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CONSTITUTION IN FOURTH - GRADE BOYS.

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JEAN HOCKING ERWIN

1969

**INTERRELATIONS OF PEER ACCEPTANCE, INTELLIGENCE, MOTOR
PERFORMANCE, AND CONSTITUTION IN FOURTH-GRADE BOYS**

by

Jean Hocking Erwin

**A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY**

Major Subject: Child Development

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DEDICATION

to

All fourth-grade children in Marshalltown and Nevada
who made the collection of data herein
a pleasant and memorable experience

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INTRODUCTION

Accelerated tempo of change brought about through emphasis on science, technology, and cybernetics in the twentieth century demands increasing emphasis on social interactions and an understanding of other people. Our neighbor is no longer the person living next door, or in our community or nation. Our range has become extended to an intra-national fellowship and rapidly is acquiring an intra-spacial orientation. To accompany this acute rate of acceleration in the control over material things, man must gain also a deeper understanding of himself and of his relationship with other people.

Since the turn of this century, various trends in psychological thinking have developed out of which research in social development has egressed, e.g. discovery of the individual person, Freudian psychoanalysis. A concern for people and their social interactions in today's society implies the possibility that more emphasis should be placed on the discovery of the whole child in the total situation and on a multi-disciplinary approach.

Toward a Global Look at Development

In working with and looking at humans, the trend in this century has been toward a specialized view of the component parts. For example, in the medical profession the 'general practitioner' is becoming a person of the past. Today's interns are specializing in fields such as surgery, obstetrics,

gynecology, orthopedics, podiatry, urology, ophthalmology. Such specialization is advantageous. However, there is sometimes the danger of becoming so specialized in one area that the analysis of a symptom remains unsolved.

If you were asked the question, "Which is the most important part in your body?", what would be your reply? Some might answer the heart, while others might respond the brain, or the digestive-urinary tract, the respiratory system, the eyes, the legs, and so forth. Each organ has its own important function to fulfill but collectively these organs must perform in unison, thereby producing an integrated whole. When this consolidation is achieved, the human being functions as a healthy well-balanced individual. We see him as an entity rather than a collection of component parts. It is only upon closer analysis that we observe him as a complex of diminutive units.

From the societal aspect of humans, one views the developing child living generally within the family. The family in turn functions within, and has its effect on, culture and society. Culture defined by Tyler in its wide ethnographic sense,

is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society. (144, p. 18)

Many influences are constantly acting upon the child, from without and within the individual. Looking briefly from

the outside, we find a variety of forces acting upon the child within the family situation. These forces, or influences are of different classes. Within the culture and society there are the economic, political, educational, and the ethic-moral-religious systems, all of which have been developed by man's mind. Another class of controls which have their biological and genetic influences on the developing child includes, for example, nutritional, health, and safety aspects. Looking briefly from within the child, we also find a variety of influences which have their effect upon his functioning as an entity. These relate to the four main areas of development: social, intellectual, physical, and emotional. Each of the latter can be sub-classified, producing a complex picture.

In attempting to identify all the possible factors operating upon the child, externally and internally, one views a mundane picture. Its extent is somewhat overwhelming. However, this approach is analagous to the progress which has been made in science and travel. Could it be that through time, with the development of better techniques and instruments for measuring social interrelations, that we will be able to view the whole child in the total situation?

The trend in this century has been toward viewing the child's development in respect to one specific area, or to a limited number of areas. For example, a frequent check is made of the child's height and weight as indicators of his

physical growth; intelligence and achievement tests are administered to attain evidence of his ability to undertake the school work of a specific grade level. In the analysis of component parts versus the totality, a caution is proposed here in terms of an analogy: Do we become unable to see the forest for the trees? A cursory scan of available literature will reveal that current research has emphasized only two, or three, aspects of development. In examining a specific area of the child's development, it is important to view him also as a functioning entity. This gives us the overview picture, viewing the interaction of all areas of development.

Social acceptance and motor performance

Two areas of development which appear to be interrelated are peer acceptance and motor performance. It is a major tenet that for a boy to excell in motor skills leads to popularity with his peers. The child gains status. Competency in many skills fosters ego development through personal satisfaction, a feeling of achievement, and the ability to compete successfully with others. If the boy can hit a home run or help the team with a tug-or-war, he is more likely to be selected first when choosing sides. This status would favorably enrich his self-concept. Furthermore, having achieved this positive image of himself, his emotional balance is more readily attained and he has greater incentive to perform scholastic work according to his innate endowment.

The socialization process is learned, commencing from birth. The infant's first experience with his world and the people about him are gained through his mother or mother surrogate who fulfills his basic needs. With increasing socialization, the attention of the growing infant and child spreads to his father, siblings, relatives, peers, significant others, and to mankind generally. Accompanying this increasing range of friendships and acquaintances, the growing individual is identifying with others. He perceives and internalizes his self-image or concept of himself as a worthwhile person, which is reflected back to him through his relationships with other people.

The significance of motor skills and socialization in early childhood (an age range of two to six years) should not be overlooked. Espenschade and Eckert state:

The significant role of motor skills in social development, even at these very early ages, should be noted. The child gains approval from his parents as he learns to do things for himself. His early contacts with other children are frequently through parallel and manipulative play in which objects may circulate among the group. By the fourth year he wants to be with others and to share more vigorous activities. (47, pp. 106-107)

In later childhood, interest in motor activity will depend not only upon the opportunities and equipment available (which will vary with the socio-economic status) but also upon the persons with whom the child identifies during the growing years.

Espenschade and Eckert note that there is

a marked increase (in interest) during the latter part of childhood and early adolescence for both boys and girls. This is, of course, the period in which the child wants to be a member of the "gang" and motor activities offer an excellent opportunity for such association. (47, p. 170)

Whereas in the early years of life, the child's social milieu lies in or near the home, as he progresses in the elementary school grades, his milieu is extended to an increasing number of significant others.

Close friendships are formed in the school years. It has been shown (129) that 'the accepted remain accepted', such friendships are molded and set in the early grades, and that an individual can have a marked success in social acceptance and still have great personal difficulty in certain aspects of personality.

According to the Freudian viewpoint (54), latency is the time between childhood and adolescence. It is possible that this period has been underestimated and what may appear overtly as calm and steady growth may be, in reality, covertly dynamic and malleable. This stage is the period of industry (45), when the individual is seeking to attain a sense of accomplishment as well as to be accepted as he is (3). The peer group takes precedence many times over the family. Motor skills become perfected; strength, speed, coordination, and endurance are attributes which the developing child gains through practice, maturity, and competitive sports.

Social acceptance with peers serves, furthermore, as a base for the expansion and continuance of personality development during the adolescent period. Within a group, the child is continually observing, reacting to, and evaluating other members as well as the events in which the group participate. He thereby acquires his own role and status among his peers. Through motor development and athletic prowess, he learns how to lead and/or follow, to cooperate and work together for group goals. This early training could be effective in establishing habits for satisfactory living within our society, where the emphasis is on individual and group achievement.

Intelligence, as related to social acceptance and motor performance

Socialization and motor performance are only two aspects of the total picture of development. The intellectual area is another. Seagoe states that "education in the broadest sense is growth guided toward socially desirable ends." (125, p. 32)

It has been suggested that intelligence may include factors other than the native intellectual factor. In defining intelligence, Weschler refers to

the aggregate or global capacity of the individual to act purposely, to think rationally, and to deal effectively with his environment. (154, p. 3)

This statement denotes a total functioning of the organism. Many aspects of intelligence may not be measured by an intelligence quotient score alone. It has been suggested by Sloan

(130) that an adequate evaluation of adaptive capacity should include not only estimates of intelligence but of motor proficiency and social maturity as well.

Constitution, as related to social acceptance and motor performance

Constitution is defined by Webster (152, p. 178) as "the aggregate of the physical and vital powers of an individual; also temperament or disposition." Current research seems to substantiate the fact that a relationship exists between body build and temperament (25, 38, 85, 132, 148, 151). Jones (80), working with boys at the end of adolescence found that boys superior in strength showed a tendency to be tall, mesomorphic, early maturing, proficient in athletics, high in popularity and social prestige, and well-adjusted.

Summary

Since there appears to be a close alliance of physique, temperament, motor performance, social acceptance, and intelligence, it seems that each of these aspects should be considered in any analysis of working toward a global pattern.

Some Developmental Characteristics in Boys and Girls

Zeller and Hetzer (161, 68) present evidence to show that school readiness is associated with body configurations, the child between five and seven undergoing striking reorganization in bodily form. Simon (128) found a striking change in body

configuration between 4.6 to 7.5 years. The second rapid change in body configuration occurs at adolescence.

Girls do mature physically earlier than boys. Parnell states, "At eleven years a few boys, but roughly one-quarter of girls, are already starting their pubertal spurt." (119, p. 32). The youngest menarche recorded is for girls in Cuba where the mean for white-descent girls is 12.4 years (136). Because of a great variety in individual differences, it is not possible to state a precise age for puberty. Suffice it to say that physical growth is stable in middle to late childhood, prior to the temporary sharp decline preceding the onset of puberty.

In studying friendships, Wellman (153) found that boys are more alike in chronological age, height, and intelligence quotient, whereas girls are least alike in the first two. The boys are less alike in scholarship, mental age, and extroversion. The reverse is true of girls, who are most alike in scholarship. Furfey (55) likewise found boys to choose chums of same age, size, intelligence, and social maturity. His low correlation suggested that the more important factors are certain non-intellectual traits, as yet unmeasured.

Early maturation is beneficial to boys in our culture, where the big, strong athletic male image is exalted. Jones and Bayley (81) found that boys manifesting such characteristics were more likely to obtain and maintain prestige associated with athletics. Thus, they have less need to

strive for status. The early-maturing girl is physically bigger than her peers of both sexes. In a culture which admires slenderness and femininity, she may feel conspicuously noticed and embarrassed.

Growth is interrelated. Throughout middle childhood the hand-eye coordination and also control of small muscles have been increasing. Considerable time is spent practicing, perfecting, and extending motor skills. To excel in such requires physical fitness and motor competency, as well as intellectual and emotional functioning. With increasing age, motor skills (especially those involving large muscles) become more predominant in the boy's daily life, whereas in our society girls become oriented toward feminine traits and tasks. Bagley (7) found that boys surpass girls in motor performance, although the reverse is found for mental performance. For both sexes, the child becomes more peer oriented. From his peer group, he formulates his self concept and feeling of personal worth in society. Acceptance, fellowship, and status take on increasing importance and need to the maturing child. By third or fourth grade, groups of boys or girls form to comprise 'gangs' with fairly constant membership. These groups enable group play activities as well as socializing and psychological needs for its members. In studying social success, Bonney (17) found that sex differences were not large, but were in favor of girls.

With increasing age, sex cleavage occurs. Challman (33) found that boys have a slight tendency to form stronger friendships with other boys as they grow older. Working with grades 6, 9, and 12, Kuhlen and Lee (87) noted an increase in heterosexual relationship as age increases. Whereas at grade 6, less than one-third chose the opposite sex, at grade 12 nearly two-thirds did.

Considering the preceding developmental changes in all areas, it might be concluded that a fairly stable homogenous group, limited to sex variable would be a sample of third- or fourth-grade boys who would be approximately nine to ten years of age. By the time they have reached this age, most of them have achieved a reasonable measure of scholastic, physical-motor, and social stability within the school environment. They have acquired the skills of reading and writing, have become acclimatized to the school and peer environment (as contrasted to the stronger home- and parental- ties of an earlier age), and have acquired more dexterity in the use of large and small muscles.

Statement of Problem

Is there an interrelationship of physical, motor, and intellectual development influencing the peer acceptance or social status of the individual? Many investigations have examined the relations of any two or three factors of: social, physical, motor and intellectual. Such research efforts have

pertained to various age groups: infancy (10), preschool children (33, 84, 91, 148), school age child (2, 8, 14, 15, 16, 19, 21, 32, 42, 67, 73, 76, 82, 89, 102, 121, 123), adolescents (7, 13, 18, 29, 52, 59, 69, 87, 97, 143), college students (18, 30, 100, 103, 157), adults (151). When one considers the definition of intelligence by Weschler (154), the question arises concerning the developmental overview pattern and the possible interrelationships of the physical, motor, intellectual, and social aspects. In a review of available sources, the investigator was unable to find any research in the professional periodicals dealing with the view toward a global look at development. Nevertheless when discussing the topic with professionals and laymen in the field, great need was expressed for such investigations.

The current study is directed toward a global look at statuses, viewing the social, intellectual, physical and motor aspects of fourth-grade boys within their environmental school background. Furthermore, the investigation seeks to ascertain if, allowing for individual differences, there might be some overall physical-motor-intellectual-social pattern which could be generalized to the population selected.

Definitions

Peer acceptance In this study, the term peer acceptance has been defined as the status assigned to a child by his peers within his group experience. It entails the accep-

tance, or rejection of him based on their impressions of him.

Social acceptance status This index, in the study, is evidenced by the boy's peer acceptance rating score, obtained from the first two items (friends) of the Sociometric Choice Enquiry Test.

Social acceptance characteristic status This index, in the study, refers to the boy's status as evidenced by his score on each of 13 characteristics rated by peers, 11 characteristics rated by teachers, 2 characteristics rated by strangers, and 10 self-rating scores.

The 13 peer-rating scores were obtained from items 3 to 8 inclusive of the Sociometric Choice Enquiry Test, and all items of the Who Is It? Test (Appendix B). These characteristics are: athlete, popular, smart (intelligence), cleanliness, good looking, honest, leader, right answer (intelligence), creative, cooperative, humor, good sport, and prompt.

The 11 teacher-rating scores were obtained as follows: one score from the Physical Education Teacher Rating sheet (Appendix B), and 10 scores from the Grade Teacher Rating Sheets (Appendix B), one score for 'top five' showing interest and nine scores for the functions performed. The characteristics or traits represented by the nine functions performed are: good looking, reliable and prompt, cleanliness, intelligent, cooperative, leader, creative, good sport, and emotional stability and maturity.

The two stranger rating scores were obtained from First Impressions (Appendix B). The two scores represented the traits of good looks and cleanliness.

Self ratings were optional on the Who Is It? Test (Appendix B) for any or all of the 10 items which the child considered were applicable to himself.

It is felt by the investigator that some, or all of these characteristics will contribute to the child's social acceptance status.

Intelligence status In this study, intelligence status is evidenced by the child's intellectual performance as noted by his intelligence quotient obtained on The Lorge-Thorndike Intelligence Tests.

Physical status The physical aspect of the study is broken down into two sub-classifications: motor performance and constitution.

Motor performance status In this study, motor performance status is evidenced by the child's score on the modified Iowa-Brace Test. This score denotes how the individual performs in motor skills at a given time. However a rating of interest, participation, and excellence of achievement in athletics generally is not neglected, since these athletic characteristics are dependent on innate capacity, training, and experience. They have been considered under the social acceptance characteristic status.

Constitution status The term constitution in this study refers primarily to physique. This status is evidenced by 16 variables. The latter are obtained from two measures of strength, one for handedness, six anthropometric measures, and seven indices for body build. The latter is specified in Table 4 analysis of data.

Approach to problem

In setting up the current investigation designed toward a global look at statuses, for each subject the data collected include 57 variables. Stated briefly, these variables pertain to statuses as defined above (one variable for social acceptance status, 36 for social acceptance characteristic status, one for intelligence status, one for motor performance status, and 16 for constitution status) and to demographic data (chronological age and socioeconomic status).

There are two approaches by which the data will be analysed: a) confirmatory analysis, e.g. looking at relationships which others have found to exist, and b) exploratory analysis. The majority of data herein are explanatory in nature.

Although the principal analysis of this investigation is of an exploratory nature, it is possible to consider a confirmatory analysis, looking at relationships which other studies previously have designated. In this study, the statuses as defined for motor performance, intelligence, and social

acceptance are each represented herein with one variable only. Based on a review of previous research, 3 null hypotheses may be formulated:

1. There is no relationship between motor performance status and intelligence status among fourth-grade boys.
2. There is no relationship between motor performance status and social acceptance status among fourth-grade boys.
3. There is no relationship between intelligence status and social acceptance status among fourth-grade boys.

Having established the fact that the major approach of the current study is not to test null hypotheses (though it can be used on a confirmatory basis), the focus now turns toward the exploratory analysis.

One can readily see from the summarized variables with which this investigation is dealing, that collectively there is not one known variable and a group of dependent variables. Peer acceptance, as defined, is a multicomplex item. It is hopeful that this study may be able to specify a model for peer acceptance. At present, it can be said that peer acceptance is a function of many things. Former studies have looked at items such as motor performance, good looks, chronological age, intelligence. Conclusions have been that peer acceptance is a complex factor, still unanalyzed. This study therefore is another attempt to analyze peer acceptance further, and from a different approach. By looking at a variety of factors from many aspects, possibly different classes may be noted, and of

a different order or effect. Some may prove to be more instrumental, for example, in establishing social status or peer acceptance. By looking at the relationships within the classes, the question will then become 'are they correlating because of some quality within the individual, or are they doing this independently?'

This study will consist of a large matrix which is identifiable with many variables. Sometimes the reasons for including some of the data may not be completely clear. However, in working toward this global picture, all data for the boys will be perused. It may prove that the best criterion for expressing a specific status may result from some combination of these variables. When a child makes a rating, say on popularity, it is uncertain upon what factors he is making this decision. Perhaps when viewed in terms of other variables, e.g. teacher ratings, intelligence, it may be possible to consider the rating more objectively or to ascertain on what other conditional factors this rating has been made. This study, therefore, is of an exploratory nature.

REVIEW OF LITERATURE

The literature reviewed in this section pertains to that which deals directly with the status classifications, as defined earlier. These classifications relate to social acceptance, social acceptance characteristics, intelligence, motor performance, and constitution. The purpose of this review is to gain a general background of the former research evidence, with emphasis on the relationship between the fore-named classifications. Relevant literature will be dealt with under three headings: 1) research relating to peer acceptance within the global look, 2) research relating to physical status within the global look, and 3) techniques for examining interpersonal relations.

Peer Acceptance Within the Global Look

Peer acceptance and intelligence

The intelligence quotient and its component parts, e.g. mental and chronological ages, appear to play a role in determining friendships. Almack (2), using a sociometric technique, asked 387 children from fourth to seventh grades to select a friend with whom he would like to work a problem, and one with whom he would like to go to a party. Almack concluded two findings: there was a stronger tendency for the children to choose associates more like themselves with whom to work, than with whom to play. Another finding of Almack's was that there were substantial resemblances between friends in

intelligence and chronological age.

Within the same decade, Furfey (55) likewise found a tendency for boys within the same school or neighborhood group to choose chums of the same age, intelligence, and maturity. No one variable appeared to be more influential than another in children's selection of friends. He concluded that the more important factors of peer selection are certain non-intellectual traits as yet unmeasured.

Bonney (15, 16, 17, 18, 19, 20) conducted an investigation of mutual friendships over a five year period with three groups of children in grades three through six. Approximately 100 children on each grade level were noted. The main purpose of this investigation was to determine the factors related to social success and to devise means of raising the social acceptance of those who were below average. It should be noted that throughout his discussions, Bonney used the terms social status, social recognition, social success and popularity interchangeably. Status, recognition, success, or popularity was determined by pupil choices. He employed sociometric questionnaires, peer and teacher ratings on personal traits, and self ratings as obtained from the California Test of Personality.

Bonney (16) stated that social skills cannot be assumed to be a natural consequence of intellectual brightness or of mastery of subject matter. However, when the upper and lower quartiles in popularity were compared regarding intelligence

and academic achievement, the upper group were favored. It was noted also by Heber (67) and Koch (84) that the children who were higher in intellectual ability were also above the average group in popularity. Page (118) compared the academic achievement of 296 elementary school boys (ages 10, 13, and 16) as related to selected nonacademic factors e.g. body size, strength, motor ability, and personal-social measures. The groups were equal in intelligence but high or low on the fore-named factors. Page found that the boys who rated high in the personal-social measures had a significantly higher grade point average.

Jenkins (76) studied the factors which influence the friendship formation of 280 boys and girls, representing a cross-section of junior high school children. Although there is no report of the criteria for selecting these friendships, nevertheless she noted some interesting findings. She observed the chronological age, mental age and intelligence quotient, school division and place of meeting, socioeconomic status of parent and play interests of each subject. The results suggested a spontaneous tendency for children to choose friends of the same approximate intelligence. Of the factors considered in the study, socioeconomic status of parents was of prime importance. The correlation coefficient for social-economic position of parent of each child with that of the parent of the child's friend was $.716 \pm .032$. The high correlation did not seem to be significantly influenced by the

proximity of homes, since only 25 percent of the total children stated that friendships were made in the neighborhood. On the contrary, school was the greatest single source for friendship formation.

The sociometric pattern of sixth-grade children in two systems were compared (43). One sample of 86 children in a three-year experimental program were grouped by ability in accordance with general school achievement and intelligence. The second sample of 112 were grouped heterogeneously. From the sociometric questionnaires, Dietrich found that in selecting friends there was a strong tendency of the 'bright' to select friends who are 'bright', and vice versa. It was also noted that children did not necessarily choose bright classmates to help them with difficult lessons.

Wellman (153), using an observational method selected 56 pairs of children in seventh to ninth grades on the basis of child-initiated friendships which were previously established. She observed these friendship pairs over a five-month period during the freer activities of school. She noted that with boy friends of these grades, pairs were more similar in intelligence quotient, height, and chronological age and less alike in scholarship and mental age. On the other hand, girls were more alike in scholarship and physical achievement and less alike in height and chronological age.

Peer acceptance and personality characteristics

There appears (125) to be a slight but significant relationship for friendships in the personal traits of athletic ability, cleanliness, and courtesy. Tryon (143) developed an opinion test to evaluate adolescent personality. The data were in terms of peer ratings, or opinions of each other. These peer ratings were collected by means of a verbal portrait-matching technique (Guess Who Test) rather than direct appraisal of abstracted traits. She used the technique in an investigation of 350 subjects on two occasions, the mean age of the group was 12, and 15 years respectively. The purpose of the study was to discover some of the qualities or aspects of personality which subjects considered desirable in each other. Such traits which were included in the test were happy, humorous, daring, leader, restless, talkative, attention-getting, aggressive, popular, good looking. It was found that social pressure and the need within the individual to impress his peer group are far more effective than parents' admonitions. Of the 20 single variables, unkempt-tidy showed a completely reversed relationship. For the 12-year-old boy, unkempt showed a positive relationship to the most desirable qualities. These desirable characteristics denoted a boy who was friendly, pleasant and lovable person, gentle and quiet, and possessed skill in games and masculine qualities (bravery and fearlessness). It was noted that the seventh-grade boy who lacked physical skills and had a distaste for games was

ridiculed and shunned by the group. At twelfth grade, outstanding athletic skill maintained prestige. For the adolescent boy, heterosexual interests and success, attractive appearance, and aggressiveness were all important qualities.

Kuhlen and Lee (87) substantiated the need for participation in games for social acceptability with boys, especially during the adolescent period. In their study of boys in sixth, ninth, and twelfth grades, the investigators used a Guess Who and a sociometric technique to determine social acceptability. It was noted that the boys who were chosen most frequently by their peers were also more frequently mentioned as being neat and clean. These authors were aware of Tryon's findings regarding the fluctuation of the cleanliness variable in peer acceptance. They suggest the variation in adolescent mores of the two samples might be responsible for the difference in their findings. Tryon's study was conducted in urban California while Kuhlen and Lee investigated an eastern rural area of lower socioeconomic population. Of the personality characteristics studied, the ones found among the most accepted boys were: popular, cheerful, enthusiastic, friendly, enjoys jokes, and initiates games and activities.

In investigating mutual friendships, Bonney (19) observed children in second and third grades within three schools, over a two-year period. Social status was determined by pupil choices in five to eight situations throughout the school year

in the second grade. Certain traits were found of greatest importance. The trait which most clearly differentiated the highest from the lowest social status was "cooperative in the group; good sense of duty". Courtesy, cheerfulness, intelligence, truthfulness, control of temper and avoiding fights, unforced humor, adaptability, and sympathetic interest in others were noted also. Some of the children who rated in the top quartile in popularity had some unfavorable traits, e.g. show off, dishonest, bossy. Bonney stated that:

Each individual is a unique whole and is judged by the total impression he makes. He is not judged on a part by part or a trait by trait basis. Gestalt psychology in particular has emphasized that any functional whole is more than a mere sum of its parts. The meaning of any trait in a child cannot be determined simply from knowing that he has that trait. It takes on meaning only when it is known how that trait functions in the total matrix of his personality. This is why rating scales are so unrevealing unless accompanied by much supplementary data.
(19, p. 293)

Physical attractiveness was more characteristic of the popular group than of the unpopular children at the elementary school age (63). This is substantiated by Bonney's study with fourth grade children (15). For this group, modifications of the trait rating scale of Tryon (143) was answered independently by pupils and teachers. Social relationships were measured by the pupil choices for special occasions throughout the school year, e.g. choosing work companions on committees, listing names to whom they would like to give Christmas presents, and later to whom to send Valentines, to work on

reading projects. Traits having the closest association with mutual friendships were tabulated. It was noted that teachers ratings agreed very highly with results of composite scores of children. The most popular children were found to be more aggressive and overt in their responses, as noted by traits such as leadership, enthusiastic, frequent laughter. However, friendly attitudes and other popularity traits showed significant differences between the highest and lowest quartile on the basis of social acceptance.

Bonney concluded that there were two syndromes which differentiated between popular and non-popular children. One of these syndromes related to strong aggressive traits (leadership, enthusiasm, frequent laughter, daring, fights). The second emphasized the importance for interpersonal contact. The most popular children rated higher in traits such as friendly, tidy, good looking, happy. These traits have been emphasized in the literature relating to children's friendships (87, 125, 143).

A questionnaire submitted to 72 boys and 70 girls representative of grades five to eight inclusive was administered in Seagoe's (125) preliminary investigation of children's friendships. The Who Is It? form of questionnaire was administered to each child enabling him to name a person in his room who was like each of 12 given descriptions. The number of times a child was named by his classmates constituted his

score in each of the descriptions. In each of the descriptive items, either a positive or negative score was possible.

Seagoe found that the top-ranking descriptions were representative of traits: cleanliness, sportsmanship, optimism, kindness, dependability, agreeableness, helpfulness, similarity to the friend, refraining from self-glorification, and external appearance.

Investigating 26 boys and girls in eighth grade regarding the social interactional processes led Hilkevitch (70) to note that there were significantly more complimentary traits than common traits among boys. Social interaction took place between boys who complimented each other in strength or weaknesses of personality, leadership or followership, and social acceptability in a specific situation other than friendship. Communality of traits was found mainly in the intellectual sphere.

Rarick and McKee (123) used a case study technique with 20 third grade boys showing extreme levels of achievement (10 high and 10 low), on tests of motor proficiency. The superior group tended to be active, popular, calm, resourceful, attentive, and cooperative, while those boys inferior in motor performance frequently were described as being more often shy, retiring, and tense.

Creativity is a potential which all people have, but to different degrees. Guilford (61) suggests there are about 50 known factors of intellect and that there may be many more as

yet not disclosed. The gifted person has been defined as "a person whose performance in any line of socially useful endeavor is consistently superior." (61, p. 8). This includes those talented in art, music, drama, as well as those who possess mechanical and social skills and those with high abstract verbal intelligence.

Recent findings (1, 57, 142) show a relationship between measures of creative ability and academic achievement. However, the correlations reported show a wide range. As Cicirelli (34) points out, this range can be due to the dimensions of creativity being measured as well as to the interaction of creative ability with other factors affecting achievement. Further, the same tests for measuring creative ability are not always used.

In a study with 500 adolescents, sixth grade through high school seniors, it was noted that intelligence does not ensure creativity, and vica versa (57). Torrance (142) and Getzels and Jackson (57) have found that teachers in general prefer to have students with high intelligence quotient, in contrast to those with high creative ability. Studies have shown (57) that although the high creative student may have been below the school's average in intelligence quotient, he could achieve as well academically as the high intelligence quotient student.

Creativity and intelligence quotient tend to correlate only to a certain point (57). Moore (104) and Torrance (142) list 120 as the approximate intelligence quotient

threshold. It may be stated, therefore, that creativity is usually associated with above-average intellectual ability. Brown (27) noted that superior school achievement does not indicate high creativity. Concerning socioeconomic status, Cicirelli (34) observed that children of higher socioeconomic status have more opportunity or incentive for artistic elaboration.

Peer acceptance and environmental or sociological factors

Seagoe (125) found that measures of propinquity showed the highest degree of relationship to peer acceptance. Her major study related to 115 pairs of friends selected, by a Who Is It? Test in a preliminary investigation, from 823 children within third to eighth grades. The basis of further paired selection was a test question, repeated one month later, asking each child, "Suppose you were going to a party and could invite just one person to go with you. Suppose it could be either a boy or a girl, but not a member of your family. Whom would you ask to go with you?" Only 29 of the original 115 pairs again chose each other. Two groups were formulated thus: Group I with the 29 pairs, representing a closer degree of intimacy, and Group II with the remaining 86 pairs. About 75 percent of the pairs were in the same grade and room.

Jenkins (76) noted that children tend to choose friends within one year of chronological age, however a larger age range occurs for friendships made in the neighborhood. She

found a slight tendency for children to have a greater number of like interests with their closest friends as compared with other children. She adds, however, that this tendency may be either the "cause" or "outcome" of friendship.

Sex is also an influencing factor of friendships. This fact is readily understood from a former discussion pertaining to some developmental characteristics in boys and girls. Working with subjects aged 27 to 59 months, Challman (33) found that boys have a slight tendency to form stronger friendships with other boys as they grow older. At sixth grade, Kuhlen and Lee (87) noted that less than one-third of the boys chose the opposite sex, whereas at twelfth grade nearly two-thirds selected heterosexual relationships.

General socioeconomic status is related to friendships (51, 76), although the relationship does not appear to be influenced by the proximity of homes. Hagman (62) and Bott (22) noted the tendency for preschool children to choose playmates with whom they have some association outside school. In studying selection-rejection among sixth-grade children, Grossman and Wrighter (60) found that social status, as measured by father's occupation, does influence choices to a certain degree. The minimum requirement appeared to be lower middle class status (Warner classification, 150, pp. 121-159). Once middle class status (e.g. skilled worker's family) was achieved, additional status does not improve the possibility of selection

at this age. On the other hand, a child from an unskilled occupational background (e.g. day laborer) was handicapped for selection, in that particular sample. Kanous, Daughtery, and Cohn (82) noted that the proportion of heterosexual choices was related positively to the socioeconomic level of children.

There is a tendency for the best-liked pupils to come from smaller family units. Hardy (63) in a study of elementary school children, found that 15 percent of the most popular were 'only' children. Bonney's investigation (20) also noted that the 'only' child was consistently superior in social acceptance and in economic circumstances but as a group, the 'only' children were not superior in degree of brightness, as measured by group intelligence tests.

Peer acceptance and physical ability

Athletic achievement has been found to be an important factor in social and personal adjustment of high school boys (13). McCraw and Tolbert (102) noted a substantial relationship between best liked and athletic participation. Bower (23) found a correlation of .39 between physical ability and popularity with adolescents. If dexterity in games were lacking, clear superiority in other areas of social acceptability (e.g. friendliness or enthusiasm, cheerful attitude, humor and aggressiveness) must be present to achieve popularity.

Physical Status Within the Global Look

Although physical ability appeared to have a direct relationship to popularity, as noted above (23), it was partially dependent upon strength and body form. A positive correlation with these three variables was noted by Clarke and Clarke (36). Body weight also has been found significant with social acceptance (48). Jones (80) reported that boys high in physical strength tended to have good physiques, to be physically fit, and to enjoy a favored status with adolescents.

In a 'Camp on the Island' device for measuring aspects of temperament, Bull noted that

pupils whose motor capacity is high in both agility and power (especially power) tend to be regarded by peers for admired roles of exploration, foraging, and defence. (29, p. 153)

Strength is important, therefore, in that it underlies favorable traits, both physical and functional (leadership, aggressiveness, activity). Bower (23) substantiated this statement in his four year longitudinal study on 98 adolescent boys. The mean age of the boys was 12 years; the grades ranged from high sixth to low tenth. In Bower's investigation of the relation of physical, mental, and personality factors to popularity, he used an opinion type of Guess Who instrument and scores on eight supplementary measures. The latter included chronological age, intelligence, achievement scores, physiological age, height, strength, physical ability (utilizing gross motor tests) and ratings of the subjects' homes. A

study of the intercorrelations obtained between popularity and other variables was made. The study included also partial correlations and composite profiles on which were charted the 20 traits (from the Guess Who instrument) and eight supplementary measures. His findings showed that strength did underlie the favorable traits. However when combined with low intelligence, strength appears to be unfavorable factor in peer acceptance.

On the basis of the opinion-type test noted above, Bower found a positive correlation of .69 between good looks and popularity. He states that symmetry and good body build are important for popularity. He further comments that popularity may also be due to an indeterminate amount of: 1) a "halo effect" and 2) the effect of personal care upon appearance. He found that at ages 12 and 13 height correlated negatively with popularity, regardless of its positive correlation with strength and physical ability which were favorable traits for social acceptance. Seagoe (125) noted in friendships the similarities of athletic ability, cleanliness, and courtesy. No relationship between height and social status was found, however, by Heber (67) with preadolescent children or by Challman (33) for the preschool child.

Relatively little relationship has been shown between motor performance and mental ability. In 1900 an inverse relationship was found (7), although differences were noted between individuals as well as between periods of development

within the same individual. Later, the relationship between motor and mental abilities was found to be very low or near zero (48, 146, 71). Page (118) found that grouping his sample of boys (aged 10, 11, and 13) by strength and motor ability did not produce significant differences in academic achievement among the groups. Lauten (89) noted a low positive correlation in both gifted and normal subjects. However, when examining the upper and lower quartiles of the combined sample, a significant positive correlation was noted for the gifted children.

Concerning traits, Rarick and McKee (123) found third-grade children of superior motor performance tended to be more active, popular, calm, cooperative. On the other hand, the group of inferior motor performance children frequently were noted to be shy and tense. The findings of Cortés and Gatti (38) revealed that regardless of age, sex, social and educational level of their subjects, that physique and self-description of temperament intimately and persistently were associated. The investigators rated the physiques of subjects and the subjects rated their own temperament. Cortés and Gatti caution that their findings do not infer that physique determines or influences temperament, but only that they are intimately related. The investigators concluded that nature and nurture work together; neither is exclusive. They add that perhaps in the field of temperament, the role of biological and constitutional factors has a slight margin of preponderance.

Techniques for Examining Interpersonal Relations

Studies within the past 20 years reveal a specific interest in interpersonal relations. Frankel and Potashin state,

It is generally assumed that lack of friends, and/or a low degree of acceptance by one's contemporaries, indicates some inadequacy in the personality development of the individual. (53, p. 422)

Zeleny (160) states that the first problem in the measurement of social acceptability is the determination of the degree of positive and negative intensity of interpersonal attitudes in a group. In a review of the research pertaining to social acceptance, there are three major techniques for examining social acceptance. Briefly stated, these are observation, verbal choice, and written records. Each of these methods have been used in the past, and continue to be used. Each can offer advantages and disadvantages in its use.

Through objective observation of group activities and recording the actions and attitudes of subjects, inferences can be made concerning the social relations within a group. The earliest devices for recording of behavior and analyzing the obtained records were in the form of diary descriptions, specimen descriptions, and then time sampling. The latter method, introduced by Olson (116), was adapted (58, 11) for observing various aspects of social behavior revealed by nursery school children. If an investigator is interested in studying the incidence of behavior, this is a good technique.

However, it is not suited to some topics especially if they cannot be readily defined and recognized. The minimum number of observations and their duration must be defined also. There is always the risk that the significant behavior may not occur during the specified time, yet it may occur 30 seconds later. The observational method can be used for general social acceptance and choice of companions. Moreno (105) noted spontaneous play contacts of nursery school children, while Pechstein and Munn (120), Thrasher (141), White (156), and Wellman (153) used it with older subjects.

Verbal choice is a second technique for determining pairs of friends, as employed by Dimock (44). Personal interviews were used by Criswell (40) to ascertain reasons for each child choosing a specific classmate to sit beside. Lippitt (91) and Koch (84) used the verbal technique to determine popularity preference. A verbal choice, especially for the young child can be time consuming, thereby leading to boredom or fatigue. There can be many sources of invalidity. The subject must be aware of his reactions, and further be able to verbalize these. Even if subjects can express themselves, they may deliberately withhold some feelings. This is especially true if the investigator is not well known to the subject.

Besides observation and verbal selection, there are the written replies, including check lists and ratings. Probably one of the commonest current methods of gaining information about children from their peers is a sociometric questionnaire

(77, 78, 82, 87, 102, 114, 125). Sociometry was devised by Moreno (106). Frankel and Potashin (53) suggest the superiority of the sociometric technique for the selection of friends since it overcomes many of the difficulties inherent in the foregoing methods.

In addition to the 'best friend', Cassell and Martin (32) asked subjects to list the names of people whom they would like for friends. Other criteria for choice-making have been items such as Horrocks and Thompson (72) asked: Whom do you want to sit beside at the table?, and Whom do you want to sleep beside? Clarke and Clarke (36) had preadolescent boys list names of friends, of boys to go to the movies, play sports, study homework, and invite to a birthday party.

The friendship-type sociometric test has been administered twice or more to the same subjects, e.g. Horrocks and Thompson (72). Singer (129) administered a sociometric test in disguised form on eight occasions, over a period of one and one-half years. Bonney (15, 16, 17, 19, 20) included sociometric questionnaires in his longitudinal study over a five-year period.

Guess Who is another written technique which is frequently employed. The earliest persons recorded to have used it are Hartshorne, May and Miller (65). Guess who consists of a series of behavioral descriptions and the subject is asked to name as many (or a specific number) of his group members as he thinks fit each description. A social role status score is then

obtained, based on the number of nominations received by each member within the group. Since the description of traits or functions have been provided for by the investigator and not the respondent, the latter is relieved of the burden of verbalization. He is only required to match the description with one or more persons.

Kuhlen and Lee (87) used the Guess Who Test patterned after the one described by Tryon with adolescents. The 40 test items describing particular behavioral functions are arranged in pairs representing polar traits, e.g.

Here is someone who is always cheerful, jolly and good-natured, laughs and smiles a good deal.
Here is someone who always seems rather sad, worried or unhappy, who hardly ever laughs or smiles.

McFarlane, Honzik, and Davis (95) used the polar trait concept of the Guess Who technique as a measure of reputation differences with children in the first three school grades. They used paired questions (positive and negative) for each pair of items, e.g. wiggly versus quiet, popular versus not many friends, smiles frequently versus serious or unsmiling, sissy versus real boy, good at games versus not good at games.

Reliability and stability

Mussen (111) states that the reliability and stability of indices based on Guess Who procedures are generally satisfactory for correlational purposes and for group comparisons. Bronfenbrenner (26) has shown the high reliability and validity of the sociometric test with grade school children. Hartshorne,

May and Miller (65) report a reliability coefficient of .95 for a battery of Guess Who items administered to children in fifth and sixth grades. Symonds and Jackson (134) administered a Guess Who to 585 children in seventh, eighth, and ninth grades; reliability varied from $-.2$ to $.97$ for the various items. MacFarlane, Honzik, and Davis (95) used a Guess Who technique in the first three grades, finding intercorrelations of scores ranging from $.02$ to $.81$. The average for girls was $.52$ while that for boys was $.44$.

Concerning stability of scores, studies have been done at all age levels. With preschool children, McCandless and Marshall (98) found stability at 30 day intervals, while Northway (114, 115) found relatively constant scores over a period of four months. Bonney (16) found the sociometric status of children in second to fourth grades to be as constant over a three-year period as intelligence quotients and academic success.

Choice order appears to effect stability of acceptance selection. Less stability of choice tends to occur with increased distance from first and second choice (145). Singer (129) noted a 72 per cent constancy of first choices of the group maintained over a one and one-half-year period. Criswell (40) likewise found first choices most resistant to change, to the extent of 69 per cent stability. Thompson and Horrocks (139) study with 969 urban youths, ages 11 to 18, noticed a

trend toward greater stability in friendship with increasing chronological age.

Ratings

The reliability of ratings by teachers, especially if the rating occurs during the teacher's early acquaintance period with the child, can be questioned. In an investigation at an army officer candidate school, Wherry and Fryer (155) found that buddy or peer ratings appeared to be the most reliable method of determining leadership, while academic instructor's ratings were practically useless. The factors measured by buddy ratings in the first month of association were the same as those rated by superiors after four months of observation. The latter had measured something quite different in the first and fourth months; it took four months for superiors to identify this leadership factor. The peer rating nominating technique therefore, has the property of early identification of group members who constitute the extremes of leadership distribution.

Other studies show a high relationship of teacher ratings with the results of composite scores from children in first to fourth grades (15, 95). It is possible that the teachers were more familiar with the children at the time of the study. Whereas these teacher-pupil studies showed a close relationship of scores when similar traits are judged by peers and teachers, teachers' ratings were not successful when judging who were

the best friends for each child (91, 96). It was found that when judging popularity in children, adults are likely to base their estimates on behavioral criteria, e.g. judging the socially active child as popular. It would seem essential when judging child popularity to obtain more information concerning the criteria upon which such preferences are made.

Summary

Although numerous studies have been done pertaining to the selection of friends, the exact answer remains unsolved. The concept of a multi-factorial relationship is proposed. From the review of literature, factors which have been pointed out are intelligence, friendliness, enthusiasm, humor, physical attractiveness, popularity, cooperativeness, aggressiveness, socioeconomic status, and chronological age. Although social skills are not a natural consequence of higher intelligence quotients, nevertheless intellectual ability has been shown to favor peer acceptance. Skill in games or motor performance has been related to a person's popularity. In addition, physical ability and popularity have been related to strength. The relationship of motor performance with intelligence has been debated, although generally little or no significant correlation between these variables has been shown.

A survey of research and literature has revealed the value of written replies as a technique for measuring social acceptance. The sociometric technique and Guess Who Test have

been used favorably.

Despite diverse investigations relating to social acceptance, an analysis of research discloses that it is currently an unsolved area worthy of exploratory approaches.

METHODOLOGY

The present investigation is directed toward a global look at development. It is concerned with looking at the interrelationships among the social, intellectual, and physical statuses of fourth-grade boys. The children used in the study are drawn from a fourth-grade census population of two urban centers in mid-west Iowa.

Social status, defined for the research as social acceptance status and social acceptance characteristic status, was determined through peer and adult ratings while intelligence was measured by administering the Lorge-Thorndike Intelligence Tests. Physical status for each boy was determined through a survey of motor performance and body measurements. Data were collected over a three-month period, November 1968 to end of January 1969. The methodology of the study will be discussed under three major headings: 1) subjects, 2) instruments selected, and 3) procedure.

Subjects

A broad study, focusing on the interrelatedness of the social-intellectual-physical areas, inherently must encompass a large number of variables. Therefore it seems advisable to control as many variables as possible outside the main effect, tempered with rationality based on finances, time, and feasibility. Previous research indicates that factors of age, sex,

and race may affect performance in the areas under investigation, but the degree to which they contribute to the inter-relatedness of the areas is unknown. Thus it was decided to control for the variables of age, sex, and race by limiting the investigation to fourth-grade white boys.

Limiting the study to fourth-grade boys avoids the two periods of accelerated physical growth changes (64, 119) and of body configuration (128). In addition, this grade is the earliest one for which a standardized motor test currently is available. Further, for this age the peer group is taking on prime importance as a socializing agent. Through the group, basic psychological needs are fulfilled, competition and cooperation are practiced, values and attitudes are transferred, appropriate masculine and feminine social roles are learned, and friendships are molded (66, 159, 129).

Sex differences are noted by Wellman (153) concerning the factors involved in the selection of friends. Therefore, it is deemed expedient to limit this investigation to boys only.

A review of research further indicates a difference in physical development, fitness, and performance of black and white children (28, 41, 46, 75, 158). Consequently, a white population became the third criterion in this investigation.

Two urban areas, Marshalltown and Nevada, located in mid-Iowa were selected as testing centers. A summarized tabular description of their socioeconomic and racial status can be viewed in Tables 1, 2, and 3. Marshalltown differs from

Table 1. Summary of social characteristics of population in I. Marshalltown and II. Nevada, Iowa, 1960 (Census of Population - 1960, Part 17, Iowa. Tables 13, 21, 22, 33, 34)

Loca- tion	<u>Total population</u>							Per cent increase in sq. miles	Land area per sq. mile of land area	Population per sq. mile of land area
	Total	Whites	Blacks	Indian	Japanese	Chinese	Other			
I.	22,521	22,246	247	13	7	1	7	13.6	7.6	2,963
II.	4,227	4,226	1	--	--	--	--	12.3	2.1	2,013

Table 2. Completed summary of social characteristics of population in I. Marshalltown and II. Nevada, Iowa, 1960 (Census of Population - 1960, Part 17, Iowa. Tables 33, 34. Census of Population and Housing, 1960. Table 30)

Location	<u>Total population</u>		
	Per cent under 18 years	<u>Persons 25 years and over</u>	
		Median school age completed	Per cent who completed 4 years or more of high school
I.	32.8	11.7	48.4
II.	31.9	12.1	52.5

Table 3. Summary of economic characteristics of population in I. Marshalltown and II. Nevada, Iowa, 1960 (Census of Population - 1960, Part 17, Iowa. Tables 33, 34)

Loca- tion	Families			Non worker- worker ratio	Civilian labor force	Employed persons	
	Median income (\$)	Per cent under \$3,000	with incomes of: \$10,000 and over			Per cent in manufacturing industries	Per cent in white collar occupations
I.	5,905	15.8	13.1	1.49	3.0	33.5	43.2
II.	5,374	16.4	12.1	1.32	5.8	10.3	49.9

Nevada in that it encompasses a larger land area and has a larger and more diversified population racially (Table 1). However, when age and education level of the populations are considered, it can be seen that the communities are very similar (Table 2). Although the median family income levels are similar, there are approximately three times as many people employed in manufacturing industries in Marshalltown as in Nevada (Table 3).

In the ten Marshalltown schools having fourth grades there were 20 such classes, with one to four classes per school. The census population of the 20 classes consisted of 461 children (244 boys, 217 girls). Of these, 6 children (5 boys, 1 girl) were not available as subjects due to change in residence and failure to meet the racial criteria. Thus in Marshalltown there was a total of 455 children (239 boys, 216 girls) who were subjects in the study. Nevada had one community school with five fourth-grade classes, consisting of 119 children (69 boys, 50 girls). Of these, one girl moved during the testing period. The total research sample, 573 fourth-grade children, consisted of 308 boys and 265 girls. Since one of the criteria for this study is the sex factor, only the 308 boys will receive the complete battery of tests.

Instruments Selected

In investigating the social-intellectual-physical statuses of children, a variety of instruments and techniques were employed. Social acceptance status and social acceptance characteristic status, as defined in this study, were measured through peer and adult ratings (by strangers, physical education and grade teachers). To gain peer ratings, the Sociometric Choice Enquiry and Who Is It? Tests (Appendix B) were developed by the investigator. For adult ratings, special stranger and Teacher Rating Sheets (Appendix B) also were developed. Intelligence status, as defined in this study, was measured through The Lorge-Thorndike Intelligence Tests (93). Physical status, as defined in this study, was measured through a modification of the Iowa-Brace Test (Appendix C).

In developing this topic, the instruments selected and/or developed will be discussed according to each status which is being measured by it, e.g. for the measurement of intelligence status, social acceptance status, motor performance status, and constitution status respectively.

Intelligence status

Three criteria involved in the selection of an intelligence test were: 1) it should be able to be administered to a group, 2) it should be appropriate for the age being tested, and 3) it should possess relatively high validity and reliability. The Lorge-Thorndike Intelligence Tests, Level 3, Form A,

Verbal Battery fulfilled these three criteria.

The Lorge-Thorndike Intelligence Tests are a series of tests appropriate for kindergarten to college freshmen subjects. The tests are available in verbal or nonverbal series, and in five levels. In addition, each level is available in two comparable forms, A and B. This enables retesting the same child whose score seems questionable for any reason. The Verbal Battery consists of four subtests. These subtests involve tasks pertaining to word knowledge, sentence completion, verbal classification, verbal analogies, and arithmetic reasoning (94).

In the average community, Level 3 is most appropriate for fourth through sixth grades. The average standard error for Level 3 is 4.4 I.Q. points; its statistical validity is a correlation of .77 with the Kuhlmann-Anderson, .79 with California Mental Maturity, and .84 with Otis.

Knowing the test score and chronological age in years and months for each child, an intelligence quotient is interpolated through the use of tables in the Examiner's Manual (92) accompanying the test.

Social acceptance status

Since the innovation of the sociometric test by Moreno (107) numerous studies have utilized it, or a variation of sociometrics, as a technique in measuring personal attraction or interaction. Frankel and Potashin (53) suggested the

superiority of some form of sociometric questionnaire for determining friendships. Various studies (16, 40, 50, 98, 114, 115, 129, 139) have shown that the peer status (especially for the top ratings) remains relatively stable over time.

To obtain peer status ratings, numerous methods have been used. Possibly the commonest one is that of peer, or buddy ratings. This entails pupil choices in various situations which naturally arise in classroom activities, such as working together on a group project, exchanging Christmas gifts or valentines. Research studies have employed self ratings (137), a social distance scale (67), teacher ratings (13, 15, 73, 84, 87, 91, 95, 96, 125), interviews or direct questioning (20, 40, 44, 98), best liked (107, 13, 32, 36, 74, 82, 87, 102, 125, 140), Guess Who or Who Is It? (15, 65, 70, 87, 95, 125, 134, 143), or paired comparisons (84, 91, 95).

In the current study, three types of ratings for social acceptance characteristic status were employed: peer, teacher, and stranger. In considering social acceptance status in this study, the major emphasis is on peer acceptance. However, it is understood that the child's social milieu is not limited solely to the peer group. Briefly it may be stated that adults have a functional role in the socialization of children. The actions and replies from these people, as well as from the peers, direct or mold the child's socialization techniques.

Development of the instruments to measure the social acceptance characteristic status was based on a broad survey of previous research, tempered with a global look at what may constitute social acceptance of a child. Since major emphasis of the investigation is on the peer acceptance, two tests were designed: Sociometric Choice Enquiry and Who Is It? (Appendix B). From the former, the first two items yielded one score for friends which is the measure for the social acceptance status. The remaining portions of the two tests generated 13 scores for peer ratings of social acceptance characteristic status. In addition, on the Who Is It? Test, the child was permitted to include his own name if he so desired. This enabled the possibility of 10 self-rating scores.

Teacher Rating Sheets were developed for the grade and physical education teachers. The combined sheets produced 11 scores for teacher ratings.

Debate had arisen while designing this study concerning the connotation of cleanliness and good looking, as applicable to a ten-year old boy. Do these have similar connotations, and how are they viewed by different ages and people? For this reason, it was decided to include First Impressions (Appendix B), a stranger rating on neat (N), or cleanliness and good looks (L). Thus, two more scores of adult ratings were included.

Development of Sociometric Choice Enquiry Test and Who Is It? Test

Four criteria were involved in the selection of a test to measure social acceptance status and social acceptance characteristic status, as defined in this study. These criteria were that: (1) the test should be applicable to group administration, 2) the format and terminology should be simple and suited to the grade level of subjects, and 3) the coverage of various behavioral characteristics should represent areas which previous research indicates probably are influential to social acceptance status.

With these criteria in mind, literature and former research were scrutinized for a suitable test, preferably standardized, to measure the social acceptance status of subjects at the fourth-grade level. Since no single test suited the investigator for this particular study, it was decided to design two instruments, the Sociometric Choice Enquiry and the Who Is It? Tests (Appendix B).

The Sociometric Choice Enquiry Test was designed to ascertain the three best-liked (and least-liked) friends in rank order, for each child. In addition the test furnished the polar extremes (three best and three least), arranged in rank order, for each statement related to: athlete, popular, and smart. These social characteristics were selected as worthy of investigation, based on previous research. Keeping the positive and negative statements together as a set, the sets were arranged in random order. These followed the set of

friendship statements.

The Who Is It? Test may be considered here as similar to the Guess Who instrument, designed by Hartshorne, May, and Miller in 1929 (65). This instrument presents brief descriptions, always in pairs representing polar traits, and asks the children to guess the child who best fits each description.

The Who Is It? Test served two major purposes: 1) to measure peer ratings of social acceptance characteristics evidenced in classmates, and 2) to test the consistency of subjects' ratings on each of the two tests.

To gain valid profiles, this instrument was founded on statements of specific functions, rather than traits since there is no evidence for discrete validity with the use of the latter. In developing the Who Is It? Test, wordings were of prime importance. The functions selected must bear the following criteria: 1) briefly stated yet clearly perceived, 2) verbally expressed and understood in terms of a fourth-grade vocabulary, 3) characteristic of the trait being measured, and 4) a sufficient yet limited number of items (considering the time allotment as well as maintenance of interest and thoughtful discrimination of the child in his choice-making).

First, the investigator listed which social characteristics of boys might be influential socially with peers and with adults. Nine characteristics were selected: appearance, good looking, dependable, leadership, smart, a real boy, creative,

enthusiastic and cooperative, cheerful. For each of these, four or more functions were listed. For example, the following functions were considered with leadership: suggests interesting things, accepts responsibility, likes to run things, a leader, waits for somebody else, likes to be told what to do.

A series of pretests were administered, first with professionals and adults, finally with young boys. The social characteristics were placed individually on small numbered cards. The adults were told that the social characteristics were to be used in an instrument being developed for fourth-grade boys. The behavioral functions on the numbered cards represented positive and negative aspects of the ten characteristics printed on a tabular sheet. The adults independently were asked to place the cards in positive and negative piles for these ten characteristics. If they felt that any function fit more than one characteristic, they were asked to place it where they felt it "best" belonged. In addition, they were encouraged to contribute suggestions, including additional functions which might describe a characteristic more adequately and in terminology appropriate to a nine- to eleven-year-old boy. The test was administered individually to five boys, ages nine to ten to observe the appropriateness of the test for their age level.

As a result of the pretesting, the term enthusiastic was deleted; real boy was replaced by a good sport, and

appearance became neatness. Any behavioral functions which revealed doubtful connotation were deleted.

Upon completion of the pretests, the selected behavioral functions were arranged randomly. Rather than utilizing the format of the Sociometric Choice Enquiry (where pairs of statements representing polar extremes were arranged consecutively), a more compact presentation was employed for the ten behavioral functions contained in the Who Is It? Test (Appendix B). This compact format consisting of two columns enabled all information to be written on one page only, yet allowed ample space for at least three names for each polar end.

One of these sets of behavioral phrases, namely, who most fits (least fits) the description 'Can you rely on him for the right answer most of the time' was purposely included to test the consistency of subjects' ratings. If subjects are consistently and realistically thinking of persons who are most like (and least like) the descriptions, then there should be a significant relationship between the answer to the forenamed question and the answer to naming 'Boys who are the smartest (and least smart) on the Sociometric Choice Enquiry test.

Scoring The scoring technique for these two tests is somewhat similar. On the Sociometric Choice Enquiry, each child selects in rank order the three children (of same sex) in his class who most fit and least fit the description. An alphabetized roster of classmates is provided and first names only plus the corresponding number of the roster list are

used, e.g. John - 2 and John - 11 denote John Brown and John Smith respectively on the roster-listing of boys within that class. The ranked scores for each child in the class are noted and these scores are then weighted: 4, 2, 1 for first, second, and third choice respectively. Children who are listed as most like the description rate positive scores, while those who are least like rate negative scores. All scores within the class are recorded prior to calculating the total weighted score. Next, the algebraic sum of these weighted scores are obtained, thereby yielding the total weighted score for each child and for each variable. Each individual's total weighted score is then divided by the number in the class less one, thereby adjusting for the size of class.

For the Who Is It? Test, each name mentioned under most like receives a +1 and the least like receives a -1. The score for each variable and for each boy is obtained by the total algebraic sum of numbers for that variable and subject. The score is then divided by the number in the class less one, as noted above.

Self ratings for each function on the Who Is It? Test is optional; if the subject thinks that he is most like or least like the description, he includes his name where applicable. The score is recorded as +1 or -1 respectively. Otherwise no score is listed under the self rating column.

Development of adult ratings Rating sheets were developed for the grade teacher, the physical education teacher, and the stranger.

The Grade Teacher Rating Sheets consist of two parts: 1) to list, in rank order the top five boys (and top five girls) who show most interest in academic work, regardless of their term grades in scholastic attainment or of their intelligence quotient, and 2) to evaluate each child on nine functions, using a scale of 1 to 99 (39). Instructions for the teacher and for the scale rating is detailed on the Grade Teacher Rating Sheets (Appendix B).

In developing these sheets, the following criteria were considered: 1) individually answered by the regular grade teacher of said classroom, 2) the use of functions rather than traits, 3) appropriate terminology for clear and concise descriptions of functions performed, and 4) a coverage of the various behavioral characteristics rated by peers in the Who Is It? Test. The nine functions were selected, representative of the same traits which are being tested by the ten functions rated by peers. For teachers, these functions which are representative of traits e.g. cleanliness, good looking, honest, leader, are described in greater detail for adult clarification. Emotional stability and maturity were incorporated on the Grade Teacher Rating Sheets in lieu of a measurement of humor. It was felt that teachers have more opportunity to observe the former and are more observant of this trait. Due to a one-page

limitation for the test, one combined description for reliable and prompt substitutes for the two descriptions for prompt and honest on the Who Is It? Test. It is possible, however, that some teachers would prefer this description in two parts.

Scores for Part 1 of Grade Teacher Rating Sheets are weighted, while the score ratings for each subject and each variable on Part 2 are obtained directly from the Grade Teacher Rating Sheets. Scores range from 1 to 99. In weighting the scores on Part 1 for the top 5 boys (and top 5 girls), 8, 5, 3, 2, and 1 are used for first, second,... fifth position respectively. All other children receive a score of zero. The score for each child is then multiplied by the number in the class divided by 7, and rounded to two whole numbers.

The Physical Education Teacher Rating Sheet (Appendix B), was devised to discover the outstanding athletes among the fourth-grade boys. Standards for determining outstanding performance is left to the discretion of the physical education teacher. The Physical Education Teacher Rating Sheet requests, in rank order, a maximum of 7 names of boys (within each class) whom the teacher considers to be the best athletes. In addition, the teacher is asked to select the top 5 athletes, in rank order, from all the preceding names, i.e. the best athletes within fourth-grade level taught by that particular teacher. Provided each teacher has the same pupil-load, as was the case in this sample, the scores for the top athletes

are then weighted: 15, 10, 7, 5, 3 respectively, as listed in rank order. All other names which are listed under the individual class but do not make the top 5 each receive 2 points. All others who are not mentioned receive a zero.

The stranger rating for cleanliness (neat, N) and good looks (L) was devised as a comparison technique (First Impressions, Team Scoring Sheet, Appendix B). Attention has been drawn previously to the reader that people vary in their connotation of words, and that opinions differ regarding the similarity (or difference) of neatness with good looks for a fourth-grade boy. Thus the question arises concerning the reliability of adult ratings, especially if the rating occurs during the early acquaintance with children. The ratings of neatness and good looks by teacher and peers have been accounted for in the Who Is It? Test and the Grade Teacher Rating Sheet. The First Impression Scale, therefore, was devised to ascertain how a stranger views a fourth-grade boy, meeting him for the first time. In this study, 'stranger' refers to each woman on the team scoring the motor performance test, to be discussed in detail later.

First Impression Scale involves rating a boy upon first meeting him. The ratings of excellent, average, or weak are applied to neatness (N) and good looks (L). Since the pre-testing period revealed that scorers wanted some guidelines for rating these traits, some general suggestions are given to them (Manual for Assistants, Appendix C). The final decision

for rating these two traits is based on independent scorer's interpretation of neatness and good looks for a fourth-grade boy.

It was recognized from the outset that this rating has limitations and is only a rough guide.

Each scorer's rating for neatness and for looks is given a 3, 2, or 1 weighting for high, medium, or low rating respectively. The stranger rating score on cleanliness and good looks for each subject is obtained by calculating the mean score of all individuals making a rating.

Motor performance status

As a measure for the area of motor skills, an adaptation of the Iowa-Brace Test, (Appendix C), was utilized.

The pioneer test, by David Kingsley Brace (24) was intended to be a test of general motor ability. Since McCloy and Young, found this test "included some stunts that depend, for their execution, primarily upon strength", (101, p. 85), they revised the test. The Iowa revision of the Brace Test, commonly referred to as the "Iowa-Brace Test", has the following test criteria:

1. The percentage of persons who executed a stunt correctly increased with each year of age; for example, a stunt executed successfully by 80 per cent of the thirteen-year-old performers but by only 45 per cent of the fourteen-year-old performers was eliminated.
2. The stunt...was not a significant measure of strength, size, and maturity, and/or of power.

3. The stunt had a high correlation with track-and-field athletics when the classification index (or age alone for girls), the Sargent Jump and the strength score was held constant to the athletic events but not to the stunt. (101, p. 85)

The validity of the Iowa-Brace Test for the measurement of motor educability is a correlation of .68 with sports rating, and of .62 with sports intelligence. McCloy and Young (101, p. 91) note that in a factorial analysis of the Iowa-Brace Test, six factors were identified: 1) dynamic energy, 2) flexibility, 3) balance, 4) semi-circular-canal balance, 5) insight into the nature of the stunt, and 6) arm control.

The Iowa-Brace Test is designed for fourth-grade children through adolescence. It comprises a total of 21 stunts. For each sex and at each level (elementary, junior-high, and senior-high schools) only 10 stunts are specified. The order for performing each of these 10 stunts is also designated (101).

In designing the current study, several questions arose concerning the instrument and its administration. After reviewing the instruments available, it was felt that an adaptation of the Iowa-Brace Test was the most appropriate. Briefly stated, the adaptations involved the administration of the test as an individual, rather than a group, test and the additional use of a stop-watch for each scorer, and one or two tumbling mats.

Although Brace's pioneer test (24, p. 100-101) gives directions to be followed "when the tests are to be given individually and scored by an examiner", this really applies

to a small group test. Four pupils are tested simultaneously by one examiner. This method decreases the discipline and management problems as well as limits the aspect of competition, as compared to the total class group. Consequently, in the current study it was deemed advisable to adapt Brace's method further thereby enabling individual testing.

Constitution status

There are many ways by which body build has been determined. Usually these involve some measurements (somatometric method), or pictures taken in the nude against a background grid (somatoscopic method). The present study used the former method.

In differentiating body types, various indices have been utilized. The Ponderal Index (119), a ratio of height (inches) divided by cube root of weight (pounds) was used by Stafferi (132) to separate his subjects according to types of body build. From a battery of 13 indices used by Simon (128), the most powerful in revealing change from early- to middle-childhood figures were head circumference (decreasing), waist circumference (decreasing) and leg length (increasing). She suggested an index of head circumference (or waist circumference) divided by leg length might be a particularly sensitive instrument for registering changes in body circumference. Rohrer's index (weight times 100 divided by height cubed, using metric units), was utilized for determining physical

similarity among subjects by Seagoe (125).

In a review of five German dissertations, Krogman (86) states that the dissertations are all based on very adequate samples for age, sex, and body build. They are uniformly well-presented. Basic to the dissertations are 11 indices calculated by age, sex, and body build. Berndt (12), Musche (110), and Vogt (147) independently found that Kaup's index (weight divided by height squared), Rohrer's index (noted above), and Rel. Head Abdomen Circumference (head circumference times abdomen circumference, divided by height) are best adapted to body-typing, with preference to Kaup's and Rohrer's indices although none are precise in individual cases. Kempken (83) and Neumann (113) each found the forenamed indices and also Quetelet's index (weight divided by height) best in picking out individuals, although none of the indices will body type an individual precisely.

When surveying the broader view of development, the question is proposed concerning the possibility of an existing relationship of physique with other developmental aspects, e.g. social, intellectual, motor. For example, a fourth-grade boy who is tall and slender might find height an advantage (or disadvantage) in performing motor skills, in making friends, or in gaining popularity with his peers. Perhaps the overweight boy is handicapped in self concept which in turn could affect his academic performance.

In designing this study, the investigator considered two directions regarding the measure of constitution: 1) to classify each boy into one of the specific body builds, as set forth by Kretschmer (85) or by Sheldon (127), or 2) to investigate various indices which have been used or recommended by researchers in this area of development. The latter direction was selected. Rather than body typing subjects, the major intent of this investigation is to ascertain in what way, if any, body build is related to each of the other areas under study. Since the research focus is toward a global look, it was felt that a broader view of physique (utilizing anthropometric measurements and formulae) would be desirable. Furthermore, this broader view of physique is based on more objective measures as well as utilizing a variety of formulae in contrast to being dependent on one evaluation only.

In this broad analysis, eight individual anthropometric measurements and seven indices were included as variables. The eight measurements include: weight, maximum standing height, leg length, head diameter, maximum head circumference, abdomen circumference, and strength as measured by each of the right and left hands.

The equipment used were the Bayley height board and wooden seat (Appendix D), Borg scales, steel calipers, steel tape, Smedley-type hand dynamometer, rating sheets on clipboards, and pencils. The detailed methods for taking each of

the anthropometric measurements may be noted in the Manual for Assistants (Appendix C).

Since constitution has been studied from various approaches in different countries, a variety of indices utilizing different combinations of anthropometric measurements are noted in the literature. In the current study, the intent is not to test any individual index. Rather, it is to ascertain if any association between body build and some social, motor, and intellectual measurements will be revealed. Therefore seven indices were selected, as shown in Table 4.

Procedure

The school superintendent of each community was contacted, followed by a personal interview with the principals enabling a discussion of the proposal, basic objectives, and implications of the research (Appendix A). Space requirements and testing time were discussed and a schedule was set up for the sequential visitation to the schools.

A meeting of the investigator with all fourth-grade teachers was arranged prior to conducting the investigation, in both Marshalltown and Nevada. Details of the study were not discussed purposely at this meeting. The teachers were told that the investigator was interested in how children of this age were growing up, who their friends were, what their interests were, and how they were performing at school. They were told that the boys would be taken to the multi-purpose

Table 4. Anthropometric indices adapted to differentiation of body typing

Index	Reference	Formula
Ponderal or Height-Weight ratio, H.W.R.	Parnell (119)	$\frac{\text{Height}}{\sqrt[3]{\text{Weight}}}$
Suggested Head-Leg ratio	Simon I (128)	$\frac{\text{Head cir.}}{\text{Leg length}}$
Suggested Waist-Leg ratio	Simon II (128)	$\frac{\text{Waist cir.}}{\text{Leg length}}$
Kaup's (Index 2)	Berndt (12, p. 10) Kempken (83, p. 10) Musche (110, p. 5) Neumann (113, p. 8) Vogt (147, p. 10)	$\frac{\text{Weight}}{\text{Height}^2}$
Quetelet's (Index 1)	Same as for Kaup's, above	$\frac{\text{Weight}}{\text{Height}}$
Rohrer's (Index 3)	Berndt (12, p. 10) Musche (110, p. 5) Vogt (147, p. 10)	$\frac{\text{Weight} \times 100}{\text{Height}^3}$
Rel Head Abdomen Cir., Height (H.A.H.)	Berndt (12, p. 10) Kempken (83, p. 10) Musche (110, p. 5) Neumann (113, p. 10)	$\frac{\text{Head cir.} \times \text{Abdomen cir.}}{\text{Height}}$

room in small groups where they would be measured and would perform some motor stunts. In addition, the investigator would visit the classroom on three occasions to administer an

intelligence test and two sociometric-type tests to both boys and girls. Prior to visitation, a schedule would be worked out in cooperation with the teachers concerned. The Grade Teacher's Rating Sheets (Appendix B) were then discussed. The teachers were told that the investigator was withholding further information at this time so as not to bias their rating scores. However, as soon as all sheets had been received, the teachers should feel free to discuss the investigation in further detail.

Testing occurred daily, commencing in Marshalltown on October 31, 1968. Due to semester change and a special testing period, a schedule had been arranged in Nevada to test on January 7, 9, and 24 through 31, 1969. The investigator administered classroom tests on scheduled days when the trained assistants were not available.

The census fourth-grade population of both centers consisted of 20 classes in Marshalltown and 5 classes in Nevada. Prior to each test administration, (whether group classroom testing or individual testing of boys in the multi-purpose room), equipment was set up. At the meeting with the principals, a table, four chairs, and a wrestling mat had been requested for testing purposes in the multi-purpose room. The investigator and the Child Development Department at Iowa State University provided the remaining equipment. The latter consisted of: Bayley height board and wooden seat (Appendix D), leveler, Borg scales, steel calipers, 2 steel tapes, 3

stop-watches, Smedley-type hand dynamometer, colored sashes (markers) and bows, clipboards, The Lorge-Thorndike Intelligence Tests and answer sheets, Sociometric Choice Enquiry and Who Is It? Tests for both boys and girls, and Demographic Sheets. Stop-watches were used for accurate timing on the intelligence and motor testing.

Team and Training Series

Three demonstrators and four scorers were trained in the knowledge and skill required for the taking of anthropometric measurements and in the judging and scoring of the Iowa-Brace Test. Training was conducted by professionals in the Child Development and Physical Education Departments of Iowa State University, accompanied by the investigator. The team of seven women, including the investigator, were either graduates or upper classmen in the forenamed departments. On the first meeting, the research was introduced with the Manual for Assistants (Appendix C). No title was stated on this manual. Stating the title would reveal all aspects of the study and could bias the First Impressions, the approach of the assistants to the boys, and their measurements. Rather, the team members were told that:

This is a study involving many variables, e.g. physical, motor, and certain specific traits in fourth-grade boys. Further information is not being disclosed at this time since it might influence the scorer's judgments. However, upon completion of data collection, any question can be discussed at any time and to any extent. Meanwhile, the important emphasis is on accuracy and preciseness in all measurements.

At this first meeting, equipment required for measuring body build and motor performance were shown and discussed. One demonstrator, who had previously worked with the investigator, demonstrated the ten stunts of the Iowa-Brace Test. After each stunt had been demonstrated, questions and a discussion followed concerning a 'pass' or 'fail' in performance as well as modifications which had been made.

After the initial training period and prior to visiting the schools selected, the team scorers working in pairs obtained anthropometric measurements and independently scored ten-year-old children in the Older Children's Laboratory at Iowa State University, Child Development Department. Scores were independently recorded. Through group discussion and demonstrations, standards of acceptance and rejection were set up. Training continued until scoring for motor performance was consistent and accurate, and anthropometric measurements agreed or were within the accepted variation, as noted in the Manual for Assistants (Appendix C). Thus, reliability and consistency in technique methods and scoring were established.

Administration of Tests

Basically there were two types of testing: 1) the taking of anthropometric measurements and the administration and scoring of individual motor performance tests for boys only in the multi-purpose room, and 2) group tests, consisting of the intelligence and peer acceptance test, administered in the

classroom to fourth-grade boys and girls. The information pertaining to the girls was not included in the analysis of data of the present investigation.

Intelligence testing

In Marshalltown, The Lorge-Thorndike Intelligence Tests were administered to each class always at the opening of the school day. In all cases, the four parts of the tests were administered consecutively by the investigator and timed precisely by a stop-watch, as outlined in the Manual accompanying the tests (92).

Immediately following the 8 minutes' timing for Test 2 of the four-part tests, the investigator told the children to:

Stop. Even if you have not finished, stop and put down your pencil, and stand beside your desk (specifying to which direction of the desk to stand).

Approximately a one-minute intermission was taken when the pupils were directed to follow the investigator's instruction and demonstration of reaching high toward the ceiling, bending down to touch the floor, stretching upward once again then twisting to the right and then to the left, stretching upward and being seated. This intermission afforded relaxation, without conversation, for these younger children. Immediately upon completion of the exercise, children were asked to:

Be seated, turn the page to Test 3. Read the directions silently while I read them aloud.

Attention was immediately resumed and Tests 3 and 4 were completed.

Peer acceptance testing

The Sociometric Choice Enquiry and Who Is It? Tests (Appendix B) were administered usually not less than one day apart. Since each test was untimed, the investigator had previously arranged with the grade teacher for an academic assignment (e.g. spelling, arithmetic) on which the child could work individually while seated, upon completion and handing in of the test. This technique enabled the child to think and work at his own pace on the test while also avoiding the waste of time, thereby gaining teacher cooperation and child interest. The answering time might vary from fifteen to forty minutes.

When distributed, each test was read aloud by the investigator while the pupils read it silently. Accompanying each test was an alphabetized roster, each child receiving the complete list of the same-sexed children within the class. For each answer, the reply was to consist of the first name and the correct corresponding number for that person. For example, John Brown was differentiated from John Smith as John-2 and John-11 respectively. Prior to the marking of the tests, these numbers were verified.

Questions pertaining to each test were encouraged. An explanation was given concerning least-liked friends, as follows:

This is not saying that you do not like that person. You could easily tell me whom you like best, second best, and so on. If you were to list in this order everyone in this class, whose name would be last on your list? Then write this name under Column I;

for the person who would be second from the last, write the name under Column II; and third from last, under Column III.

The attention of all children was drawn to the terms athlete and popular. The investigator summarized these, explaining that an athlete was "a person who took part in, and played well in many sports and games". Popular referred to "a person who was known to a lot of people and liked by many".

On the Who Is It? Test, good looking was defined further by explaining that we think of some girls as 'pretty' while some boys are 'handsome'. From the expression on the children's faces, these terms were readily understood. It was added that it was up to each child to choose the persons of the same sex whom they felt applied best to this description, and least to it. 'Rely' was defined as "someone you can count on and depend on". The investigator explained the word cooperative in terms of working together in groups, such as in the classroom projects or in Boy Scouts' work. The cooperative person was the one who worked together well with the others, could give suggestions but did not have to gain his own way. He was always ready to assist others or to do a little more work than was required of him.

Adult ratings The grade, and physical education teachers individually were handed the teacher rating sheets and asked to return the completed form to the investigator prior to a reasonable due-date.

For the stranger rating, when the boys first entered the multi-purpose room for the motor performance testing, each scorer independently rated all of the boys entering at one time.

Motor performance testing

A trained team of three to five persons (one demonstrator and two to four scorers) was used to administer the Iowa-Brace Test. The investigator (a scorer) and a Child Development graduate (a scorer) were always present in the team. However, all team members had been trained previously for accuracy and consistency in techniques and scoring. Fourth-grade boys were escorted by the demonstrator to the multi-purpose room, the number of boys corresponding to the number of scorers present.

Upon entering the room, the boys were given the opportunity to select their desired color-choice of sash which was to replace temporarily a belt, if being worn. The sashes consisted of five-inch strips of double-woven, non-ravelling fabric with wide stripes of two colors. The boys were asked also to remove their shoes. This interlude enabled the scorers to complete the First Impressions scale for each boy, as well as permitting the boys to become familiar with the demonstrator and the room set-up. They were told that some measurements would be taken first and later they would be shown how to do some motor stunts. The demonstrator then drew the boys' attention to the bows made from matching material and colors,

similar to their sashes, being worn by the women scorers. Each of the boys was introduced and requested to go directly to the scorer wearing the matching color. These sashes proved very successful, serving as a quick means of identification throughout, avoiding any restriction of a tight belt during the motor testing, as well as simplifying the waistline measurement adjacent to the skin.

Following the anthropometric measurements, discussed later, the boys were asked to take off their socks, sit on the mat, and wait for the demonstrator to give them further instructions. After the introduction to the tests (Appendix C), the demonstrator explained each test, how it was executed, and what constituted a failure. These standardized instructions were printed on 5" x 8" cards, with failure criteria printed in red. Immediately following each explanation, the demonstrator performed the test, asked if there were any questions, then requested each boy to go immediately to his own scorer. As noted in the introductory instructions (Appendix C), each boy watched his own scorer for signals and timing which the scorer checked with a stop-watch. He was given one or two trials, as necessary, then asked to sit on the mat for further instructions by the demonstrator. When all boys had returned to the mat, the demonstrator continued to present the next test. When the ten tests were completed, the boys were asked to return the sashes and complete dressing.

Anthropometric measurements testing

Upon introduction and matching of pupil-scorer personnel, the following measurements were taken according to specifications outlined in the Manual for Assistants (Appendix C): maximum standing height, maximum sitting height, weight, maximum head circumference, head diameter, abdomen circumference, and the hand grip for each of right and left hand. Measurements for each boy was checked by an assistant scorer, rechecking as necessary by each scorer until measurements agreed within not more than one millimeter for height, head circumference and diameter, and within five millimeters for abdomen circumference, and within 0.5 pound for weight.

Testing overview chart

A summarized chart of the procedure for this investigation may be noted in Table 5. For each factor studied, the reader can quickly observe the instruments used, the respondent(s) and equipment necessary, and how the instrument or item was administered.

Socioeconomic status

Father's occupations (Demographic data, Appendix A) were broadly classified into three areas; high (managerial and professional), medium (clerks, salesmen, skilled laborers, and uncertain), and low (unskilled and unemployed). These areas were weighted 3, 2, and 1 respectively.

Table 5. Testing overview chart, a summarized plan of the procedure

Factor studied	Instrument or item	Respondent and equipment	How administered or obtained
1. Peer acceptance social status	1. Peer ratings a) Sociometric Choice Enquiry b) Who Is It?	Fourth-grade children; roster Fourth-grade children; roster	Group test; Classroom Group test; Classroom
	2. Teacher ratings	a) Grade teacher b) P.Ed. teacher	Individual rating sheet left with each teacher
	3. Stranger rating	Research team assistants	First impressions when boys enter multipurpose room
	<hr/>		
2. Intelligence	1. Lorge-Thorndike Intelligence Tests, Level 3, Form A. Verbal battery	Fourth-grade children	Group test; Classroom (by investigator)
	2. Grade teacher rating sheets	Grade teacher	Individual sheet left with each teacher
3. Motor performance	1. Iowa-Brace Test	Fourth-grade boys; mat; stopwatches; score sheets; pencils	Multipurpose room; 2-4 boys at a time, tested individually by research team assembly line
	2. Physical Education Teacher Rating Sheet	P.Ed. teacher	Sheet left with each P.Ed teacher
4. Constitution a) Physique	Anthropometric meas'ts.	Special height board & sitting attachment	Research team, working in pairs (taking meas'ts.)
	1. Maximum height; standing, sitting	Borg scales	individually, and
	2. Weight	Steel calipers	cross-checking
	3. Head diameter	Steel tape	within the pair, for accuracy
	4. Head circumference		
	5. Abdomen circumference		
	6. Strength (hand dynamometer)	Hand dynamometer	
b) Temperament -- Included in social status instruments (3) -- interwoven (refer to #1 above).			

Analysis of Data

All tests were hand-scored twice, independently and any discrepancies rechecked for accuracy. When tests were completely scored, weighted as specified, and rechecked, data were coded for each subject within each of the 25 fourth-grade classes, and for each of the 57 variables (as summarized in Table 6). The data were analyzed within classes (e.g. mean, variance), and a correlation matrix established by pooling the covariances within classes. All of the resulting correlations within the matrix were then presented in a multitrait multi-method matrix (Matrix 1 and variables) which is described more fully in the results chapter.

Table 6. Classification of variables included in correlation matrix

Number of variables	Assigned status to variable	Sub-classification of variable	Source
1	Social acceptance	1 peer rating score	Sociometric Choice Enquiry Test, items 1, 2
36	Social acceptance characteristic	3 peer rating scores 10 peer rating scores } - - - 10 self rating scores 10 teacher rating scores 1 physical education teacher rating score 2 strangers rating scores	As above, items 3 to 8 Who Is It? Test, numbers 1-10 inclusive Grade Teacher Rating Sheets Physical Education Teacher Rating Sheet First Impression Scale
1	Intelligence	Intellectual quotient	The Lorge-Thorndike Intelligence Tests
1	Motor performance	1 motor performance score	Iowa-Brace Test (modified)
16	Constitution	2 strength measures 1 handedness 6 anthropometric measurements 7 indices adapted to body typing	Hand dynamometer Child's verbal response during measurements Trained scorers Table 4
2	Demographic data	1 chronological age 1 socioeconomic status	Office records Office records

RESULTS

In this exploratory study, the major concern is to ascertain what interrelations exist among peer acceptance, intelligence, and physical (motor performance and constitution) status of 308 fourth-grade boys.

Included in the investigation are 57 variables. Of these, 1 represents social acceptance status while 36 represent the social acceptance characteristic status, 1 variable is for intellectual status, 1 for motor performance status, 16 for constitution status, and 2 denote chronological age and socioeconomic status. A more detailed listing of these variables is noted in Table 6 and in Matrix 1 and variables. Four family variables (regarding sibling order) are included, as discrete data, in addition to the 57 variables.

Looking at relationships which other research have designated, this study serves as a confirmatory analysis of the following null hypotheses:

1. There is no relationship between motor performance status and intellectual status among fourth-grade boys.
2. There is no relationship between motor performance status and social acceptance status among fourth-grade boys.
3. There is no relationship between intellectual status and social acceptance status among fourth grade boys.

Matrix 1 and variables. Multitrait multimethod matrix including 57 variables

Method I. Grade teacher rating for:

1. intelligence, scale of 1-99
2. top 5 (showing interest)
3. leader
4. cooperative
5. creative
6. good looking
7. cleanliness
8. good sport
9. reliable and prompt
10. emotional stability and maturity

Method II. Physical education
teacher rating for:

11. (top) athletes

Method III. Peer ratings for:

12. smart (intelligence)
13. right answer (intelligence)
14. friends
15. popular
16. leader
17. cooperative
18. creative
19. good looking
20. cleanliness
21. good sport
22. honest
23. prompt
24. humor
25. athlete

Method IV. Self ratings for:

26. right answer
27. leader
28. cooperative
29. creative

30. good looking

31. cleanliness

32. good sport

33. honest

34. prompt

35. humor

Method V. Stranger ratings for:

36. good looks (L)

37. cleanliness (neat, N)

Method VI. Strength and anthropometric
measurements for:

38. right hand grip

39. left hand grip

40. maximum standing height

41. weight

42. leg length

43. head diameter

44. head circumference

45. abdomen circumference

Method VII. Indices for body build, Table 4.

46. Parnell

47. Simon I

48. Simon II

49. Kaup

50. Rohrer

51. Rel. head cir., abdomen cir., ht. (H.A.H.)

52. Quetelet

Single variables:

53. motor performance, by Iowa-Brace Test

54. I.Q., by The Lorge-Thorndike Tests

55. chronological age

56. socioeconomic status

57. handedness

37		
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39		13
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534		508
535		509

In collecting data from many of these variables, four independent rating methods were utilized, e.g. peer, teacher, self, and stranger.

The data were analyzed within classes (e.g. mean, variance), and a correlation matrix set up by pooling the covariances within classes. With 308 students in 25 classes, the degrees of freedom for testing for a correlation different from zero is 282. Using these degrees of freedom, a correlation of .15 is significant at or beyond the .01 level.

In order to discover discriminant validity, and to estimate the relative contribution of trait and method variance (due to rater), more than one method must be considered in the validation process. To assess the validation process, all of the resulting correlations within the matrix are presented in a multitrait multimethod matrix (Matrix 1 and variables). Reading downward on the vertical axis, Method I (grade teacher rating), variables 1, 2,... 10; Method II (physical education teacher rating, which is included separately from the grade teacher rating due to the difference in rating the variables being measured. The physical education teacher was only rating the top athletic performers. In addition, the subjects were not as intimately known to this teacher as to the grade teacher. Consequently the rating scales differ), variable 11; Method III (peer rating), variables 12, 13,... 25; Method IV (self rating), variables 26, 27,... 35; and Method V (stranger rating), variables 36 and 37. Method VI contains a group of two strength

measures, variables 38 and 39, and six anthropometric measurements, variables 40, 41,...45, while Method VII includes a group of seven indices of body build, variables 46, 47,...52. At the bottom, single variables (representing motor performance, intelligence quotient, chronological age, socioeconomic status, and handedness), variables 53 to 57 inclusive complete the matrix.

In order to make this large matrix easier to peruse and comprehend, it has been sectioned according to the scheme recommended by Campbell and Fiske (31). Variables representing ratings made by the same rater are grouped together and as far as possible, within each group the variables representing the traits have been ordered alike. This arrangement of the variables results in the triangular submatrices (adjacent to the major diagonal) containing all correlations among variables derived from the same rater (heterotrait monomethod coefficients). Except for the underlined coefficients, the rectangular submatrices contain correlations which represent variables having neither the trait nor the method in common (heterotrait heteromethod coefficients). The underlined coefficients in the rectangular submatrices represent correlations between different raters rating the same trait (monotrait heteromethod coefficients).

Viewing each of the triangular submatrices, Tables 7, 8, and 9 (for self-, teacher-, and peer- ratings), fairly homogeneous correlations are found, probably explained by the halo effect often found in ratings. Within the triangular submatrix for self-rating, Table 7, correlations are low, due to low

Table 7. Triangular submatrix for self rating of variables 26, 27..35

	26	27	28	29	30	31	32	33	34
26									
27	18								
28	30	21							
29	06	16	12						
30	18	12	15	10					
31	26	22	24	11	39				
32	11	20	22	10	12	16			
33	24	14	30	11	26	18	12		
34	17	17	16	11	14	30	25	17	
35	06	17	19	26	08	08	18	22	11

Table 8. Triangular submatrix for teacher rating of variables 01, 02,...10. Physical education teacher rating for variable 11

	01	02	03	04	05	06	07	08	09	10
01										
02	55									
03	78	53								
04	74	47	66							
05	70	49	74	60						
06	58	36	53	56	51					
07	60	40	55	62	52	68				
08	58	43	68	66	59	51	48			
09	72	49	65	71	59	61	68	53		
10	57	39	55	62	51	48	49	66	52	
11	02	18	11	08	06	12	12	11	02	00

Table 9. Triangular submatrix for peer rating of variables 12, 13,...25

	12	13	14	15	16	17	18	19	20	21	22	23	24
12													
13	75												
14	59	55											
15	62	59	73										
16	68	71	65	67									
17	64	58	62	53	70								
18	41	48	33	39	42	33							
19	52	51	64	66	66	53	36						
20	62	61	60	59	67	58	38	67					
21	61	62	71	68	67	63	36	61	60				
22	62	59	56	53	60	64	33	50	62	64			
23	60	58	45	48	53	47	34	45	53	51	50		
24	54	62	61	55	59	56	37	65	58	44	56	44	
25	57	53	67	79	65	53	28	61	57	64	48	49	49

variance; teacher ratings were on a scale of 1 to 99, peer ratings were derived as previously described and substantial variability was possible, whereas self ratings were +1 or -1 since this was on optional rating.

Scrutinizing the triangular submatrix of teacher ratings, Table 8, intelligence (variable 1) is highly correlated with variables 3, 4, 5 and 9 (leader, cooperation, creative, reliable and prompt), while lower correlations of .55 and .58 (although significant) occur with variables 2 and 6 (top 5 and good looking). The lowest correlation of .36 within the triangle is noted in the relationship between variables 2 and 6. This is due partly to the low variance for variable 2, since only the top 5 are being considered in the class. It may be noted also that the horizontal row for variable 6 (good looking) is somewhat low. The highest correlations within this triangular submatrix are .78 (variables 1 with 3, or intelligence with leader), .74 (variables 1 and 4, or intelligence with cooperative), and .74 (variables 3 with 5, or leader with creative).

Looking briefly to Table 10, the highest correlation of intelligence quotient (variable 54) within the teacher ratings is .52 (a correlation of variables 54 with 1, or intelligence quotient attained from The Lorge-Thorndike Intelligence Tests and the teacher rating of the functions representing intelligence). Close to this correlation is .50 (variables 54 with 3, or intelligence quotient and leader).

Turning attention to the triangular submatrix of peer ratings, Table 9, five high correlations are observed: .79 (variables 15 with 25, or popular with athlete), .75 (variables 12 with 13, or right answer and smartest), .73 (variables 14 with 15, or friends with popular), .71 (variables 14 with 21, friends with good sport), and .70 (variables 16 with 17, or leader with cooperative). The consistently lower correlations are noted in the vertical column for variable 18 (creative). Once again, a glance to Table 10 reveals that for intelligence quotient the highest correlation within the peer ratings is .49 (variables 54 with 12, or intelligence quotient with smartest).

Viewing the heteromethod-heterotrait submatrix Table 11, the combined peer-teacher ratings can be observed. In the upper left corner is an area with correlations of .56, .52, .51 and .45 pertaining to variables 1, 2, 12, and 13 which collectively relate to intelligence ratings. Within the homo-trait heteromethod diagonal, .49 correlation (of variables 3 with 16, representing leader) stands out. When viewed with other variables (e.g. vertically and horizontally from .49), the moderately high correlation follows throughout. It is highest, .64, for variables 12 with 3 (peer rating for the smartest and teacher rating for leader).

The triangular submatrix for self ratings, Table 7, reveals the highest correlation to be .39 (variables 30 with 31, the trait being measured by both good looking and cleanliness).

Table 10. Single variables 53, 54,...57, within multitrait multimethod matrix (Matrix 1 and variables), for teacher rating of variables 1, 2,...10, and for peer rating of variables 12, 13,...25

01 02 03 04 05 06 07 08 09 10	11	12 13 14 15 16 17 18 19 20 21 22 23 24 25
53 06 04 08 06 03 12 11 06 07 08	03	14 02 16 10 12 11 06 12 12 08 06 14 13 19
54 52 34 50 34 41 23 28 28 37 30	04	49 38 04 11 22 22 28 14 19 18 31 26 23 03
55 -25-10-16-11-13-09-07-10-11-11	-03	-09-06 20 13-03-05-01-04 00 04 -07-04-05 15
56 17 20 18 10 15 16 09 20 13 12	03	21 14 25 17 18 12 17 13 19 12 09 09 17 08
57 -05-07-08-06-11 02-08 00 00-08	06	-06-06 01-05-05-05 00-07-06 02 -03-05-04 06

Table 11. Rectangular submatrix for peer rating of variables 12, 13,...25 with teacher rating of variables 1, 2,...10

01 02 03 04 05 06 07 08 09 10
12 56 52 64 55 50 51 56 49 58 41
13 51 45 56 49 48 41 44 48 46 33
14 29 28 35 32 21 37 32 39 32 29
15 31 32 42 35 33 44 36 44 39 25
16 41 43 49 47 38 44 45 49 41 35
17 41 34 41 46 33 40 41 42 40 39
18 35 24 39 19 32 26 24 25 25 16
19 26 21 35 26 27 35 35 40 30 23
20 40 34 45 42 35 48 48 41 45 35
21 43 35 50 43 37 42 42 46 44 36
22 43 35 46 51 34 34 42 41 47 41
23 43 31 44 39 34 40 44 33 47 26
24 27 30 33 31 29 32 29 38 28 27
25 27 24 33 34 27 43 35 37 38 32

Table 12. Rectangular submatrix for self rating of variables 26, 27,...35 with peer rating of variables 12, 13,...25

12 13 14 15 16 17 18 19 20 21 22 23 24 25
26 23 16 03 11 21 14 05 11 05 17 13 03 09 13
27 18 15 10 13 21 14 17 22 15 13 06 08 10 08
28 08-03-04 01 04 05 01-01-09-07 01 08-01 00
29 07 10-03 06 04-06 24 06 04 04 03 08 08 00
30 02 01 03 08 06 04-02 13-04 01-05-02 12 07
31 08 06 03 14 14 10 00 08 10 06-04 09 07 14
32 14 05 07 13 03 00 12 13 02 11 02 05 08 10
33 03-04-01-04 00 07 01 02-08-02-01-07 03 08
34 10 07 04 03 02 06 06 04 03 02 05 16 09 04
35 04-01-04 04-07-11 07-01-05-05-01 02 01-02

The trait is probably due more to cleanliness than what is considered by others to be good looking, since the cleanliness variable denotes moderate relationship with variables 26 (.26 correlation with right answer), 27 (.22 correlation with leader), and 28 (.24 correlation with cooperative). Correlations of .30 are noted for variables of intelligence with cooperative, for cooperative and honest, and for cleanliness and prompt. The vertical row for creative (variable 29) shows a consistently low correlation pattern, except for humor (variable 35). Glancing at the homotrait heteromethod diagonal in the rectangular submatrix, Table 12, a .24 correlation is noted for creative (variables 18 with 29), .23 and .16 for intelligence (variables 12 and 13, with 26), .21 for leader (variable 16 with 27), and .16 for prompt (variables 23 with 34). Since the self ratings of creativity are less subject to halo than the other self ratings and correlate lowly, but highly significantly with peer ratings of creativity (as noted by the .24 correlation) but not with other peer ratings, it is concluded that there is evidence for discriminant validity for creativity for peer ratings and self ratings. In contrast, however, the correlation of peer and self ratings for intelligence shows discriminant validity throughout. A cluster of higher correlations appear around the leader and intelligence area, along with cooperative. When looking horizontally on variable 27 (self rating with leader), a correlation of .22 is found for good looking and leader (variable 19 with 27).

Looking at the heteromethod-heterotrait rectangular submatrix for self and teacher ratings, Table 13, the outstanding correlations are among the ratings pertaining to intelligence, followed by the ratings pertaining to leader. The ratings for intelligence correlates highly with ratings for all variables within the block except for good looking and cleanliness by teacher ratings (variables 6 and 7). It is interesting to note that in this submatrix, the self ratings for good looking and cleanliness (variables 30 and 31) are all negative or near zero. Carrying this relationship further, it is noted that the combined stranger and self ratings noted in Table 14 are mainly negative or very low correlations. The exception is with variable 30, or the self rating for good looking which agrees somewhat, .12 with variable 36 though not significantly.

When comparing the stranger and peer ratings, Table 15, a fairly homogeneous picture is seen. Correlations are relatively high for stranger ratings of good looks and cleanliness with peer ratings of: variable 20 or cleanliness (.31 and .36 respectively), variable 19 or good looking (.34 and .30), variable 16 or leader (.23 and .28), variable 15 or popular (.24 and .25), and variable 12 or smartest (.19 and .27). When observing stranger ratings and friends (variable 14), the same correlation of .26 is noted with each of good looks and cleanliness.

The highest stranger-teacher coefficients, Table 16, are for good looks and for cleanliness, the only traits rated by

Table 13. Rectangular submatrix for self ratings (variables 26, 27,...35) with teacher rating for variables 1, 2,...11

	01	02	03	04	05	06	07	08	09	10	11
26	20	23	18	18	14	08	10	15	18	10	09
27	<u>10</u>	14	<u>16</u>	18	08	09	15	11	15	05	-03
28	11	15	<u>09</u>	<u>07</u>	03	-09	-02	02	13	-01	02
29	07	-04	09	<u>00</u>	<u>06</u>	-01	04	03	05	01	-01
30	-07	00	-06	-06	<u>-06</u>	01	-05	01	00	07	01
31	-04	08	-01	00	-04	<u>-04</u>	-02	-02	00	-07	00
32	02	04	11	01	04	-01	<u>07</u>	<u>01</u>	07	-03	10
33	00	06	02	00	00	-08	-05	<u>04</u>	04	-04	-04
34	14	10	14	13	10	08	07	13	18	08	-04
35	-05	00	03	-05	02	-04	-03	-04	02	-10	-02

Table 14. Rectangular submatrix for stranger ratings for variables 36 and 37 with self ratings for variables 26, 27,...35

	26	27	28	29	30	31	32	33	34	35	36
36	-05	01	-11	-03	<u>12</u>	04	-04	-06	-10	03	
37	-02	05	-10	-04	<u>09</u>	<u>02</u>	-03	-12	-10	-05	45

Table 15. Rectangular submatrix for stranger ratings (36, 37) with peer ratings for variables 12, 13,...25

	12	13	14	15	16	17	18	19	20	21	22	23	24
36	19	16	26	24	23	21	07	<u>34</u>	31	21	14	16	24
37	27	25	26	25	28	20	14	<u>30</u>	<u>36</u>	22	24	21	21

Table 16. Rectangular submatrix for stranger ratings (36, 37) with teacher ratings for variables 1, 2,...11

	01	02	03	04	05	06	07	08	09	10	11
36	07	10	06	00	02	<u>24</u>	15	11	07	10	04
37	21	15	17	17	15	<u>33</u>	<u>28</u>	18	24	15	06

strangers. Further, the teacher rating for cleanliness shows a .15 correlation with stranger rating for good looks and a .28 correlation with stranger rating for cleanliness.

To summarize, the following statements may be made regarding the discriminant validity of data pertaining to social acceptance: 1) the highest correlations among teacher, peer, and self ratings pertaining to social acceptance are ratings dealing with intelligence; 2) both teacher and peer ratings of intelligence correlate with the intelligence quotient and negatively with chronological age; 3) peer ratings in this sample show high reliability as evidenced by the high correlation of the answers for smart and right answer since these traits were measured on different days with different instruments. Other evidence of high reliability is the relatively high correlations of these two peer ratings with intelligence quotients.

In addition to these three findings, it is noted that: 4) the highest correlation within peer ratings only is athlete with popularity; 5) popularity and good sport each correlate highly with friends; 6) a high correlation within teacher ratings is noted for leader with intelligence and with intelligent quotient; also a high correlation of leader with creative, while a moderate correlation exists for creative with intelligence; 7) there is some evidence for discriminant validity among peer and self ratings for creative, nevertheless it really does not correlate highly with the ratings for other

variables, including the ratings dealing with intelligence; 8) both peer and self ratings for leader correlate significantly; 9) a high correlation within peer ratings is noted for leader and cooperative; 10) the highest correlations within self ratings is for cleanliness and good looking.

Physical (motor and constitution)

Motor performance, as defined in this study by the Iowa-Brace test, (variable 53, Table 10) shows no strong relationship with the social acceptance characteristics. Although peer ratings of athlete (variable 25) correlates .19 with motor performance, this is a weak correlation compared to other peer ratings. There are .14 correlations of motor performance with each of smartest and prompt. In Table 17, a more outstanding relationship for motor performance (variable 53) is a negative correlation of $-.21$ with abdomen circumference (variable 45) and of $-.17$ with weight (variable 41).

Focusing on the selection of friends (variable 14) with anthropometric measurements, fourth-grade boys significantly indicate that they do not like fat friends, as noted by the correlation of $-.22$ with weight (variable 41) Table 17. The next strongest correlation, although not statistically significant at the .01 level, is a $-.13$ correlation of friends with height (variable 40). It is worthy to note that all factors but two in the physical-motor area show negative correlations with friends. With the index of Simon I (variable 47), the

Table 17. Rectangular submatrix for single variables within Matrix 1 and variables (Appendix) with physical measures (variables 38, 39,...52)

	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
53	13	00	-01	-17	00	01	-08	-21	13	00	-18	-21	-20	-15	-20					
54	-14	-13	-08	-05	-11	15	13	-04	-08	16	06	-01	03	08	-03	01				
55	22	20	20	13	25	-09	-04	10	20	-27	-12	02	-07	-16	09	07	-55			
56	-06	-04	-07	-10	-06	06	-02	-10	-07	07	-04	-08	-05	02	-10	05	25	-18		
57	-16	-07	-06	-11	-07	-01	-03	-11	-06	07	-02	-09	-06	-03	-10	-05	00	01	12	
14	-02	00	-13	-22	-11	-01	-06	-23	-13	11	-10	-20	-15	-01	-22	10	16	14	20	01

Table 18. Triangular submatrix for anthropometric measures, including hand grips (variables 38, 39,...45)

	38	39	40	41	42	43	44	45
38								
39	73							
40	54	49						
41	49	45	71					
42	45	41	90	50				
43	15	20	32	29	21			
44	19	27	41	48	28	82		
45	35	32	50	91	33	22	42	

Table 19. Triangular submatrix for anthropometric measures, variables 38, 39,...45 with self rating variables 26, 27,...35 and stranger rating for variables 36 and 37

	26	27	28	29	30	31	32	33	34	35	36	37
38	-01	02	-04	05	-03	06	02	-03	10	02	-03	01
39	03	05	-08	01	-03	07	00	-02	04	01	02	12
40	-01	02	-09	05	-09	-02	-02	-08	01	-01	-07	04
41	00	00	-03	00	-09	01	02	-05	04	00	-18	-10
42	-04	-02	-12	04	-04	-05	-05	-07	-02	-03	-10	03
43	12	11	02	03	-04	-06	-01	00	03	04	02	09
44	14	10	02	07	-01	-03	01	00	04	07	-01	05
45	02	-01	00	-02	-08	-01	00	-01	03	-05	-24	-16

results are positive although non-significant at the .01 level of probability.

Examining the triangular submatrix for anthropometric measures, Table 18, there is a positive cluster of correlations. The highest relationships are noted by the .91 correlation of abdomen circumference with weight (variables 45 with 41), .90 correlation of maximum standing height with leg length (variables 40 with 42), .82 correlation of head diameter with head circumference (variables 43 with 44), .73 correlation of right- with left- hand grips (variables 38 with 39), and .71 correlation of maximum standing height with weight (variables 40 with 41).

In the rectangular matrix for anthropometric measures with self rating and stranger rating variables, Table 19, in general there are no outstanding correlations with self ratings. The highest correlation of .14 is noted for variables 26 with 44 or intelligence with head circumference. A consistent negative correlation, though not significant statistically at the .01 level, is that of leg length with the self-rating variables being measured except for creative. This consistent negative or near zero correlation is somewhat true also for the abdomen measure. As one might expect for the stranger ratings, statistically significant negative correlations are noted. This is especially true for abdomen circumference (variable 45) which correlates -.24 and -.16 with good looks and cleanliness (variables 36 and 37) respectively. It is also true for weight

(variable 41) which correlates $-.18$ with good looks (variable 36) and $-.10$ with cleanliness (variable 37).

Glancing to the rectangular matrix for anthropometric measures with peer-rating variables, Table 20, the same consistent negative pattern exists for leg length, as well as for maximum standing height. Stronger negative patterns appear for the weight and abdomen measures. Six of the twelve rating variables show a statistically significant negative correlation with the abdomen measure (variable 45), while four of the rating variables show a statistically significant negative correlation with weight (variable 41). For each of abdomen circumference and weight respectively, friends (variable 14) correlates $-.23$ and $-.22$; leader (variable 16) correlates $-.18$ and $-.17$; good looking (variable 19) correlates $-.26$ and $-.25$; cleanliness (variable 20) correlates $-.18$ and $-.14$; humor (variable 24) correlates $-.21$ and $-.23$; and cooperative (variable 17) correlates $-.16$ with each of abdomen circumference and weight. In addition, the abdomen circumference (variable 45) correlates with athlete (variable 25) $-.22$; with popular (variable 15) $-.15$; and with smartest $-.14$.

Looking at Table 21, moderately low correlations of anthropometric measure variables with the teacher rating variables are noted. It is interesting to note that the highest correlations, although not significant at the $.01$ level of probability, are in the horizontal row for variable 43 or head

Table 20. Rectangular submatrix for anthropometric measures, variables 38, 39,...45 with peer rating for variables 12, 13,...25

	12	13	14	15	16	17	18	19	20	21	22	23	24	25
38	-01	01	-02	11	-01	01	11	00	04	-01	-01	05	-05	16
39	01	03	00	06	01	05	08	05	09	07	02	09	-04	12
40	-05	-05	-13	-02	-07	-10	01	-14	-01	-06	00	01	-15	-02
41	-12	-07	-22	-09	-17	-16	-05	-25	-14	-10	-08	-11	-23	-15
42	-05	-05	-11	-01	-05	-08	01	-11	03	-06	03	02	-12	00
43	07	09	-01	-01	00	01	06	02	-03	08	05	13	05	-06
44	07	09	-06	-04	-01	00	-02	-06	-07	07	06	08	03	-08
45	-14	-06	-23	-15	-18	-16	-09	-26	-18	-13	-10	-15	-21	-22

Table 21. Rectangular submatrix for anthropometric measures, variables 38, 39,...45 with teacher rating for variables 1, 2,...11

	01	02	03	04	05	06	07	08	09	10	11
38	07	-04	03	05	08	11	-01	07	05	02	-03
39	07	-04	00	04	07	11	04	-05	09	02	-06
40	-01	01	-03	00	-03	09	-01	-12	05	05	-14
41	00	01	00	03	-02	01	-05	-11	05	09	-14
42	00	04	-02	01	-02	08	03	-08	05	05	-13
43	10	11	11	08	10	10	10	07	10	10	-02
44	09	14	10	08	07	08	04	06	11	10	-02
45	-01	01	00	04	-03	-07	-09	-08	04	-11	-12

Table 22. Triangular submatrix for seven body build indices

	46	47	48	49	50	51	52
46							
47	-28						
48	-69	61					
49	-85	03	69				
50	-92	34	81	92			
51	-50	74	85	42	64		
52	-68	-24	50	93	72	17	

diameter and in the vertical row for variable 6 or good looking. The two exceptions in the vertical row are for weight (variable 41) and for abdomen circumference (variable 45) which correlate .01 and -.07 respectively with good looking (variable 6).

Viewing the triangular submatrix for the seven body build indices, Table 22, except for the consistently negative relationship of Parnell index (variable 46), a fairly homogeneous cluster is found, due to the indices being constructed from height and weight and other indices reflecting body size.

Looking within the rectangular submatrix for seven indices and anthropometric measures, Table 23, the high correlations are found as expected depending on the measures used within each index. For example, the index for Simon I (variable 47) correlates highest with leg length (variable 42), -.94, and with maximum standing height (variable 40) -.80; while Kaup's index (variable 49) correlates .81 with weight, and .83 with abdomen circumference. These two variables show a high relationship with all indices which have the weight variable in the denominator.

A statistically significant correlation pattern is noted here, (Table 23), between the Iowa-Brace test (variable 53) with Kaup's index (variable 49) -.21; Quetelet's index (variable 52) and Rohrer's index (variable 50) -.20 with each; with the index for Simon II (variable 48), a correlation of -.18

Table 23. Rectangular submatrix for body build indices, variables 46, 47,...52 with anthropometric measures including hand grips (variables 38, 39,...45) and with motor performance (variable 53)

	38	39	40	41	42	43	44	45	53
46	-10	-16	06	-50	25	-13	-27	-56	13
47	-41	-35	-80	-40	-94	09	-02	-25	00
48	-10	-08	-35	33	-58	-01	11	57	-18
49	26	28	25	81	03	20	38	83	-21
50	05	09	-13	52	-31	09	22	62	-20
51	-29	-25	-65	00	-70	05	07	29	-15
52	42	-40	55	97	33	27	46	92	-20

Table 24. Rectangular submatrix for body build indices, variables 46, 47,...52 with self rating for variables 26, 27,...35 and with stranger rating for variables 36 and 37

	26	27	28	29	30	31	32	33	34	35	36	37
46	-06	-03	-05	00	-04	-10	-02	-06	-08	03	07	07
47	10	04	14	-03	04	03	07	07	03	04	11	-01
48	07	01	12	-04	-02	05	07	04	06	-01	-10	-16
49	02	01	04	-01	-04	09	05	01	09	-01	-18	-14
50	05	02	08	-02	02	12	07	04	11	-01	-14	-15
51	08	-01	11	-07	04	02	04	06	03	-01	-09	-15
52	00	01	00	-01	-08	05	03	-03	06	00	-19	-12

while with the H.A.H. index (variable 51) a correlation of -.15 is found.

In Table 24, rectangular submatrix for body build indices with self rating variables, it can be noted that no special variable stands out. For stranger ratings, some negative correlations are noted: Kaup's index (variable 49) correlates

-.18 with good looks (variable 36) and -.14 with cleanliness (variable 37), while Rohrer's index correlates -.14 and -.15 with good looks and cleanliness respectively. With the H.A.H. index (variable 51), cleanliness shows a -.15 correlation, and Quetelet's index (variable 52) correlates -.19 with good looks.

The picture is even less noticeable in Table 25 with teacher rating. The two highest correlations of -.15 for variable 6 (good looking) with the H.A.H. index (variable 51) and with the index of Simon II (variable 48).

Peer ratings in Table 26, show more significant correlations. This is especially true of Quetelet's index (variable 52) and Kaup's index (variable 49); good looking (variable 19) correlates -.25 and -.23 respectively; humor (variable 24) correlates -.24 and -.22 respectively; cleanliness (variable 20) correlates -.17 and -.20; and leader (variable 16) correlates -.17 and -.16 respectively. Rohrer's index (variable 50) correlates -.17 with good looking (variable 19), and -.21 with cleanliness (variable 20). The index of Simon II (variable 48) correlates -.18 with cleanliness (variable 20).

In summary of physical-motor results regarding discriminant validity are: 1) the traits of friends and athlete correlate negatively with weight; 2) motor performance correlates negatively with each of abdomen circumference and weight measures; 3) motor performance correlates negatively with the following indices: Kaup, Quetelet, Rohrer, Simon II, and

Table 25. Rectangular submatrix for body build indices, variables 46, 47,...52 with teacher rating for variables 1, 2,...11

	01	02	03	04	05	06	07	08	09	10	11
46	00	-01	01	03	02	03	09	07	-03	-03	02
47	03	06	05	01	04	-06	-02	10	-03	00	13
48	-01	03	01	01	-02	-15	-12	-01	-02	02	01
49	01	02	01	01	-02	-05	-07	-10	04	04	-08
50	01	02	02	01	00	-08	-08	-06	02	02	-02
51	01	02	05	04	03	-15	-04	10	-02	04	06
52	01	01	01	03	02	-01	-06	11	05	07	-12

Table 26. Rectangular submatrix for body build indices, variables 46, 47,...52 with peer rating for variables 12, 13,...25

	12	13	14	15	16	17	18	19	20	21	22	23	24	25
46	07	02	12	11	12	06	09	15	17	04	14	07	15	13
47	07	07	11	04	04	08	-01	13	-05	09	-01	00	14	00
48	-08	-01	-10	-10	-10	-07	-09	-11	-18	-05	-12	-15	-07	-18
49	-11	-05	-20	-12	-16	-14	-08	-23	-20	-09	-15	-11	-22	-19
50	-09	-03	-15	-11	-13	-09	-10	-17	-21	-06	-15	-10	-16	-17
51	-04	03	-01	-06	-05	-01	-08	-02	-14	00	-06	-12	02	-14
52	-12	-06	-22	-11	-17	-15	-07	-25	-17	-10	-11	-11	-24	-17

H.A.H.; 4) abdomen circumference correlates with weight; 5) maximum standing height correlates with leg length; 6) right-hand grip correlates with left-hand grip; 7) maximum standing height correlates with weight; 8) stranger ratings for good looks and cleanliness correlate with Kaup's and Rohrer's indices, while H.A.H. index correlates with cleanliness only

Quetelet index correlates with good looks; 9) self rating for intelligence correlates with head circumference; 10) maximum standing height correlates negatively with peer ratings of humor and good looking; 11) weight and abdomen circumference both correlate negatively with peer ratings for leader, cooperative, good looking, cleanliness, and humor; in addition; abdomen circumference only correlates negatively with athlete, smartest, and popular; 12) among all the seven indices for body typing, Kaup's and Quetelet correlate with more traits than any other index. These two indices correlate negatively with good looking, cleanliness, humor, and leader.

Socioeconomic

There is a high positive correlation of .25 for socioeconomic status with intelligence quotient (variable 54), and of .20 with friends (variable 14). A negative correlation of -.18 exists for socioeconomic status with chronological age (variable 55).

Examining the teacher ratings along with socioeconomic status, there is a positive correlation of .20 with the top five (variable 2) students, of .17 with intelligence (variable 1), of .20 with good sport (variable 8), of .18 with leader (variable 3), of .16 with good looking (variable 6), and of .15 with creative (variable 5).

Peer ratings and socioeconomic status also reveal positive significant correlations of .21 with smartest (variable 12), of .14 with right answer (variable 13), and of .19 with cleanliness

(variable 20).

Looking at the group of self ratings, the highest correlation is .11 with creative (variable 29). This correlation does stand out among the other correlations in this group. However, statistically it is not significant at the .01 level of probability.

Confirmatory analysis

Motor performance status, as defined in this investigation, is evidenced by the child's score on the modified Iowa-Brace Test. Intelligence status, as defined in this investigation, is evidenced by the child's intellectual performance as noted by his intelligence quotient obtained on the Lorge-Thorndike Intelligence Tests. Between these two variables 53 and 54, a correlation of .01 was revealed. On the basis of these results with this sample and with this measuring device, the null hypothesis that there is no relationship between motor performance status and intellectual status in fourth-grade boys cannot be rejected.

Social acceptance status, as defined in this investigation, is evidenced by the boy's peer acceptance rating score obtained from the first two items of the Sociometric Choice Enquiry Test. This variable, number 14, shows a correlation of .10 with variable 53. On the basis of these results with this sample and this measuring device, the null hypothesis that there is no relationship between motor performance status and social acceptance status among fourth-grade boys cannot be

rejected. However a qualifying statement will be added concerning weight, which will be discussed later in more detail.

Throughout these results, validity has been shown repeatedly by the high correlation of the ratings dealing with intelligence as well as the intelligent quotient with social acceptance status as with social acceptance characteristic status. Thus the hypothesis that there is no relationship between intellectual status and social acceptance status among fourth-grade boys is rejected.

Scatterplot

To examine the relationship between social acceptance and motor performance further, a closer check was made of the 25 fourth-grade classes. A scatterplot was made, Fig. 1, with the mean abdomen circumference for each class plotted against the corresponding correlation coefficient for social acceptance and motor performance for that same class.

A definite trend can be noted which shows significance beyond the element of chance. It is not uncommon to find that when the mean abdomen circumference is larger, a higher relationship is noted between social acceptance and motor performance. This scatterplot would substantiate the hypothesis proposed that increased weight (and the increased abdomen circumference) is the mediating factor affecting social acceptance and motor performance.

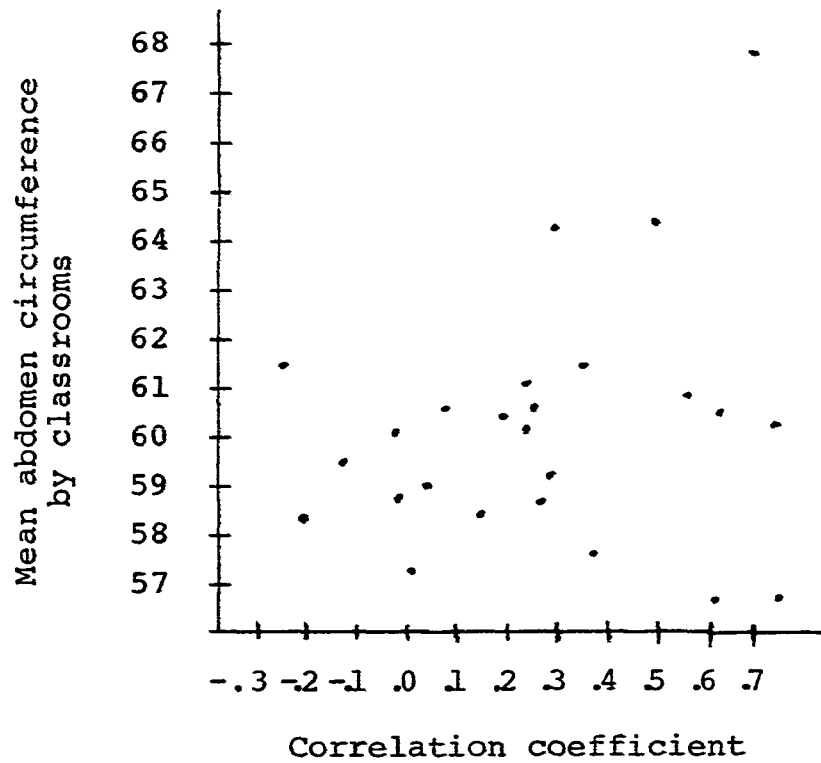


Fig. 1. Scatterplot showing mean abdomen circumference for each of 25 classes plotted against the corresponding correlation coefficient between social acceptance and motor performance

DISCUSSION

The intent of this investigation is primarily exploratory in nature. It is directed toward the total person, in contrast to an analysis of the specialized parts, with the aim of discovering any underlying factor(s) which may not have been revealed previously through an analysis of the parts.

The conclusions presented in this section will be discussed under three major headings: 1) results of the exploratory analysis; 2) involvement of results in the confirmatory analysis; and 3) implications.

Results of Exploratory Analysis

Perhaps the most important outcome of the more discriminant validities revealed in this global picture pertain to five major points of interest: 1) intelligence, 2) characteristic of being a leader, 3) creative, 4) excessive weight and abdomen circumference, and 5) socioeconomic status. All of these variables have involvement with social acceptance status and social acceptance characteristic status.

Intelligence

The intelligence status, as defined in this study, is evidenced by the child's intellectual performance as noted by his intelligence quotient obtained on The Lorge-Thorndike Intelligence Tests. In addition general intelligence, as perceived on the Teacher Rating Sheets, was evidenced by the

top 5 listing of pupils who were interested in the academic work as well as by the functions designated by 'expresses himself well; asks intelligent questions; attentive when I talk; interested in many topics'. Peer ratings of intelligence were evidenced by the nominal replies of the subjects to the request to list in rank order the smartest (and least smart), as well as to the function 'can rely on him for the right answer most of the time'. These functions were included on the Sociometric Choice Enquiry and the Who Is It? tests. On the latter, the subject could include his own name if he felt that it applied.

Results herein reveal that peer ratings have a high reliability, as evidenced by: 1) a .74 correlation of smart with right answer (measuring the same trait but obtained on different days and with different tests); and 2) a high correlation of these functions with the intelligent quotient, e.g. .49 for smart and .38 for right answer.

With teacher, peer, and self ratings, the highest correlations are found for the intelligence quotient with the intelligence rating. When noticing the social acceptance status (as defined in this study by friends, or variable 14), a moderately high relationship is found with intelligence as rated by teachers, peers, and self for each of the forenamed functions and with the intelligence quotient. These findings will support previous research findings that subjects who are above average in popularity are also higher in intellectual

ability, noted by Furfey (55), Gallagher (56), Grossman and Wrighter (60), Jenkins (76), Heber (67), Koch (84), Page (118), and Wellman (153). As noted by Bonney (16), social skills are not a natural consequence of higher intelligence quotient but intelligence quotient does favor friendships.

In addition to a positive relationship with intelligence quotient, the current study finds that for both teacher and peer ratings, the functions relating to intelligence correlate negatively with chronological age. Further, the relationship with social acceptance status (as defined in this study by best-liked and least-liked friends) is .04. This low correlation presents data which tend to disagree with the findings of Furfey (55) and Wellman (153) that friends are more similar in chronological age as well as in intelligence.

Leadership

For all ratings, discriminant validity is shown that the leader characteristic is deemed an outstanding trait for social acceptance characteristic status. A high relationship was found with leader and intelligence as measured by intelligence quotient as well as by the other measures of functions representing this trait. The high relationship of intelligence with leader substantiates the factor analysis of leadership ability by Fleming (52). He revealed eight traits, including intelligence, necessary for leadership. However, having these traits does not ensure leadership.

Creative

Evidence for discriminant validity for the variable creative is noted between peer ratings and self ratings. With- in these two areas of ratings, however, creative has a low relationship with other variables including friends. Never- theless, it does reveal that children are able to recognize this trait within their peers. In teacher ratings, a high correlation of .74 is noted for creative with leader, and .70 creative with intelligence. To the teacher, this trait rates highly, although it should be added that it does not rate high among the top 5 as listed by the teacher. This substantiates the findings by Brown (27) that superior school achievement does not indicate creativity. Creativity and intelligence quotient tend to correlate only to certain point (57), which is I.Q. 120 (142, 104).

Motor performance

In this investigation, no strong relationship was evi- denced for motor performance with social acceptance status, as defined. This might be due to one or more of the following factors: 1) the use of the total score only on the Iowa-Brace test; 2) precision of score and technique through individual testing; 3) 'motor performance status', as defined in this study; and 4) no statistically significant relationship exists, directly between motor performance and social acceptance.

Only the one total score on the modified Iowa-Brace test was utilized. In a factorial analysis of the Iowa-Brace test, six factors had been identified (101). Since these factors were applicable to the entire test and not to each stunt individually, the investigator felt that only the total score should be recorded for the entire test.

In designing the current study, the terminology and performance of the Iowa-Brace test had been carefully analysed and discussed with authorities. The instrument was modified for individual testing and precise timing, thereby enabling consistency in scoring and techniques by the same trained personnel. Standards were set up and consistently used as guidelines in determining a pass or a failure. The range of scores was from 1 to 16; no perfect score of 20 was achieved.

Motor performance status, as defined in this study, is evidenced by a subject's score on one particular performance at a specific time, in contrast to innate capacity, training and experience. Although a rating of interest and athletic achievement was received for the top performers by the physical education teacher, this rating along with peer ratings of best athletes were applicable to the social acceptance characteristic status.

In this study no significant relationship was found for motor performance with social acceptance status. A .10 correlation coefficient was obtained; a .15 correlation coefficient is required with this sample, for a .01 level of probability.

A correlation coefficient of .19 is noted for peer rating of athlete with motor performance status. Although this is a low coefficient compared to peer ratings for social acceptance variables, nevertheless it is significant at the .01 level. More significant, however, is the .67 correlation coefficient for peer ratings of athlete with best-liked (or least-liked) friends. This higher relationship may be measuring the athletic achievement due to other unidentified factors such as innate potential, training, and experience. It may include more of the halo effect or may be interrelated with some other variable such as good sport, which has a correlation coefficient of .71 with best-liked (or least-liked) friends, and also with popular which correlates .73 with best-liked (or least-liked) friends. Among the peer ratings, popular, athlete, good sport and friends show the highest intercorrelations.

Obesity factor

A noteworthy revelation in this global study of social acceptance, intelligence, and physical (motor and constitution) status is the obesity factor, as evidenced by larger abdomen circumference and excess body weight. Significant negative correlations of -.21 and -.17 respectively are noted for motor performance with each of these anthropometric measures. Further, significant negative correlations of -.23 and -.22 are found for friends with abdomen circumference and body weight,

respectively. To state this simply, peers tend not to choose fat children for their best-liked friends. In the teacher rating, little emphasis is placed on body weight and abdomen circumference, as evidenced by the relationship of good looking with weight. However, for the stranger rating this relationship is highly significant. Negative correlations of $-.24$ and $-.18$ respectively for good looks with abdomen circumference and body weight are evidenced.

It is revealed that a negative relationship holds for each of: 1) peer acceptance with obesity factor (both abdomen circumference and body weight), and 2) motor performance with obesity factor (both abdomen circumference and body weight). From these two relationships, it cannot be deduced that motor performance is influential to social acceptance; a cause and effect relationship cannot be inferred. It is obvious, of course, that excess fat is detrimental to athletic factors, e.g. agility, speed, coordination.

Former studies by McCraw and Tolbert (102), Bower (23) have concluded that a positive correlation exists for peer acceptance and athletic ability. From the evidence presented within this global study, the obesity factor mediates the relationship between peer acceptance and motor performance. Clarke and Clarke, (36) in a study related to somatotypes, noted that body weight was significantly related to social acceptance. In an earlier study, Clarke (35) noted a

correlation of .91 standing height with leg length, which is substantiated in the current study by a .90 correlation coefficient.

Socioeconomic status

It is worthy to note that within this study obesity (as evidenced by abdomen circumference and body weight) in fourth-grade boys is not positively related to socioeconomic factors. In this sample, socioeconomic level is correlated with both abdomen circumference and body weight to the extent of $-.10$ (Table 17).

A significant correlation of $.20$ is found for socioeconomic status with friends. This would be in keeping with previous research. Jenkins (76) found the socioeconomic status to be the most important factor in selection of friends; Grossman and Wrighter (60) specify that social status does affect peer acceptance to a certain point (which is lower middle class status), but beyond that it is unimportant. In the current study, socioeconomic status correlates significantly with intelligence quotient, as well as with the functions which measure general intelligence as perceived by teachers and by peers. This is quite understandable since all variables for intelligence showed consistent correlation with friends throughout the study. Likewise because older children are not the brighter children in the class, it is logical that there should be a negative correlation of socioeconomic status with

chronological age.

Additional overview of peer acceptance

Previous studies have linked specific traits with peer acceptance, but without any statistical significance. Such traits are popular (87), unkempt (143), cheerful, and friendly (19, 87, 143), athlete, and physical skills (87, 125, 143), humor (87), cooperative (19), enthusiasm (87), strength (70). In the current investigation, one of the goals was to ascertain which traits have greatest significance to social status as well as to discover any interrelationship with variables other than peer acceptance.

In summarizing the global picture for social acceptance status, as noted in this study, peers rate athlete, popular, and good sport as priority characteristics. The obesity factor, as noted by excess weight and large abdomen, has significant negative relationship with these. Further, the obesity factor is negatively related with other peer ratings but not statistically significant. Intelligence, leader, cooperative, and socioeconomic status also play supportive roles. The physical education teacher ratings reveal very similar emphasis for athlete, popular, good sport, and leader. Grade teacher ratings reveal a central core of leader, and intelligence (both of which highly correlate with intelligence quotient), supported by cooperative, reliable, and creative. Within self ratings good looking and cleanliness, intelligent, a leader,

and to a lesser extent honest and reliable are intercorrelated relatively highly. These traits of good looking and cleanliness are viewed by self negatively to reality, as defined by stranger, peer, and teacher ratings.

Among the seven indices, Kaup and Quetelet indices correlate with the largest number of traits: leader, cooperative, cleanliness and good looking, humor. The negative correlation is understandable since the least desirable trait, weight, is the numerator in each index. In Table 22, a consistent negative relationship was noted for Parnell's index with other indices. It would appear that where less emphasis is placed on weight, (as noted by the cube root of weight in the denominator), a negative relationship results.

Apparently, strength has no effect, apart from the correlation with body measurements.

Involvement of Results on the Confirmatory Analysis

In the previous chapter, the null hypothesis that there is no relationship between motor performance status and social acceptance status among fourth-grade boys could not be rejected. However, a qualifying statement concerning weight was added. From the preceding discussion on obesity, the reasoning for a qualification regarding motor performance and weight should be forthcoming. Excess body fat does have a negative correlation with motor performance and peer acceptance. Although the inference that motor performance is influential to social

acceptance cannot be made, nevertheless current evidence reveals that this excess body fat is a mediating factor. For this reason, it can be concluded that there is a need to be concerned with motor achievement and with obesity if the overweight child is to be helped to improve his social acceptance status.

Implications

For parents and educators

Parental cooperation and understanding is essential to the mental health of the child. Awareness of development and of the interrelatedness of its various aspects influences the child's self-image and social acceptance. Friendship patterns are formed early. These friendship patterns with peers play a predominant role in molding the individual, developing a sense of trust in self as well as in others, and enforcing attitudes, standards, and values. The old adage holds: though wisdom is a house builded; and by understanding it is established.

The current investigation has revealed the significant detriment of excess fat for social acceptance as well as for motor performance of the fourth-grade boy. This should be of specific interest to teachers and administrators, since social adjustment of pupils is one of the aims of education. Understanding aid based on the recognition of the interrelatedness of development should be focused toward the child of above-average weight. This help must come discretely, and where possible with the assistance and encouragement of select, empathic,

bright peers.

A variety of one or more factors may be the cause of plumpness. These factors could vary from over-enjoyment of mother's cooking or other nutritional problems (including attitudes and values), excess indulgence in television or other sedentary habits, psychological problems or biochemical imbalance. Even if of a genetic nature, obesity factor can be controlled provided there is the desire to do so. But the approach toward the child must be skilfully handled in order to ascertain the real cause of obesity. Sincere concern in the welfare of the child and emphatic understanding of each unique person, his feelings and interests are of utmost importance for remedial success. Every individual wants to be loved, be accepted, and feel wanted although he may show this desire in a different manner.

Hopefully, having gained parental cooperation and understanding, concerned educators need to examine the facilities and planned curriculum of the school program and of leisure activities. How meaningful, directly and indirectly, are these for good physique? Do they encourage gross muscular activity, good posture, and fresh air? In today's society with its millions of television watchers, encouragement as well as provision for active exercise should be considered.

Physical education programs and teaching techniques can do much to encourage the heavier-built boys. While individually testing the motor performance of fourth-grade boys, the

members of the research team were aware of the readiness on the part of plumper boys to comment such as "I can't do that", or "It's too hard to do". In fact, occasionally one of the team members might give such a child a third chance to perform the stunt, (even though a mark of zero was already established for that particular stunt), for the sake of added encouragement and esteem in goal-fulfillment. At that stage, no member had any idea that weight was to prove a statistically significant factor for social acceptance status. It is the belief of the investigator that special interest and concern must be directed to the heavier boys, encouraging and stimulating them to put forth extra effort to master motor skills. This is an extra challenge to the physical education teacher in his already overcrowded schedule. However, if the need is sufficiently great, its cure will be listed in the upper hierarchial order in the allotment of time for individual help. Possibly it may be reached with the aid of enthusiastic and emphatic peer leaders, carefully selected to sufficiently challenge yet encourage the physically-motor disadvantaged.

Leadership, another characteristic which rates high in achieving social acceptance, can be greatly fostered and encouraged. True, not all persons can be leaders. However, this term can be broadened in terms of excellence in the mastery of a skill, whether great or small. It may pertain to intellectual, social, motor, or emotional skills. If excellence is attained, the child may become a leader in this particular

milieu. The skill may vary from being organizer for a class excursion to being efficient keeper of the rock display. The class members are aware of this talent and miss him when not present. Even though the task may seem trivial to the teacher, if it focuses favorable attention to the child even for a few minutes while he is performing the task, it can be important in the eyes of the child. He has achieved something which made him feel important to his peers and to this group.

Within the last decade especially, leaders have been alert to discriminatory conditions arising from economic inequalities. To help enrich the socially and culturally disadvantaged, programs such as Head Start and Follow Through have been advanced. On a smaller scale, teachers and educators can examine the social structure pattern within each classroom and be alert to the extremities in friendship patterns. Research shows that socioeconomic status affects friendships, and that peer friendships are meaningful and catalytic to the molding of human behavior. The alert and interested adult, therefore, would direct some special attention to the 'outlyer' in peer acceptance sociograms. Extra assistance can be directed to the building up of positive features and talents within this individual. Where socioeconomic status is the underlying cause, the interested adult can assist the child to learn appropriate social skills which will help him achieve higher social acceptance with his peers. At the risk of redundancy, caution is re-emphasized. The approach and technique of this help must be

sincere and meaningful, otherwise the mental health of the child can be handicapped rather than helped.

Future research

A replication of the current study, with emphasis on individual testing of motor performance, is necessary for confirmatory data. Previously, research pertaining to motor performance has been restricted to its relationship with limited areas, e.g. to social acceptance, to body build, to intelligence. Even within each of these areas, frequently a more specialized approach has been undertaken.

In designing the study, the investigator became aware of the need for developing valid and reliable standardized instruments to enable individual testing of motor performance, in its broadest aspects. Such a test must be practical, regarding testing time, ease of administration, and equipment which are required for its administration. For each item within the test, reliable analysis of motor factors being measured should be known. Further, standardized norms based on individual (in contrast to group) testing should be available for each item within the test. These norms should be established through use of the same raters, in contrast to the use of a variety of teachers or children scorers.

Somewhat similar research could be designed, varying the sex, or age group, or ethnic background. Such studies would enable more information pertinent to the interrelations of peer

acceptance, intelligence, motor performance and constitution generally.

A replication of the major principles included in this study could be done, incorporating family involvement, e.g. parental leisure-time interests, family nutritional patterns, parental attitudes and values concerning the importance of motor skills, of social skills, of physical build. By working toward a global approach, possibly we may learn more about mankind and his behavior. Just as a discussion in the early nineteenth century pertaining to orbital travel seemed unrealistic though nevertheless a future reality, the current investigator directs your attention to the worthwhileness of a global approach toward the understanding of mankind.

SUMMARY

Preliminary to designing this study, the investigator felt an urgent need on the part of all humans for a deeper understanding of mankind, his development, and his relationship with other people. The research theme focused toward a global look at development. Limiting this global picture somewhat, the purpose of this investigation was to examine the social acceptance status, intelligence status, and physical (motor and constitution) status of children. With additional limitations for sex, age, and race variables, a population of 308 fourth-grade white boys was selected.

To attain data, a variety of instruments and techniques were utilized. The physical-motor testing was done individually in a multipurpose room; all other tests were group administered in the classroom, within a three-month period. Four methods for rating subjects were included: peer, self, teacher, and stranger. Teacher ratings were sub-classified: grade teacher and physical education teacher ratings. The Lorge-Thorndike Intelligence Tests furnished an intelligence quotient for each subject. Two tests and two scales were developed by the investigator as instruments for measuring social acceptance and social acceptance characteristic status. These instruments were: Sociometric Choice Enquiry, Who Is It?, First Impressions, and Teacher Rating Scales. Motor performance was measured by a modified Iowa-Brace Test, enabling individual

testing of boys through the use of a trained team (of demonstrator and scorers, always including the investigator). Eight individual anthropometric measurements and seven indices, previously used or suggested by leaders and researchers in this field, furnished evidence for physical status of each subject. Socioeconomic status and additional demographic data were determined from information received at each school office.

All tests were hand-scored twice, independently, rechecked where necessary. Scores, which were weighted as specified and then coded for each subject, furnished 57 variables. The data were analyzed within classes and a correlation matrix set up by pooling the covariances within classes. All of the resulting correlations within the matrix were then presented in a multitrait multimethod matrix.

Data were supportive at the .01 level of probability, for the following major findings:

1. Peer ratings within this study have a high reliability.
2. Teacher, peer, and self rating all reveal a high correlation of the functions representing intelligence with the intelligence quotient.
3. Subjects who are above average in popularity are also higher in intellectual ability.
4. Teacher and peer rating reveal a negative correlation of intelligence with chronological age, and a very low relationship (which is statistically non-significant) for chronological age with friends, e.g. children do not

necessarily choose friends of the same age level.

5. Leadership is an outstanding trait for social acceptance characteristic status.
6. Within peer ratings, leader correlates highly with intelligence quotient as well as with functions representing intelligence.
7. Creative is recognized by peers.
8. Teacher ratings reveal a high correlation for creative with each of leader and intelligence.
9. Superior school achievement does not indicate creative talent.
10. For peer ratings, creative correlates positively with socioeconomic status.
11. Obesity (as evidenced by abdomen circumference and body weight) is detrimental to social acceptance.
12. Obesity is detrimental to peer acceptance.
13. Obesity is the mediating factor between social acceptance status and motor performance.
14. Obesity, in this sample, is not a socioeconomic problem.
15. Socioeconomic status correlates positively with intelligence quotient and with functions measuring intelligence by teacher and peer rating, but negatively with chronological age.
16. Among peer ratings, popular, athlete, good sport, leader cooperative, and friends show high intercorrelations.

The high relationship may be due in part to the halo

effect. Peer ratings of functions pertaining to intelligence show moderate intercorrelations with the above characteristics. The obesity factor and socioeconomic status are moderately intercorrelated with the above characteristics, but on a basis other than halo effect.

17. Physical education teacher ratings support the first five traits; the grade teacher ratings emphasize both leader and intelligence, while their ratings of cooperative reliable and prompt, and creative show moderate importance.
18. Self rating, (which was optional), rates good looks, cleanliness, intelligence, and leader as foremost traits. However good looking, as rated by teachers and peers, was the opposite to the rating given by self.
19. Of the 7 indices for body build which were tested, the indices by Kaup and Quetelet reveal greatest relationship with social acceptance status, social acceptance characteristic status, and anthropometric measurement.

Implications were proposed for parents, educators, and for future research.

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APPENDIX A. SCHOOL CONTACTS

HANDOUT FOR INTRODUCTORY MEETING WITH
SUPERINTENDENT AND PRINCIPALS

TENTATIVE RESEARCH OUTLINE
for
INTERRELATION OF PEER ACCEPTANCE, MOTOR PERFORMANCE,
AND CONSTITUTION IN FOURTH-GRADE BOYS

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Ames, Iowa. Fall/68.

INTERRELATION OF PEER ACCEPTANCE, MOTOR PERFORMANCE,
AND CONSTITUTION IN FOURTH-GRADE BOYS

PROPOSED RESEARCH

A global approach to a specific group of boys will be taken in the proposed study, viewing social relationship of boys within their environment (school) background, especially as it relates to the development of motor skills and the body build of the individual. Furthermore, this study will seek to ascertain if, allowing for individual differences, there may be some overall physical-motor-intellectual-social pattern which could be generalized to the population selected.

SUBJECTS

About 300 fourth-grade boys, approximately nine to ten years of age are preferred for the sample since it is felt that they would be a fairly stable homogenous group for the proposed investigation. As a control for the sex variable in development, boys are chosen since it is felt that motor skills for boys (rather than for girls) have a greater influence in the selection of peers and the attainment of peer status. Grade-four subjects will enable the use of the Iowa Brace Test for motor performance and still be in an age group prior to early maturation.

In selecting the source for subjects, preference is directed to two areas having a large number of subjects in each location, as well as a white population, thereby deleting the race variable. The two areas are somewhat similar in socio-economic status.

SPECIAL NOTE

No names will be communicated to anyone. All data will be used only for research purposes and for the benefit of the particular school and teachers.

Except for anthropometric measurements and motor performance test, girls will be included. This data, though not employed in this investigation will prove helpful for future publication and for the school and teachers involved in the particular class.

PROCEDURE (Refer also to chart, next page)

1. Demographic data, obtained from the office
2. Lorge-Thorndike Verbal Intelligence Test, Level 3, Form A
3. Peer Ratings: a) Sociometric Choice Enquiry
b) Who Is It?
4. Teacher Ratings: a) Teacher
b) Physical Education Teacher
5. Stranger Rating
6. Anthropometric Measurements:
 - a) Height: i) Standing ii) Sitting
 - b) Weight
 - c) Head Circumference
 - d) Abdomen Circumference
 - e) Strength, as measured by hand dynamometer
7. Motor Performance Test: Iowa Brace (McCloy and Young)

Testing overview chart, a summarized plan of the procedure

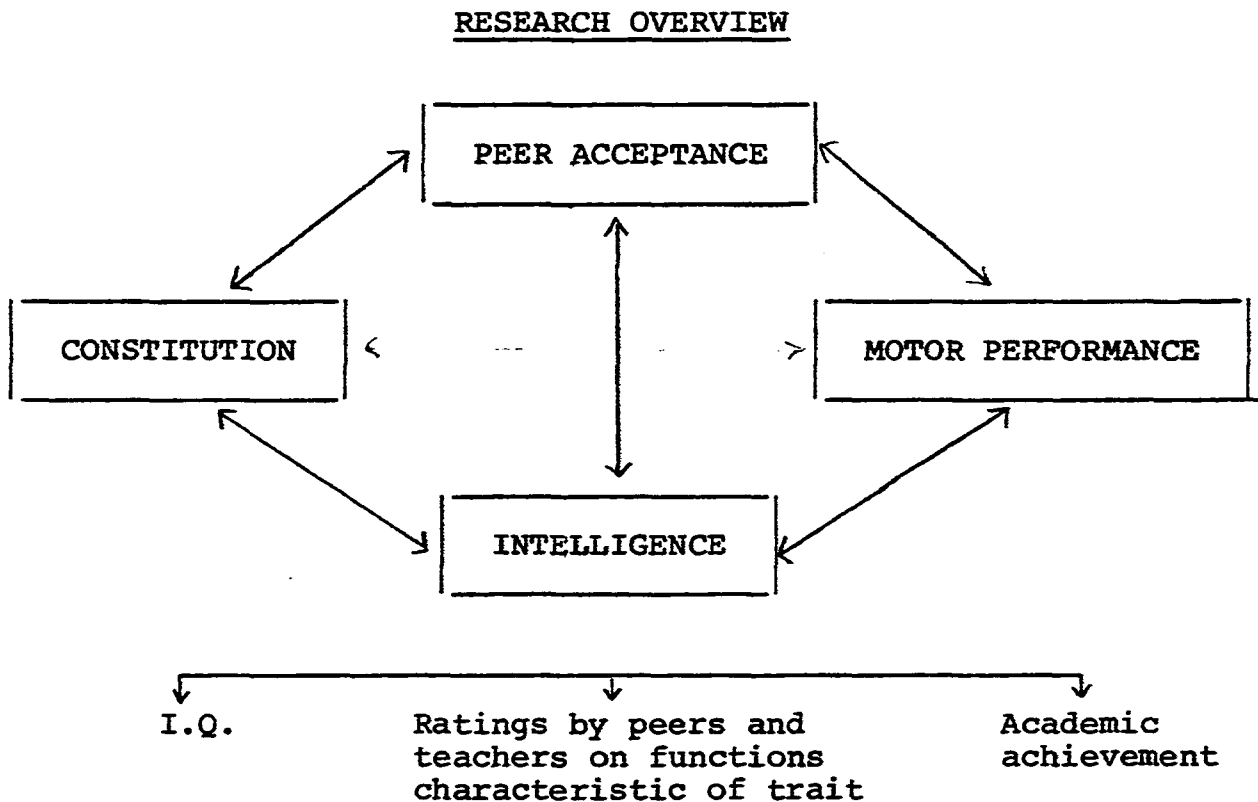
Factor studied	Instrument or item	Respondent and equipment	How administered or obtained
1. Peer acceptance social status	1. Peer ratings a) Sociometric Choice Enquiry b) Who Is It?	Fourth-grade children; roster Fourth-grade children; roster	Group test; Classroom Group test; Classroom
	2. Teacher ratings	a) Grade teacher b) P.Ed. teacher	Individual rating sheet left with each teacher
	3. Stranger rating	Research team assistants	First impressions when boys enter multipurpose room
	<hr/>		
2. Intelligence	1. Lorge-Thorndike Intelligence Tests, Level 3, Form A. Verbal battery	Fourth-grade children	Group test; Classroom (by investigator)
	2. Grade teacher rating sheets	Grade teacher	Individual sheet left with each teacher
3. Motor performance	1. Iowa-Brace Test	Fourth-grade boys; mat; stopwatches; score sheets; pencils	Multipurpose room; 2-4 boys at a time, tested individually by research team assembly line
	2. Physical Education Teacher Rating Sheet	P.Ed. teacher	Sheet left with each P.Ed teacher
4. Constitution a) Physique	Anthropometric meas'ts.	Special height board & sitting attachment	Research team, working in pairs (taking meas'ts.)
	1. Maximum height: standing, sitting	Borg scales	individually, and
	2. Weight	Steel calipers	cross-checking
	3. Head diameter	Steel tape	within the pair,
	4. Head circumference		for accuracy
	5. Abdomen circumference		
	6. Strength (hand dynamometer)	Hand dynamometer	
b) Temperament -- Included in social status instruments (3) -- interwoven (refer to #1 above).			

DEFINITION OF TERMS

'PEER ACCEPTANCE', in this study, has been defined as the status assigned to a child by his peers within his group experience. It entails the acceptance, or rejection of him, based on their impression of him.

'MOTOR PERFORMANCE' includes not only what the individual does (in the area of motor skills) at any given time but also the rating of interest, participation, and excellence of achievement in athletics generally, which is dependent on innate capacity, training, and experience.

'CONSTITUTION' refers to the physique of the individual. 'PHYSIQUE' of the human, or body build, relates to the three types: pyknic, athletic, and asthenic (Kretschmer), or to the endomorphy, mesomorphy, and ectomorphy (Sheldon). Sheldon noted that each individual possesses, in varying amounts, each of the three components.



PROJECT PERSONNEL

Major Advisor: Dr. Damaris Pease, Professor, Child Development

Consultants: Dr. Jess Beard, Professor-in-charge, Education

Dr. Roger W. Coulson, Professor and Head,
Child Development

Dr. Helen R. LeBaron, Dean, Home Economics
Administration

Dr. Ronald C. Powers, Professor and Head,
Family Environment

Dr. Waldean A. Robichau, Professor, Physical
Education for Women

Dr. Leroy Wolins, Professor, Psychology and
Statistics

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FOLLOW-THROUGH LETTER TO TEACHERS

Child Development Department,
Iowa State University,
Ames, Iowa, 50010

Dear Miss (Mrs.) _____

Would you PLEASE have each girl complete the enclosed form, then mail the complete set by RETURN MAIL in the enclosed stamped, self-addressed envelope. Will you please tell them that if any brother (or sister) is married, she should include that person but not his wife (or husband), or their children--simply the girl's own brothers and sisters.

If a girl is an only child, then her reply consists of 4 zeros. For the boys, we obtained this information while working with them in the multi-purpose room.

I am including a listing of I.Q.'s which I sent previously to your Principal. You might also like to know that my preliminary work with the sociometrics showed that the students considered in your classroom that the:

- i) BEST FRIENDS:
- ii) LEAST-LIKED FRIENDS:
- iii) PUPILS CAPABLE OF LEADERSHIP:

I am particularly interested with the ii) group above, and feel that anything which you can do to help them socially will benefit them for their own self-concept, their adjustment with others, their current satisfaction and success in school, as well as their future attitude and success in learning.

Thank you for your courtesy, and for returning immediately the brothers-sisters' information.

Very sincerely yours,

(Mrs.) Jean Erwin.

APPENDIX B. MEASUREMENTS, DATA AND RATING SHEETS

DEMOGRAPHIC DATA SHEETSCHOOL:CLASSNAMECITYBIRTHDATE (Mo./Day/Yr.)ADDRESS

PARENTAL OCCUPATION:

FATHERMOTHER

HEALTH &/or HANDICAPS (Physical, etc.):

SOCIOMETRIC CHOICE ENQUIRY

PLEASE FOLLOW THESE INSTRUCTIONS:

NAME _____

- A. 1. On a separate page, you will find the names of all boys in your class.
 2. Cross out your name by drawing a line through it.
 3. Read each of the following statements and list in order of preference 3 names from this list for each question, so that the boy who BEST fits your answer will be written under Column I, your second choice under Column II, and your third choice under Column III.

	<u>COLUMN I</u>	<u>COLUMN II</u>	<u>COLUMN III</u>
Boys who are your best-liked friends:	_____	_____	_____
Boys who are your least-liked friends:	_____	_____	_____
Boys who are the best athletes:	_____	_____	_____
Boys who are the poorest athletes:	_____	_____	_____
Boys who are most popular:	_____	_____	_____
Boys who are least popular:	_____	_____	_____
Boys who are the smartest:	_____	_____	_____
Boys who are least smart:	_____	_____	_____

SOME GAMES ENJOYED BY GRADE FOUR PUPILS¹

1. Hop Scotch
2. Soccer (or Kick Ball)
3. Four Square
4. Bingo
5. Football
6. Checkers
7. Dominos
8. Twister
9. Model Cars (or aeroplanes)
10. Ping Pong
11. Concentration
12. Baseball
13. _____
(any other which you especially want to add)

In the given list of games, you may find some in which you are very good, some in which you often play, and others which you do not play (either because you don't enjoy them or because you just don't know how to play them). If you wish, you may add the name(s) of other game(s) in the empty space of the list of games.

From this list, name in order of preference -- with your first choice in Column I, second choice in Column II, and third choice in Column III.

- | | <u>COLUMN I</u> | <u>COLUMN II</u> | <u>COLUMN III</u> |
|--|-----------------|------------------|-------------------|
| 1. Games which you play most often: | _____ | _____ | _____ |
| 2. Games which you <u>really</u> would like to play: | _____ | _____ | _____ |
| 3. Games which you care least to play: | _____ | _____ | _____ |

¹Administered at same time as Sociometric Choice Enquiry. Data gained was not analyzed in present investigation.

WHO IS IT?

How good are you at guessing the description of boys in your room? I am going to describe several boys. In your classroom there may be some boys who are very much like the descriptions, and some who are very much unlike them. They may even describe you.

After I finish describing the boys, for each description write (in the blanks of Column I) the names of whichever boys in your classroom MOST fit the description. Then write the names of the boys who LEAST fit the description (in the blanks of Column II). You may include your own name wherever you think it fits.

<u>DESCRIPTION</u>	COLUMN I (MOST FIT the description)	COLUMN II (LEAST FIT the description)
CLEAN, TIDY, NEAT	_____	_____
YOU NOTICE HIM FOR HIS GOOD LOOKS	_____	_____
HONEST, CAN BE TRUSTED	_____	_____
GOOD AT RUNNING THINGS: A LEADER	_____	_____
CAN RELY ON HIM FOR RIGHT ANSWER MOST OF THE TIME	_____	_____
LIKES TO INVENT: IMAGINATIVE	_____	_____
COOPERATIVE	_____	_____
GOOD SENSE OF HUMOR	_____	_____
GOOD SPORT: ADDS MOST TO CLASS SPIRIT	_____	_____
ALMOST ALWAYS ON TIME	_____	_____

TEAM SCORING SHEET, p. 1

SCHOOL: _____ CLASS _____ DATE _____ PUPIL _____ COLOR OF MARKER _____

SPECIAL NOTES _____

MAIN SCORER _____

ASSISTANT _____

FIRST IMPRESSIONS (check list)

SIBLINGS

ITEM	EX.	AV.	WEAK
N			
L			

brothers: _____
older_____
younger# sisters: _____
older_____
youngerANTHROPOMETRIC MEASUREMENTS

ITEM	MAIN SCORER	CHECKING SCORER	AVERAGE MEASURE
HEIGHT, Standing (Cm.)			
HEIGHT, Sitting (Cm.)			
WEIGHT (lbs. & 1/2 lbs.) to be converted to Kg.			
(Calipers) HEAD CIRCUMFERENCE (Cm.)			
(Tape)			
ABDOMEN CIRCUMFERENCE (Cm.)			
RIGHT-HAND GRIP (Kg.)			
LEFT-HAND GRIP (Kg.)			

DOMINANT HAND of Boy: _____

TEAM SCORING SHEET, p. 2

 SCHOOL AND CLASS

 PUPIL

 DATE

 COLOR OF MARKER

 (SCORER of Test)

SCORE CARD: IOWA BRACE TEST

STUNT #	TRIAL 1 (X = 2 marks) (0 = 0 marks)	TRIAL 2 (X - 1 mark) (0 = 0 marks)	SCORE
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		TOTAL SCORE:	

PHYSICAL EDUCATION TEACHER RATING SHEET

NAME

I understand that you teach Physical Education at (Name of Schools) Schools, and realize that the number of Grade Four boys does vary from one school to another.

I am conducting a study of Grade 4 boys at Marshalltown, with Dr. McFarland's permission. Would you please give me the following information pertaining to your Physical Education classes (Grade 4):

BOYS' NAMES (2 or more for each school, with a maximum of 7/school) who are the BEST ATHLETES AT EACH SCHOOL, listing the boys in rank order -- so that #1 represents the top athlete, #2 the second best athlete, and so on.

Name of school

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Name of school

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

BOYS' NAMES of the 5 BEST ATHLETES (Grade 4 boys) WITHIN both SCHOOLS

1. _____
2. _____
3. _____
4. _____
5. _____

Thank you for your assistance.

GRADE TEACHER RATING SHEETS

Special note to teachers

These ratings are for research purposes only. They do not become a part of the record; they become the property of Mrs. Jean Erwin, Doctoral Candidate, Iowa State University and will be held strictly confidential. They will not be communicated in name form to anyone.

We do appreciate your cooperation and the time which you have devoted in answering to the best of your ability the information requested of you as well as that time in your classroom which enabled us to collect the data.

Thank you once again. We hope that the investigation may reveal some information which we can return to you and may prove beneficial in your future teaching and/or working with these same boys.

Sincerely yours,

Form X Research Committee and

Mrs. Jean Erwin.

GRADE TEACHER RATING SHEETS

NAME of TEACHER _____

PART A

From the school grades and intelligence quotients for each child, we could easily find, as you could too, the brightest and highest achievers in the class. We are interested, however, in your judgment of:

Who are the top 5 boys (and top 5 girls) whom you feel are most interested in academic work, regardless of their term results. These may, or may not be the same persons as those rating high in school grades et cetera.

From the rosters provided, will you please list those boys (girls) who BEST FIT this category. List them in rank order -- the person showing the most academic interest and enjoyment is listed under #1, second best under #2, et cetera.

BOYS MOST INTERESTED
IN ACADEMIC WORK

1. _____
2. _____
3. _____
4. _____
5. _____

GIRLS MOST INTERESTED
IN ACADEMIC WORK

1. _____
2. _____
3. _____
4. _____
5. _____

PART B

On the next 2 pages are rating forms for you to evaluate each of the boys (girls) listed on the class rosters, according to functions which they perform. Your task will be to indicate the extent (on a scale from 1 to 99) to which the statement best describes the person or his (her) school performance (as noted in the classroom, playground, excursion trips, library, etcetera).

Read the definition of each function carefully and consider each part of the definition. In making your judgments and evaluations, compare the ratee throughout with the average boy (girl) in grade four. In each instance, the middle of the scale (50) is defined as this average person.

PLEASE ANSWER EVERY STATEMENT, using the following scale. If any function is irrelevant, or if you cannot make a judgment as requested, answer '50'. Be careful to place the number corresponding to your rate in the BLOCK (INTER-SECTION OF SPECIFIC FUNCTION AND THE SPECIFIC BOY'S NAME).

SCALE:

1	10	20	30	40	50	60	70	80	90	99
Worse than				As well as the				Better than		
the average				average boy in				the average boy		
boy in grade 4				grade 4				in grade 4		

NAMES OF BOYS

FUNCTION PERFORMED

Handsome boy; presents a good first impression to strangers if opening doors, or representing class group

Homework always done on time. Reliable on errands, writing exams, handling money

Well groomed; notebook is neat and organized; careful with library books

Expresses himself well; asks intelligent questions; attentive when I talk; interested in many topics

Works together well on committees. Listens as well as contributes; willing to do extra jobs for teacher or help other boys

Suggests interesting things to do (projects games, discussion). Makes a good leader

Comes up with original ideas, inventive, creative and exciting essays or orals, artistic

Adds most to 'class spirit'. Good sport. Has understanding and empathy for all boys. Seems to enjoy everything, everyone, and everywhere

Accepts blame; not suspicious or resentful. Is usually relaxed (no nail-biting, temper outbursts)

APPENDIX C. MANUAL FOR ASSISTANTS

Introductory Comments to the Research TO MY ASSISTANTS:

"This study involves a survey of many variables (including physical, motor, certain specific traits,...) in fourth-grade boys. Further information will be withheld for the present so as to avoid any bias which might influence your judgments. Following the collection of data, I will be very pleased to discuss the study with you, or to relate more detailed information at that time. Meanwhile, suffice it for me to emphasize the importance of accuracy and preciseness in all measurements."

SCORERS

For each group of boys entering the multi-purpose room, or gymnasium, you will be asked to:

1. state your rating (on good looks and neatness) for each boy entering the room to be tested;
2. obtain 8 anthropometric measurements for each of two boys--the measurements being cross-checked by a fellow-rater;
3. score the Iowa Brace motor performance test for one boy of each group entering at any one time to be tested.

A demonstrator will greet the boys as they enter the testing room (or gymnasium). She will offer each boy a marker -- a quick means of identification to you. Similar colors of markers will be worn by you, enabling each boy to quickly identify his instructor (scorer).

While the boys are being met by the demonstrator, you are seated in the room and will complete the Stranger Rating chart "First Impressions". (Team Scoring Sheet, p. 1, Appendix B). To aid you in the above rating, the following information is your guide:

General stature: well-proportioned head: body: looks
Hair: shiny, not oily; healthy-looking
Features: distinctive
Eyes: alert
Complexion: clear, not pale. Freckles need not be
distracting.
Smile: pleasant; even teeth, if shown
Good posture

Any further specific characteristics of good looks can be interpreted by you, based on whatever interpretation "good looks" for a fourth-grade boy means to you. This will constitute the "Stranger Rating" for each boy -- the average of all raters will be determined later.

M.2

Ratings (excellent, average, or weak) for each characteristic (cleanliness or neat N and good looks L) are made in the appropriate space, designating each boy according to color of sash being worn. When all ratings are completed, demonstrator will assign the boys to you. At this time, you will obtain his name and then proceed with anthropometric measurements.

ANTHROPOMETRIC TECHNIQUES

Precise methods for measuring the physical growth of children have been established. It is important that these established methods be followed as closely as possible. On the following pages precise directions for taking height, weight, head circumference, and head diameter, abdomen circumference, leg length, and grip are described. In all cases, measurements are taken by two independent investigators and measurements are repeated until the standard limitations for agreement are reached.

It is desirable for subjects to take the tests under stimulating conditions so that maximum expenditure of energy is reached. To help achieve this, the tests should be administered to two subjects at a time, the subjects should be verbally encouraged to do their best and if desired, they should be allowed to see their scores.

HEIGHT AND WEIGHT

Each time the equipment is set up, use the leveler to secure level areas on floor surface of sufficient area for the weighing scales and height boards. Section each area off with masking tape.

Check that clamps are released on sitting box, with the latter adjacent to height board. Place all other equipment on the table provided for this purpose.

In order to be as uniform as possible, subjects are asked to remove shoes and all heavy outer garments such as sweater, jackets. Articles of any weight are removed from pockets.

In instances where the results of the measurements by the two investigators fail to show agreement to the nearest millimeter for height or the nearest half-pound for weight, additional measurements must be taken until such agreement is established.

M.3

STATURE (MAXIMUM STANDING HEIGHT)

Instrument: A two-meter ruler and a six-foot ruler fastened flat against a wall-board. A triangle of wood for use with the measuring sticks to determine the distance from the floor to the crown of the head.

Definition of Measurement: Erect body length from the soles of the feet to the vertex (the highest point of the skull when oriented on the Height Board plane).

Posture: The subject stands erect with heels almost touching each other. Heels, with toes pointing outward, are placed according to the painted form on baseboard of the height board platform (the longitudinal axes of feet forming a 45° angle with each other). Buttocks, upper part of the back and rear of head are in contact with the wall to which the scale is attached. The arms are permitted to hang at the sides in a natural manner.

Technique: When the subject is in position, the anthropometrist takes the square, places it above the subject's head so that its one face is against the scale and the other face is horizontal. Subject is then asked to take a deep breath and hold it for the taking of the measurement described above. The square is then brought down until the horizontal face crushes the subject's hair and makes firm contact with his vertex.

Note: Care must be taken to see that the subject keeps his heels in firm contact with the floor, and his trunk in 'non-slumped' contact with the wall.

The subject's eyes should be focused on an object which is placed on the wall at his eye level. The investigator should check this position by viewing the subject laterally from the right side to see that the ear-hole, shoulder-tip, most lateral projection of hip, and lateral projection of ankle are in the same vertical plane.

It is suggested that one investigator check the position of subject while the second takes the measurement. These duties are then reversed.

MAXIMUM SITTING HEIGHT (STEM LENGTH)

Instrument: Refer to stature. In addition, a box at convenient sitting height (30.1 cm.), fitting exactly into the Height Board plane was stoutly constructed.

Definition of Measurement: Distance from the surface of the bench to the vertex, with the subject in an erect sitting position.

M.4

Sitting Height (Stem Length) cont'd.

Posture: The subject sits on a bench with his knees flexed and spread apart. He should lean forward, slide hips far back, and then sit upright. Where the legs reach the floor, not only should the knees be spread apart but the ankles should be crossed. The hands should be placed on the thighs with fingers pointing downwards. The posterior aspect of the trunk should make contact with the scale both at the sacral region and at the upper thoracic region.

Technique: With the head in the same position as for measuring stature (height), subject takes a deep breath and holds it while the square is brought down firmly on the vertex of subject's head, as in the measurement of stature. The sitting height is recorded as the value read from the scale, the height of the bench being subtracted later.

Note: After the knees of the subject have been spread apart and his ankles crossed (in order to release as much as possible the tension of the gluteal muscles and to permit the ischia to closely approximate contact with the bench), it is necessary to check the sacral region and see that it is in contact with the scale. The upper legs should be parallel to the floor.

(LEG LENGTH: Stature (maximum standing height) less (maximum sitting height minus Bench height).

WEIGHT

Instrument: Borg Scale, certified within 1% or less of accuracy.

Technique: Before beginning measurement at any examination period, the anthropometrist should check the scales -- first having checked that floor was level. The anthropometrist should stand on, then off the scales to ascertain that the scales return to the exact zero position. In the event they do not balance, they should be adjusted.

The subject is requested to stand in the center of the platform of the scales facing the weighing gauge scale. Care is taken that the subject's arms are not in contact with any object or wall.

The scales are read from center-front, dead-on with the central arrow.

Note: Measurements for weight are taken at the same time as measurements for height and under the same conditions, re clothing.

M.5

MAXIMUM HEAD CIRCUMFERENCE

Instrument: Steel millimeter tape.

Definition of measurement: Maximum girth through glabella.

Landmarks: Glabella, the point in the mid-line of the forehead at the level of the superciliary arches. Anteriorly, the tape should cross the glabella. Posteriorly, it should lie at the level of the occiput which gives the maximum circumference.

Technique: The anthropometrist, standing in front of the subject, extends the tape and places it around the subject's head. The tape is sufficiently extended that when drawn around the head from back to front, its zero end can be brought in contact with the other end in the vicinity of the glabella. After the tape is oriented anteriorly, it is moved up and down posteriorly by another assistant, until the level of the maximum girth is ascertained. The measurement is read after the anthropometrist has noted that the level of the tape is the same on both sides of the head and has applied sufficient tension to the tape to crush the hair snugly against the head.

HORIZONTAL HEAD DIAMETER

Instrument: Steel calipers

Definition of measurement: Distance horizontally from glabella to level of occiput giving maximum diameter.

Technique: Subject is seated, with chin at right angles to neck and eyes focused on an object placed at eye level. Anthropometrist stands at side of subject and places one end of calipers at glabella and other end is placed at level of occiput which gives maximum diameter, taking precaution that calipers are parallel to the Frankfort Horizontal, or roughly, parallel to the surface on which subject is seated.

ABDOMEN CIRCUMFERENCE

Instrument: Steel millimeter tape

Definition of measurement: Girth of the abdomen at the level of the umbilicus and in a plane at right angles to the vertebral column.

Posture: The subject stands in a natural manner with head erect and with the upper extremities held slightly away from the body.

M.6

Abdomen Circumference, cont'd.

Technique: The anthropometrist stands in front of the subject and passes the tape around the abdomen of the subject so that it crosses in front at the level of the umbilicus and lies in a plane at right angles to the vertebral column. In cases showing umbilical protrusion, the tape should cross at a level immediately above the umbilicus. The tension applied is only sufficient to enable the tape to remain in place without slipping. The measurement recorded is the median value during normal respiration.

GRIP

Strength of grip is measured by a Smedley-type hand dynamometer. To assure optimal adjustment of the dynamometer for the individual subject, the hand of each subject is measured on a ruler from where the thumb joins the hand to the end of the fingers. The dynamometer is then adjusted by whirling the inner 'stirrup' until the scale on the outer stirrup indicates one-half of the distance measured. The clutch is set so that the inner stirrup cannot twist while in use.

Technique: Each subject is asked to hold the dynamometer in the right hand above the head and to pull on the stirrup as he brings the dynamometer down to his side. Care must be taken that no part of the arm gains support from a portion of the body.

The investigator is allowed to demonstrate the technique. Two trials for each hand, with at least a 10 second pause between each trial -- thereby avoiding excessive fatigue, are made.

Measurement: For each hand, the larger measure (of two trials per hand) in kilograms and tenths of kilograms.

M.7

DIRECTIONS FOR ADMINISTERING AND SCORING THE IOWA-BRACE TEST

The Iowa-Brace Test for elementary school boys consists of ten specific tests (of the total thirty-nine items), namely numbers 24, 22, 27, 25, 7, 21, 14, 17, 16, and 29. These have been renumbered consecutively from 1 to 10, as suggested by McCloy and Young, so that #1 represents test 24, #2 represents test 22,... #10 represents test 29.

Verbal explanations, directions, and demonstration are given by the demonstrator to the subjects for each test. Subjects remain seated on the floor when not being tested; they are not allowed to practice before each test is administered, since performance is greatly affected by the practice of stunts.

Subjects are arranged in a line, about six feet apart. Scorers stand facing the subjects, with a scorer assigned to each subject.

DEMONSTRATOR:

The demonstrator explains the test and how it is scored by the following introductory instructions:

"We are going to take a test that is made up of ten stunts. Some of these stunts are very easy and some are more difficult. Probably none of you will be able to do all of them. Two trials will be given for each stunt. The scorer will indicate to you whether you succeeded, or if you may have a second trial. Some of the stunts require a time count, which will be given to you by your particular scorer -- watch her for your signal. As soon as you have done a stunt correctly or have had two trials at it, sit down on the floor so that I will know when everyone is ready for the next stunt. Do not talk to others. You must not get up from a sitting position until directed to do so by me. Listen carefully for directions as well as what makes up a Pass or Failure for each stunt."

Each stunt is written on a separate card and held in one hand by the demonstrator. She reads each stunt slowly while it is being demonstrated -- clearly indicating:

- i) the parts of the body referred to,
- ii) the correct position to be taken, for each step in the stunt, and
- iii) what constitutes a failure.

M.8

Then she quickly demonstrates the stunt correctly, saying:

"This would be correct and make a successful trial.
Are there any questions about what you are to do?
Pause briefly. "Ready, everyone stand up now."

Later, when all subjects are seated on floor, she repeats the above procedure with the succeeding stunt, in chronological order until all ten have been completed.

SCORERS:

If subject does the stunt correctly on the first trial, put an 'X' in the first square; if he fails, a 'O' in the first square. If he fails on the first trial, he is given a second trial. If he does the stunt correctly on the second trial, put an 'X' in the second square; if he fails, a 'O' in the second square. Do not permit the subject to practice the stunt in any way.

If the performer succeeds in executing a stunt on the first trial, he receives two points; if he fails on the first trial but succeeds on the second trial, he receives one point; if he fails on both trials, he receives zero points. The maximum score is twenty.

Re timing, each scorer will have a stop-watch and will signal her particular subject (1,2,3,4,5) sufficiently loud, but not so as to be distracting to the adjacent subject. She will also direct the subject to be seated upon success of stunt on first trial, or to take a second trial, or to be seated after the second trial (whether it was a success or failure).

TEN STUNTS SPECIFIC FOR ELEMENTARY SCHOOL BOYS:

1. (24) Stand on either foot. Close eyes and take 5 hops backwards, then put both feet on ground and open your eyes.

Failure: a) to open eyes while hopping.
b) to touch the floor with the other foot, not supporting the body weight.
c)¹ not to keep your balance until finished and your eyes are opened.

¹In this study, any movement of the feet from their position of floor contact within 2 seconds upon completion of stunt disqualified the passing of that particular trial of stunt.

M.9

2. (22) Take one-quarter turn to the right. Kneel on one knee. Raise arms sideways to level of shoulders. Raise from the floor your second leg, and hold this position for 5 counts.

Failure: a) to touch the floor with any other part of the body than the one lowered leg.
b) to fall over.

3. (27) Stand on left foot, and jumping, make a 1/2-turn to the left -- when you are finished, you should be facing that wall (demonstrator points). Keep the balance.

Failure: a) to lose the balance.
b) to fail to complete the 1/2-turn.
c) to touch the floor with the right foot

4. (25) Forward-Hand-Kick Test (use of mat)
Jump upwards, swinging legs forward. Bend trunk forward, and touch toes with both hands before landing. Keep lower legs in as straight a line as possible with upper legs. (If desired, legs may be out to the side, but knees must be straight).

Failure: a) not to touch toes with both hands before landing.
b) to bend lower legs more than 45°.

5. (7) Full-Left-Turn Test
Stand with feet together. Jump upward, making a full turn to the left. Land at approximately the same place from which the test was started. (Feet may be separated when landing.) Do not lose balance, or move feet after they have touched the floor.

Failure: a) not to make a full turn to the left.
b) to move the feet after they have returned to the floor.
c) to lose the balance.

6. (21) Side-Leaning-Rest Test
Sit on floor, with lower legs extended, and feet together. Put right hand on floor behind body, with elbow straight. Turn to the right with right hips off the floor, and take a side-leaning-rest position, resting the body on the right hand and right foot. Raise left arm and left leg and hold this position for 5 counts. Your scorer will tell you to 'take the position', 'ready' (you raise up), 'go' (lift left leg and left arm).

M.10

6. (21) cont'd.

Failure: a) not to take the proper position
b) not to hold the position for 5 counts.

7. (14) Grapevine Test

Stand with heels together. Bend trunk forward; extend both arms down between legs and behind ankles. Be sure to bring your fingers together or overlap them. Hold this position for 5 seconds.

Failure: a) to lose the balance
b) not to hold fingers of both hands together
c) not to hold the position for 5 seconds
d) not to keep the heels together.

(Note: If necessary, heels may be off the floor but must be together.)

8. (17) Cross-Leg-Squat Test

Fold arms across chest. Cross feet and sit down. Get up without unfolding arms and without moving feet about to regain the balance.

Failure: a) to unfold the arms
b) to lose the balance
c) not to get up
d) not to sit on the floor until the count of two.

9. (10) Kneel-Jump-to-Feet Test

Kneel on both knees. Rest backs of toes on the floor, not curling the toes. Swing arms and jump to the standing position. Make sure that you are in a standing position. Do not rock backward on toes, or lose the balance.

Failure: a) to curl toes and rock backward on them
b) not to execute the jump, and not to stand still after the standing position has been reached.

10. (29) Russian Dance Test

Take a one-quarter turn to the right. Take a squat position. Stretch one leg forward, with the heel touching the floor -- the rear heel touching the hip. Perform a Russian dance step by extending legs alternately while in a squat position. Perform 4 such steps, that is two with each leg. Heel of forward foot must touch the floor; heel of rear foot should strike hip on that side.

Failure: a) to lose the balance
b) not to do the stunt twice with each leg.
c) hands touching the floor.

APPENDIX D. CONSTRUCTION OF HEIGHT MEASURING DEVICE

CONSTRUCTION OF HEIGHT MEASURING DEVICE

A two-meter stick, of hardwood, accurately calibrated, is attached to one side of a one by four board of the same length in such a way that the zero point is flush with the surface on which the child stands. This surface is a low platform about 2 inches high and a foot square to which the upright measuring board is attached at right angles.

For measuring sitting height and stem length, use the same upright, with the addition of a box which is open at the bottom and also open in the bottom few inches of one side, to permit pushing it flush against the upright measuring board. This box is built so when in place its top surface is at the 30 cm mark on the 2-meter stick. For such measures, you subtract 30 cm from the reading.

The Baldwin square, with Stolz's adaption, is made of two pieces of seasoned hardwood, 18 cm by 13 cm, joined at right angles. On the inside of the median line is a narrow strip 5 mm thick, in which is cut an opening that serves as a handle. Along the right edge of one surface is attached a strip of wood 4 cm wide by 18 cm long. This strip extends one or two cm over the edge to act as a guide in holding the square upright on the measuring scale.

DRAWINGS AND USE OF HEIGHT MEASURING EQUIPMENT

The use of this equipment in collecting data is clearly seen in Bayer and Bayley (9, Figures 3, 4, and 5).

Some dimensional drawings of the height measuring equipment may be seen on next page.

ROUGH DRAWINGS FOR HEIGHT MEASURING BOARD

