wish behind the throwing line but do not step on or across the line when throwing. Throw in any way you wish, three consecutive times. The score is the distance from the throwing line to the spot where the ball touches the floor. Only the longest throw counts (1, p. 346).

## 3. Standing Broad Jump

If the test is given outside, it is necessary to have a jumping pit with sunken take-off board within 30 inches of the edge of the pit. If given indoors, the test requires mats at least 7 1/2 feet long and a solid board at least 2 feet long (beat boards used with apparatus are excellent) placed against the wall to prevent slipping. If the mat is marked in 2-inch intervals, it eliminates the need to measure each jump with a tape.

Description:

Stand on the take-off board with feet parallel, toes may be curled over the edge of the board. Take-off from both feet simultaneously; jump as far forward as possible. The score is the distance from the edge of the take-off board to the nearest heel (or to the nearest part of the body if the balance is lost). The best of three trials will be counted (1, pp. 347-348).

The Secord-Jourard Body Cathexis Scale, as amended, contains a list of 43 items which include various parts and processes of the body. Beside each listed item is a scale of numbers ranging from 1 to 5. A selection of the lowest number by the subject indicates extreme dissatisfaction with the item listed, a selection of "2" indicates

slight dissatisfaction, a selection of "3" denotes indifference toward the item, a selection of "4" indicates slight satisfaction, and a selection of "5" denotes extreme satisfaction. The total of the ratings of all 43 items produced the Body Cathexis Score. (A detailed description of the scale may be found in Appendix A.)

#### General Procedures in Test Administration

The equipment and facilities were prepared for the testing program in compliance with specifications as set up by the Scott Motor Ability Test (1, pp. 344-348). The motor ability test items were administered with the aid of one student assistant in each of six physical education classes. The assistants were given detailed instructions concerning their responsibilities prior to the administration of each item in each class. All subjects were given instructions concerning proper execution of each item in compliance with suggestions by the author of the test. Prior to administration of each test item scoring and timing materials such as stop watch, pen, score sheets, and clip board were made available. The obstacle race was scheduled for the first day of testing, the standing broad

jump was administered on the second day of testing, and the basketball throw for distance was given on the third day of testing.

The equipment for the obstacle race included a jump standard, a cross bar suspended by two additional jump standards, and appropriate lines placed on the floor using a brightly-colored tape. Care was taken in timing each subject and determining possible infractions of execution of the test item. The announced time of each subject was recorded by the student assistant.

Equipment for the standing broad jump included a beat board placed against a wall and a mat marked at 2-inch intervals. Proper execution of each jump was checked, and the best of three trials taken by each subject was marked. The assistant recorded the score of each subject.

For the basketball throw for distance a throwing line was marked at 5-foot intervals from 15 feet to 80 feet in front of the throwing line. A yardstick was also used to compute throws which landed between lines. Three basketballs inflated to proper specifications were provided. Each throw was marked and the distance of the best of three trials by each subject was computed. The student assistant watched the throwing line for infractions and recorded each

subject's score. Two other students were assigned duties to catch the balls after they had landed and return them to the throwing line upon completion of three throws by each subject.

The Secord-Jourard Body Cathexis Scale was administered on the fourth testing day. Sheets containing marking instructions and the scale were given the subjects, and an explanation of the proper method of marking the scale was given verbally. Questions concerning the scale were then answered. Subjects were asked to respond to all items on the scale and to place only their grade level and class period on the sheet in the blanks indicated. In order to provide an atmosphere of anonymity and encourage truthful responses to items on the scale, subjects were requested not to sign their names to the scale. Identification numbers corresponding to a listing on class attendance records were given each subject. It was later possible to check identification numbers and indicate on the sheet the name and ethnic classification of each subject.

#### Treatment of Data

The Scott Motor Ability Test was administered to 117 subjects to measure motor performance. A composite score

for each subject on the test was calculated by weighting the raw scores reported for the students using the simplified regression equation derived from a multiple correlation. A Body Cathexis Score for each subject was determined by totaling the scores of responses to the 43 items on the Body Cathexis Scale.

Relationships between performance on the motor ability battery and scores on the Body Cathexis Scale were calculated by means of the Pearson Product-Moment Zero order method of correlation. Separate product-moment coefficients of correlation were also calculated between Body Cathexis Scores and individual test items in the battery. A two-factor analysis of variance and Duncan's Multiple Range Test were calculated to determine whether or not any similarities or differences in Body Cathexis Scores and motor ability scores occurred among the three grade levels and the three ethnic groups at the .05 level of confidence.

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## CHAPTER IV

### FINDINGS

An analysis of data and an interpretation of the findings of the study are presented in this chapter. The findings of this study were derived from statistical treatment of the data as calculated by an IBM 1620 computer. A body cathexis scale and the Scott Motor Ability Test were administered to 117 junior high school girls of three ethnic groups and three grade levels to determine whether or not significant differences existed among the ethnic groups or the grade levels in body cathexis scores and in performance on the motor ability test and to determine whether or not there would be a significant relationship between body cathexis and motor performance.

Table I presents the relationship between scores of the Secord-Jourard Body Cathexis Scale and scores of the various items of the Scott Motor Ability Test. The coefficients of correlation ranged from .04 to .10, thus denoting relatively low relationships between motor ability scores and body rating scores. This relationship between scores

was expressed by the Pearson-Product Moment coefficient of correlation (3, p. 201).

TABLE I

COEFFICIENTS OF CORRELATION BETWEEN BODY  
CATHEXIS SCORES AND MOTOR ABILITY SCORES

Motor Ability Item	r
Obstacle Race . . . . .	.10
Broad Jump . . . . .	.08
Basketball Throw . . . . .	.04
Composite Score . . . . .	.05

Table II presents the means and standard deviations of the body cathexis scores with regard to grade level and ethnic classification of the subjects.

TABLE II

MEANS AND STANDARD DEVIATIONS  
OF BODY CATHEXIS SCORES

Group		Negro		White		Mexican-American		Total	
Grade	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD
7	39	142.62	33.88	144.08	22.09	140.92	22.74	142.54	26.11
8	39	149.38	30.06	135.69	20.27	150.92	11.83	145.33	22.53
9	39	148.54	23.80	135.46	16.54	142.00	28.33	142.00	23.40
Total	117	146.85	28.91	138.41	19.67	144.62	21.94	143.29	23.90



Table III presents the means and standard deviations of the composite scores of the Scott Motor Ability Test. Composite scores on the motor ability test were computed using the simplified regression equation derived from the multiple correlation as described by the author of the test.

TABLE III  
MEANS AND STANDARD DEVIATIONS OF  
COMPOSITE MOTOR ABILITY SCORES

Group		Negro		White		Mexican-American		Total	
Grade	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD
7	39	175.45	31.98	139.69	23.47	142.40	19.88	152.51	29.88
8	39	176.85	25.15	164.21	18.96	154.58	22.72	165.21	23.70
9	39	188.05	34.22	170.31	25.69	169.32	20.81	175.89	28.13
Total	117	180.12	30.42	158.07	25.99	155.43	23.43	164.54	28.77

A comparison of differences among the ethnic groups and among grade levels on the body cathexis scale was determined by an analysis of variance. An  $F$  ratio of 3.07 was required for significance at the .05 level of confidence (2, p. 387). The source of variation, degrees of freedom, sum of squares, and  $F$  ratio for the groups on the body cathexis scale are presented in Table IV. There was no

statistically significant difference among the groups on the scale.

TABLE IV

SUMMARY OF ANALYSIS OF VARIANCE AMONG  
ETHNIC GROUPS AND GRADE LEVELS ON  
BODY CATHEXIS SCALE

Source of Variation	df	Sum of Squares	Mean Square	F Ratio
Grade	2	249.76	124.88	.21
Race	2	1490.38	745.19	1.28
Interaction Effects	4	1513.83	378.46	.64
Within Groups	108	62996.15	583.30	
Total	116	66250.12		

An analysis of variance was computed to determine the significance of differences among the ethnic groups and the grade levels on composite scores on the motor ability test. An F ratio of 3.07 was required for significance at the .05 level of confidence. A significant difference was noted among ethnic groups and among grade levels. Table V presents the source of variation, degrees of freedom, sum of squares, and F ratio for the groups on the motor ability test.

TABLE V  
 SUMMARY OF ANALYSIS OF VARIANCE AMONG ETHNIC  
 GROUPS AND GRADE LEVELS ON SCOTT MOTOR  
 ABILITY TEST COMPOSITE SCORES

Source of Variation	df	Sum of Squares	Mean Square	F Ratio
Grade	2	10685.24	5342.62	8.38*
Race	2	14333.34	7166.67	11.23*
Interaction Effects	4	2106.01	526.50	.83
Within Groups	108	68893.20	637.90	
Total	116	96017.80		

\*Significant at the .05 level of confidence.

Duncan's Multiple Range Test was applied to determine among which ethnic groups statistically significant differences existed in composite motor ability scores (1, pp. 2-7). Table VI presents the results of this test. The Negro group was found to score significantly higher than both the white and Mexican-American groups. Statistically significant results were indicated by the mean difference exceeding the range product value. Although the white group scored higher than the Mexican-American group, the difference did not approach significance.

TABLE VI  
 DIFFERENCES AMONG ETHNIC GROUPS IN  
 COMPOSITE MOTOR ABILITY SCORES

Groups	Mean	SD	Mean Difference	Duncan's Range Product
Negro	180.12	30.42	24.69	12.04*
Mexican-American	155.43	23.43		
Negro	180.12	30.42	22.05	11.44*
White	158.07	25.99		
White	158.07	25.99	3.64	11.44
Mexican-American	155.43	23.43		

\*Significant at the .05 level of confidence.

Duncan's Multiple Range Test was used to ascertain among which grade levels statistically significant differences existed in composite scores on the motor ability test. Table VII presents the results of this test. Both ninth-grade and eighth-grade groups scored significantly higher on the test than the seventh-grade group. Although the ninth-grade group exceeded the eighth-grade group, the difference was not statistically significant.

TABLE VII  
DIFFERENCES AMONG GRADE LEVELS IN  
COMPOSITE MOTOR ABILITY SCORES

Groups	Mean	SD	Mean Difference	Duncan's Range Product
Ninth-Grade	175.89	28.13	23.38	12.04*
Seventh-Grade	152.51	29.88		
Ninth-Grade	175.89	28.13	10.68	11.44
Eighth-Grade	165.21	23.70		
Eighth-Grade	165.21	23.70	12.70	11.44*
Seventh Grade	152.51	29.88		

\*Significant at the .05 level of confidence.

#### Test of Hypotheses

Hypothesis 1 stated that there would be no significant relationship between body cathexis and performance on a motor ability test among junior high school girls. Since the correlation coefficients shown in Table I were not statistically significant, Hypothesis 1 was accepted.

Hypothesis 2 stated that there would be no significant differences among Negro, white, and Mexican-American girls

in body cathexis. An analysis of variance revealed no statistically significant differences; therefore, Hypothesis 2 was accepted.

Hypothesis 3 stated that there would be no significant differences among seventh-grade, eighth-grade, and ninth-grade girls in body cathexis. Since there were no significant differences as shown in Table IV, Hypothesis 3 was accepted.

Hypothesis 4 stated that there would be no significant differences among Negro, white, and Mexican-American girls in performance on a motor ability test. The results of analysis of motor ability scores as presented in Tables V and VI indicated that Negro girls scored significantly higher than both white and Mexican-American girls; therefore, Hypothesis 4 was rejected.

Hypothesis 5 stated that there would be no significant differences among seventh-, eighth-, and ninth-grade girls in performance on a motor ability test. Since ninth-grade and eighth-grade girls scored significantly higher than seventh-grade girls, Hypothesis 5 was rejected.

### Discussion of the Findings

The absence of a significant correlation between body cathexis scores and composite motor ability scores may indicate that variables other than physical prowess tend to influence the manner in which a junior high school girl feels about her body. It may be speculated that some subjects might have felt a reluctance to indicate true feelings concerning body satisfaction. This, however, could only be an assumption, since subjects were asked during administration of the body cathexis scale to refrain from signing their names on the papers, thus providing an atmosphere of anonymity.

The analysis of variance of the body cathexis scale resulted in an F ratio which was not significant with regard to ethnic classification or grade level. This seems to indicate that racial differences and variations in age and maturation may not be considered influential factors in development of feeling concerning the body.

The findings derived from this study with regard to superiority of the Negro girls in performance on the motor ability test were analogous to the results of various studies dealing with racial comparison of physical attributes as cited in Chapter II. The Negro girls appear

to be reared in an environment in which vigorous physical activity is actively sought. Therefore, their superior performance might be attributed to this cultural factor. This, however, is an assumption. The superiority of ninth-grade and eighth-grade girls over seventh-grade girls in motor ability performance cannot be considered unexpected, as growth and maturation may be contributing factors in improved motor performance. Ninth-grade girls also tended to surpass eighth-grade girls in composite motor ability scores, although the difference did not approach statistical significance. In physical performance testing the factors of motivation and competition between individuals may be a variable which exists outside the controlled situation. However, this is an assumption, since all groups were equally encouraged in order to evoke the best possible performance from the subjects.



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## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents a summary of the problem, an analysis of results, conclusions based on the results, and recommendations for additional studies.

This study was designed to determine the relationship between body cathexis and motor performance among 117 junior high school girls enrolled at Mann Junior High School, Abilene, Texas. The study further sought to investigate whether or not significant differences existed between Negro, white, and Mexican-American girls and seventh-, eighth-, and ninth-grade girls in body cathexis and performance on a motor ability test. The hypotheses under test were that there would be no relationship between body cathexis and performance on a motor ability test, that there would be no significant differences in body cathexis among ethnic groups and grade levels, and that there would be no significant differences in motor performance among ethnic groups and grade levels.

Scores derived from the Secord-Jourard Body Cathexis Scale and the Scott Motor Ability Test were the data

utilized in this study. The data were analyzed statistically using the IBM 1620 computer to complete computations. Statistical treatment of the data included the computation of means and standard deviations, the Pearson Product-Moment Zero Order method of correlation, analysis of variance, and Duncan's Multiple Range Test.

An analysis of relationship between body cathexis and motor performance revealed no statistically significant relationship. Analysis also revealed no statistically significant differences among ethnic groups and grade levels in body cathexis. An analysis of motor ability performance revealed that Negro girls surpassed white and Mexican-American girls and ninth- and eighth-graders exceeded seventh-graders in motor ability performance.

The results based on this study appeared to justify the following conclusions:

1. There is little relationship between body cathexis and motor performance among junior high school girls.
2. Differences among Negro, white, and Mexican-American ethnic groups in body cathexis are not apparent as measured by the Secord-Jourard Body Cathexis Scale.

3. There are no differences among grade levels of junior high school girls in body cathexis as measured by the Secord-Jourard Body Cathexis Scale.

4. Performance by Negro girls on the Scott Motor Ability Test is superior to that of white and Mexican-American girls.

5. There is no significant difference between white and Mexican-American girls in performance on the Scott Motor Ability Test.

6. Ninth- and eighth-grade girls are better performers on the Scott Motor Ability Test than seventh-grade girls.

As a result of this study the following recommendations are presented:

1. A similar study be conducted utilizing high school girls or college women as subjects.

2. A similar study be conducted using boys or men as subjects.

3. A study be conducted concerning the relationship of body cathexis and some other measure of motor performance.

4. Investigation be continued in an attempt to ascertain what variables do manifest a relationship with body cathexis.

5. Further investigation concerning ethnic and cultural differences and physical attributes be undertaken.

6. A comparative study between body image and body cathexis at various age levels be undertaken.

APPENDIX A

Period \_\_\_\_\_ Grade \_\_\_\_\_ Number \_\_\_\_\_

SECORD--JOURARD BODY CATHEXIS SCALE

On the following pages are listed a number of things characteristic of yourself or related to you. You are asked to indicate which things you are satisfied with exactly as they are, which things you worry about and would like to change if it were possible, and which things you have no feelings about one way or the other.

Consider each item below and encircle the number which best represents your feelings according to the following scale:

1. Have strong feelings and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate.

1 2 3 4 5	hair	1 2 3 4 5	ankles
1 2 3 4 5	facial complexion	1 2 3 4 5	neck
1 2 3 4 5	appetite.	1 2 3 4 5	shape
1 2 3 4 5	distribution of hair over body	1 2 3 4 5	body build
1 2 3 4 5	nose	1 2 3 4 5	profile

1 2 3 4 5	fingers	1 2 3 4 5	height
1 2 3 4 5	wrists	1 2 3 4 5	age
1 2 3 4 5	breathing	1 2 3 4 5	width of shoulders
1 2 3 4 5	waist	1 2 3 4 5	arms
1 2 3 4 5	energy level	1 2 3 4 4	chest
1 2 3 4 5	back	1 2 3 4 5	eyes
1 2 3 4 5	ears	1 2 3 4 5	digestion
1 2 3 4 5	chin	1 2 3 4 5	hips
1 2 3 4 5	exercise	1 2 3 4 5	skin texture
1 2 3 4 5	lips	1 2 3 4 5	knees
1 2 3 4 5	legs	1 2 3 4 5	posture
1 2 3 4 5	teeth	1 2 3 4 5	face
1 2 3 4 5	forehead	1 2 3 4 5	weight
1 2 3 4 5	feet	1 2 3 4 5	back view of head
1 2 3 4 5	sleep	1 2 3 4 5	trunk
1 2 3 4 5	voice	1 2 3 4 5	hands
1 2 3 4 5	health		

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APPENDIX B

RAW SCORES ON THE SCOTT MOTOR ABILITY TEST  
AND THE SECOND-JOURARD BODY CATHEXIS SCALE

Subjects	Obstacle Race (seconds)	Broad Jump (inches)	Basketball Throw (feet)	Body Cathexis (test score)
1N7*	19.7	83	54	138
2N7	16.7	89	58	148
3N7	24.8	65	58	67
4N7	25.9	82	50	170
5N7	25.7	78	68	143
6N7	20.8	82	55	142
7N7	18.6	74	48	156
8N7	29.9	68	48	192
9N7	21.4	75	50	154
10N7	23.5	80	37	185
11N7	22.6	65	40	94
12N7	22.5	70	47	141
13N7	23.9	71	38	124
14W7*	25.6	58	29	138
15W7	24.0	63	31	145
16W7	24.2	67	34	179
17W7	25.6	65	46	171
18W7	21.9	70	31	143
19W7	21.0	76	50	159
20W7	22.8	66	41	141
21W7	28.3	54	23	128
22W7	24.2	68	41	135
23W7	24.2	67	41	159
24W7	24.1	57	32	94
25W7	23.7	60	36	157
26W7	22.0	73	38	124
27M7*	21.6	64	36	159
28M7	29.2	60	52	145
29M7	22.7	72	34	100
30M7	23.6	58	29	149
31M7	22.8	76	45	108

\*7--seventh grade girls

W--White

N--Negro

M--Mexican-American

Subjects	Obstacle Race (seconds)	Broad Jump (inches)	Basketball Throw (feet)	Body Cathometrics (test score)
32M7	21.8	69	49	132
33M7	24.6	69	30	112
34M7	28.4	57	26	144
35M7	22.7	64	41	143
36M7	23.6	61	41	142
37M7	21.8	66	34	173
38M7	23.5	56	38	171
39M7	20.7	71	34	154
40N8*	32.8	60	39	131
41N8	21.5	66	30	113
42N8	27.6	67	43	189
43N8	22.1	72	54	207
44N8	25.9	73	48	172
45N8	19.5	82	49	123
46N8	21.8	82	48	144
47N8	19.9	81	41	142
48N8	22.9	78	51	182
49N8	22.4	84	48	128
50N8	24.0	85	60	163
51N8	25.7	74	57	126
52N8	21.0	69	54	122
53W8	23.7	74	50	112
54W8	21.8	74	39	148
55W8	20.2	81	40	161
56W8	21.6	80	41	146
57W8	25.1	69	49	111
58W8	22.3	74	42	121
59W8	23.2	72	36	142
60W8	25.6	73	39	127
61W8	24.5	67	36	151
62W8	19.5	73	48	144
63W8	29.2	65	31	117
64W8	22.4	76	42	172
65W8	21.2	87	49	112
66M8	26.4	76	51	143
67M8	24.0	72	45	155
68M8	21.0	78	32	129
69M8	26.1	69	22	141
70M8	24.0	36	39	146

\*8--eighth grade girls

Subjects	Obstacle Race (seconds)	Broad Jump (inches)	Basketball Throw (feet)	Body Cathexis (test score)
71M8	20.7	67	32	164
72M8	21.7	68	30	138
73M8	21.3	74	39	153
74M8	19.9	88	39	158
75M8	22.5	75	45	148
76M8	20.8	68	47	156
77M8	29.3	54	38	157
78M8	21.0	81	42	174
79N9*	19.6	86	67	142
80N9	23.5	73	49	156
81N9	19.4	88	54	127
82N9	21.4	81	61	167
83N9	20.9	83	45	127
84N9	17.4	80	76	130
85N9	29.5	60	31	187
86N9	23.9	71	48	115
87N9	23.7	70	44	166
88N9	24.1	76	61	145
89N9	25.5	77	42	174
90N9	25.5	76	52	175
91N9	19.3	77	42	120
92W9	22.7	83	51	121
93W9	23.0	70	38	146
94W9	19.0	82	44	138
95W9	19.8	82	45	143
96W9	24.1	75	25	143
97W9	21.2	84	44	127
98W9	22.5	74	52	133
99W9	19.5	84	43	143
100W9	21.0	74	31	109
101W9	23.3	66	41	117
102W9	19.1	81	60	134
103W9	24.9	65	33	131
104W9	20.0	76	45	176
105M9	24.4	58	36	101
106M9	22.7	63	47	111
107M9	21.2	74	49	152
108M9	27.6	74	48	165
109M9	24.8	69	50	146
110M9	18.7	80	61	160
111M9	21.1	71	50	94

\*9--ninth grade girls

Subjects	Obstacle Race (seconds)	Broad Jump (inches)	Basketball Throw (feet)	Body Cathexis (test score)
112M9	21.0	76	44	157
113M9	20.7	78	47	181
114M9	23.6	75	36	179
115M9	21.1	76	38	124
116M9	23.1	68	37	127
117M9	26.1	56	63	149

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