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Children's Friends in Ability vs. Randomly Grouped Classrooms

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CHILDREN'S FRIENDS

IN ABILITY vs. RANDOMLY GROUPED CLASSROOMS

by

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INTRODUCTION

For over forty years ability grouping has been of professional concern to educators in the United States (Reisner, 1936). There have been fundamental changes in educational theory and practice during that time, one of which is the recognition that educational practices must adjust to individual differences. The interpretation of "equal opportunity" in education has gradually changed from meaning the same methods, standards, and course content for all children, to meaning the full opportunity for each child to develop his own potential in a school program suited to his individual capacities and needs.

The interpersonal relationships and social development of school children have received an increasing amount of attention as we have come to realize the pervasive effect they have on educational objectives and as optimal social adjustment has itself become one of these objectives. As Brumbaugh (1960, p. 99) has pointed out:

> Mental health and social adjustment are words to conjure with when there is discussion about separate grouping. A half century ago, the fear was that stigma would attach to a child in a special class for those with below average intelligence. It is now replaced by anxiety lest those at the other end of the scale would have feelings of superiority and become egotistical little snobs.

There are enough studies of children in such classes to indicate that this does not happen but there is also some evidence that there are concomitant effects which are used to oppose ability grouping on a "social segregation" argument. Taba et al. (1952) as an example of this point of view write:

> Of special interest for intergroup education is the fact that the static single bases for grouping have almost always fixed homogeneity simultaneously along lines of socioeconomic status, race, and religious background. For example, any type of ability grouping also inadvertently introduces segregation by economic class, race, and neighborhood. Because of their cultural handicaps, children from deviant backgrounds tend to be at the bottom of the heap, as far as school achievement is concerned. Hence, in ability grouping, they are thrown together and separated from other children. . . .
>
> This segregation, of course, prevents learning common culture by association with other children. The stigma attached to the lower ability groups further destroys motivation and self-respect. Thus, a basis is built for both physical and psychological isolation. (pp. 138-1939)

The importance of the classroom friendship relationship rests on the well accepted theory that the interpersonal environment is a powerful determinant of educational, social, and psychological development. A particular environment may be facilitative or restrictive of desirable development and it is imperative that people concerned with education know the extent to which that environment rewards or penalizes pupils differentiated on abilities for classroom assignment.

There is little direct evidence upon which to base conclusions about the effect of ability grouping on children's friendships within the classroom. Little has been added since Masterton (1956), after an extensive review of the literature, concluded that: (a) we do not know much about friendship, (b) the basis of friendship is not the same for everyone, and (c) friendship might be just as much a result of complementary need satisfying differences as it is of similarities between friends.

It is the purpose of the present study to attempt to make some contribution to our knowledge and understanding of children's classroom associations and the effect thereon of a program of full-time ability grouping.

REVIEW OF THE LITERATURE

Friendship has been of concern to poets, philosophers, politicians, and divines throughout recorded history. Educators and parents become concerned whenever the school systems are faced with a change in practice or location which might influence the social associations, or in some way determine the friendship formation processes, of children. Ability grouping of pupils for classroom assignment is such a change and has been the target of both criticism, e.g., Bettelheim (1958), and approbation, e.g., Burt (1962).

As separate contributions to a major study, of which this is a part,[1] Manning (1962) and Standing (1962), have quite thoroughly reviewed the literature on ability grouping and it has been suggested that this review confine itself more narrowly to the sociometry of the classroom.

Psychological research on friends and friendship are reported as far back as 1898 when Street collected questionnaire reponses from 189 persons (mostly young women between the ages of 17 and 21) including direct statements of resemblance between "self" and "friend" in temperament, likes and dispositions. That study is relevant in the fact that it marks a beginning but more so in that its results set a pattern for much that was to follow. There were 100 of his respondents who either confused the issue or "gave no clue" at all, 46 of them were attracted by persons of opposite, and 43 by similar dispositions. The problem

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[1]Under the direction of Dr. Walter R. Borg of the Utah State University Bureau of Educational Research (see Borg, 1964).

of similarity or complementarity is still at issue. Who chooses whom as a friend? In what situation? These are unanswered questions, but the literature does contain a large number of studies contributing to the store of information that may be used to support educational decisions.

Social effects of special programs

The criteria involved in sociometric studies so vary that one is led to wonder about the comparability of results. Bonney (1946b) asked: To what extent do those who receive the greatest number of choices for a particular purpose vote for those who receive the least number of choices and vice versa, to what extent do those who are low vote for those who are high? He selected clearly differentiated high and low choice groups of sixth grade children and examined their choices on a "play" criterion and on a "quiz kid" criterion. There was a definite tendency for children with high choice status to choose each other and for low choice status children to make unreciprocated choices of children in the high status groups. When a high status child did choose a low status child, the choice was reciprocated. This was clear in the "play" situation and pronounced in the "quiz kid" situation in which academic ability was important. The low status children actually managed to establish more mutual choices with the high status group than with their own group. High status children show more "emotional expansiveness" in that they choose more widely (write down more names) than do either low or average status children. Low status children do much more in-group choosing for "play" than for the intellectually oriented "quiz kid" activity and it is interesting to note that some children of very high

academic ability jumped from one choice status extreme to the other on the different criteria.

Pointing out that there is a difference between popularity and friendship, O'Shea (1960) reviews the difference in response to tasks on intelligence tests for different mental age levels and offers the opinion that the difference in functioning of the gifted as compared to his age peers would lead to dissatisfaction, frustration, and disinterest in interaction. She cites Mann's (1957) study (reviewed below) to back up the proposition that friendship occurs with those of like mental age rather than chronological age. It is her opinion that the gifted child without mental age peers is really "an isolated individual for whom activities tend to drop dead, and for whom there is malnutrition in the area of rich, constructive, developing, rewarding experience of close friendship." (p. 335)

The often cited, and frequently misinterpreted, study of Mann (1957) involved children of high (130 up) IQ who spent half of their time in regular class and half in workshop rooms with other gifted children doing individual or group projects. He reported that children choose their friends from their ability peers for both in- and out-of-school association. It should be considered, in interpretation, that the high ability children of this study were spending the whole day together and only half of their time with those of lower ability. There is evidence, to be presented later, that proximity and extent of contact are important factors in friendship formation. Mann suggested that similar studies of programs employing full-time ability grouping would be of value.

The effects of an elementary school "fast-learner" program on

children's social relationships is presented by Goldworth (1959). In this study the fast-learning children of an experimental group from a school district in a suburban community in the San Francisco Bay area attended classes held for 90 minute periods twice a week. In the special classes the pupils were grouped, as nearly as possible, into one of four subject areas by chosen interest on a questionnaire. In each subject area, two groups were formed: pupils from grade levels four through six, and those from grades seven and eight. The number of children was limited to 15 for each group. The building in which the special classes were held was some distance away and pupils were transported to and from classes by bus. Control groups were established so that the experimenters were able to compare fast-learners, non-fast-learners, classrooms containing experimental fast-learners, and classrooms containing control fast-learners. Pre- and post-measures were administered four and one-half months apart on the Columbia Classroom Social Distance Scale and three sociometric tests in which each pupil was asked for three classmates he would most prefer to "work with," "play with" and sit with." The experimental and control groups were compared, by grade levels, in terms of change in acceptance, change in degree of cohesion within their regular classroom and change in degree of fast-learner sub-group preference within regular classrooms. It was found that:

1. At all grade levels (4 through 8) the proportion of children showing an increase in acceptance as friends by classmates was significantly greater ($p < .001$) for children in control classrooms than for those in experimental classrooms. Goldworth felt that this might be explained by the lack of coordination between regular and special teachers or by

parental attitude resulting in a dampening of pupils' enthusiasm for regular classrooms.

2. In grades 4 to 6, a greater proportion of control fast-learners showed an increase in acceptance as friends than did the experimental fast-learners. The difference was not significant for grades 7 and 8.

3. There was no significant difference in the degree to which fast-learners in the experimental and control groups accepted their classmates as friends. Goldworth felt that this contradicted the common view that special grouping fosters attitudes of intolerance.

4. With regard to mutual choice, each of the criteria on the sociometric test was examined separately. A measure of "group cohesion" was determined for each of the regular classrooms by dividing the actual number of mutual choices by the total possible number of mutual choices. The increase, decrease, or no change, in cohesion was tested for significance between experimental and control classrooms and it was found that, with one exception, no significant differences existed for any one of the grade levels on any of the three sociometric criteria.

5. The fast-learner program did not result in the formation of identifiable sub-groups among fast-learners within the regular classroom.

Thus, for the most part, the fast-learner program did not have any apparent effect on the volume of mutual choices but did produce a slight decrease in the proportion of classmates accepted as best friends in the experimental classrooms.

The choice status of ability grouped pupils is reported by Cunningham et al. (1951). In the eighth grade of a junior high school in which there were seven groups, five heterogeneous, one homogeneous high- and

one homogeneous low-ability, the children were asked for three choices on "What groups would you like to have visit us for a program?" The distribution of group choices was fairly even, except for the low-ability group, which was never chosen. The high-ability group was neither favored over the other groups nor ignored. The low-ability group chose the high-ability group as second choice.

Seventeen different programs for the gifted were studied by Simpson and Martinson (1961). The subjects were 493 pupils from the first six grades (478 boys and 451 girls) of 25 districts selected to represent the varied rural, semi-rural and urban areas of the State of California. The programs evaluated were planned within the general areas of enrichment in regular class, acceleration and special grouping in these general areas. At each grade level, experimental pupils within different programs were matched with a control on the basis of similarity in chronological age, IQ, sex, and socioeconomic status based on father's occupation. The mean IQ on the Revised Stanford-Binet was 142.6. To assess the effects of the programs on personal and social relations, the staff used sociograms, a Teacher Reaction Sheet, and check lists at the elementary levels. The California Psychological Inventory was also administered to pupils in junior and senior high school. Friendship choices of the participants at the elementary level (N = 343) were taken in the spring before the experimental year, and at the end of the experimental year. The evaluation revealed that fears that special planning necessarily penalizes the gifted child socially are unfounded. The pupils in experimental programs at the first grade level showed highly significant gains in friendship choices; their control group showed no change. Fifth and sixth grade

pupils who attended Saturday classes showed significant gains in social status on the basis of responses by their peers in regular classroom situations. Pupils in special groups showed no significant change from regular to special class rating and their control group showed no change.

The conclusion derived from this study was that special planning need not affect the gifted child adversely, whether he remains in the regular classroom, or takes part in special class. His regular classmates in this study did not regard him as a less desirable friend because special provisions were made for him.

An evaluation of individual classroom planning and adjustment for gifted children in elementary schools is given by Gallagher, Greenman, Karnes, and King (1960). The children had a generally high level of acceptance prior to the program planning instituted by the experiment. Fifty percent of the group (29 boys and 25 girls) stood in the top quarter of their class in social popularity as measured by peer nomination for friendship by the rest of their class. Only 9 percent were found in the bottom quarter. After program planning and implementation, the sociometric devices were again administered. The general level of social popularity of the group seemed to diminish slightly as only 46 percent were now found in the top quarter of their own classroom, whereas 20 percent were found in the bottom quarter, on social popularity. The loss occurred almost entirely in the sixth grade and seemed to be related to "low referral" schools (schools having fewer gifted) where it appeared that greater teacher attention to these gifted pupils was accompanied by a loss in social status. Special efforts to improve the social acceptance of a small group (N = 11) of children were ineffective.

The Horace Mann-Lincoln Institute of School Experimentation cooperated with the Staff of the DeWitt Clinton High School in a study of social and personal factors associated with underachievement and school procedures which would provide special attention to problems of underachievers (Goldberg, 1959). Seventy under-achieving tenth grade students were identified and paired on the basis of IQ and ninth grade averages; one from each pair was placed in a special class and the other served as an experimental control. The control students were randomly distributed in homeroom and subject matter classes and were not identified to themselves or to their teachers. Interviews of these children revealed that all took part in social activities and had friends. Frequently they attributed social success to "not being a grind," to not studying too hard or too much.

Student attitude toward ability grouping for classroom instruction is reported by Klausmeier, Mulhern, and Wakefield (1960). Three high schools with enrollments of 700, 1013, and 2160, all of which sectioned classes on the basis of achievement and IQ were examined. Students were asked to name five friends, now in school, who the student would like to be with in future work, and to give reasons (from a listing of being in the same classes, same school activities, same neighborhood and church) for the choices. It was found that being in the same school activities was given far more prominence as the basis for friendships than being in the same classes or in the same neighborhood or church. This was especially clear for choices of the opposite sex. High ability students gave more weight to being in the same classes than did low ability students who gave relatively more weight to being in the same neighborhood or church

activities, particularly in choices of own sex. All ability groups favored continuing the sectioning practice with the high ability group most in favor, followed by the low and middle groups. The authors conclude that sectioning improved the learning opportunities and was approved by the majority of both students and teachers. When many non-class activities are available for friendship formation, sectioning in most of the subjects required for graduation does not produce appreciable undesirable social effects in the comprehensive high school. Apparently, neighborhood and church activities are social outlets more frequently used by the low than by the high-ability student.

In an earlier study of children's attitudes toward homogeneous grouping, Luchins and Luchins (1948) interviewed half of the pupils in fourth, fifth, and sixth grades. The pupils were told that the Board of Education was conducting a study to find out what kind of classes children prefer. The results of 190 interviews indicated that those pupils in "dull" classes feel inferior and ostracized. All pupils were aware of the label "bright," "average," or "dull" attached to their class, even though the classes were numbered 1 for bright, 2 for dull, and 3 for average. There was a decided stigma attached to the "2" class and a strong social pressure to be in the "1" class. The brighter children gave the impression of being snobbish in their attitudes toward those in the "2" class and the homogeneous grouping system was serving to create a caste system in the school. There was no control group in this study and the obvious question arises as to whether low-ability students might not also feel ostracized and inferior, or the high-ability student feel superior in the regular heterogeneously grouped situation.

When we look at the social status of pupils who represent the lower end of the intelligence scale in special and regular classrooms, we find a clear differential. Johnson (1950) reported a sociometric investigation of 39 such children enrolled in regular elementary grades one through five. He found that their peer acceptance score was significantly lower than was the score of the more normal children enrolled in the same grades. In addition, the degree of isolation steadily increased the lower down the intelligence scale one went. The same picture in reverse was true for active rejection, with the lower (IQ = 50 to 60) group being most highly rejected. Rejection decreased as one ascended the IQ scale. In a later study, Johnson (1961) supported his own 1950 findings. The low acceptance of mentally handicapped children in regular classes adds to their problems. He also found that when the total population of special classes for the handicapped was compared to total population of regular classes, they were quite similar in social acceptance. It is quite clear that pupils of low ability benefit socially from special grouping for classroom instruction.

In an exceptionally well designed and controlled study of the effects of homogeneous and heterogeneous grouping upon pupils of three levels of ability, Drews (1962) examined the differential in peer choice on a number of sociometric criteria. Her subjects were pupils classified as superior, average, or slow on the basis of IQ, reading and language skills. They were placed (at random) in homogeneous or heterogeneous ninth grade English classes at the beginning of a school year. Homogeneous classes for slow pupils were limited to 15 to 20 per class, while all other classes ranged from 30 to 35 pupils. Total N was 432 but it should be

noted that by subdividing the two groupings on sex and ability in the analysis, the N for some groups became very small. For example, there were only 8 girls and 13 boys in the heterogeneous slow groups. Sociometric tests were given at the end of the experimental year and were designed so that the choices were made which had either social or intellectual implications. The intellectually oriented questions asked for three choices in each of the general areas: general excellence, originality, open-mindedness, and critical thinking. Social choices were for a picnic and a school dance. All choices were to be made from within the pupil's English class. (This is a weakness of the study. Pupils in the ninth grade normally spend only one class period per day in an English class and may well have a number of friends in other classes and yet be an isolate in English.)

Drews points out that within-class choices force the student in a homogeneous class to choose those more nearly his own academic level and that pupils have shown a tendency to choose those of higher ability level in heterogeneous classes. Her results emphatically support the expectation that there would be a wider differential between the choice status of different ability levels within heterogeneous classes than within the homogeneous classes. Composite scores were computed for each type, social and intellectual, of sociometric criteria and analysis was based on these composite scores.

On the intellectually oriented criteria, a definite hierarchy appeared in the heterogeneous classroom with superior students receiving many, and slow students few, nominations. The socially oriented criteria produced the same hierarchy but it was not so distinct. Within the

homogeneous classroom the choices were much more evenly distributed over the three levels of ability.

Within-group analysis of the heterogeneous classes indicated that superior students were nominated three times as frequently as slow students on the social questions and 15 times more frequently on intellectual questions. In the homogeneously grouped class, the pupil is awarded his social and intellectual standing on the basis of comparisons within his own ability group which forces a gain in sociometric recognition for some average and slow pupils.

Ability and sociometric choice

Because the institution of special programs is usually based on academic ability as measured by IQ or scholastic achievement, many of the studies reported in the previous section also apply here. Similarity difference or correlation of measurable achievement and/or intelligence is reported in most of the sociometric studies.

To briefly note some of the earlier work: Wellman (1926) found that mutual friends among girls were more similar in scholarship than in other characteristics studied, while boys were more similar in height, intelligence, and chronological age. Furfey (1929) found about the same results in a study of factors influencing the selection of boys' chums. He reported a tendency (average $r = .31$) for boys to choose chums of the same age, size, intelligence, and maturity. Furfey was not convinced, however, that traits as yet unmeasured, might not prove to be more important factors contributing to the formation of children's friendships. He noted that pre-adolescent boys appeared to be more influenced by frequent

association, either at school or in home neighborhood. Challman (1932) found that similarity in mental age had no effect on friendship choice of either boys or girls. Later studies by Jennings (1950) and Cunningham et al. (1951) failed to find significant relationships between intelligence and social acceptance.

The type of study that was being done is illustrated by that of Pintner, Forlano, and Freedman (1937). Several personality and attitude tests were given to 819 children in grades five through eight in four different schools. Each child was asked to indicate three preferred friends, ranking them in order. Correlations between the scores were low for sociometric choice and all of the attitude and personality tests given. Correlations for age and mental ability were somewhat higher. The investigators concluded that to the extent their tests were true measures of personality characteristics, there was no tendency for a child to be influenced by such characteristics in the choice of friends. It was not a negative correlation. The child does not choose a friend of opposite characteristics. It is a zero (or near zero) correlation. The friend is just as likely to differ from, as to resemble, the child in question. The positive correlations with chronological age and mental age led them to conclude that physical maturity and to some extent mental maturity were far more potent in influencing friendship than were the personality traits measured in the study.

There were those who were slightly impatient with these studies; for example, Potashin (1946, p. 49) writes:

> This approach while producing few positive results, reduces the relationship to a mechanistic patterning and tells us virtually nothing about its dynamics. It may indicate roughly

> that two people of a particular background may become friends, but it does not tell why two others similarly limited do not become friends. It may suggest the limitations within which the relationship is possible, but it says nothing of the nature of the relationship as it functions, its meaning and value to the people who are friends.

She would include a sociometric analysis utilizing the diagrams developed by Moreno (1934) and observational techniques involving the interaction of friends and non-friends. On the other hand, many investigators felt, as did Gronlund (1959), that a consideration of many variables, social cultural, psychological, and situational as related to sociometric results, provides an understanding of factors which influence sociometric responses which is necessary if the basis of sociometric choice is to be clearly understood and sociometric results properly interpreted. The personal and social factors related to sociometric results have implications for use in educational practice.

The studies continued. Bonney (1943b) investigated social, intellectual and academic status of children in a demonstration school and two public elementary schools over the years 1939 to 1942. His subjects were in the second through fourth grades during the time of the study. Choice situations throughout the school years were presented to the children and the results scored according to a rather complex weighting system. IQ's based on the California Mental Maturity Test in the second grade and on the Kuhlman-Anderson Test in the third and fourth grades; academic achievement based on the Gates Silent Reading Test in the second grade; and on the Stanford Achievement Test in the third and fourth grades were correlated with mutual friendship scores with the following results:

Variables	Grade	r
Social Acceptance vs. Mutual Friends	2	.71
	3	.69
	4	.66
Intelligence vs. Mutual Friends	2	.19
	3	.34
	4	.20
Gates Reading vs. Mutual Friends	2	.42
Stanford Achievement vs. Mutual Friends	3	.32
	4	.26

Correlations testing stability from grade to grade ranged from .68 to .90 and Bonney concluded that social position was approximately as stable as position in brightness and achievement but that this was not so clear for mutual friendships as with general social acceptance. He noted that with few exceptions the difference between social acceptance and mutual friendship could be accounted for by some pupils having higher mutual friendship scores than general acceptance scores. Such children confined their choices to those whom they knew reciprocated their friendship. Bonney quotes Irving Lorge : "If psychologists are responsible for one generalization, it is that all positive traits are correlated positively." This means that desirable intellectual and social traits are associated, and also undesirable intellectual and social traits are associated. An examination of the extremes (upper and lower quarter in social acceptance) lent emphatic support for this general conclusion.

In a broader study involving students on secondary and college level as well as in elementary schools, Bonney (1946a) computed critical ratios on the difference between means of reciprocating pairs as compared to nonreciprocating pairs on sociometric choice. Correlation coefficients relating mutual choice to academic achievement and intelligence were

included and indicate that:

1. There is a small correlation between academic achievement and mutual friendship which Bonney felt was accounted for by the influence of an intelligence factor.

2. Intelligence is positively correlated and is a contributing factor in friendship formation.

A sociometric study of pupils in grades five, six, and seven of a small elementary school in a suburban residential section near Toronto is reported by Potashin (1946). This school had only one class per grade K through seven so that pupils were with approximately the same group throughout elementary school. Sociometric mutual first choice pairs were taken as friends, nonreciprocating first choice pairs as non-friends. There were 21 pairs of friends and 29 pairs of non-friends so identified. Teachers rated the pairs on the difference between partners into categories ranging from almost no difference to very great difference on several variables. It was found that there is little difference between friends and non-friends in the percentage falling into the categories for mental age, IQ, or academic status.

As part of a study of mental health and social status (reported more full later), Greenblatt (1950) found that a child's academic achievement bears little or no relationship to his sociometric standing in the group.

Interpersonal behavior in relation to intelligence and social power in grades two and five was investigated by Zander and Van Egmond (1958) and Van Egmond (1960) who report that intelligence by itself was not an important determinant of interpersonal relations but that the utilization

of intellectual ability in academic performance was related to influence on, and acceptance by, peers. Their findings also indicated that disturbance in achievement was greatest for boys when they lacked an influential position in the power structure of the group. Girls showed more disturbance in achievement when they lacked emotional acceptance.

Laughlin's (1954) study of peer status of sixth and seventh grade children led him to conclude that mental ability and academic achievement have a much lower correlation with group social acceptance than do desirable personality traits. Children with high IQ's and high academic achievement were, with few exceptions, well accepted. However, children who were average on these variables were also frequently popular and those who were especially disliked were seldom those with lowest IQ's.

Intelligence was found to be relatively unimportant to the establishment of social acceptance by Williams (1958) in a study of 117 gifted (IQ = 130 or more) pupils. Data from the Classroom Social Distance Scale and the California Test of Mental Maturity revealed that four out of five pupils high in total acceptance were achieving within or beyond expectancy, and three of five pupils low in acceptance were achieving below expectancy. This would indicate again that utilization of intellectual ability and acceptance are related.

Specifically testing the hypothesis of relationship between intelligence and sociometric choice, Gallagher (1958a, 1958b) found that pupils with higher levels of intelligence tended to receive more choices than those of lower intelligence. It was also found that pupils of similar intellectual levels show no tendency to prefer one another. When a highly select group of children with IQ's of 150 or higher were compared with

their classmates, the gifted pupils were significantly higher in acceptance than their average peers. Fifty-two percent of the gifted group were in the top quarter of their class in terms of sociometric choice and only 11 percent were in the lowest quarter. High acceptance did not seem to be affected by sex or grade level (second through fifth grades), and there was no tendency for gifted pupils of schools having more gifted in the school to receive higher acceptance than comparable pupils in schools having fewer such pupils. Gifted pupils were chosen by pupils of all levels of intelligence and not more so by other gifted pupils. They chose other pupils of all levels of ability as friends which suggests that the gifted child is not unduly concerned with the other's intellectual ability in choice of friends. A special comparison of pupils with IQ's of 165 or above vs. those with IQ's of 150 or 164 revealed some tendency for the extremely high IQ pupil to be less well accepted but the difference was not significant.

In an earlier study by Grossman and Wrighter (1948) personality, intelligence and achievement tests administered to sixth grade pupils yielded data used to compare pupils with different "selection-rejection" scores. Intelligence was found to be a contributing factor up to the point of normal intelligence but a higher than normal intelligence did not materially affect the score. When below normal pupils were compared with those of normal or superior intelligence, the more intelligent pupils had a significantly higher score.

Miller (1956) tested mentally superior (IQ = 120 to 140), typical (IQ = 90 to 110), and retarded (IQ = 60 to 80) pupils at each of the fourth and sixth grade levels from 13 different classrooms. One of his

hypotheses was set up to test for significant difference between the three groups in the extent to which they were socially accepted on an average friendship rating for each pupil. The superior pupils were wanted as friends by their classmates more than typical pupils who, in turn, were wanted more than the retarded. Superior pupils chose other superior pupils as friends significantly more often than they chose typical or retarded pupils. The choices of the typical pupils were about equally proportioned at the fourth grade level but shifted to significantly more for the superior pupils at the sixth. Retarded pupils chose about the same number of superior and typical pupils at both grade levels.

Baldwin (1958) used 572 non-retarded and 31 mentally retarded fourth, fifth, and sixth grade children in a study of the social position of the mentally retarded child in regular classrooms. There was at least one retarded child in each of 22 classes. His measures were the Wechsler Intelligence Scale for Children, the Ohio Social Acceptance Scale, the Ohio Social Recognition Scale, and personal interviews with classroom teachers. It was found that mentally retarded children were much less accepted socially than were the non-retarded.

One hundred eighth grade pupils of a boy's school rated all others in their homeroom for Davis (1957). A five point scale was used for a variety of traits and sociometric status was based on a general acceptance scale on which boys rated others on how they would like them as friends. Intelligence was measured on the Otis Beta Test and achievement on the Nelson-Denny Reading Test. Low but significant relationships were found between sociometric rating, intelligence, and achievement in

reading. It was felt that this correlation was a result of the effect of interdependence of the variables and suggested that intelligence has some (unidentified) behavioral correlates which peers perceive and react to favorably.

A study of London school children, in an investigation of sociometric status and some factors in friendship formation, is reported by Thorpe (1955a, 1955b). There were 34 complete school classes from which friends, partial friends, and non-friends were identified. The differences between pairs on the variables neuroticism, intelligence, age, and popularity were examined for significance of the difference between the three types of friends groups. The findings pertinent here were:

1. In the main, whether the pairs were male-male or female-female made no difference in the results obtained.

2. Each of the above variables was found to be unrelated to friendship formation with the possible exception of age.

3. Correlations within each class separately, between sociometric status and intelligence were on the whole small (less than .20).

The Brown (1954) study identified the 200 most accepted and 200 least accepted from 1600 students in an Indiana high school. Chi-square technique was used to examine the role of family, school, and home in acceptance. On the intelligence and scholastic achievement variables a higher rating was associated with higher acceptance scores on a 12-question sociometric choice instrument and an 11-statement check list of reasons for choice. Scholastic achievement showed an especially marked association with acceptance for girls.

The interactions of ability, achievement and choice were involved

in a part of the study reported by Karnes et al. (1963) in which intellectually gifted, but underachieving, children were identified in two large elementary schools. Approximately five underachievers at each grade level, two through five, were placed in homogeneous high-ability classes and five were placed in heterogeneous ability classes at the same grade level. After treatment of from two to three years the data analyzed indicated that there was a slight drop in the perceived peer acceptance of the underachievers which the authors felt was not surprising in view of the low degree of peer acceptance which "seems to characterize underachievers as a group." Data are not presented on actual peer acceptance but the authors state:

> Although neither group made gains with respect to perceived peer acceptance, it is reassuring to note that gifted underachievers placed in homogeneous classes are able to achieve more academically without appreciably sacrificing their social status. (p. 444)

The peer relationships of children of different intelligence levels were examined by Barbe (1954) who asked: From what intellectual level do children of above and below average intelligence select their friends? And: Are "bright" children and slow learners chosen as friends by those of average intelligence? He analyzed the choice process of 244 elementary school children whose IQ's ranged from 65 to 140, from grades four through seven of three schools. Barbe reported that pupils with above average IQ tended to select friends from those with superior IQ but selected some from each level of intelligence. Pupils with below average IQ tended to select friends from high-average IQ but selected some from each level. "Bright" children were chosen by average children far more frequently than were slow learners. None of the slow learning children chose friends with IQ's over 120 and 62 percent of them chose friends from the below

average group. In contrast, 80 percent of the "bright" children chose as friends children of less IQ "probably because of the limited choice."

Age and sociometric results

In the Thorpe (1955a, 1955b) search for factors underlying friendship formation of London school children cited in the previous section, it was noted that pupils identified as friends tended to be slightly more alike than non-friends with respect to age. The studies of the influence of overage and underage pupils at particular grade levels probably reflect, in part, the influence of intelligence and achievement on sociometric choosing. The overage pupils are usually slow learners who have been retained, while underage pupils tend to be those with higher ability. Two studies reported by Morrison and Perry (1956) of overage pupils (N = 745) in grades four through eight showed a consistent tendency for children in the lower (four through six) grades who were overage to have lower sociometric status. The children in grades seven and eight did not show this difference in overage and average age groups and the authors attributed this to the greater athletic ability of overage boys and the prestige attached to physical maturity. They also felt that increasing cross-sex choosing at the higher grade levels was a factor.

Bedoian (1954) studied the influence of age on sociometric choice of 743 sixth grade pupils from 22 different classes. Pupils who were nine months or more above the class average were classified as overage and those nine months below as underage. He found that pupils who were overage had the lowest choice status and tended to be rejected more frequently by their classmates on classroom activity criteria. Intelligence

was not controlled, thus this probably reflects the relationship between sociometric choice and achievement or intelligence. Underage pupils had the highest status and largest percentage of "stars" in class. However, those pupils who were from 12 to 14 months underage were not as well accepted as were those between 9 and 12 months underage.

Social and physical skill

Self-ratings, peer ratings, adult ratings, and measured performance have been used as criteria of skill and related to sociometric results. Both social and physical skills appear to be positively related to the number of choices received on sociometric tests. The Brown (1954) study previously cited found that there was some association between frequency of participation in sports and extracurricular activities, and acceptance by peers. Bretsch (1952) asked boys and girls (325 of each) in the ninth grade for self-ratings on eight social skills. The skills were carrying on a conversation, singing, dancing, playing an instrument, playing cards, swimming, tennis, and skating or skiing. They also chose associates on six sociometric criteria in the general areas of work, play, and social activities. The most highly chosen of both sexes (top 25 percent) on the sociometric test were found to have rated themselves higher on the social skills than the poorly accepted (bottom 25 percent). The highly chosen pupils also indicated that they participated more frequently in social activities than did the poorly accepted group.

A concept that is receiving attention is that we might distinguish different types of social functioning in the poorly accepted pupil. Northway (1944) has called our attention to different types of "outsiders" in social groups, including: "recessive" (listless, under par physically,

either below normal in intelligence or ineffective in their use of ability); "socially uninterested"; and "socially ineffective"(noisy, rebellious, boastful, and arrogant) children.

In an attempt to identify the characteristics of socially gifted children, Jarecky (1959) used a battery of tests including sociometric questions, a "guess who" questionnaire, a rating scale and teacher rankings. His subjects were 76 14-year-old boys and girls from two freshman classes at two large metropolitan high schools. He found that the "socially gifted" who maintained enduring relationships with peers and were much accepted could be characterized as physically attractive, neat, involved in constructive social enterprise, and respected as policy makers by their peer groups. They related to peers and adults on an egalitarian basis, resisting insincere, artificial or patronizing relationships. These children were rated as non-defensive and free of emotional tension; that is, they were unafraid to express themselves emotionally when the emotion was relevant to the situation. Characteristics exhibited were a mixture of intelligence, humor, and insight which helped them to cope with any social situation and to stimulate positive productive behavior in others.

Interests, values, and sociometric results

Interests, leadership, and sociometric status among adolescents were examined by Marks (1954). Contrasted groups of accepted and non-accepted subjects (N = 302) from among 730 students in grades eight through twelve were matched by grade and sex and compared on the aforementioned variables. Significant differences indicated that acceptable

girls show more social, heterosexual and adult-disapproved interests; they dislike fewer interest items in general but also have fewer intellectual cultural interests; they accept more persons as friends even though they also tend to reject more than do the unacceptable girls. Acceptable boys show significantly fewer mechanical-constructive interests than do the unacceptable. For the entire test group, acceptability had a small but significant negative correlation with interest non-conformity and a curvilinear relationship with interest maturity among boys but there was no such relationship among girls. Marks concluded that the acceptable adolescent is sociable, involved with people and relatively impulsive. He suggested that the mechanical interests of unacceptable boys and the intellectual interests of unacceptable girls may act both to isolate and to compensate for isolation.

In the previously cited study of Bonney (1946a) the Kuder Preference Record interests of mutual friends were found to be significantly correlated but it was felt that this was negated by the fact that the interests of non-mutual-friends pairs were also correlated. As Gronlund (1959) points out, it is difficult to determine whether individuals consciously choose associates with similar interests and values, but extensive studies at both elementary and secondary school level (Austin and Thompson, 1948; Brown, 1954) have reported that the reasons pupils give for their sociometric preferences includes a relatively large number of statements pertaining to similarity of interests and values. The pupil reports that "we have the same interests," or "we have common ideals," as reasons for preference, and "is insincere," "has low ideals," is "stuck up," "snobbish," "never thinks of other people's preferences," are given as reasons for rejection.

Cunningham et al. (1951) reporting the Horace Mann-Lincoln Institute of School Experimentation studies of group behavior report that:

> . . . We have found little significant correlation of acceptance with such factors as chronological age, intelligence quotient, or socioeconomic status. However, correlations of acceptance with factors stated as important by boys and girls were statistically significant. (p. 203)

The factors important to the children were, "have fun with him or her," "has other friends," " is easily liked," "seems to come from a good home," " is a good sport," "is not conceited," "always neat," and "does what other people want." The correlations of these factors with a social distance score range from .51 to .86 and are all higher than those found for chronological age, intelligence quotient or socioeconomic status.

Students and teachers rated fourth grade pupils on 20 descriptive traits for Bonney (1943a). He also collected sociometric choices on a number of criteria over the period of a school year and concluded that popularity is not a superficial thing but is tied up with the most basic traits of personality and character. However, more traits (12 as compared to 7) were found to have little or no value in differentiating between mutual and unreciprocated choices than were found to be significant in differentiating between most and least popular children on general social acceptance. Thus, it is easier to describe traits important to group acceptance than it is to isolate the traits essential in attracting one individual to another particular individual.

Gronlund (1959) warns that although the lack of acceptance among peers may be due to the absence of a single highly valued personal characteristic, high status among peers depends on the entire pattern of

personal characteristics possessed by an individual. For example, lack of a social skill may result in low sociometric status among peers, but a high degree of social skill will not lead to high acceptance unless other personal characteristics are also present. Prestige factors such as intelligence, achievement, skill, and physical attractiveness appear to be important. Personal factors such as kindness, helpfulness, considerateness, and friendliness are frequently stated as reasons for choosing associates. Individuals highly chosen on a sociometric test seem to have a pattern of personal characteristics which includes both prestige factors and need-satisfying behaviors.

The Edwards Personal Preference Schedule, a forced choice personality inventory measuring 15 manifest needs, was administered to over 200 pupils from a high school and private college drawing largely from white middle classes by Izard (1960). The subjects were also required to list their closest personal friends in rank order and 30 pairs of mutual choice best friends were identified. A control group of 60 students were selected and paired at random with the restriction that there be the same number of male and female pairs in both groups. Correlation and analysis of variance techniques yielded the following results: Pairs of friends were significantly more similar on personality profile than were pairs established at random. Of the 15 personality characteristics, three (exhibition, deference, and endurance) showed significant intraclass correlations among friends; there were no significant correlations on these variables for the random pairs. Mutual friends considered as a unit were significantly more similar than were random pairs. Personality similiarity was interpreted as essentially a facilitator of interpersonal

positive effect which was postulated to be a key determinant of attraction as well as other aspects of interpersonal behavior.

Davitz (1955) studied actual and perceived similarity of the high and low choice peers of summer campers. High choice (valued others) children were perceived to be more similar to self than they actually were. Those classified as low-choice others were not perceived as more similar to self than they actually were. The conclusion drawn was that there is a positive relationship between perceived similarity and valuation of others and it was postulated that this may be a function of a need to be similar to valued others. The tendency to attribute characteristics to others was investigated by Maisonneuve (1954) on a rating scale using 30 "polar" personality traits. The mutual choices on a questionnaire asking for the names of six people "toward whom you feel most attracted" constituted the friends for the study. She reported that some socio-affective gravitational factors seem to be related to the characterization of others. Isolation usually goes with attribution of a marginal (exceptional) profile and most popular subjects tend to mutually attract each other and to be characterized in a similar manner. In other words, it may be said that people to whom are attributed similar profiles tend to mutually choose each other; that people characterized in a similar way tend to associate. This is supported by the finding of Lindzey and Urdan (1954) where it was noted that pairs who chose one another appeared to be more alike on personality measures than individuals who rejected one another, but that there was only slight evidence that clique members were more homogeneous on personality measures than the average of their group.

Social and emotional adjustment and sociometric results

Seventh grade pupils from two classrooms with 16 girls in each and 16 boys in one, 17 boys in the other, were the subjects of Greenblatt's (1950) study of mental health and social status. The children answered a seven-question (criteria) sociometric form for each question of which they selected a first, second, and third choice. Achievement, mental maturity, and mental health were measured on standardized California tests. Mutual choice pupils' scores were correlated and it was found that on total sociometric scores the correlation ($r = .12$) was not significant but that pupils with high mental health scores tended to choose ($r = .61$) others with high mental health scores. Pupils with low mental health scores tended to choose others with low scores. It was noted that a mutual choice unit (pair) having a high combined mental health score will tend to a strong degree to have a high sociometric score while a unit with a combined low score will tend to have a low sociometric standing. With respect to the individual child it was reported that a child's social standing in his classroom was in no way indicative of his mental health status and that neither of these variables had a significant relationship to mental age or deviation from grade level expectancy.

The previously cited study of gifted pupils by Williams (1958) reported a relationship between satisfaction with interpersonal relationships and achievement. She found that there was a considerable difference between high and low acceptees in fulfillment of their emotional needs as measured by the Van Pit Series-Wishes.

Kuhlen and Bretsch (1947) examined the relationship between personal

problems of adolescents and sociometric status using a modified Mooney Problems Check List of 235 problems administered to 692 children (326 boys and 366 girls) representing practically all of the beginning ninth grade pupils in a small city in central New York. In general it was found that those who were least accepted (about the bottom 25 percent) had significantly more problems pressing enough to be checked "often" than did the top 25 percent on acceptability. There was little difference between accepted and unaccepted children with respect to the total number of problems checked as occurring "sometimes". Item differences on the "often" responses showed the unaccepted group to have greater concern with social skills, unhappiness, lack of status, family problems, and a dislike of school. The more highly accepted group checked as "sometimes" more frequently the items relating to social activities, moral concerns (girls--presumably growing out of broader heterosexual activities), concern for future education and job. The unaccepted group also appeared to be more concerned over health than did their more accepted peers.

Mental health and personality traits of sociometrically popular and unpopular children were subjected to investigation by Guinouard (1961). The upper and lower quartiles on sociometric status for work and play companions of 112 sixth grade, and 93 eighth grade pupils were the subjects. The IPAT High School Personality Test was used to measure traits and the Mental Health Analysis for desirable habits. There were significant differences in both personality traits and mental health habits favoring popular children. This is in agreement with the findings of Baron (1951) who studied a group of 220 girls from 11 fifth and sixth grade classrooms. He grouped the subjects as to upper quartile, average,

and lower quartile in sociometric status and using the Mental Health Analysis found that the high status group revealed little adverse emotionality (anxiety, depression) while the average and low status groups more frequently reveal such unfavorable characteristics. Low and average groups also showed inadequacies in self-concept and in the frequency with which they compare themselves unfavorably with their peers. The high status group tended to compare themselves more favorably with peers in terms of school success, health, and ability. In social relationships, average and low status individuals found difficulty in establishing and maintaining satisfactory relationships. A marked difference in social participation was revealed between high and average status groups. Average and low status girls both indicated a greater teacher dependency than high status girls. There was some tendency for low status girls to show seclusiveness.

Bonney's (1946a) study of the differences between reciprocating and non-reciprocating sociometric choice pairs has been discussed in previous sections. Findings pertinent to this section were:

1. The factors measured by the California Test of Personality show very little association with the process of friendship formation.

2. On the high school level, the Bell Adjustment Inventory variables of home and health adjustment showed no relationship to mutual friendship but there were substantial correlations with the variables of social and emotional adjustment and friendship formation.

A later study of second grade pupils by Bonney (1955) found that highly accepted children were more variable in their social behavior than were those of low choice status. The highly accepted had more capacity

to express themselves in both socially approved and disapproved behavior, were more versatile and psychologically free, social in activity, group oriented, and involved in verbal behavior with others. High status children had acquired a more balanced cross-section of all aspects of our culture leading to a more balanced personality. They were more characterized by possession of positive traits than by the absence of negative traits. Bonney cautions that there were notable individual differences and that there would be danger in generalizing on even the most clearly differentiating traits.

The traits especially admired by children are often indicative of good emotional and social adjustment. In Laughlin's (1954) correlational study of behavioral descriptions and sociometric results (for 21 classrooms of sixth and seventh grade children) the traits attributed to those who were liked were friendliness, cheerfulness, and enthusiasm. Children who were described as talkative and restless tended to have lower group social acceptance scores than their companions not so described.

Socioeconomic factors and sociometric results

The socioeconomic status a family holds in a community is usually determined by occupation, income, type of house, residential location, and other criteria as did Hollingshead (1949). He reported that the analysis of the friendship patterns of an entire high school population revealed cliques tending to follow socioeconomic class lines. Stendler (1949) noted a similar tendency for a New England community's elementary school children and, in addition, called attention to a criterion

differential in sociometric choosing. When children were asked to choose classroom seating companions, their choices were generally distributed among the class members, with only a slight tendency to choose those of the same socioeconomic class, but when the same children were asked to choose companions for out-of-school activities, the majority of their choices were confined to members of their own socioeconomic class.

Social class and friendship among school children of a "typical middle western town" was the relationship examined by Neugarten (1946). She found that with the exception of the group of lowest status, children tended to select as friends, first, children of higher status than their own, and second, children of their own status level. Neugarten is supported by the findings of Brown (1954), Grossman and Wrighter (1948), and Bonney (1944). In the latter study, Bonney reported the tendency for children of high socioeconomic status to have higher choice status, but noted that there were many exceptions based on the possession of physical skills, desirable personality traits and other social assets.

Brown and Bond (1955) found a well defined pattern of social stratification in operation in their study of sixth grade Negro children of a tenant farming community. Acceptance was measured by the Ohio Social Acceptance Scale and socioeconomic status on the Warner Index to Social Status. The large percentage of the pupils were from lower-lower and upper-lower class. Correlation between socioeconomic status and acceptance was .82 for girls, but low and negative for boys. On the sociometric choice of seating companion the girls revealed a clear and persistent attempt to "climb socially." School records indicated that the low in

sociometric status were also low in scholarship, received fewer school rewards or symbols of recognition (elective offices) and more punishment. In play activities girls and boys formed separate groups. The girls clearly grouped themselves on a social status basis but boys were in two groups, one consisted of those with interest and ability in baseball the other of those who were basketball oriented, with little or no hostility or friction between the two.

The importance of social class in adolescent groupings was tested by Udry (1960) who took a random sample of 51 same-sex friends from a high school student body of 2500. He found that social class, as determined by father's occupation, was of little importance to groupings in this particular community but noted that the community was relatively "new" and the population may have been biased in explanation of why Hollingshead's (1949) findings did not obtain. Young and Cooper (1944) compared pupils from grades five through eight, grouped according to high or low sociometric status and reported no relationship of the grouping variable to socioeconomic status. This finding is consistent with results reported by Davis (1957) and Dahlke (1953).

Commenting on the somewhat contradictory results concerning the relationship between sociometric status and socioeconomic level, Gronlund (1959) states that these can probably be explained by "the varying degree of social stratification found in the different communities" (p. 209). He feels that "class conscious" parents will lead to more awareness of class differences on the part of children which will be reflected in sociometric choice and that, in those communities with less firmly established social structure, a child's sociometric status would be

likely to be more influenced by his own personal and social assets and less by the family's socioeconomic position in the community.

The reflection of social class values in peer evaluation was evident in a study by Butman (1961) in which "blue collar" and "white collar" groups of children were examined. White collar boys were found to place high value on "impulse control," intellectual and physical skills. Blue collar boys and girls placed high values on impulse control and intellectual skills but placed a lower value on physical skills. White collar girls did not differentiate on impulse control or intellectual skills but gave high ratings to those high in achievement.

Proximity and sociometric results

When rural (bus riding) students are brought together in consolidated schools with "town" students, there seems to be a tendency for in-group preference to develop. Bonney (1951) used a 5-point friends-rating scale to study peer acceptance in three consolidated high schools, a "town" school which drew 43 percent of its students from buses, a "rural" school drawing from four small communities, and a "demonstration" high school associated with a college which also drew students from both town and buses. In the town school the students from the town were significantly higher on an acceptance index than were bus students (p. 01). Town boys in the tenth and eleventh grades were more accepted than were rural boys but the difference disappeared for twelfth grade (senior) boys. Rural girls received the lowest acceptance ranking of all groups on all three grade levels. The town students tended to choose themselves in contrast to the rural students' preference for

town students. There is a sex differential in that, while all three grade levels show girls' preference for town girls, boys, as sophomores and juniors tend to in-group choice. Rural boys chose rural girls only about one-half as much as would be expected on the basis of population representation and Bonney felt that it was not unreasonable to speculate that the inability of the rural girls (as determined by questionnaire) to attend school functions at night was one of the factors accounting for their isolated social position. In the rural school, over-all acceptance was higher than in the town school. Each of the four communities represented was about equal to the others in acceptance but there was a strong in-group preference. Mutual friendships were from 52 to 71 percent within community groups and mutual rejections (there were few) were all between individuals from different communities. The seventh through twelfth grades were included in the demonstration school where, at all grade levels, the bus students were less well accepted and had less mutual friendships than did those from the town.

By direct location and measurement on the map, Devault (1957) found that mutual friends tended to live progressively further apart as they progress through the grades up to the tenth grade. Pupils in the tenth, eleventh, and twelfth grades, with the most number of choices between them, tended to live closer together than pairs of pupils with fewer choices between them. It is quite clear that residential proximity is related to sociometric choice and the formation of friendships. The studies of Saegoe (1939), Gallagher (1958a) and Potashin (1964) support this but Brown (1954) found no association between acceptance and whether the pupil's residence was located in town or on the "fringe."

Gronlund (1959) notes that residential proximity in the community has the greatest influence on children's actual friendships. When asked to choose desired associates, the relationship is minimized, a difference which holds true for socioeconomic class differences and other social factors as well.

Reliability of sociometric measures

Sociometric measures have been in use for a sufficient number of years for the accumulation of data to permit several authors to make systematic evaluations of their reliability. For detailed analysis the reader is recommended Lindzey and Borgatta (1954), Gronlund (1959), and Mouton, Blake and Fruchter (1960). In the latter, critical features of various experiments are summarized and it is demonstrated that sociometric scores constitute a satisfactorily stable basis for measuring individual differences.

Sociometric data are, to some extent, different from the types of scores with which psychologists are accustomed to deal. There are opposing views as to whether sociometric data should possess "test-retest" reliability. If behavior is undergoing constant change and is in continuous process, then the reliability coefficients should not be expected to be high, and in fact a high reliability coefficient would indicate a lack of sensitivity in the dynamics of social process.

When sociometric responses are used to evaluate the social adjustment of individuals or the social structure of groups, some assumptions must be made with regard to consistency of responses. If the choice status or friend relationship does not have some stability, the results

of a particular test would have little meaning. The consistency reported in some selected studies is summarized in Table 1.

Gronlund (1959, p. 132) reports that over a period of four months, the average stability of various choice levels for two investigations at the elementary school level are:

	Gronlund	Bjerstedt
First choice	72%	82%
Second choice	59%	72%
Third choice	52%	68%
Fourth choice	45%	50%
Fifth choice	38%	-

In general, when choices given and mutual choices are considered, it appears that the social structure of a group is less stable than the sociometric status scores of group members. Bonney (1943c) included a study of the stability of mutual choices in his investigation of the stability of sociometric results at one-year intervals over three years for children in the second to the fifth grade. He reported stability coefficients for the mutual choices ranging between .41 and .49, and for the stability of sociometric status between .67 and .84. Thus, we see that a significant number of mutual relationships are still in existence after a period of a year for children at an age and level of social development when one would expect variability.

Validity of sociometric measures

Both Gronlund (1959) and Lindzey and Borgatta (1954) specifically note the complexity of the problem of evaluating the validity of sociometric results. First, the traditional concept of validity of psychometrics, i.e., the degree to which the measuring instrument measures what it purports to measure, is difficult to apply because it is not

Table 1. Consistency of choices given on retest as a measure of reliability of sociometric results[a]

Authors	Criteria	Choices	Subjects	Time	Change and remarks
Criswell (1939)	Seating	Two limit	238 1st - 6th grade children	6 weeks	38% No change 42% 1 change 20% 2 changes 69% No change in 1st choice 49% No change in 2nd choice
Horrocks and Thompson (1946)	Best friends	Three limit	905 6th - 12th grades age 10 - 17 years	2 weeks	% of no change Age Boys Girls 10 50% 70% 11 48% 55% 12 63% 63% 13 60% 55% 14 55% 63% 15 60% 70% 16 65% 60% 17 55% 80%
Austin and Thompson (1948)	Best friends	Three limit	404 6th graders in 7 schools	2 weeks	40% No change 38% 1 change 16% 2 changes 5% 3 changes
Singer (1951)	Best friends (8 variations on this)	Three limit	28 students 7th and 8th grades	1½ years	72% No change in 1st choice

[a]After Mouton, Blake and Fruchter (1960), p. 329.

generally agreed as to what the sociometric test is supposed to measure. Jennings (1947, p. 32) states: "Choice behavior, as one kind of behavior, is valid just as any behavior is valid, providing choices are made on criteria holding significance for the subjects." Pepinsky (1949) supports her position in arguing that the test is valid by definition. Lindzey and Borgatta (1954) state this a little differently by suggesting that no demonstration of validity is necessary if one limits one's interest to verbal interpersonal choice. Other problems arise when one attempts to establish validity on the multitude of psychological and sociological variables specified on logical grounds as being relevant to sociometric choice. Such validity criteria as teachers' judgments of pupils' social acceptance, other measures of social and/or personal adjustment, are examined at some length by Gronlund (1959) and Mouton, Blake and Fruchter (1960).

We have found no report directly investigating the extent to which reciprocating pairs of children actually pair off when given the opportunity to do so. There are some studies which show how "real life" choices relate to sociometric choice. Byrd (1951) asked 27 pupils in a fourth grade classroom to write down the classmates they most preferred as fellow actors in a classroom play. He then (over a two-month period) had each pupil openly choose several classmates and put on an unrehearsed play. As a follow-up he again administered the same sociometric test and the number of choices pupils received on each sociometric test was correlated with the number of choices they received for the actual play situation. Rho's were .76 and .80 which indicate a high degree of relationship between sociometric choices and "real" choices for a particular situation.

Bock (1952) observed the interaction of 6 girls and 10 boys in a ninth grade physical science class in which students worked on a problem in pairs when the class was allowed to group itself freely. The children had also been asked to choose three classmates on a sociometric test with whom they preferred to work. Bock reports that there was much interaction between mutual choices but not all, as there was also extensive interaction between unreciprocated choices.

The problem has been attacked in a different way by Gage, Leavitt and Stone (1955). These investigators compared the judgments of 103 teachers in fourth, fifth, and sixth grade classes, with the results of a sociometric test in which the pupils choose five classmates they would most prefer as classmates if the class were divided into two groups. The teachers predicted which five children each of their pupils would choose. The number of choices each pupil received on the sociometric test was correlated with the number of choices the teacher predicted each would receive. The average correlation for the 103 teachers was .48 indicating a fair degree of relationship.

Other studies, reviewed by Gronlund (1959), in which teachers' judgment of sociometric status of pupils in rank-order is compared with actual rank order, yield correlation coefficients ranging from .55 to .62 which Gronlund feels is fairly standard of the degree of relationship and which he points out is about the same as is obtained when teachers' judgments are correlated with results of intelligence tests.

Summary

A concern with the social adjustment of exceptional children for whom special educational provisions are made has resulted in increasing use of sociometric techniques in evaluating the effect of the school program on pupil's sociometric status. It is a characteristic of the literature dealing with sociometric results that the reader is reminded of the many exceptions to generalizations and warned of the pitfalls in deductive application of these generalizations to individuals. We have presented evidence from the literature which will support the following:

1. Special provision for pupils of high ability does not appreciably alter their sociometric status. As a group, gifted pupils are distinctly superior in terms of social acceptance in regular classrooms and are frequently recognized as leaders in class activities (Goldworth, 1959; Simpson and Martinson, 1961; Cunningham et al., 1951; Klausmeier et al., 1960).

2. Homogeneous ability grouping of pupils places those assigned to low ability sections under stigma and efforts to disguise the grouping system are not successful (Luchins and Luchins, 1948; Cunningham et al., 1951).

3. Homogeneous ability grouping provides the low ability pupil with a much better chance for social recognition and acceptance by his classmates (Johnson, 1950, 1951; Drews, 1962).

4. Pupils in programs of part-time ability grouping tend to choose their ability peers as friends for both in- and out-of-school activities (Mann, 1957; Drews, 1962).

Closely related to the problem of special programs for exceptional children is the question of the relationship between sociometric status and academic achievement and/or intelligence. The results of studies of these variables are, in general, consistent with the generalizations above and we may further state:

1. Low-positive coefficients of correlation are frequently found on analysis of the association of sociometric status and academic achievement or intelligence. This is particularly so when the group represents the normal range on any of the variables (Gronlund, 1959; Bonney, 1943b, 1946a; Laughlin, 1954; Gallagher, 1958a, 1958b; Williams, 1958).

2. Extremely deviant high- or low-ability pupils tend to have lower sociometric status than do their peers (Grossman and Wrighter, 1948; Gallagher, 1958a, 1958b; Baldwin, 1958).

3. Pupils in heterogeneous ability classrooms show a tendency to choose classmates of their own or higher ability but it should be kept in mind that pupils on the ends of the continuum are restricted in the direction of choice (Barbe, 1954; Miller, 1956).

4. Underachievers as a group have been characterized by a low degree of peer acceptance. There is evidence to support the proposition that it is the constructive utilization of intelligence that contributes to a more favorable sociometric status (Karnes et al., 1963; Northway, 1960).

Over- or under-age-in-grade pupils are usually also differentiated on intelligence and academic achievement as they have been advanced or retained in school progress on the basis of these variables. Findings consistent with the aforementioned relationship between intelligence

and/or academic achievement and sociometric status are reported.

1. Within reasonable limits, overage pupils are more frequently found to have lower, and underage pupils higher, sociometric status than their peers who are at the expected age for the classroom (Thorpe, 1955a, 1955b; Morrison and Perry, 1956; Bedoian, 1954). It should be noted that this relationship between age and acceptance was found for elementary school pupils but not for pupils in grades seven and eight. The explanation offered was that physical maturity becomes an important value of the older children (Thorpe, 1955a, 1955b).

It has been pointed out (Bonney, 1946a) that it is easier to determine traits important to group acceptance than to isolate those essential to the attraction of one individual to another. The interests and values of mutual friends are generally found to be positively correlated but so are those of non-reciprocating pairs of peers. Summarizing statements we might make are:

1. The reasons pupils give for choice or rejection of peers are often those that would indicate a community of interests and values (Austin and Thompson, 1948; Brown, 1954; Cunningham et al., 1951).

2. Individuals who are highly chosen seem to exhibit a pattern of desirable personal characteristics which include both prestige factors and need satisfying behaviors (Davitz, 1955; Maisonneuve, 1954; Lindzey and Urdan, 1954; Gronlund, 1959; Izard, 1960).

3. The possession of group-valued social and/or physical skills is positively related to the number of choices received on sociometric questionnaires (Brown, 1954; Bretsch, 1952).

4. It is possible to classify children as socially gifted who

have (or to whom is attributed) a combination of desirable social skills (Jarecky, 1959).

Mental health and personal adjustment have been correlated with sociometric status. The results indicate that:

1. Pupils with high mental health scores tend to choose others with high scores and those with low mental health scores tend to choose others with low scores ($r = .61$). But, in the same group, the total sociometric scores of reciprocating pairs of pupils was correlated at .12 which was not significant (Greenblatt, 1950).

2. An individual child's social standing in his classroom is in no way indicative of his mental health status and neither of these variables is significantly related to mental age or grade level expectancy (Greenblatt, 1950).

3. Pupils receiving many choices on sociometric questionnaires have been found to show little adverse emotionality (anxiety, depression) in contrast to those of average and low sociometric status who frequently reveal such characteristics (Baron, 1951; Guinouard, 1961).

4. Children of low or average sociometric status tend to show inadequacies in self-concept and in the relative frequency with which they compare themselves unfavorably with their peers. Those of high status tend to compare themselves favorably in terms of school success, health, and ability (Baron, 1951).

A multitude of personality traits have been correlated with the results of sociometry with the usual low-positive coefficients between desirable traits and peer acceptance. Traits of high, low, and average status pupils have been found to differ for groups. In general it might be said that:

1. The high status pupil is characterized more by the possession of positive (desirable) traits than by the absence of negative traits (Bonney, 1955).

2. Children are attracted by friendliness, cheefulness, and enthusiasm in others. They dislike those who may be characterized as talkative and restless (Laughlin, 1954).

3. A marked difference has been noted when comparing high status groups with their average status peers on which variables as social participation, ability to express themselves, group orientation, and verbal behavior with others. We are cautioned, however, that there are notable individual differences and there would be danger in generalizing on even the most clearly differentiating traits (Baron, 1951; Bonney, 1955).

Socioeconomic status has been correlated with sociometric status with inconsistent results. Gronlund (1959) felt that these inconsistencies could be explained on the basis of the varying degree of social stratification in different communities. Another explanation might be based on the sociometric criteria employed. Stendler (1949) found that children making choices for within classroom activities show only a slight tendency to choose those of the same socioeconomic status but give the majority of their choices to others of their own status when choosing for out-of-school activities. It is quite clear that extent of contact and residential proximity are influential on children's actual (near-sociometric or observed) friendship formation but when asked to choose desired associates, the relationship is minimized, a difference which holds true for socioeconomic class and other social factors as well.

Hollingshead's (1949) generalization that clique and friendship formation follows socioeconomic class lines is supported by the findings in a number of studies (Stendler, 1949; Neugarten, 1946; Grossman and Wrighter, 1948; Brown and Bond, 1955). On the other hand, there are studies which report little or no relationship of socioeconomic status and sociometric status (Udry, 1960; Young and Cooper, 1944; Davis, 1957; Dahlke, 1953).

Sociometric measures have been in use for a sufficient number of years for the accumulation of data to permit several authors to make systematic evaluations of their reliability (Lindzey and Borgatta, 1954; Gronlund, 1959; Mouton, Blake and Fruchter, 1960). In these evaluations, critical features of various experiments are summarized and it is demonstrated that sociometric scores constitute a satisfactorily stable basis for measuring individual differences. Over one-year intervals, one might expect stability coefficients for mutual choices between elementary school children to range between .41 and .49. Coefficients for sociometric status will be somewhat higher, ranging from .67 to .84 (Bonney, 1943c).

One view of the validity of sociometric results is that, as a kind of behavior, choice behavior is as valid as any other behavior providing choices are made on criteria holding significance for the subjects (Jennings, 1960; Lindzey and Borgatta, 1954). There is some evidence to indicate the extent to which reciprocating pairs of children actually pair off when given the opportunity to do so. Byrd (1951) reported rho's of .76 and .80. Studies in which teachers' judgment of sociometric status of pupils is correlated with sociometric results yield coefficients of .55 to .62 which Gronlund (1959) points out is about the same as is

obtained when teachers' judgments are correlated with results of intelligence tests. Teacher predictions of sociometric status were found by Gage, Leavitt, and Stone (1955) to correlate with choices received at an average coefficient of .48 indicating a fair degree of relationship.

STATEMENT OF THE PROBLEM

This is an exploratory and descriptive study of the mutual friendship choices of children in fourth, fifth, and sixth grade classrooms of a school district employing a program of ability grouping (with adjustment in rate of presentation), as compared with the mutual friendship choices of similar children in fourth, fifth, and sixth grade classrooms of a school district employing regular (non-ability) random grouping (with enrichment materials for curriculum adjustment), of pupils for classroom assignment.

Assumptions, postulates and proposition

On the basis of the literature cited, certain basic assumptions and postulates are reasonable.

Assumption I: Friendship is phenomenal.

It is assumed that friendship and friends can be identified objectively either by direct observation or indirectly by measures that provide descriptive and correlative information.

Postulate I-1: Friends are classifiable qualitative and quantitatively. A classification of friends may be made on the basis of identifiable and measurable characteristics. These characteristics may be qualitatively described and those characterized by continuity may be enumerated or placed by order or scale.

Postulate I-2: Friendship is revealed by sociometric techniques. The reliability and validity of the sociometric technique is such that those so identified are friends.

In any behavioral study, some expression of faith in the reliability or consistency, of behavior is required. It is reasonable to believe that the formation of friendship is a result of (a) certain situational factors and (b) certain organismic conditions, and their interaction. Specifically stated: The behavior of friends in the formation and maintenance of friendship is a function of environmental influences and of learned and unlearned characteristics of the individual friends.

Assumption II: Friendship is a function of environmental factors and of individual characteristics of friends.

Postulate II-1: Friendship formation is characterized by some degree of consistency. The friends involved are determined reliably to the extent that similar individuals in similar circumstances will form similar social relationships.

Postulate II-2: Friendship formation is a function of the environmental situation in which it takes place. Those situational factors which so vary as to characterize the situation will contribute to the behavior of participating individuals.

Postulate II-3: Friendship formation is a function of the personal characteristics of the interacting individuals. It is determined in part by such personal and social characteristics as educational achievement, socioeconomic class, attitudes, adjustment, values, and other definable personality factors.

Postulate II-4: Friendship formation is not certain. As an aspect of human behavior, the formation of friendship must be considered in the light of probability rather than from the standpoint of invariable cause and effect relationships.

Under the above assumptions and postulates, and on the basis of literature cited, it is reasonable to formulate certain propositions concerning the effects of ability grouping of children on friendship formation which may be employed in the construction of research hypotheses and tested against empirical data. Of the many possible propositions, those upon which this study is to be based are:

1. Ability grouping of children will change the classroom situation, and the ability distribution of the peer group, leading to significant differences in the proportion of friendships within the various classrooms.

2. Ability grouping of children will change the classroom situation, and the ability distribution of the peer group, leading to significant differences in the number of friends of individual pupils within the different classifications of ability.

3. The multiplexity of factors contributing to friendship formation is such that individual differences in achievement, or in socio-economic class, will have no significant effect on individual choice of friends.

4. Certain identifiable and classifiable personal traits and characteristics of individuals will contribute to friendship formation in sufficient degree to result in correlation with the number of friends of those individuals.

STATISTICAL HYPOTHESES

I. There will be no significant difference between districts on the proportion of mutual choices within the classrooms of the district.

II. There will be no significant difference between boys and girls of comparable ability in either school district on the number of mutual choices of each pupil.

III. There will be no significant difference between the similarity in achievement of mutual friends and the similarity in achievement of randomly matched pupils of the same sex and classroom in either district.

IV. There will be no significant difference between the similarity in socioeconomic status of mutual friends and the similarity in socioeconomic status of randomly matched pupils of the same sex and classroom in either district.

V. The number of mutual choices of pupils in both districts will be independent of their socioeconomic status.

VI. Correlation coefficients will be low and positive between the number of mutual choices of each pupil and the following variables:

a. Achievement

b. Adjustment

c. Attitudes

d. Personality

METHODS AND PROCEDURES

The situation

The Bureau of Educational Research of Utah State University, under the direction of Dr. Walter R. Borg, conducted an extensive study and evaluation of ability grouping, as compared with a traditional system of random grouping, under the auspices of the United States Department of Health, Education and Welfare. As an integral part of that study, sociometric, psychometric, socioeconomic, and educational data had been collected which offered the opportunity for this investigation of children's friendship and the effect thereon of ability grouping in elementary school classrooms.

The populations

Weber County and its largest city, Ogden, comprise one demographically homogeneous metropolitan area in northern Utah. By political and administrative subdivision, the school districts of the City and County are separately administered under State authority and regulation. Revenue, teachers' salaries, and school facilities were comparable and in the past both districts had operated under a conventional system of random grouping of pupils for classroom assignment. At the time of this study the total enrollment of the two districts was approximately 31,000 students, 13,000 in the County and 18,000 in the City.

In 1957, the County district instituted a program of three-level homogeneous ability grouping of pupils, based on over-all achievement as modified by teachers' judgment in individual cases. Superintendents

and other school personnel in both districts were dedicated to the successful operation of their own system, took much interest in the study, and cooperated fully with the research tem. The schools of the districts which were included in the study were selected on the basis of comparability of rural-urban environment by Administrative and Guidance Personnel from the cooperating central district Staffs and were highly comparable to the socioeconomic status of the pupils.

The subjects

The schools in the experimental district, hereafter referred to as District A, were grouped into three ability levels on the basis of teacher recommendation and California Achievement Test (CAT) scores in such a way that the superior group generally included the top 25 to 30 percent, the slow or below average group the bottom 25 to 30 percent, and the average groups the remainder of each grade level. There were, in some schools, more than one average group and some were randomly eliminated from the study. It should be noted that teacher recommendation was made before the children were tested in order to avoid the possibility of the teacher being influenced by test scores. In the event that teacher opinion and test result were not in agreement, re-test and adjustment procedures were carried out with borderline cases considered individually. Assignment was flexible enough to allow adjustment in placement upon recommendation by the teacher. Low ability classes were kept smaller, ideally 10 boys and 10 girls, than the high and average ability classes. Curriculum adjustment was achieved by adjusting the rate of presentation for pupils at the three ability levels.

The control (District R) for the study continued its policy of random assignment to classrooms of pupils at grade level. The California Achievement Test was administered to these pupils at the same time as to the District A pupils. "Cutoff" points computed for the District A pupils were applied to establish the ability level classification of District R pupils. Curriculum adjustment in District R was achieved through the use of enrichment materials.

Data were collected as the pupils progressed through the fourth, fifth, and sixth grades which enabled us to replicate the study at each of these grade levels. The pupils were to a large extent the same individuals in each of the three replications.

In May of 1960 the pupils of District A were tested and grouped for the coming sixth grade year on the basis of the California Achievement Test. This test was not administered to the District R pupils but both Districts had taken the Sequential Tests of Educational Progress (STEP) in mathematics, science, reading, and social studies in April of 1960. The STEP scores for the different ability levels of the ability grouped district were used to establish comparable ability level classification of District R pupils. The "cutoff" point for the latter was set at half way between the means of adjacent ability level groups of District A. Specifically these converted total scores were:

Group	Score Range
Accelerated (high ability)	1039 and above
Average	990 to 1038
Developmental (low ability)	989 and below

All of the pupils having reciprocated choices on a "near-sociometric" test using the criterion of "best friend" in the classrooms were identified and were the subjects of this study. The populations of the classrooms and the pairs of friends in each are tabulated in Tables 24 to 29 of Appendix A. In summary they are presented in Table 2.

Table 2. Summary of classroom populations and mutual friends in the two districts on the three replications

Grade[a] District	N	Boys N	Girls N	Total pairs	Pupils included N	%	Boys pairs	Girls pairs	Cross-sex pairs
Fourth									
A	293	154	139	329	250	85.3	163	158	8
R	496	259	237	576	425	85.6	292	249	35
Fifth									
A	455	248	207	532	409	89.9	284	231	17
R	596	307	289	714	517	86.7	338	345	31
Sixth									
A	393	202	191	542	372	94.6	269	258	15
R	709	376	333	881	649	91.5	439	403	39

[a]A = ability grouped; R = randomly grouped.

There were approximately 5 to 15 percent of the pupils who had no reciprocated choice. Approximately one-third of these were those for whom there were no data or who were "new" to the class. Since the mutual choice relationship was the principal dependent variable under consideration in this study, only those having one or more reciprocated choices were included. Those with no reciprocated choice have been identified and will possibly be the subjects of a separate study.

Measures used

A near-sociometric device developed for use in this study employed the following three criteria: (1) the five children in the class who you think are your best friends; (2) the five children in the class with whom you would most like to study; and (3) the five children whom you would like to be with you if you were moved to another classroom. A copy of the administrator's instructions is included in Appendix B. Each pupil was furnished with a roster of the class and indicated his choices by placing check marks opposite names. In this study, only the data from the first criterion in which the pupil selected his best friend were used.

An experimental inventory, The U.S.U. School Inventory, a copy of which is included in Appendix B, was used to assess the attitude of pupils toward school, teacher, and peers.

Standard, commercially available measurement devices used include: the California Achievement Tests and Sequential Tests of Educational Progress for measurement of achievement and assignment to ability level; the SRA Junior Inventory Form S and California Test of Personality to provide scores on personal problems and as measures of personal and social adjustment. Another personality measure was taken from the Objective-Analytic Personality Test Batteries of R. B. Cattell and Associates. This latter factor is what Cattell calls "competent assertiveness" which he feels might be positively correlated with "salesmanship and success in situations requiring social aggressiveness." The Bills Index of Adjustment and Values Elementary and Junior High School forms were used at appropriate grade levels to measure Concept of Self, Acceptance of Self, and Ideal Self.

Socioeconomic data were collected on a U.S.U. Biographical Information Form, a copy of which may be found in Appendix B. These data provide the basis for a five-level socioeconomic status classification similar to that of Hollingshead (1949).

Definition of terms

Friends. In this study "friends" will refer to the pair of pupils naming each other on the sociometric criterion of "best friend."

Random pairs. In the identification of mutual choice pairs, the computer was programmed to punch out two cards for each pair so identified. Each of these cards contained data pertaining to chooser and chosen pupil. From these cards, two decks were assembled, each containing a card for one member of each pair of mutual friends. Each of these decks was then randomized by formal procedures and one of them was sorted into student number, sex, and classroom order. The other deck was then sorted into sex and classroom order and the two were merged with alternate cards filing from each deck. The result was a deck of cards in which alternate cards were paired to form randomly matched pairs of same sex classmates. In this process each pupil became a member of the same number of random pairs as he had mutual friends in his classroom.

Ability level. Pupils of "high," "average," and "low" ability level will refer to those so classified in the district employing ability grouping and to pupils of comparable ability in the district employing random grouping.

District A. will refer to the school district in which ability grouping with adjustments in rate of curricular presentation was employed.

District R will refer to the district in which random grouping with enrichment was employed.

Method of analysis

Although the treatment differences and trends attributable to the ability grouping of pupils were of primary importance, this study was essentially an exploratory and descriptive examination of the classroom friendship of pupils in the upper elementary school grades. In the analysis of variance procedures pupils were grouped in such a way as to examine differences between relatively homogeneous groups on the variables treatment, ability level, sex, and number of mutual friends as appropriate to the particular variable under study. Standard "t" tests were used to measure the significance of differences between means. Chi-square contingency tables were used as a test of independence in the portion of the study concerned with socioeconomic status, and percentages were tabulated to help the reader compare proportions and trends.

An IBM Utility Program of the University Computer Center was used for correlation analysis. In some instances the correlation study was supplemented by analysis of variance and "t" test procedures in order to clarify relationships between the number of mutual friends of pupils and variables in the exploratory and descriptive parts of the study. Most of the data processing and statistical computation was done through the cooperation of the Utah State University Computer Center.

RESULTS AND DISCUSSION

The relevant propositions and statistical hypotheses will be reveiwed as the results of each section of the study are presented. In those sections dealing with experimental variables, treatment differences and trends will be presented first, followed by within-district and/or within-class analysis. The reader is cautioned to carefully note the grouping for treatment comparisons. For some variables (Self Concepts from the Index of Adjustment and Values and Attitudes from the USU Inventory) the major study (Borg, 1964) reports ability level differences which may have been masked by the number of friends grouping of this study. No effort will be made to discuss every significant difference or call attention to every fluctuation in the data. The frame of reference is treatment effect in the experimental results and description of relationship in the exploratory analysis. This is to say that analytical discussion is generalized to the extent necessary to avoid obscuring the meaning of results by detailed recitation of tabulated information.

Proportion of mutual choices

Treatment difference. Proposition 1 stated that ability grouping of children will change the classroom situation, and the ability distribution of the peer group, leading to significant differences in the proportion of friendships within the various classrooms. The null hypothesis formulated under this proposition is supported by the data.

The percentage of pupils having mutual choices at the fourth grade level is almost identical (85.3 and 85.6 percent) in the two districts.

Table 2 presents the percentages for the three replications and it may be seen that there are essentially equal (3 percent) differences between the districts at both the fifth and sixth grade levels. Neither of these differences is large enough to reach the .05 level of confidence. The 3 percent difference in both of the latter replications favors the ability grouped district and might be interpreted as a slight superiority on group cohesiveness for that district. There is a difference in the rate of increase over the three years in that the ability grouped district gained about 5 percent in pupils having mutual choices each year while the randomly grouped district gained only 1 percent from the fourth to fifth grade. It should be noted that at the sixth grade level the high percentage of pupils who have at least one friend (94.6 and 91.5 percent) is such that future gains are likely to be small. These percentages are all larger than those presented for the same grades by Gronlund (1959, p. 108) which range from 67 to 81 percent and show no increase over the advancing grade levels. It is apparent that there was a high degree of group cohesiveness in both of these districts.

Number of mutual friends

Treatment differences. Proposition 2 stated that ability grouping of children will change the classroom situation, and the ability distribution of the peer group, leading to significant differences in the number of friends of individual pupils within the different classifications of ability. Table 3 presents the means and differences between means of the number of mutual friends of boys and girls of similar ability and grade level in the two districts.

Table 3. Mean number of mutual friends, and difference between means for pupils of the same ability and grade level in the two districts

Grade	District	High boys	Avg. boys	Low boys	High girls	Avg. girls	Low girls
4	A	2.76	2.49	2.73	2.64	2.54	2.75
	R	2.93	2.73	2.60	2.94	2.55	2.13
	Difference	.17	.24	.13	.30	.01	.62*
5	A	2.84	2.45	2.75	2.64	2.51	2.78
	R	2.93	2.79	2.12	2.96	2.66	2.37
	Difference	.09	.34	.63*	.32	.15	.41
6	A	2.20	2.78	2.46	2.46	2.78	2.26
	R	2.87	2.73	2.24	2.82	2.39	1.94
	Difference	.67**	.05	.22	.36	.39	.32

**Significant at .01 level.
*Significant at .05 level.

A definite pattern and directional tendency is evident which holds for both boys and girls at all three grade levels. In this, high ability boys have more mutual friends in the randomly grouped than in the ability grouped district with the difference for the sixth grade significant at the .01 level of confidence. Differences, favoring randomly grouped girls of high ability in all three grades are consistent in direction and magnitude even though they do not reach significance. Both boys and girls of low ability consistently show a larger mean number of mutual friends in the ability-grouped district. The difference between low-ability girls in the fourth grade and between low-ability boys in the fifth grade are significant at the .05 level of confidence. Pupils of average ability show no significant treatment differences and no consistent directional tendency over the three grades. In the fourth and fifth grades average

ability boys have a slightly larger man number of mutual friends but the difference practically disappears in the sixth grade. Average ability girls show no treatment difference in the fourth grade and the differences at the fifth and sixth grade level are in opposite directions.

We can reject the null hypothesis and state, with a high degree of confidence, that there is a true difference in the number of mutual friends of pupils of high and low ability attributable to the grouping treatments. The data indicate that high-ability pupils have fewer, and low-ability pupils have more, mutual friends in ability-grouped classrooms than they do in the traditional classrooms which are more heterogeneous on the ability variable.

Ability level differences. Means and differences between mean number of mutual friends of pupils of different ability level with district, grade, and sex held constant, are reported in Tables 4 and 5.

Within the ability-grouped district only 1 of 18 differences (which is almost the 1 in 20 we could expect by change when no true difference existed) was significant at the .05 level. In this the high-ability sixth grade boys have a smaller number of mutual friends than do their average ability peers. Acceptance or rejection of this difference must depend on evidence in the rest of the table where it can be seen that for both boys and girls, pupils of high ability had more friends than did those of average ability in the fourth and fifth grades. It is also notable that low-ability pupils of both sexes show a loss in mean number of friends at the sixth grade level over their relatively high mean in the fourth and fifth grades. One would need to be cautious in prediction on the basis of these data. However, it is possible that

Table 4. Means and differences between means of the number of mutual friends of pupils of different ability levels within the ability grouped district

Ability group	Boys grade			Girls grade		
	4	5	6	4	5	6
High	2.76	2.84	2.20	2.64	2.64	2.46
Average	2.49	2.45	2.78	2.54	2.51	2.78
Difference	.27	.39	.58*	.10	.13	.32
High	2.76	2.84	2.20	2.64	2.64	2.46
Low	2.73	2.75	2.46	2.75	2.78	2.26
Difference	.03	.09	.26	.11	.14	.20
Average	2.49	2.45	2.78	2.54	2.51	2.78
Low	2.73	2.75	2.46	2.75	2.78	2.26
Difference	.24	.30	.32	.21	.27	.52

Table 5. Means and differences between means of the number of mutual friends of pupils of different ability levels within the randomly grouped district

Ability group	Boys grade			Girls grade		
	4	5	6	4	5	6
High	2.93	2.93	2.87	2.94	2.96	2.82
Average	2.73	2.79	2.73	2.55	2.66	2.39
Difference	.20	.14	.14	.39	.30	.43*
High	2.93	2.93	2.87	2.94	2.96	2.82
Low	2.60	2.12	2.24	2.13	2.37	1.94
Difference	.33	.81**	.63**	.81**	.59*	.88**
Average	2.73	2.79	2.73	2.55	2.66	2.39
Low	2.60	2.12	2.24	2.13	2.37	1.94
Difference	.13	.67**	.49*	.42	.29	.45

**Significant at .01 level.
*Significant at .05 level.

developmental factors, e.g., changes in attitudes and values, are operative which favor the average over the deviant ability level and one should be alert to other differences which might offer an explanatory concept.

Within the randomly-grouped district, there is a clear tendency for higher ability pupils to have more, and lower ability pupils fewer, mutual friends. Table 5 shows 8 of 18 possible differences to be significant. All but one of these significant differences involve the low-ability pupils. High-ability girls have a larger number of friends than do average or low-ability girls in every comparison with two, of six possible, significant at the .01 level, and two at the .05 level of confidence. Boys show essentially the same tendency as the girls. The differences between high and average ability boys are in favor of the higher ability boy at all grade levels, indicating a consistent difference favoring the high-ability pupil. Of six comparisons involving low-ability boys, four are significant, three at the .01 level. All non-significant differences were in the same direction as those that are significant.

We can reject the null hypothesis with respect to ability level differences with a high degree of certainty for the randomly grouped district, while it must be accepted for the ability-grouped district.

It may be concluded that in randomly grouped classrooms, pupils of higher ability have more mutual friends, and conversely, pupils of lower ability have fewer friends, than do their classmates of different ability. Ability grouping tends to produce a more even distribution of mutual friends over the three ability levels.

Sex differences. Reference is made to Table 6 in which it can

be seen that there were no significant differences in mean number of mutual friends of boys as compared to girls of the same district, grade, and ability. The differences are extremely small and a search for tendency shows that they are at random in direction and magnitude. We fail to reject a null hypothesis of no significant differences between the sexes. The evidence will support a positive statement to the effect that boys and girls of similar ability tend to have about the same amount of success in finding mutual friends among their classmates as do their peers of the opposite sex.

Table 6. Means and differences between means of the number of mutual friends of boys and girls in the two districts

Grade	Sex	District A Ability			District R Ability		
		High	Avg.	Low	High	Avg.	Low
4	Boys	2.76	2.49	2.73	2.93	2.73	2.60
4	Girls	2.64	2.54	2.75	2.94	2.55	2.13
	Difference	.12	.05	.02	.01	.18	.47[a]
5	Boys	2.84	2.45	2.75	2.93	2.79	2.12
5	Girls	2.64	2.51	2.78	2.96	2.66	2.37
	Difference	.20	.06	.03	.03	.13	.25
6	Boys	2.20	2.78	2.46	2.87	2.73	2.24
6	Girls	2.46	2.78	2.26	2.82	2.39	1.94
	Difference	.26	.00	.20	.05	.34	.30

[a]There are no significant differences in this table.

Academic achievement

The difference between friends. The hypothesis that the multiplexity of factors contributing to friendship formation is such that individual differences in academic achievement would have no significant effect on individual choice of friends was examined by comparing differences in achievement between mutual friends and random pairs of pupils of the same sex taken from the same classroom. Table 7 reports the results and it can be seen that the difference between friends on the CAT grade placement (fourth and fifth grade), and STEP total (sixth grade) scores is almost the same as that between random pairs. As might be expected, the mutual friends are slightly more alike on this variable. There are two significant differences, and both are in the randomly-grouped district. At the fourth grade level, the difference is one-tenth of one grade placement for both districts but the larger N of the randomly-grouped district brings it within the .05 level of confidence. The randomly-grouped sixth grade mutual friends were significantly (p. .01) more alike than random pairs on the STEP total score, but again the difference is extremely small. Although we must reject the null hypothesis, the magnitude of the differences is such as to indicate that achievement is a very minor factor in mutual friendship choice during the intermediate grades.

Treatment differences. As an exploratory matter, we compared the differences between mutual friends of the two districts (Table 31, Appendix A). The effect of ability grouping was very clear in the highly significant differences at all grade levels. The obvious conclusion is that difference between friends on the academic achievement variable

Table 7. Achievement[a] differences between mutual friends and between random pairs of pupils of the same sex and classroom

Grade	District	Pupils	N[b]	Mean	SD	SE_D	"t"
4	A	Random pairs	280	.79	.72		
		Friends	302	.68	.70		
		Difference		.11		.06	1.83
	R	Random pairs	343	1.11	.72		
		Friends	374	1.01	.70		
		Difference		.01*		.05	2.00
5	A	Random pairs	215	.57	.72		
		Friends	230	.55	.60		
		Difference		.02		.06	.33
	R	Random pairs	230	1.01	.72		
		Friends	248	.90	.60		
		Difference		.11		.06	1.83
6	A	Random pairs	502	47.7	94.7		
		Friends	543	38.5	88.3		
		Difference		9.2		5.68	1.62
	R	Random pairs	805	85.3	94.7		
		Friends	861	70.2	88.3		
		Difference		15.1**		4.49	3.36

[a]Fourth and fifth grades, CAT grade placement, sixth STEP total, scores.
[b]N for random pairs reduced by self matching in randomization.
**Significant at .01 level.
*Significant at .05 level.

is quite directly a function of the range of ability within the classroom from which the pupil was required to choose his friends in this study.

Concept of Self

Treatment differences. Examination of the arrays of means of Table 9 reveals that the mean Self Concept scores of pupils grouped by district, grade and number of friends, are consistently higher for the randomly grouped district. The differences at grade levels four and five are very small with only 1 of the 10 reaching the .05 level of significance. Significant differences (p. .01) appear at the sixth grade level, and these too, favor the randomly-grouped district.

A reasonable inference would be that ability grouping is having an adverse effect on the Self Concept of pupils, and that it becomes more pronounced as they mature and advance through the grades. This seems to be so even though the pupils enjoying some social success.

Number of mutual friends and Self Concept. Within-district comparisons of pupils grouped by number of friends produced the differences in Table 10. There were no significant differences in the fourth or fifth grades of either district, but there is a slight tendency, evident on examination of the means, for pupils with more mutual friends to have a better Self Concept. Significant differences occur in both districts' sixth grades. Within the ability-grouped district, those pupils with five mutual friends have a significantly higher mean score on this variable than do their peers with one, two, or three such friends. Pupils with four friends are significantly higher than those with only one. Those

pupils of the randomly-grouped sixth grade who have only one mutual friend have a significantly lower Self Concept than do their classmates with more friends with three of the four differences significant at the .01 level.

Correlation coefficients for number of mutual friends vs. Self Concept yield essentially the same information. For grades four and five the coefficients range from -.004 to .099 as tabulated in Table 8. Coefficients of .198 for the ability-grouped district and .123 for the randomly-grouped districts' sixth grades are significantly (p. .01) greater than zero but are too small to be of predictive value.

Table 8. Correlation of IAV variables and number of mutual friends

Grade	District	N	Concept of Self	Ideal Self	Discrepancy score	Acceptance of Self[a]
4	A	181	.099	-.117	-.159*	
	R	321	-.004	.066	.076	
5	A	378	.099	-.112*	-.139*	
	R	502	.086	.056	-.030	
6	A	299	.198**	.077	-.143*	.195**
	R	564	.123**	.123**	-.030	.105*

**Significant at .01 level.
*Significant at .05 level.
[a]A score on Acceptance of Self from the Elementary School Form of the IAV was not included in the data analyzed in this study.

Table 9. Means and "t" test of differences between mean scores on Bills Index of Adjustment and Values of pupils grouped by district, grade, and number of mutual friends

Grade	Number of friends	Concept of Self			Ideal Self			Discrepancy		
		District			District			District		
		A	R	"t"	A	R	"t"	A	R	"t"
4	1	43.76	45.40	NS[a]	49.95	49.24	NS	6.68	4.15	2.87**
	2	44.80	45.93	NS	50.47	50.00	NS	5.96	4.24	2.56*
	3	44.42	44.82	NS	49.33	49.78	NS	5.30	4.90	NS
	4	44.60	44.97	NS	49.77	49.44	NS	5.60	5.28	NS
	5	45.82	46.39	NS	49.12	50.42	2.17*	3.76	4.45	NS
5	1	43.71	44.77	NS	50.64	49.44	2.67**	7.18	4.80	3.70**
	2	44.08	44.92	NS	49.81	49.76	NS	5.81	4.90	NS
	3	44.47	45.70	2.25*	49.59	49.75	NS	5.38	4.31	2.13*
	4	45.19	45.88	NS	49.73	49.81	NS	4.99	4.12	NS
	5	44.62	45.47	NS	49.66	49.95	NS	5.75	5.05	NS
6	1	82.41	85.90	NS	93.86	94.94	NS	12.43	10.32	NS
	2	83.62	90.91	5.75**	95.42	99.14	3.06**	12.79	9.05	3.00**
	3	84.39	88.81	3.50**	94.78	98.40	2.72**	11.85	10.38	NS
	4	85.77	91.29	3.86**	96.33	100.23	2.95**	12.04	9.12	2.32*
	5	88.62	91.11	NS	96.38	99.08	NS	9.32	8.87	NS

**Significant at .01 level.
*Significant at .05 level.
[a]NS indicates that the difference between district means is not significant.

Table 10. Significant differences between mean Self Concept scores of pupils with different numbers of mutual friends within the districts

District	Grade	No. of friends	Mean	No. of friends 2	3	4	5
A	4	1	43.76	NS[a]	NS	NS	NS
		2	44.80		NS	NS	NS
		3	44.42			NS	NS
		4	44.60				NS
		5	45.82				
	5	1	43.71	NS	NS	NS	NS
		2	44.08		NS	NS	NS
		3	44.47			NS	NS
		4	45.19				NS
		5	44.62				
	6	1	82.41	NS	NS	2.05*[b]	3.43**
		2	83.62		NS	NS	2.76**
		3	84.39			NS	2.52*
		4	85.77				NS
		5	88.62				
R	4	1	45.40	NS	NS	NS	NS
		2	45.93		NS	NS	NS
		3	44.82			NS	NS
		4	44.97				NS
		5	46.39				
	5	1	44.77	NS	NS	NS	NS
		2	44.92		NS	NS	NS
		3	45.70			NS	NS
		4	45.88				NS
		5	45.47				
	6	1	85.90	3.89**	2.10*	3.44**	2.97**
		2	90.91		2.09*	NS	NS
		3	88.81			2.05*	NS
		4	91.29				NS
		5	91.11				

**Significant at .01 level.
*Significant at .05 level.
[a]NS indicates that the difference between means of pupils having 1 friend and those having 2 friedns is not significant.
[b]The critical ratio ("t" values given) shows that the difference between those having 1 friend and those having 4 friends is significant at the .05 level.

It is not surprising that there is a positive relationship between Concept of Self and successful social efforts. The obvious inference is that having a larger number of mutually satisfying friendships may be both cause and effect of higher Self Concept.

The data of this section of the study indicate two tendencies. First, ability grouping tends to lower Self Concept. This might be explained as result of stigma attaching to assignment to a lower ability classroom and, for high-ability pupils, self comparison with ability peers. Second, to the extent that ability grouping aids the pupil of lower ability to make more friends and experience social success, it will contribute to the development of a better Self Concept.

Self Acceptance

Treatment differences. The junior high school form of the Bills Index of Adjustment and Values yields a score purporting to be a measure of Self Acceptance. This device was administered to the sixth grade. A score on the Elementary School form of the IAV administered to the fourth and fifth grades was not included in this analysis. The means and differences in Tables 11, 12, and 13 show that there is a tendency for pupils in the randomly-grouped district to be more self accepting than pupils with the same number of friends in the ability-grouped district. The difference for all but the group having five friends favor the randomly-grouped district with that of the two-friends group significant at the .01 level. However, pupils with five friends in the ability-grouped district were higher than the comparable group in the randomly-grouped district. We must reject the null hypothesis on

Table 11. Means and "t" test of differences between means of Self Acceptance scores of sixth grade pupils with the same number of mutual friends in the two districts

Number of friends	Mean Self Acceptance District A	Mean Self Acceptance District R	Difference	"t"
1	85.00	86.37	1.37	NS[a]
2	87.80	91.79	3.99	2.63**
3	88.48	89.95	1.47	NS
4	88.93	91.66	3.73	NS
5	93.28	92.24	1.04	NS

these data, and conclude that, though it is small, there is a true difference, favoring the randomly-grouped district, on the variable Self Acceptance.

Number of mutual friends and Self Acceptance. Within the ability-grouped district, those pupils with five friends show (Table 12) a significantly higher Self Acceptance than do any of the groups with fewer friends, and those with four friends are significantly higher than those with one friend. Two of the five significant differences are at the .01 level of confidence.

Randomly grouped pupils with one mutual friend are significantly lower in Self Acceptance than any group with more friends, with three or four differences significant at the .01 level.

We may be highly confident that higher Self Acceptance is associated with having more mutual friends in the classroom. The correlation of these two variables is .195 (p. .01) in the ability-grouped district, and .105 (p. .05) in the randomly-grouped district. It is interesting to note that these coefficients are very nearly the same as those for number of friends vs. Self Concept.

Table 12. Significance of the differences between mean Self Acceptance scores of pupils with different numbers of friends within the ability-grouped district[a]

Number of friends	2	3	4	5
1	NS[b]	NS	1.99*	4.18**
2		NS	NS	2.71**
3			NS	2.43*
4				2.30*

Table 13. Significance of the differences between mean Self Acceptance scores of pupils with different numbers of friends within the randomly-grouped district[a]

Number of friends	2	3	4	5
1	3.46**	2.03*	2.79**	2.69**
2		NS	NS	NS
3			NS	NS
4				NS

[a]"t" values are given in the table.

[b]NS indicates that difference between means is not significant.

**Significant at .01 level.

*Significant at .05 level.

Ideal Self

Treatment differences. Reference is made to Table 9 where it may be seen that fourth grade pupils in the two districts have very nearly the same mean scores on this variable. Differences for all but that group with the most (five) friends are small and favor neither grouping practice. Pupils with five friends in the randomly-grouped district have a significantly (p. .05) higher Ideal Self score than does the comparable group in the ability-grouped district.

In the next replication, when the pupils were in the fifth grade, we again find four non-significant differences, but here the deviant group is that in which the pupils have only one friend. This difference is significant at the .01 level and favors those who were in the ability-grouped district.

The Junior High School form of the IAV was administered to the sixth grade. This form is a longer (35 as compared to 19 trait words) instrument than the Elementary School form and the two do not correlate very highly (Borg, 1954, p. 246). On the Junior High School form, the sixth grade pupils show a clear treatment difference in Ideal Self. In this the randomly-grouped district is favored on all five comparisons with three of the differences highly (p. .01) significant. It must be concluded that there are factors operating in the ability grouped situation which tend to produce a lower Ideal Self as measured by the Junior High School form of the IAV. This effect does not appear to be the result of the relative social success (number of friends) of the pupil.

Number of mutual friends and Ideal Self. Within the ability-grouped district, pupils with different numbers of friends at the fourth and fifth

grade level show little difference in their Ideal Self scores. There is a slight tendency for pupils with fewer friends in these two grades to have a higher Ideal Self score but the tendency is reversed in the sixth grade where those with more friends have higher means.

The over-all picture in Table 14 shows that the randomly grouped pupils show essentially the same tendencies on this variable as do those in the ability-grouped district. Differences at the fourth grade level are very small with no apparent direction; at the fifth grade level a slight tendency appears which becomes more pronounced in the sixth grade. In this the groups having more friends are higher in Ideal Self than are those with fewer friends. One deviant group (those with only one friend in the randomly-grouped district) produced highly significant differences when compared with groups having more friends.

Correlation coefficients for number of friends vs. Ideal Self scores were computed and found to be very low (Table 8). The range (-.12 to .12) is such that one must conclude that the true correlation on these variables is essentially zero even though the large N would classify some of them as significant.

In general, it appears that children in the fourth and fifth grades of the two grouping systems have about the same Ideal Self image as measured by the Elementary School form of the IAV. The Junior High School form of the IAV measures an Ideal Self that appears to be associated with the practice of ability grouping and relative success in the formation of mutual friendships.

Table 14. Significant differences between mean Ideal Self scores of pupils with different number of friends within the districts

District	Grade	No. of friends	Mean	No. of friends 2	3	4	5
A	4	1	49.95	NS[a]	NS	NS	NS
		2	50.47		2.05*[b]	NS	NS
		3	49.33			NS	NS
		4	49.77				NS
		5	49.12				
	5	1	50.64	1.98*	2.69**	NS	NS
		2	49.81		NS	NS	NS
		3	49.59			NS	NS
		4	49.73				NS
		5	49.66				
	6	1	93.86	NS	NS	NS	NS
		2	95.42		NS	NS	NS
		3	94.78			NS	NS
		4	96.33				NS
		5	96.38				
R	4	1	49.24	2.02*	NS	NS	2.37*
		2	50.00		NS	NS	NS
		3	49.78			NS	NS
		4	49.44				NS
		5	50.42				
	5	1	49.44	NS	NS	NS	NS
		2	49.76		NS	NS	NS
		3	49.75			NS	NS
		4	49.81				NS
		5	49.95				
	6	1	94.94	3.35**	2.53*	3.74**	2.28*
		2	99.14		NS	NS	NS
		3	98.40			NS	NS
		4	100.23				NS
		5	99.08				

**Significant at .01 level.
*Significant at .05 level.
[a]NS indicates that the difference between means of pupils having 1 friend and those having 2 friends is not significant.
[b]The critical ratio ("t" values given) shows that the difference between those having 2 friends and those having 3 friends is significant at the .05 level.

Discrepancy (Ideal Self - Self Concept)

It will be recalled that the ability grouped pupils tended to have lower scores on both Ideal Self and Self Concept than did the randomly grouped pupils who were experiencing similar social success. The Discrepancy score is an intra-individual difference variable which should reflect a pupil's self satisfaction.

Treatment differences. Correlation between number of friends and Discrepancy score was zero or near zero for all three grades in the randomly-grouped district. In the ability-grouped district low (-.14), negative, but significant correlation was found. This district difference was corroborated by the differences between Discrepancy score means. Six of 15 differences in Table 9 are significant. At each grade level the highly (p. .01) significant differences are those showing a larger Discrepancy for pupils with only one or two friends in the ability-grouped district. Other differences throughout the table support the conclusion that there is a definite tendency for ability grouped pupils to show a greater difference between Ideal Self and Self Concept than do pupils with the same number of friends in the randomly-grouped district.

Number of mutual friends and discrepancy score. In 60 comparisons between pupils grouped by number of friends (Table 15) there were only 4 significant differences between means on this variable. There were no tendencies attributable to the number of friends of pupils in the randomly-grouped district. In the ability-grouped district, the array of means shows a tendency at all grade levels for pupils with fewer friends to have higher discrepancy scores. The significant differences

Table 15. Significant differences between mean discrepancy scores (Ideal Self - Self Concept) of pupils with different numbers of mutual friends within the districts

District	Grade	No. of friends	Mean	No. of friends 2	3	4	5
A	4	1	6.68	NS[a]	NS	NS	2.26*[b]
		2	5.96		NS	NS	NS
		3	5.30			NS	NS
		4	5.60				NS
		5	3.76				
	5	1	7.18	2.01*	2.55*	2.93**	NS
		2	5.81		NS	NS	NS
		3	5.38			NS	NS
		4	4.99				NS
		5	5.75				
	6	1	12.43	NS	NS	NS	NS
		2	12.79		NS	NS	NS
		3	11.85			NS	NS
		4	12.04				NS
		5	9.32				
R	4	1	4.15	NS	NS	NS	NS
		2	4.24		NS	NS	NS
		3	4.90			NS	NS
		4	5.28				NS
		5	4.45				
	5	1	4.80	NS	NS	NS	NS
		2	4.90		NS	NS	NS
		3	4.31			NS	NS
		4	4.12				NS
		5	5.05				
	6	1	10.32	NS	NS	NS	NS
		2	9.05		NS	NS	NS
		3	10.38			NS	NS
		4	9.12				NS
		5	8.87				

**Significant at the .01 level.
*Significant at the .05 level.
[a]NS indicates that the difference between pupils having 1 friend and those having 2 friends is not significant.
[b]The critical ratio ("t" values given) shows that the difference between those having 1 friend and those having 5 friends is significant at the .05 level.

are those between pupils with only one mutual friend and those with more friends in the fourth and fifth grades.

Attitude toward Peers

Treatment differences. Table 16 shows significant differences in Attitude Toward Peers at all grave levels. This treatment difference appears to be independent of the pupil's number of friends. In the fourth grade, pupils with three friends show the significant difference. The fifth grade group with five friends, and the sixth grade groups with two or four friends, are significantly different on this variable. When the arrays of means are examined for trends, it appears that pupils in the randomly-grouped district consistently have a more favorable Attitude Toward Peers than do pupils with the same number of friends in the ability-grouped district. It is possible that the more competitive situation in the randomly-grouped district demands that a pupil show a better attitude toward his peers in order to win the same number of friends as his contemporary in the ability grouped classroom.

Number of mutual friends and Attitude Toward Peers. The results of within-district comparison of groups of pupils with different numbers of friends is presented in Table 18. At the fourth grade level, only 1 of 20 differences is significant (p. .05). For both the fifth and sixth grades there are a number of highly significant differences. These differences all indicate that a more desirable Attitude Toward Peers is associated with having more mutual friends. It would not be unreasonable to speculate that there is an interaction between these variables. A desirable attitude toward one's peers should contribute to successful social efforts, and conversely, successful social efforts should contribute

Table 16. Means and "t" test of differences between mean scores on USU School Inventory attitudes of pupils grouped by district, grade, and number of mutual friends

Grade	Friends	Attitude Toward School			Attitude Toward Teacher			Attitude Toward Peers		
		District			District			District		
		A	R	"t"	A	R	"t"	A	R	"t"
4	1	12.28	12.75	NS	39.61	40.14	NS	14.36	15.42	NS
	2	12.15	12.25	NS	40.35	38.37	NS	15.60	14.96	NS
	3	10.60	11.65	NS	38.40	38.72	NS	13.97	16.43	2.17*
	4	11.42	12.69	NS	39.58	39.52	NS	15.04	16.88	NS
	5	10.88	11.07	NS	35.82	38.14	NS	16.53	17.10	NS
5	1	12.03	12.43	NS	39.90	40.79	NS	14.01	14.71	NS
	2	11.30	11.99	NS	37.40	39.32	NS	13.84	15.37	NS
	3	11.05	12.50	2.43*	38.57	40.52	NS	15.75	16.40	NS
	4	12.97	13.04	NS	41.95	38.93	2.00*	17.02	17.68	NS
	5	10.78	12.85	2.06*	35.78	39.12	NS	15.48	18.86	2.75**
6	1	11.52	11.65	NS	38.33	38.27	NS	12.11	13.74	NS
	2	11.10	12.00	NS	38.49	39.34	NS	13.97	15.83	2.60**
	3	11.98	12.26	NS	39.22	38.65	NS	15.65	15.50	NS
	4	11.56	12.56	NS	39.00	38.88	NS	15.89	17.45	2.20*
	5	11.70	13.41	2.15*	38.82	40.26	NS	17.36	18.23	NS

**Significant at .01 level.
*Significant at .05 level.

Table 17. Correlation of attitudes toward peers, teacher, and school and number of mutual friends

District	Grade	N	Attitude toward Peers	Attitude toward Teacher	Attitude toward School
A	4	149	.067	-.108	-.130
R	4	303	.130*	-.045	-.073
A	5	304	.182**	.008	.011
R	5	451	.255**	-.052	.069
A	6	358	.287**	.022	.028
R	6	560	.227**	.034	.118**

**Significant at .01 level
*Significant at .05 level

to the formation of better attitudes toward one's peers. Highly significant correlation coefficients (.18 to .29) at the fifth and sixth grade levels support the above findings. The magnitude of these coefficients is such that one must note that Attitude Toward Peers is only one factor in the formation of mutual friendship.

Attitude Toward School

Treatment differences. In Table 16 one may see that there is a consistent tendency at all grade levels for the Attitude Toward School of ability grouped pupils to be less favorable than is that of the randomly grouped pupils having the same number of mutual friends. Three of 15 differences are significant (p. .05) and we are quite certain that there is a true treatment difference on this variable. It should be pointed out that in this grouping, pupils are not differentiated on ability level and that there may be a within-group difference attributable to ability level differences. This could be profitably examined in further analysis.

Table 18. Significant differences between mean Attitude Toward Peers scores of pupils with different numbers of mutual friends within the districts

District	Grade	No. of friends	Mean	No. of friends 2	3	4	5
A	4	1	14.36	NS[a]	NS	NS	NS
		2	15.60		NS	NS	NS
		3	13.97			NS	NS
		4	15.04				NS
		5	16.53				
	5	1	14.01	NS	NS	3.39**[b]	NS
		2	13.84		2.07*	3.37**	NS
		3	15.75			NS	NS
		4	17.02				NS
		5	15.48				
	6	1	12.11	2.00*	3.73**	4.18**	5.01**
		2	13.97		NS	2.35*	3.59**
		3	15.65			NS	NS
		4	15.89				NS
		5	17.36				
R	4	1	15.42	NS	NS	NS	NS
		2	14.96		NS	1.99*	NS
		3	16.43			NS	NS
		4	16.88				NS
		5	17.10				
	5	1	14.71	NS	2.23*	3.81**	4.99**
		2	15.37		NS	3.02**	4.19**
		3	16.40			NS	2.89**
		4	17.68				NS
		5	18.86				
	6	1	13.74	2.89**	2.23*	4.71**	4.77**
		2	15.83		NS	2.60**	3.19**
		3	15.50			2.89**	3.37**
		4	17.45				NS
		5	18.23				

**Significant at .01 level.
*Significant at .05 level.
[a]NS indicates that the difference between means of pupils having 1 friend and those having 2 friends is not significant.
[b]The critical ratio ("t" values given) shows that the difference between those having 1 friend and those having 4 friends is significant at the .01 level.

Number of friends and Attitude Toward School. One deviant group, those pupils with four friends in the fifth grade (see Table 19), accounts for all of the significant differences in Attitude Toward School of pupils with different numbers of friends in the ability-grouped district. As we will see later, this group also accounts for most of the significant differences in attitude toward teacher and it is quite likely that they do have a different attitude but it is not possible to attribute this to the controlled variables of this study.

Randomly grouped pupils in the fourth and fifth grades show no significant differences but there is a tendency in the array of means which is corroborated by significant differences, at the sixth grade level, for pupils with more friends to have a better Attitude Toward School. It is possible that this is the beginning of an emerging attitude differential which would be more pronounced in the higher grades. One would be extremely cautious in formulating a statement of positive relationship of these variables. The correlation coefficients are very small as may be seen in Table 17.

Attitude Toward Teacher

Treatment differences. One would expect that Attitude Toward Teacher would be more directly a function of teacher personality than of grouping practice, and since we have no measure or manipulation of such a variable, we are not surprised to find that there is no apparent tendency or differential on grouping effect in Table 16. The one significant difference (p. .05) could well be a function of sample and we conclude that it is.

Number of mutual friends and Attitude Toward Teacher. The same

Table 19. Significant differences between mean Attitude Toward School scores of pupils with different number of mutual friends within the districts

District	Grade	No. of friends	Mean	No. of friends 2	3	4	5
A	4	1	12.28	NS[a]	NS	NS	NS
		2	12.15		NS	NS	NS
		3	10.60			NS	NS
		4	11.42				NS
		5	10.88				
	5	1	12.03	NS	NS	NS	NS
		2	11.30		NS	2.47*[b]	NS
		3	11.05			3.01**	NS
		4	12.97				2.58*
		5	10.78				
	6	1	11.52	NS	NS	NS	NS
		2	11.10		NS	NS	NS
		3	11.98			NS	NS
		4	11.56				NS
		5	11.70				
R	4	1	12.75	NS	NS	NS	NS
		2	12.25		NS	NS	NS
		3	11.65			NS	NS
		4	12.69				NS
		5	11.07				
	5	1	12.43	NS	NS	NS	NS
		2	11.99		NS	NS	NS
		3	12.50			NS	NS
		4	13.04				NS
		5	12.85				
	6	1	11.65	NS	NS	NS	2.59*
		2	12.00		NS	NS	2.33*
		3	12.26			NS	NS
		4	12.56				NS
		5	13.41				

**Significant at .01 level.

*Significant at .05 level.

[a]NS indicates that the difference between means of pupils having 1 friend and those having 2 friends is not significant.

[b]The critical ratio ("t" values given) shows that the difference between those having 2 friends and those having 4 friends is significant at the .05 level.

deviant group that accounts for the differences in attitude toward school, accounts for the three significant differences in Table 20. The favorable attitude of pupils with four friends in the ability grouped fifth grade are probably true differences, but we do not have data in this study upon which we could base an explanation. Very small, positive and negative, correlation coefficients as reported in Table 17 will support the conclusion that there is little or no relationship between a pupil's success in forming mutual friendships and his attitude toward his teacher.

Additional correlates of pupil's number of mutual friends

It was our hypothesis that there would be a low-positive correlation between number of friends of pupils and measures of certain desirable personality traits. Table 21 reports coefficients for four variables not reported elsewhere.

California Test of Personality. The sum of the scores on five selected components (Sense of Personal Worth, Feeling of Belonging, Withdrawing Tendencies, Anti-social Tendencies, and School Relations) of this test constituted the variable correlated here. It should be pointed out that these components are not names of general traits, but are, rather, names of groupings of items purporting to measure more or less specific tendencies to feel, think, and act in certain ways. The correlation coefficients are all low-positive (.14 to .20) and significant for both districts at all three grade levels. These are consistent with the hypothesis and of about the magnitude one could expect by inference from the correlates of sociometric choice as reported throughout the literature.

Table 20. Significant differences between mean Attitude Toward Teacher scores of pupils with different numbers of mutual friends within the districts

District	Grade	No. of friends	Mean	No. of friends 2	3	4	5
A	4	1	39.61	NS[a]	NS	NS	NS
		2	40.35		NS	NS	NS
		3	38.40			NS	NS
		4	39.58				NS
		5	35.82				
	5	1	39.90	NS	NS	NS	NS
		2	37.40		NS	2.80**	NS
		3	38.57			2.25*	NS
		4	41.95				3.05**
		5	35.78				
	6	1	38.33	NS	NS	NS	NS
		2	38.49		NS	NS	NS
		3	39.22			NS	NS
		4	39.00				NS
		5	38.82				
R	4	1	40.14	NS	NW	NS	NS
		2	39.37		NS	NS	NS
		3	38.72			NS	NS
		4	39.52				NS
		5	38.14				
	5	1	40.79	NS	NS	NS	NS
		2	39.32		NS	NS	NS
		3	40.52			NS	NS
		4	38.93				NS
		5	39.12				
	6	1	38.27	NS	NS	NS	NS
		2	39.34		NS	NS	NS
		3	38.65			NS	NS
		4	38.88				NS
		5	40.26				

**Significant at .01 level.

*Significant at .05 level

[a]NS indicates that the difference between means of pupils having 1 friend and those having 2 friends is not significant.

[b]The critical ratio ("t" values given) shows that the differences between those having 2 friends and those having 4 friends is significant at the .01 level.

Table 21. Correlation of number of mutual friends with selected personality variables

Grade	District	N[a]	SRA Serious Problems	SRA Inventory Total	Cattell Factor U.I. 16	California Personality Test[b]
4	A	180	-.125	-.173*	-.074	.141*
	R	317	-.153**	-.085	.068	.198**
5	A	380	-.113*	-.158**	-.026	.206**
	R	500	-.167**	-.146**	.202**	.194**
6	A	302	-.104	-.150**	-.130*	.142*
	R	466	-.189**	-.103*	.036	.149*

[a]The reported N is for Cattel and California tests; there were from 10 to 20 more individuals included on the SRA Inventory.

[b]The variable was the sum of the scores on five selected components from the California Test of Personality, Sense of Personal Worth, Feeling of Belonging, Withdrawing Tendencies, Anti-social Tendencies, and School Relations.

SRA Junior Inventory Serious Problems. Form S of this device requires the child to rate 168 problem statements in five general areas--school, home, self, other people, and things in general. He may rate a particular statement as "not a problem," a "little" problem, "middle-sized" problem, or "big" problem. The Serious Problems variable in our study is the sum of the "big" problems. We found the correlation of Serious Problems and number of mutual friends to be significant (p. .01) but low (-.15 to -.19) at all three grade levels of the randomly-grouped district. The coefficients for the fourth and sixth grade in the ability-grouped district were not significantly greater than zero and the significant (p. .05) correlation at the fifth grade was very low (-.11). The result would indicate that the felt magnitude of a pupil's problems is associated with the number of mutual friends he finds in the randomly

grouped classroom, but not in the ability grouped classroom. We have no basis for explanation of the district differential. One might speculate that the child with more friends has a greater opportunity to discuss and share his problems with those friends with a resulting decrease in the problem's felt magnitude. It is suggested that such a variable might be profitably utilized in research in such areas as "group" or "play" therapy.

SRA Junior Inventory Total. The low negative (-.08 to -.17) coefficients of correlation between number of mutual friends and the SRA Total are all significant except that of the randomly grouped fourth grade. We see no immediate explanation for the fact that the ability grouped puils show a higher correlation on this variable than on the Serious Problems variable while those of the randomly grouped district show the opposite tendency. These coefficients are consistent with our hypothesis and will lend support to the proposition that a multiplexity of factors enter into friendship formation.

Cattell Factor U.I. 16. Very much as an exploratory matter, we computed the correlation between number of mutual friends and a measure from Cattell's Objective-Analytic Test Batteries that he calls "competent assertiveness." Cattell suggests that an individual high in this factor does a whole range of things well, but that the dimension is not general intelligence. It is also suggested that the factor might be correlated with "success in situations requiring social aggressiveness." We found four of six coefficients to be non-significant and both positive and negative. This factor does not seem to be correlated with success in classroom friendship formation. Howwver, we did get one highly significant coefficient (.202) for the randomly grouped fifth grade and

one low negative and significant (p. .05) coefficient for the ability grouped sixth grade. It might be noted that the signs of the coefficients are all negative for the ability-grouped district and all positive for the randomly-grouped district. One might speculate that a more sensitive measure of "social aggressiveness" or "competent assertiveness" would show a differential effect on social success in the two districts, with such aggressiveness positively correlated in randomly-grouped districts.

Socioecnonomic status

The difference between friends. It was a part of Proposition 3 that the multiplexity of factors contributing to friendship formation is such that individual differences in socioeconomic status would have no significant effect on individual choice of friends. In order to test the hypothesis based on this proposition, we compared the differences between mutual friends with the differences between random pairs (see definition of terms) of pupils of the same sex and classroom. The results of this procedure are in Table 22. The differences between mean difference between mutual friends and random pairs range from .00 to .16 socioeconomic class units. Of the six comparisons for the three grades in the two districts, only one (that between random pairs and mutual friends in the randomly grouped fifth grade) is significant (p. 105). The extremely small magnitude of these differences will lend support to the proposition.

Treatment differences. Under a working hypothesis that grouping pupils on ability would also tend to group them on socioeconomic status, and by restriction of the classroom range, result in smaller differences

Table 22. Socioeconomic status differences between mutual friends and between random pairs of pupils of the same sex and classroom

Grade	District	Pupils	N[a]	Mean	SD	SE_D	"t"
4	A	Random pairs	116	.88	1.00		
		Friends	125	.96	.94		
		Difference		.08		.12	.67
	R	Random pairs	260	1.38	1.00		
		Friends	281	1.28	.94		
		Difference		.10		.08	1.25
5	A	Random pairs	264	1.04	1.04		
		Friends	283	.99	.94		
		Difference		.05		.08	.62
	R	Random pairs	438	1.32	1.04		
		Friends	473	1.16	.94		
		Difference		.16*		.07	2.29
6	A	Random pairs	413	1.04	.98		
		Friends	447	1.04	.89		
		Difference		.00		.06	-
	R	Random pairs	529	1.19	.98		
		Friends	566	1.11	.89		
		Difference		.08		.06	1.33

[a]N for random pairs reduced by self matching in randomization.
*Significant at .05 level.

between friends, we compared the difference between friends of the two districts. We found that there is such a tendency in our fourth and fifth grade pupils but that it was not present in the sixth grade (Table 30, Appendix A).

Number of mutual friends and socioeconomic status. We can, with caution, reject the hypothesis of independence of number of mutual friends and socioeconomic status. Contingency tables for each grade of both districts yielded non-significant chi-square values for all except the randomly grouped fifth grade where a chi-square of 31.89 which approaches the .01 level of confidence, led us to further investigate the indicated association. We computed the percentage distribution of this class presented in Table 23. Socioeconomic status was assumed to be the antecedent condition and the totals on this variable were used as the base. Examination of the table reveals a slight tendency for higher socioeconomic status to be associated with more mutual friends. This tendency is not a clear and decisive one. In view of the fact that five of the six chi-square values were not significant, it would require more evidence to make a general statement of association between these two variables.

There would be no contradiction in the findings that pupils do not seem to choose friends on the basis of socioeconomic status and that there is a tendency for those of higher status to have more friends. One could explain this on the basis of such variables as a wider and more frequent social contact or possession of social skills on the part of the child of high socioeconomic status.

Table 23. Percent of the total number of pupils in the socioeconomic status groups who were counted in the five different number of friends groups of the randomly grouped fifth grade

Occupational status	1	2	3	4	5	Base N
1	10.2	34.7	24.5	14.3	16.3	49
2	13.3	22.9	26.5	19.3	18.1	83
3	17.5	21.4	26.2	20.4	14.6	103
4	30.1	18.7	26.0	17.9	7.3	123
5	18.2	41.8	14.5	10.9	14.5	55
Total	19.6	25.2	24.5	17.4	13.3	413

Chi-square = 31.89; approaches significance at the .01 level.

CONCLUSIONS

With respect to the populations sampled, we may draw the following conclusions:

The difference between friends

1. Ability grouping of pupils and the restriction of choice to classmates restricts the range and reduces the difference between mutual friends in both academic achievement and socioeconomic status.

2. The differences in academic achievement and socioeconomic status between mutual friends in ability grouped classrooms is not significantly different from those between randomly matched pairs of pupils of the same sex and classroom.

3. The differences in academic achievement and socioeconomic status between mutual friends in randomly grouped classrooms is less than the difference between randomly matched pairs of pupils of the same sex and classroom.

Treatment differences

1. There is no significant difference in the proportion of pupils having mutual choices in the classrooms of the two districts.

2. High ability pupils have more, and low ability pupils fewer, mutual friends in randomly grouped classrooms than do pupils of similar ability in ability grouped classrooms.

The reader is cautioned that the analysis upon which the following (B. 3 through B. 7) conclusions are based did not group subjects with

respect to ability level. For a thorough coverage of treatment differences by ability level of these subjects see the report of the major study (Borg, 1964).

3. There is a definite tendency for pupils in ability grouped classrooms to develop less favorable Self Concepts than do those with the same number of friends in randomly grouped classrooms.

4. There is a tendency for sixth grade pupils in ability grouped classrooms to be less self-accepting than are sixth grade pupils with the same number of friends in randomly grouped classrooms.

5. Fourth and fifth grade pupils in the two districts, with the same number of friends, develop similar concepts of an Ideal Self; but, at the sixth grade level, the ability grouped pupils have a less favorable Ideal Self image than do those in the randomly-grouped district.

6. There is a tendency, largely attributable to a less favorable Self Concept of ability grouped pupils, for ability grouped pupils to show a larger discrepancy between Ideal Self and Self Concept than do their randomly grouped peers with the same number of friends.

7. There is a definite tendency for ability grouped pupils to have less favorable attitudes toward peers and school, and similar attitude toward teachers, when compared with randomly grouped pupils with the same number of friends.

8. Pupils in the randomly-grouped district show a low but statistically significant correlation (-.15 to -.19) between the number of their mutual friends and their score on the "serious" problems of the SRA Junior Inventory. This relationship does not appear in the ability-grouped district.

Number of mutual friendships

1. Pupils of higher ability have more friends, and those of lower ability fewer friends within randomly grouped classrooms.

2. There is a relatively even distribution of the number of mutual friends of pupils of different ability within ability grouped classrooms.

3. There is no significant difference in the mean number of mutual friends of boys as compared to girls of the same district, grade and ability level.

4. The evidence is equivocal but there may be a tendency for pupils of high socioeconomic status to have more mutual friends.

5. There is a tendency, growing more pronounced as pupils advance through the grades in both districts, for pupils with more friends to have a more favorable Self Concept.

6. Within both districts, pupils with more mutual friends have a significantly higher self-acceptance than do pupils with fewer friends.

7. At the fourth and fifth grade level, there is little difference in the Ideal Self of pupils with different numbers of friends; at the sixth grade level, pupils with more friends tend to have a higher Ideal Self concept than do their peers with fewer friends, but the evidence is inconclusive.

8. There is a tendency, most pronounced in the ability-grouped district, for pupils with fewer mutual friends to have a larger Ideal Self - Self Concept discrepancy score.

9. There is a clear and definite tendency for pupils in both

districts who have more friends to show a better attitude toward peers.

10. Attitude Toward School and/or Teacher does not appear to be associated with the number of mutual friends of pupils in the ability-grouped district.

11. Attitude Toward Teacher does not seem to be associated with number of mutual friends of pupils in the randomly-grouped district.

12. There is a tendency, slight at the fourth and fifth grade levels, but becoming significant at the sixth grade level, for randomly grouped pupils with more friends to show better attitudes toward school than do those with fewer friends.

13. The correlations between number of mutual friends and personality variables measured by the California Test of Personality are very low but significant (.14 to .20), in the two districts.

14. The correlations between number of mutual friends and total problems on the SRA Junior Inventory are very low but significant (-.08 to -.17), in the two districts.

15. Cattell's Factor U.I. 16 (competent assertiveness) was not correlated with the number of friends of pupils in either district.

SUMMARY

The problem

This study has examined the sociometric mutual choice patterns of elementary school pupils as they progressed through the fourth, fifth, and sixth grades of two school districts. One of these districts employed ability grouping and acceleration, the other random grouping and enrichment, as means of adjustment and accommodation for individual differences. The effect of grouping practice on sociometric mutual choice was examined for pupils of comparable ability and sex at each grade level. An exploratory and descriptive analysis investigated the relationship of mutual choice to educational, psychometric, and sociometric variables.

Method

A major four year study[1] had collected data on a number of standard tests and measures including California Achievement Tests, Sequential Tests of Educational Progress, SRA Junior Inventory Form S, California Test of Personality, Bills' Index of Adjustment and Values, and Cattell's Objective-Analytic Personality Test Batteries. Locally developed measures provided data on pupil attitudes and socioeconomic status. All mutual choice pairs on the sociometric criterion "best friend" from a classroom roster and allowing five choices were identified and became the subjects of this study. Appropriate statistical

[1]Borg, W. R. An Evaluation of Ability Grouping. U.S. Department of Health, Education, and Welfare, Office of Education, Cooperative Research Program, Project 577, Washington, D.C. 1964.

hypotheses were tested by analysis of variance. Correlation coefficients measured the association between number of choices of individuals and selected personality variables.

Findings

1. There was little or no difference between districts in the proportion of mutual choices within the classrooms.

2. There was no difference between sexes of the same district, grade, and ability level on the mean number of mutual friends.

3. Ability grouping and the restriction of choice to classmates restricts the within-classroom range of academic ability and socioeconomic status to such an extent as to result in significantly smaller differences between mutual friends on both of these variables in ability grouped than in randomly grouped classrooms.

4. The differences in academic achievement and socioeconomic status between mutual friends were not significantly different from those of randomly matched pairs of pupils of the same sex and classroom in the ability-grouped district.

5. Within the randomly grouped classrooms the difference between mutual friend academic achievement and socioeconomic status was consistently less than differences between randomly matched pairs on the same variables.

6. Equivocal evidence will not support a generalization from an apparent tendency for pupils of higher socioeconomic status to have more mutual friends within the classroom.

7. Low ability pupils find more mutual friends in ability grouped than in randomly grouped classrooms.

8. High ability pupils find fewer mutual friends in ability grouped classrooms than in randomly grouped classrooms.

9. Statistically significant, but very low correlations between number of mutual friends of individuals and positive personality characteristics (r's below .20) are indicative of a small contribution by multiple factors to friendship choice on sociometric criteria.

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APPENDIX A

Table 24. Classroom populations and reciprocating pairs identified therefrom in the ability grouped fourth grade sample

Teacher code[a]	Class N	Boys N	Girls N	Boys %	Girls %	Total pairs	Boys pairs	Girls pairs	Cross-sex pairs
L 75	35	24	11	69	31	36	23	12	1
A 76	42	22	20	52	48	41	19	17	5
H 77	43	16	27	37	63	53	19	34	0
L 81	24	15	9	63	37	27	13	13	1
H 82	30	14	16	47	53	39	20	19	0
A 83	32	17	15	53	47	33	16	17	0
L 87	17	13	4	76	24	19	14	4	1
A 88	31	17	14	55	45	38	20	18	0
H 89	39	16	23	41	59	43	19	24	0
Totals	293	154	139	53	47	329	163	158	8

[a]L = low ability; A = average ability; H = high ability; classrooms 250 pupils had at least one reciprocated choice (85.3%)

Table 25. Classroom populations and reciprocating pairs identified therefrom in the randomly grouped fourth grade sample[a]

Teacher code	Class N	Boys N	Girls N	Boys %	Girls %	Total pairs	Boys pairs	Girls pairs	Cross-sex pairs
23	28	15	13	54	46	35	23	12	0
24	29	17	12	59	41	31	21	9	1
25	29	17	12	59	41	39	22	17	0
28	34	19	15	56	44	37	18	15	4
29	33	19	14	58	42	43	23	19	1
30	34	17	17	50	50	44	19	19	6
34	32	15	17	47	53	35	16	19	0
35	31	13	18	42	58	35	18	17	0
38	26	13	13	50	50	32	13	17	2
41	36	19	17	53	47	27	8	12	7
42	36	18	18	50	50	37	20	17	0
43	35	18	17	51	49	38	21	15	2
48	31	17	14	55	45	43	26	15	2
49	27	14	13	52	48	34	14	17	3
50	29	16	13	55	45	36	20	12	4
59	26	12	14	46	54	30	10	17	3
Totals	496	259	237	52	48	576	292	249	35

[a]425 pupils had at least one reciprocated choice (85.6%)

Table 26. Classroom populations and reciprocating pairs identified therefrom in the ability grouped fifth grade sample

Teacher code[a]	Class N	Boys N	Girls N	Boys %	Girls %	Total pairs	Boys pairs	Girls pairs	Cross-sex pairs
H 50	34	12	22	35	65	47	18	29	0
L 51	19	15	4	79	21	26	17	6	3
A 52	30	21	9	70	30	39	25	11	3
A 53	35	20	15	57	43	42	23	19	0
A 54	35	18	17	51	49	38	20	17	1
A 55	34	16	18	47	53	34	13	17	4
L 56	22	11	11	50	50	27	12	13	2
H 57	35	15	20	43	57	38	19	19	0
A 58	31	21	10	68	32	32	21	11	0
H 59	35	16	19	46	54	45	20	23	2
L 60	20	12	8	60	40	27	17	9	1
A 61	33	17	16	51	49	23	11	12	0
H 62	33	17	16	51	49	39	23	16	0
L 63	27	20	7	74	26	30	23	6	1
A 64	32	17	15	53	47	45	22	23	0
Totals	455	248	207	55	45	532	284	231	17

[a]L = low ability; A = average ability; H = high ability classrooms; 409 pupils had at least one reciprocated coice (89.9%).

Table 27. Classroom populations and reciprocating pairs identified therefrom in the randomly grouped fifth grade sample[a]

Teacher code	Class N	Boys N	Girls N	Boys %	Girls %	Total pairs	Boys pairs	Girls pairs	Cross-sex pairs
1	32	19	13	59	41	33	15	15	3
2	31	15	16	48	52	40	17	23	0
3	32	17	15	53	47	44	25	19	0
4	35	21	14	60	40	46	25	19	2
5	35	20	15	57	43	43	20	22	1
6	35	19	16	54	46	40	18	21	1
7	27	11	16	41	59	18	6	8	4
8	30	16	14	53	47	23	7	11	5
9	35	17	18	49	51	29	18	10	1
10	35	15	20	43	57	39	16	23	0
11	35	18	17	51	49	41	21	20	0
12	14	7	7	50	50	22	9	10	3
13	33	15	18	45	55	47	18	26	3
14	30	18	12	60	40	39	23	15	1
15	34	16	18	47	53	45	21	24	0
16	19	13	6	68	32	31	20	8	3
17	32	16	16	50	50	33	13	16	4
18	36	19	17	53	47	49	25	24	0
19	36	15	21	42	58	52	21	31	0
Totals	596	307	289	52	48	714	338	345	31

[a]517 pupils had at least one reciprocated choice (86.7%).

Table 28. Classroom populations and reciprocating pairs identified therefrom in the ability grouped sixth grade sample

Teacher code[a]	Class N	Boys N	Girls N	Boys %	Girls %	Total pairs	Boys pairs	Girls pairs	Cross-sex pairs
L 65	14	14	0	100	0	19	19	0	0
A 66	29	11	18	38	62	45	21	24	0
A 67	30	12	18	40	60	46	17	29	0
H 68	31	15	16	48	52	35	17	18	0
A 69	30	15	15	50	50	48	25	22	1
L 70	16	8	8	50	50	22	11	7	4
H 71	37	17	20	46	54	57	22	35	0
A 72	35	17	18	49	51	41	21	20	0
73	29	13	16	45	55	39	10	24	5
74	35	14	21	40	60	39	16	20	3
A 75	27	17	10	63	37	39	24	15	0
L 76	18	13	5	72	28	29	21	8	0
A 77	30	18	12	60	40	43	25	18	0
H 78	32	18	14	56	44	40	20	18	2
Totals	393	202	191	51	49	542	269	258	15

[a]L = low ability; A = average ability; H = high ability classrooms; 372 pupils had at least one reciprocated choice (94.6%)

Table 29. Classroom populations and reciprocating pairs identified therefrom in the randomly grouped sixth grade sample[a]

Teacher code	Class N	Boys N	Girls N	Boys %	Girls %	Total pairs	Boys pairs	Girls pairs	Cross-sex pairs
20	38	22	16	58	42	48	21	20	7
21	37	20	17	54	46	44	17	20	7
22	35	21	14	60	40	44	28	16	0
23	32	17	15	53	47	37	19	18	0
24	36	21	15	58	42	39	24	14	1
25	37	21	16	57	43	52	26	25	1
26	34	20	14	59	41	45	28	15	2
27	32	14	18	44	56	42	16	23	3
28	29	13	16	45	55	35	15	18	2
29	35	17	18	49	51	42	18	17	7
30	36	18	18	50	50	37	18	17	2
31	34	16	18	47	53	48	23	25	0
32	31	16	15	52	48	34	14	17	3
33	28	17	11	60	40	40	24	14	2
34	29	14	15	48	52	39	20	19	0
35	37	21	16	57	43	50	27	23	0
36	38	19	19	50	50	41	19	22	0
37	34	16	18	47	53	44	21	23	0
38	35	17	18	49	51	48	24	24	0
39	31	19	12	61	39	33	18	13	2
40	31	17	14	55	45	39	19	20	0
Totals	709	376	333	53	47	881	439	403	39

Table 30. District differences in socioeconomic status differences of mutual friends and of random pairs of pupils of the same sex and classroom

Grade	Pupils	District	N[a]	Mean	SD	SE_D	"t"
4	Friends	A	125	.96			
		R	281	1.28	.94		
				.32**		.10	3.20
	Random pairs	A	116	.88			
		R	260	1.38	1.00		
				.50**		.11	4.54
5	Friends	A	283	.99			
		R	473	1.16	.94		
				.17*		.07	2.43
	Random pairs	A	264	1.04			
		R	438	1.32	1.04		
				.28**		.08	3.50
6	Friends	A	447	1.04			
		R	566	1.11	.89		
				.07		.06	1.17
	Random pairs	A	413	1.04			
		R	529	1.19	.98		
				.15*		.06	2.50

[a]N for random pairs reduced by self matching in randomization.
**Significant at .01 level.
*Significant at .05 level.

Table 31. District differences in achievement[a] differences of mutual friends and of random pairs of pupils of the same sex and classroom

Grade	Pupils	District	N[b]	Mean	SD	SE_D	"t"
4	Friends	A	302	.68			
		R	374	1.01	.70		
				.33**		.04	8.25
	Random pairs	A	280	.79			
		R	343	1.11	.72		
				.32**		.06	5.33
5	Friends	A	230	.55			
		R	248	.90	.60		
				.35**		.05	7.00
	Random pairs	A	215	.57			
		R	230	1.01	.72		
				.44**		.07	6.29
6	Friends	A	543	38.5			
		R	861	70.2	88.3		
				31.7**		4.83	6.56
	Random pairs	A	502	47.7			
		R	805	85.3	94.7		
				37.6**		5.38	6.99

[a]Fourth and fifth grades are CAT grade placement, sixth STEP total, scores.

[b]N for random pairs reduced by self matching in randomization.

**Significant at .01 level.

APPENDIX B

ADMINISTRATOR'S INSTRUCTIONS

Sociometric Choice Questionnaire

(Read all capitalized instructions exactly as written. This test will take about 20 minutes to complete, but additional time should be allowed if necessary. Pass out test papers.)

LEAVE YOUR PAPER FACE DOWN ON YOUR DESK. PEOPLE WHO LIKE EACH OTHER OFTEN WORK TOGETHER BETTER IN CLASS PROJECTS, HAVE MORE FUN, AND GET MORE DONE. OFTEN WE LIKE TO DO SOME THINGS BEST WITH ONE FRIEND AND OTHER THINGS WITH ANOTHER FRIEND.

TODAY WE ARE GOING TO THINK ABOUT OUR FRIENDS IN THE CLASS AND LIST THE ONES WE MOST LIKE TO BE WITH. NOW TURN OVER YOUR PAPER. YOU SEE THAT THE PAPER HAS A LIST OF ALL THE CHILDREN IN THE CLASS. LOOK AT THE LIST AND THINK OF THE CHILDREN IN THE CLASS WHO ARE YOUR BEST FRIENDS. THESE ARE THE ONES YOU LIKE MOST. NOW PUT A CHECK MARK LIKE THIS (illustrate on blackboard) IN FRONT OF THE NAMES OF THE FIVE CHILDREN IN THE CLASS WHOM YOU THINK ARE YOUR BEST FRIENDS. DO NOT HURRY, THINK ABOUT IT, AND BE SURE YOU CHECK THE ONES WHO ARE REALLY YOUR BEST FRIENDS. BE SURE YOU PUT THE CHECKS IN FRONT OF THE NAMES. DO NOT LOOK ON YOUR NEIGHBOR'S PAPER. RAISE YOUR HAND WHEN YOU ARE FINISHED. (Circulate around classroom to be sure that pupils are following instructions. Allow about three minutes.) HOW MANY HAVE NOT YET CHECKED FIVE NAMES? (Allow another minute and check to see if pupils not finished need help. When all students are finished, say:) NOW THAT YOU HAVE CHECKED YOUR BEST FRIENDS, LET'S SEE WHETHER YOU CAN GUESS WHO WILL CHOOSE YOU AS ONE OF THEIR BEST FRIENDS. DO NOT CHECK MORE THAN FIVE. IF YOU DON'T BELIEVE THAT FIVE PERSONS HAVE CHECKED YOUR NAME, MAKE A CHECK BEHIND ONLY THOSE WHOM YOU THINK HAVE CHECKED YOUR NAME. (Check to see if all pupils are following directions. If necessary, caution children

again not to look on their neighbor's paper. Allow three minutes and then see if pupils not finished need help. After all pupils are finished, say:) NOW, DRAW A CIRCLE AROUND YOUR NAME ON THE LIST SO I WILL KNOW WHICH PAPER IS YOURS.

NOW, TURN YOUR PAPER TO THE NEXT PAGE. THIS TIME I WANT YOU TO CHECK THE NAMES OF THE FIVE CHILDREN WITH WHOM YOU WOULD MOST LIKE TO STUDY YOUR HOMEWORK OR LESSONS. SOME OF THESE PEOPLE MAY BE THE SAME AS YOU LISTED AS YOUR BEST FRIENDS, BUT SOMETIMES BEST FRIENDS ARE NOT THE PEOPLE YOU LIKE MOST TO STUDY WITH. THINK ABOUT IT AND BE SURE TO PUT A CHECK IN FRONT OF THE NAMES OF THE FIVE CHILDREN IN THE CLASS WITH WHOM YOU WOULD MOST LIKE TO STUDY. RAISE YOUR HAND WHEN YOU ARE FINISHED. (Circulate to see if children are following directions. When everyone is finished, say:) NOW TRY TO GUESS WHICH FIVE CHILDREN WOULD MOST LIKE TO STUDY WITH YOU. PUT A CHECK MARK BEHIND THE NAMES OF THE FIVE CHILDREN YOU ARE MOST SURE HAVE CHOSEN YOU AS A PERSON WITH WHOM THEY WOULD MOST LIKE TO STUDY OR DO HOMEWORK. DO NOT CHECK MORE THAN FIVE. IF YOU DON'T BELIEVE THAT FIVE PERSONS HAVE CHECKED YOUR NAME, MAKE A CHECK BEHIND ONLY THOSE WHOM YOU THINK HAVE CHECKED YOUR NAME. RAISE YOUR HAND WHEN YOU ARE FINISHED. (When everyone is finished, say:) NOW TURN TO THE NEXT PAGE. THIS TIME I WANT YOU TO IMAGINE THAT YOU WERE TO MOVE TO ANOTHER CLASSROOM. WHICH BOYS AND GIRLS WOULD YOU MOST LIKE TO HAVE MOVED WITH YOU? PUT A CHECK MARK IN FRONT OF THE NAMES OF THE FIVE CHILDREN WHOM YOU WOULD LIKE MOST TO BE WITH YOU IF YOU WERE MOVED TO ANOTHER CLASSROOM. RAISE YOUR HAND WHEN YOU ARE FINISHED. (Check children who are not finished after three minutes.)

NOW TRY TO GUESS WHICH BOYS AND GIRLS WOULD MOST LIKE TO HAVE YOU WITH THEM IF THEY WERE MOVED TO ANOTHER CLASSROOM. PUT A CHECK MARK BEHIND THE

NAMES OF THE FIVE CHILDREN YOU ARE MOST SURE HAVE CHOSEN YOU AS ONE OF THE PERSONS THEY WOULD MOST LIKE TO HAVE WITH THEM. RAISE YOUR HAND WHEN YOU ARE FINISHED. (When all are finished, say:) NOW, TURN YOUR PAPER BACK TO THE FIRST PAGE AND PUT IT FACE DOWN ON YOUR DESK. (Designate a pupil to collect papers.) An extra name list has been provided so you can supply additional data needed in this phase of the research. Please place the following data on the extra name list:

1. Write your name at the top of sheet.
2. CIRCLE names of any children who have enrolled in your class after the first week of school.
3. Place a CHECK BEFORE the names of children who did not attend this school last year.
4. UNDERLINE the names of the three children who appear to you to be the MOST popular with their classmates.
5. Place a CHECK BEHIND the names of the three children who appear to you to be the LEAST popular with their classmates.

(Now clip your answers to the test papers, place the papers in the envelope provided, and return to the principal's office.)

THE U. S. U. SCHOOL INVENTORY

NAME _____ TEACHER'S NAME _____

GRADE _____ SCHOOL _____ DATE _____

BOY GIRL
(circle one)

DIRECTIONS TO STUDENT

On the following pages you will find a list of questions concerning things about this school that you may or may not like. We should like to know what things about this school you like and what you dislike. Your answers will be secrets to yourself, and only those of us who are here giving the test will have a chance to see your answers. They will not affect your grade in any way. Your teachers will not see your answers. If you will answer these questions honestly and thoughtfully, the school will work to improve the conditions which your answers indicate need improvement.

There are no right or wrong answers. Indicate your answer by drawing a circle around "Yes", "No", and "?". Try to answer all questions either "Yes" or "No". If you are certain that you cannot answer "Yes" or "No", then use the question mark.

There is no time limit, but work rapidly.

Yes No ? 1. Do you like all of the subjects you are now taking in this school?

Yes No ? 2. Does your teacher expect you to do too much work?

Yes No ? 3. Is it easy to make friends with your teacher?

Yes No ? 4. Does your teacher act as if she likes her work?

Yes No ? 5. Do you wish you could get better grades in school?

Yes No ? 6. Does your teacher tell you when you've done a good job?

Yes No ? 7. Does your teacher encourage you to do your best work?

Yes No ? 8. Do you have a hard time making new friends?

Yes No ? 9. Have you been able to get into the school activities that you like best?

Yes No ? 10. Have you found your teacher to be too strict?

Yes No ? 11. Would you like to study different things than the ones you are now studying?

Yes No ? 12. Are you proud of your teacher?

Yes No ? 13. Do you find it easy to make friends in this school?

Yes No ? 14. Does your teacher get upset over small matters?

Yes No ? 15. Are the things you are learning in school interesting?

Yes No ? 16. Do you feel you are popular with boys?

Yes No ? 17. Do you feel you are popular with girls?

Yes No ? 18. Can your teacher explain the lessons clearly?

Yes No ? 19. Do your principal and teacher act as if they are always right and you are always wrong?

Yes No ? 20. Are you frightened by the way your teacher calls on you in classes?

Yes No ? 21. Have you found it hard to prepare your lessons for your classes?

Yes No ? 22. Are you usually a leader in your group?

Yes No ? 23. Does your teacher require too much homework?

Yes No ? 24. If you were able to do so, would you like to attend some other school than the one you are now attending?

Yes No ? 25. Do you dislike your teacher?

Yes No ? 26. Is your principal too strict with students?

Yes No ? 27. Do you like your teacher's speaking voice?

Yes No ? 28. Do you feel that some of your teachers have held a "grudge" against you?

Yes No ? 29. Is there a small group of students who always plan class activities?

Yes No ? 30. Is your teacher lazy?

Yes No ? 31. Does your teacher have "pets" in this class?

Yes No ? 32. Is your teacher a good friend to the students?

Yes No ? 33. Do you have trouble keeping your mind on what you are studying?

Yes No ? 34. Are your lessons too long?

Yes No ? 35. Would you like to quit school now?

Yes No ? 36. Does your teacher play favorites?

Yes No ? 37. Are there any groups of children who won't let you play with them?

Yes No ? 38. Are you afraid of your teacher?

Yes No ? 39. Do the other students like you?

Yes No ? 40. Do you think the students in this school are "stuck-up"?

Yes No ? 41. Do you think that some of the women teachers in this school show favoritism toward boys in their classes?

Yes No ? 42. Is your teacher hard to understand?

Yes No ? 43. Are the students in this school fair in their play?

Yes No ? 44. Does school make you unhappy?

Yes No ? 45. Does your teacher make lesson assignments easy to understand?

Yes No ? 46. Are you smart in school?

Yes No ? 47. Is it easy to get to know your teacher?

Yes No ? 48. Are some of your lessons very boring to you?

Yes No ? 49. Does your teacher treat your fairly?

Yes No ? 50. Does your teacher admit it when she is wrong?

Yes No ? 51. Are the boys and girls in this school usually nice to you?

Yes No ? 52. Does your teacher give grades fairly?

Yes No ? 53. Is your teacher interested in you?

Yes No ? 54. Does your teacher show a lack of interest in class and school activities?

Yes No ? 55. Do you have difficulty keeping your mind on what goes on in class?

Yes No ? 56. Do your friends trust you?

Yes No ? 57. Does your teacher like to make you feel embarrassed before the class?

Yes No ? 58. Do you wish your teacher liked you better?

Yes No ? 59. Does your teacher really care whether you learn something in this class?

Yes No ? 60. Have you found that your teacher does not like to be with the boys and girls?

Yes No ? 61. Do you think that the boys and girls in this school like you as well as they should?

Yes No ? 62. Are you proud of your friends?

Yes No ? 63. Is your teacher often mean and unfair to you?

Yes No ? 64. Do your classmates usually feel that they know more than you?

Yes No ? 65. Do you feel that your teacher dislikes her job?

Yes No ? 66. Do you wish you could study better?

Yes No ? 67. Does your teacher treat you as if you were a small child?

Yes No ? 68. Are you often left out of things other kids do?

Yes No ? 69. Do you think that this school is run as if it were a prison?

Yes No ? 70. Does your teacher understand you?

Yes No ? 71. Do your classmates seem to think you are not a good friend?

Yes No ? 72. Do you think your school requires too much homework?

Yes No ? 73. Is your teacher cheerful and pleasant?

Yes No ? 74. Do you like your lessons?

Yes No ? 75. Do you find it hard to be as popular as the other kids?

Yes No ? 76. Does your teacher give you enough individual help in your school work?

Yes No ? 77. Does your teacher lack a sense of humor?

Yes No ? 78. Do your classmates think you are smart?

Yes No ? 79. Is your teacher usually nice to you?

Yes No ? 80. Do you hate school?

Yes No ? 81. Is your teacher "bossy"?

Yes No ? 82. Do you prefer to be alone?

Yes No ? 83. Does your teacher like you?

Yes No ? 84. Do you find your school work dull and uninteresting?

Yes No ? 85. Do you often think that your teacher does not like you?

Yes No ? 86. Are your feelings hurt easily?

Yes No ? 87. Do you wish you were smarter in school?

Yes No ? 88. Do your parents like your teacher?

Yes No ? 89. Is your teacher honest in her dealings with you?

Yes No ? 90. Do students who are not good at school work get treated fairly in this school?

Yes No ? 91. Do you often wish you had some other teacher?

Yes No ? 92. Do you worry about losing your friends?

Yes No ? 93. Is your teacher often so unkind or unfair that it makes you feel bad?

Yes No ? 94. Are there some students who do not like you?

Yes No ? 95. Are you lonesome in school?

UTAH STATE UNIVERSITY
Bureau of Educational Research
Biographical Information Form

The following information is needed to complete the analysis of results of the Utah State University research project currently being carried out in Ogden City and Weber County Schools. This information will be used for research purposes only. Your answers will be kept strictly confidential. Please answer carefully as accuracy is important.

Last name (Please print)	First name	date	school	grade

1. How many brothers and sisters do you have? Indicate the numbers in the blanks provided:

_____ Older brothers
_____ Older sisters
_____ Younger brothers
_____ Younger sisters

2. How many different schools have you attended: (circle appropriate numbers)

Elementary 1 2 3 4 5 6 7
Secondary 1 2 3 4 5 6 7

3. How long have you lived at your present address? (check one)

_____Less than one year
_____Between one and three years
_____Between three and five years
_____Over five years
_____All of my life

4. What school grade did each of your parents complete?

Father	Mother	
_____	_____	a. Below 6th
_____	_____	b. 6th
_____	_____	c. 7th or 8th
_____	_____	d. 9th, 10th, or 11th
_____	_____	e. 12th
_____	_____	f. 1 year college
_____	_____	g. 2 years college
_____	_____	h. 3 years college
_____	_____	i. 4 years college
_____	_____	j. More than 4 years of college
_____	_____	k. Don't know

5. Religious preference (check one)

_____ a. Protestant (indicate denomination)_____
_____ b. Catholic
_____ c. L.D.S.
_____ d. Other (indicate) _____
_____ e. I prefer not to tell my preference
_____ f. I have no religious preference

6. Please read the job descriptions below and answer the questions that follow:

a. These jobs, as a rule, can be entered only after long periods of education and training, and a broad knowledge of the job is necessary. These jobs often require training beyond four years of college.

Examples: accountants; chemists; college teachers; engineers; lawyers; doctors, etc.

b. These jobs are those in which a person owns a business or farm, or works for someone else but "is his own boss".

Examples: office, store, or business manager; government inspectors; postmasters; city, state, or United States official; pilot; elementary or high school teacher; officer in the army, navy, or marines; etc.

c. These jobs usually involve routine office activities such as preparing and filing written records and reports; operating office machines; making appointments; typing; answering telephones; etc.

Examples: bookkeepers, cashiers; office machine operators; secretaries, salesmen or clerks, non-commissioned officers in the army, navy, or marines, etc.

d. These jobs usually require a rather long period of training (not necessarily schooling) or apprenticeship; these workers often have a "boss" over them; most of the "skilled trades" fit here.

Examples: foremen, bakers, carpenters, bricklayers, electricians; inspectors; telephone linemen; machinists; painters; plumbers; auto mechanics, etc.

e. These jobs usually do not require any particular training or education; they are usually the same "day in and day out" with little change in what is done; these workers almost always have a "boss" over them and they do not "boss" anyone themselves.

Examples: bus or truck driver, laborers; workers in a gas station; railroad switchmen and brakemen; housekeepers, fkremen or policemen; janitors; barbers; soldiers or sailors or marines, factory workers, etc.

1. Which job description above best fits the work your father does? If your father is not living or is not now living with your family, select the job description that best fits the person in your family who is supporting the family now. Look over the descriptions again and be sure you check the one that best fits.

   _____a _____b _____c _____d _____e

2. Where does your father (or person who supports your family) work? Examples: Western Transport Company, Sears-Roebuck Co., City of Ogden, Telephone Co., Hill Air Force Base, etc.

   _____

3. Please write in the space below the title your father (or person who supports your family) has in his work. Examples: foreman, dentist, typist, laborer, bricklayer, etc. If the person who supports your family is in the military, please give his rank.

   _____

4. Please write below a description of the work your father does. Examples: digs holes for the telephone company, sells sporting goods for Sears, teaches science at Weber High School, drives a city transportation bus, repairs washers for Hi-Dry Laundry, etc.

   _____

   _____