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To the Graduate Council:

I am submitting herewith a thesis written by Margaret Elizabeth Vaughn entitled "Sociometric Tests of Preschool Children's Preference Patterns." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Child Development.


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SOCIOMETRIC TESTS OF PRESCHOOL CHILDREN'S
PREFERENCE PATTERNS

A Thesis
Presented to
the Graduate Council of
The University of Tennessee

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Margaret Elizabeth Vaughn

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CHAPTER I

INTRODUCTION

Helping a child to become a socially adequate person is one of the objectives of nursery school education. The amount of acceptance or rejection a child receives from members of his peer group affects his social adjustment to the group and may carry over to his adjustment in other groups. A teacher who realizes the importance to a child of acceptance by others can guide the child toward more acceptance by the group or toward a better understanding of his position within the group. One of the ways of determining the degree of acceptance or rejection in a group of nursery school children is through the use of the sociometric test.

I. THE PROBLEM

Statement of the problem. The purpose of this study was to determine the preference patterns of nursery school children as shown by two sociometric tests administered two weeks apart. Empirical evidence (1, 2, 10, 11, 25, 26) indicates that fairly stable bonds of attachment are formed on the preschool level; that teacher judgments (12, 14, 15, 16, 18, 22) have been found to coincide with sociometric status to a considerable degree; and age and sex factors (7, 9, 12, 14, 22) influence the sociometric status of children. The hypotheses formulated for this study were as follows:

1. There will be no ~~change in~~ sociometric position from test to retest and from outdoor activity to indoor activity.
2. There will be no relationship between teacher judgments and the child's sociometric status.
3. There will be no relationship between preference patterns according to age and sex.
 - a. Reciprocal choices will be made according to age and sex.

Importance of the study. Many researchers (1, 3, 4, 7, 10, 12, 14, 22) have been concerned with the sociometric status of children determined through acceptance choices. Some of these investigators (3, 5, 21) concurred in the opinion that to ask a child to express a negative choice would only serve to focus on the child's negative feelings, thus pointing out more clearly those individuals who were least accepted, possibly creating more discrimination and tension for the children who rated low sociometrically. For this reason, only choices of acceptance were used in the present study to determine the sociometric status a child holds in the nursery school group.

II. DEFINITION OF TERMS

Sociometry. There has been a considerable degree of disagreement and controversy concerning the use and definition of sociometry. The clearest definition of sociometry was a revision of Moreno's (21) definition by Bronfenbrenner, who stated it as follows:

Sociometry is a method for discovering, describing, and evaluating social status, structure, and development through measuring the

extent of acceptance or rejection between individuals in groups (6, p. 6).

Sociometry is based upon the assumption that there will be changes in ratings given and received over a period of time by individuals in a group.

Sociometric test. The sociometric test is defined as consisting "of an individual choosing his associates for any group of which he is or might become a member (20, p. 13)." The test is a means for evaluating the degree to which individuals are accepted in the group, the relationships existing among the individuals and the structure of the group. It is a simple technique, easily administered and can be used with many different age groups.

Sociometric status. In sociometric tests each child is usually given three or more choices out of the total group. Sociometric status is determined by totaling the number of choices obtained for an individual. According to Bronfenbrenner those who do not drop out of nursery school tend later to become more absorbed into the group (5). As the sociometric status of an individual changes, changes occur in the entire group structure. Status patterns may be relatively stable or may show fluctuations from day to day.

Sociogram. Sociometric scores can be obtained by adding each choice the individual receives. The choices made between or among particular individuals in the group are recorded with the results graphically illustrated by the sociogram. According to Moreno the sociogram "depicts by means of a set of symbols the two-way or interpersonal relations which

exist between the members of the group (20, p. 719)." In order for the relationship to become sociometrically meaningful, both halves have to be added. If A chooses B, then B either chooses, rejects, or is indifferent to A (20, p. 719).

People discriminate between people whom they like and whom they do not like to such a degree that the number of positive or negative choices can be determined (21). In the present study, reciprocal choices, when an individual chooses and is chosen according to the same criterion, were analyzed according to that described by Moreno (20, p. 720).

The present study was examined in view of current research findings. Nursery School Educators and others dealing with children can understand the needs and problems of children if they know what factors influence the relationship of an individual in a group. In order to study some of these factors, the next chapter will be concerned with a review of literature concerning factors pertinent to this study.

CHAPTER II

SURVEY OF RELATED LITERATURE

The literature on sociometric testing is voluminous and much of it has direct bearing on the present problem. An elaboration of related studies conducted in the same general area will be included in order that the reader may better understand the present study.

Sociometric studies. The two most frequent measures related to sociometric test choices of preschool children have been (1) observation records of social behavior in nursery school groups and (2) teacher judgments of social acceptance or rejection in these groups. Marshall (16) states that the nursery school group situation provides excellent opportunities to study the spontaneous social participation of preschool children.

Challman (7), using fifteen-second observations of thirty-three preschoolers, found that children formed friendships with their own sex, and that boys' strength of friendship increased with age. Sociability influenced the early friendships of boys to a greater degree than those of girls. Similarity of mental age, height, extroversion, attractiveness of personality as rated by adults, and laughter seem to play no part in friendships of either sex. Parten (23), who observed forty-two nursery school children between two and four years of age, found that social participation and leadership increased among nursery school chil-

dren with age. The investigations of Challman and Parten showed that children over four associate with members of their own sex. Bott, who observed fifteen nursery school children in order "to formulate certain principles of method for observing and analyzing play activity of young children," found that children did not tend to discriminate between the sexes at preschool age (4, p. 44). Bott dealt with the individual records since the play activities were so varied that the activities of the group could not be recorded sufficiently, a factor which may have biased the results she obtained.

Moreno (19) employed a technique of observation of spontaneous activities over a period of four weeks. Verbal choices were given the children asking with whom they wanted to draw or paint. The results were compared to the spontaneous free play choices. After the "best friend" was determined, he was removed from the group to see if the remaining child chose his second best friend or if he chose to be isolated from the group. After the second best friend was established, he was taken from the group along with the best friend in order to see the third preference of the remaining child.

Moreno (19) developed the above technique because he believed that children could express adequately their first choice but were greatly limited in the ability to express other choices, attractions or rejections, by verbal means. He felt that children between the age of two years and four years or even later could not understand the question or give any reason for their feelings regarding the test.

Frankel (9) used a verbal response technique with twenty-three preschool subjects between the ages of three and five "to discover some of the factors related to children's social relationships (p. 210)." It was concluded from Frankel's results that the sociometric and time sampling techniques measure related aspects of the same phenomena. Either technique will demonstrate general ranking and friendships.

Stability of choices. Jennings (11), using Moreno's technique, studied the social expansiveness of four hundred girls at the New York State Training School. Social expansiveness is the range designated for the extent of social contact. The research was conducted to discover the changes in choice behavior that took place over a period of eight months. The plan for conducting the sociometric test was agreed upon by the subjects and the experimenter. The results presented an analysis of the positive, negative and reciprocated choices. There was no evidence that the length of time individuals are together will either increase or decrease the extent of positive choice for one another. The extent to which the individual's choice for others is reciprocated correlates highly with the extent to which he is chosen by others--.70 for Test I and .67 for Test II. A slight relationship between the positive expansiveness of others to the individual was evident. The subjects tended to choose those who chose them or were drawn to them. Negative correlation was found between the extent to which subjects reject others and the extent to which they are rejected, but rejectees returned the rejection. The extent of positive expansiveness of subjects toward

others shows no correlation with the extent of rejection of others.

Bjerstedt (2) extended the work of Jennings in investigating the stability of choices. According to him the first choice is dynamically different from a second or third choice. When a first choice is changed it is usually transformed into a second choice. When a second choice is changed it is usually transformed to indifference. This suggests that the grading of choice series has been more than verbal.

Weber (26) studied peer acceptance among delinquent girls at the State Training School for Girls, Gainesville, Texas. He observed 125 students between the age of twelve years, six months to twenty years, with the average sixteen years, seven months. Two separate sets of twenty-five observations were made over a two-week period and obtained approximately one month apart. Weber found that mutual attachments exceed the mutual rejections within a group.

Biehler's (1) sociometric picture technique consisted of two series of line drawings of groups of children placed in different play situations with photographs of the faces of all the subjects presented as "cutouts." Each subject was asked to place his own face on line drawings that were presented without heads along with his four favorite companions. Through a process of elimination the final companion was selected and considered as the first sociometric choice. Seventy-two per cent of the sociometric and behavioral choices were the same in the first session. In the second session, seventy-six per cent showed perfect agreement of first choices with relation to behavior and socio-

metric criteria. For the group as a whole, the picture choices were somewhat more stable than the behavior choices from session to session. Second, third, and fourth choices revealed no clear-cut trends. The data indicated that playmates' preferences changed rapidly except for first choices.

Hankley (10) studied seventeen nursery school children (eight males and nine females) at The University of Tennessee and conducted three sociometric tests to investigate the correlates and stability of sociometric choices over a prescribed period of time. The study supported Biehler's findings that companion preferences changed rapidly "except for first choices" and that "second, third and fourth choices revealed no clear-cut trends." This is consistent with the general theoretical assumption that stability of choices is a positive function of age.

Speroff (25), in studying stability of sociometric choices among kindergarten children, found that girls were more stable than boys and made less change in choices than boys. Boys offered various reasons for changing selections. Girls gave a lesser number and variety of causes or reasons for changes.

Teacher judgments. Sociometric scores have been shown to be related to an average of teacher judgments of social acceptance. Koch (12) used the paired comparison method to determine some factors related to the popularity of seventeen (nine girls and eight boys) four-year-old children. The group teachers ranked the children in order of their

popularity within the group. The preferences expressed by the children correlated .76 with the rankings in popularity which the group teachers furnished.

Lippitt (14), using a larger group of subjects, 45 children, at the Iowa Welfare Research Station, repeated some of Koch's experimental procedures. The paired comparison method consisted of the list of pairs continued until every name had been paired with every other name. Two popularity scores were obtained from each child, one from the child's companions and one from two preschool teachers' judgments of the child's popularity. From the study it was concluded that children and teacher estimates of child popularity seemed to be based upon different criteria. Teachers estimated boys to be more popular than girls, while the children estimated the sexes to be about equal in popularity. Agreement was shown between the two teachers' estimates of child popularity in preschool groups. The tendency of the children to choose the last name in each pair in the studies by Koch (12) and Lippitt (14) reduced the consistency between reversed similar pairs, suggesting that the paired comparison method may be questioned.

Marshall (16) reports that there is evidence of only seven judgments showing that sociometric choices predict social acceptance and interaction of children in nursery school free play. McCandless and Marshall (15) made a study to investigate if children's sociometric choices are related significantly to teacher judgments of friendship of these children, and if so, if the first sociometric test is about as adequate as

later measurements. These investigators suggest that previous failures to demonstrate sociometric usefulness (prediction of teachers' judgments of acceptance) at the preschool age may have been due to inadequate measurement of sociometric standing and/or to the use of statistical indices of relationship that were less efficient than some which might have been used (15, p. 140).

Forty-eight children attending three different preschool groups at the Laboratory Preschools of The University of Iowa Welfare Research Station were the subjects in the study. At least two pictures of the child were taken and the head teacher of each group selected the picture that was most "representative" of the child in the McCandless and Marshall study (15). The three groups of children were tested three or four times at approximately ten-day intervals. Teacher judgments were obtained at times corresponding to the testing of the children. The individual teachers varied in the ability to judge the child's best friend, but significant agreement was obtained between children's sociometric choices and teacher judgments of friends of these children. The children's sociometric scores and teacher judgment scores were shown to be stable over ten- to thirty-day intervals in newly formed groups. In each case the second measure predicted the terminal one more precisely than did the first. Later child sociometric versus teacher judgment correlations were significant, whereas the first was not.

In another investigation, Marshall and McCandless (18) used sociometric test scores and teacher judgments of friendship to study the pre-

diction of social behavior of preschool children. The nineteen children in each group were observed in free play and their interactions were recorded for a minimum of one hundred minutes. They found that the degree of the child's friendly interactions was positively related to the child's sociometric score and to teacher judgments of social acceptance. Hostile play interactions were not related to the child's sociometric score but had some positive relationship with teacher judgment scores. The child's choice of his three best friends in the picture sociometric technique and the teacher judgment scores agreed beyond chance with those observed in play.

Hankley (10) found that the rankings of Teacher I and Teacher II and the combination of teacher ranks were the only variables which were significantly correlated with sociometric ranks. The correlation was .75 between the two teachers' estimates of the sociometric ranks. There was a marked relationship between the correlations of the sociometric composite rank and the teacher ranks, with a correlation of .72 between the rating of Teacher I and the sociometric composite rank; .70 correlation between the rating of Teacher II and the sociometric composite rank; and .74 correlation between the combination rank of Teacher I and II and the sociometric composite rank. The remaining variables (height, weight, chronological age, motor ability, and intelligence quotient) showed either no relationship or negative relationship.

O'Brien (22) investigated the relationship between sociometric scores and teacher judgments with eighteen subjects (eleven girls and

seven boys) at The University of Tennessee Nursery School. She found a relationship between the sociometric scores and teacher judgment scores, which suggested that the teachers were fairly well aware of the sociometric status among the children.

Preference patterns. Several investigators (7, 10, 12, 14, 22, 24) have studied the relationship of sociometric scores and inter- and intra-sex voting among nursery school children in companion preferences. Challman (7) found that boys have a slight tendency to form stronger friendships with other boys as they grow older. Also, there is a marked cleavage in friendships within their own sex. Koch (12) found that girls tend to prefer girls and that boys prefer boys, and that girls were more popular than boys. Lippitt (14) found that children showed a slight preference for their own sex and that children estimated the sexes to be about equal in popularity.

The results of Hankley's (10) study showed that preschool children preferred members of their own sex for "friends," but that they had some heterosexual interest which increased over a period of twelve weeks. O'Brien (22) supported other investigators (7, 9, 12, 14) in her findings. She found that intra-sex voting was approximately twice as great as the proportion of inter-sex voting for all choice criteria.

Some interesting findings have been reported by investigators who have studied inter- and intra-sex voting patterns of older subjects. Bronfenbrenner (5) made a sociometric analysis of the entire population of the laboratory school at The University of Michigan. He stated that

"a significant cleavage is apparent even at the nursery level (p. 64)." He found that the general tendency was for girls to choose boys even less frequently than boys choose girls, and the increase in cleavage between the two groups is fairly consistent.

Reese (24) contrived a role sociometric scale for use with eighty-four fifth graders. By means of the rating scale, which is given by each classmate of the same and opposite sex, the subjects were divided into three groups on the basis of acceptance by the same sex. Reese found that how unfavorable girls are toward boys is related to boys' acceptance by other boys, but how unfavorable boys are toward girls is related to other factors.

Bonney (3) studied the relation of intelligence, family size and sex differences with mutual friendships in the second- and third-grades of three schools in Denton, Texas. Bonney found that friendships are primarily within their own sex rather than between the sexes, and that girls are socially superior to boys.

Marshall (17) studied relationships of subjects who were in home economics clubs, agricultural clubs and 4-H clubs to predict the social acceptance in community youth groups. She found that in child or youth groups, age had a positive, low correlation with sociometric status. Girls hold higher sociometric status than boys in the sex groups. Performance or achievement in skills and knowledge was positively related to sociometric status. The sociometric status an individual attains in one group has a positive and fairly high correlation with sociometric status in groups of different membership.

Taking into consideration the studies which have been reviewed, the author has attempted to integrate them with relation to the purpose of the present study. Even though there are a great number of studies concerned with the subject of sociometric tests, only those which were most pertinent to the context of the present study were included,

In summary, there appears to be some agreement in findings relative to sociometric choice. Several investigators (1, 2, 10, 11, 19, 25, 26) have been concerned with stability of sociometric choices. Jennings and Moreno (11, 19) carried on investigations on social expansiveness with girls. They found positive attractions far outweigh rejecting or repelling feelings and that the interpersonal structure which comes to exist is characterized more by stability than change and displays a typical form. Weber (26), extending the work of Jennings, found that mutual attractions exceed mutual rejections within a group.

Bjerstedt (2) sees the first choice as dynamically different from a second or third choice, which when changed, shows more than a verbal grading of choice series. Biehler and Hankley (1, 10) found with pre-school age children that "playmate preferences changed rapidly except for first choices" and that "second, third and fourth choices revealed no clear-cut trends."

A number of experimentors (10, 12, 14, 15, 18, 22) have compared teacher rating technique to sociometric choices. Koch (12) found that the preferences expressed by the children were correlated .76 with the rankings in popularity which the teachers furnished. Lippitt (14) found

less agreement between the children's estimate of popularity and teacher judgments than Koch. The tendency in both of the studies (12, 14) was that children chose the last name in the pair presented, which may have reduced the consistency between reversed similar pairs.

McCandless and Marshall (15) found that a positive relationship between teacher judgments and children's sociometric scores agreed beyond chance. Hankley (10) expressed the teacher judgments to be the only variable which correlated significantly with sociometric rankings. O'Brien (22) found that a substantial relationship was indicated between the sociometric scores and teacher judgments. This suggested that the teachers are fairly well aware of the sociometric status of the children.

Challman and Parten (7, 23) showed that children over four associated with members of the same sex. Contradictory findings by Bott (4) were not substantiated. Most investigators (7, 10, 12, 14, 22, 23) agree that there is a significant cleavage in friendships even as early as the nursery school years. This cleavage indicates a tendency for boys to choose boys, and girls to choose girls.

Working with older groups, Bronfenbrenner (5) stated that the general tendency was for girls to choose boys less frequently than boys choose girls. The increase in cleavage between the two groups is fairly consistent. Reese (24) found that fifth grade girls are unfavorable toward boys in relation to the boys' acceptance by other boys, which was not the case with boys' acceptance of girls. Bonney (3) found that friendships were primarily within their own sex rather than between the two sexes.

Marshall (17) found that the sociometric status of girls was higher than the sociometric status of boys.

When considering the above findings, it should be kept in mind that individual investigators employed different sociometric techniques with samples drawn from different populations. Although there are still some unanswered questions regarding the predictive value of the sociometric test in general, it was decided to use the sociometric technique for the present study.

One of the principal reasons for undertaking the present study was the concern that it is important for children to be accepted by other members of the group. In addition, as nursery school teachers become more aware of these acceptance and rejection patterns, more can be done to help each child to adjust to the group in which he is a participant. Bronfenbrenner (5) concluded that withdrawals from nursery school and kindergarten account for the lower percentage of neglectees or rejectees in these groups. If they do not withdraw, they may be more accepted in the group.

CHAPTER III

METHOD

The design of the present research involved administering the McCandless and Marshall (15) "Picture Sociometric Technique" for pre-school children to two groups of nursery school children. The sociometric scores obtained were then related to sociometric status consistency, teacher judgments and sex preference patterns.

I. SUBJECTS

The subjects selected for the study were eighteen children (eight boys and ten girls) in the senior group, and eighteen children (eleven boys and seven girls) in the junior group attending The University of Tennessee Nursery School during the Spring of 1964. The chronological age of the children in the senior group ranged from 4 years 4 months to 5 years 7 months, with a mean age of 4 years 8 months. The chronological age of the junior group ranged from 3 years 5 months to 5 years 0 months, with a mean age of 3 years 8 months. Data obtained from the nursery school records indicated that the parents of the subjects were above average in the socio-economic level, according to education and occupation. All of the children involved in the study had been enrolled in the nursery school at least one quarter prior to this study and thus had had the opportunity to become socially involved with each other.

II. MEASURING DEVICES

The "Picture Sociometric Technique" developed by McCandless and Marshall (15) was utilized as the means of obtaining sociometric scores in the present study. This technique uses a black and white, facial photograph placed randomly among similar pictures of the children on a board designated for this purpose. The board, 24" x 16" with a protection of clear plastic over the pictures, was attached to the wall in the room where the children were tested. Each subject was taken voluntarily and individually to the testing room where a chair was placed in front of the board for the subject. First the child was asked to find his own picture and then to name or point to other nursery school members' pictures until he recognized all the other children. Each subject was asked the same questions in the following order:

(a) Who is your best friend when you play outdoors?

Who next? And then who? Anyone else?

(b) Who is your best friend when you play indoors?

Who next? And then who? Anyone else?

The child was allowed as many choices as he needed, but it was hoped that the way the questions were stated, the child would express freely his best friend first, the second next, and so on. The choices for both parts were recorded separately and assigned the following weights (3): first choice, five points; second choice, four points; third choice, three points; fourth choice, two points; fifth and subsequent choices, one point. From the addition of the weighted scores, the acceptance

sociometric status of each individual child was obtained. Running notes were taken during testing in order to gain insight into the behavior patterns during each individuals' test.

Teacher judgment techniques. The method for obtaining teacher judgments of a child's sociometric choice of best friends used by McCandless and Marshall (15) was also used in this study. Two teachers in each group, the head teacher and the graduate assistant, were asked to estimate the rank order of total sociometric status scores of each subject. The teachers had worked in each group at least one quarter prior to the submission of their ranked estimates of sociometric status. The experimenter explained the verbal choice response method of obtaining total scores for the subjects and requested that the teachers base their ratings on the same criterion. The rank estimates were made by the teachers independently, thereby eliminating the possibility of comparison during the ranking process. A correlation was obtained between the two teachers' estimates in each group of the sociometric ranks. Then correlations were made between the sociometric composite rank of the child and the teachers' rank.

Procedure. In order to obtain an estimate of the stability of sociometric choice, two "Picture Sociometric Technique" tests were administered. The first one was given in April, 1964 and the second one was given in May, 1964. There was an interval of approximately two weeks between the administration of the initial test and final sociometric test.

The testing was done in the nursery school in a room which was quiet and well-lighted.

No prearranged order was followed in testing the children. The investigator tried to establish rapport with each child by taking his picture, the one used in the test, and by observation of the children in the nursery school situation. When it was apparent that a child was not engrossed in activity he was told, "There is a picture of you and the other children upstairs. Come and see them."

After each of the subjects had found his own picture and named the other children, the choices for outdoor and indoor preferences were asked and recorded on a summary sheet as prescribed by Northway (21). The testing period ranged from ten to twenty minutes per subject at approximately the same time of day. Since two groups were tested, they were tested on alternate days, taking two days to test each group. Choices were given to the children who had been absent during the testing as soon as they returned to nursery school. The teacher judgment scores were obtained on the same day on which the final sociometric test was administered.

CHAPTER IV

RESULTS

As stated in the first chapter, the principal purpose of the present research was to determine the preference patterns of nursery school children as shown by two sociometric tests administered two weeks apart. The present chapter includes presentation of the analyses made of data collected as described in the preceding chapter. The findings were analyzed with reference to three major headings: (1) sociometric position; (2) teacher judgments; and (3) preference patterns according to age and sex, including reciprocal choices.

Sociometric Position

The method used to determine the child's sociometric preference patterns consisted of assigning weights of five points to a first choice, four points to a second choice, three points for a third choice, two points for a fourth choice, and one point for a fifth choice received by each individual in the junior and senior groups on the initial and final sociometric tests for outdoor and indoor play. These scores are shown in Tables I, II, III, and IV. For example, on Table I, Subject A received no first choice; one second choice, which was equal to four points; no third choice; one fourth choice, which was equal to two points; and one fifth choice, which was equal to one point. Therefore, the total number of choices he received on Sociometric Test I for

TABLE I

WEIGHTED SCORES OF FIRST, SECOND, THIRD, FOURTH, AND FIFTH CHOICES RECEIVED BY
EACH SUBJECT IN THE JUNIOR GROUP ON THE FIRST AND SECOND SOCIOMETRIC TESTS
FOR OUTDOOR PLAY

(N=18)													
Sociometric Test I							Sociometric Test II						Composite Score
Code	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	Total	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
A		4		2	1	7	5	8		8	1	22	29
B	15	4	3	6	2	30	5	8	6	2		21	51
C		8	6	2		16	5		3	2	2	12	28
D		8	3		2	13			6	8		14	27
E		4				4	5	8			1	14	18
F	5	4	3			12	5			2	1	8	20
G	10	4	3	4	1	22	20	4	3		2	29	51
H	10	4		2		16	10		3	2		15	31
I	10		3	2	1	16			3			3	19
J	5	4	3	2		14	5		3	4	1	13	27
K	5	4			1	10	5	8	3		1	17	27
L	5		9		1	15	5	8	3	4	1	21	36
M	5			2	2	9	10	12			1	23	32
N			9		3	12			3	2	2	7	19
O	10	4	3	4		21			12		1	13	34
P	5	4	3	2		14	5	4	3		3	15	29
Q	5	8	3	4		20	5	8	3		1	17	37
R		8	3	2	2	15		4		2		6	21

TABLE II

WEIGHTED SCORES OF FIRST, SECOND, THIRD, FOURTH, AND FIFTH CHOICES RECEIVED BY
EACH SUBJECT IN THE JUNIOR GROUP ON THE FIRST AND SECOND SOCIOMETRIC TESTS
FOR INDOOR PLAY

(N=18)													
Sociometric Test I							Sociometric Test II						
Code	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	Total	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	Total	Composite Score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
A	5	4		2		11	5		6	2	1	14	25
B	15	4		4	1	24	10	12	3			25	49
C	5	8				13	5			2		7	20
D	10			4		14			6		1	7	21
E	5	4	3		2	14		4		2	1	7	21
F	5			2	1	8	10		6	6		22	30
G	5	4	6	6		21	5	8	3	2	3	21	42
H		8	6	2		16	5		3		3	11	27
I		8		2	1	11	5		3	6	2	16	27
J	5		6			11	5					5	16
K	5	4			2	11	15	8	6	2		31	42
L	5	4	9			18		4	9		1	14	32
M			3		1	4		4			1	5	9
N	5		3	4	2	14	10	4	3		1	18	32
O	10	8			1	19	5	8		2		15	34
P	5		3	2	1	11	5	8	3	4	1	21	32
Q		4	9			13	5	4	3	4	1	17	30
R	5	12	6	2	1	26		8		2	1	11	37

TABLE III

WEIGHTED SCORES OF FIRST, SECOND, THIRD, FOURTH, AND FIFTH CHOICES RECEIVED BY
EACH SUBJECT IN THE SENIOR GROUP ON THE FIRST AND SECOND SOCIOMETRIC TESTS
FOR OUTDOOR PLAY

(N=18)													
Code	Sociometric Test I						Sociometric Test II						Composite Score
	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	Total	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
A	5	8		2	2	17	5	4	9		1	19	36
B	10	8		2		20	5			2		7	27
C	10		3	6	4	23	10		6	6	2	24	47
D		8	3	2		13					3	3	16
E	5		12			17	5	4	3	4		16	33
F			6	4	1	11	5	4	3	2		14	25
G	5	4	6	2	1	18		4	3	2	2	11	29
H	5	4		4	1	14	5				2	7	21
I	10	4				14	15	12			1	28	42
J	5	12			3	20	10	8		2	1	21	41
K	5		3			8		4	6	2	1	13	21
L	10		3	2	1	16	5	8	6			19	35
M	5	4		4	2	15	5	8				13	28
N	5	8				13	5	4	3	2		14	27
O	5		6		1	12	10		3	4		17	29
P	5	4	6	2		17	5	8	3			16	33
Q		4	6	4	1	15			3	2	1	6	21
R		4		2		6		4	6	2		12	18

TABLE IV

WEIGHTED SCORES OF FIRST, SECOND, THIRD, FOURTH, AND FIFTH CHOICES RECEIVED BY
EACH SUBJECT IN THE SENIOR GROUP ON THE FIRST AND SECOND SOCIOMETRIC TESTS
FOR INDOOR PLAY

(N=18)													
Code	Sociometric Test I						Sociometric Test II						Composite Score
	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	Total	First Choice	Second Choice	Third Choice	Fourth Choice	Fifth Choice	Total	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
A	5	4	3	6	1	19	5	4	9			18	37
B	5	4		2	1	12	5		3	4	1	13	25
C	5	12		4	1	22	10	4	12			26	48
D		8		2		10		8		2		10	20
E	10		9		1	20	10	4		2	2	18	38
F	5	4	6		1	16		8	3		2	13	29
G			3	6		9	5			2	2	9	18
H		12	3	4	1	20						0	20
I	10	4			1	15	15					15	30
J	5	4	3		1	13	5	4		4		13	26
K	5		6			11	5	4			1	10	21
L	10	4		2	1	17	5	8				13	30
M		4	6		3	13		8	3	2	1	14	27
N	5	8	6		1	20	5	8				13	33
O	10		6			16	5	4	3			12	28
P	15			2		17	10		9			19	36
Q			3	6	1	10		4		8		12	22
R		4			2	6	5	4	3	2	1	15	21

outdoor play would be the first, second, third, fourth, and fifth choices combined, or seven as indicated in column six. On Sociometric Test II, Subject A received one first choice, which was equal to five points; two second choices, which was equal to eight points; no third choices; four fourth choices, which was equal to eight points; and one fifth choice, which was equal to one point. The total number of choices he received on the final test was twenty-two, as shown in column twelve. A composite score consisted of the number of choices received by a given subject on both Sociometric tests for outdoor play, which for Subject A amounted to twenty-nine. This score was entered in column thirteen.

Some subjects did not use their five choices when asked to name the five persons with whom they would like to play outdoors. Theoretically, the total score for each individual on Sociometric Test I would have been 15 points; the total score for each individual on Sociometric Test II would have been 15 points; therefore, the composite score would have been 30 points. By giving each child an opportunity to name only his best friends, discrepancies occurred in the scores, but this is in accordance with the procedure of the sociometric test to indicate which are the most frequently or less frequently chosen individuals. Several subjects gave only two or three choices. For example, after each expressed choice, Subject O in the junior group would say, "But they are all my friends." Several children in each group were not able to name all of the children in their group. This factor did not limit their choices since they were able to point to the pictures of their friends.

The Subject Code Letters were assigned according to the table of Random Numbers and used throughout the present study in recording sociometric scores. The weighted scores of choices received by each subject on the initial and final sociometric tests for outdoor and indoor play, plus the composite scores were arranged in order from highest to lowest and assigned a rank order. The procedure was used to assign the average of the rank positions in case of ties among individuals. For instance, on Table V, Subject A tied with another individual for ninth place on Sociometric Test II for the indoor activity. Each individual was assigned the rank of 9.5.

To simplify the complex analysis of the data collected, the composite score consisted of the rank order found between outdoor and indoor activity for the initial and final tests as well as between the two tests according to the activity used as criteria for the tests. According to Table V, Subject A in the junior group ranked 17 on the outdoor activity for Test I and ranked 14 on the indoor activity for Test I. On the composite sociometric rank, Subject A ranked 17. The same technique was used for the outdoor and indoor rank in Test II. On the outdoor activity in Sociometric Test I, Subject A ranked 17, and for the same activity on Test II, Subject A ranked 3. The composite rank for the outdoor activity for Tests I and II was 8.5. This same technique was used for the indoor activity rank in Tests I and II in the junior and senior groups.

The Spearman rank-correlation coefficient formula used to determine the correlations with respect to outdoor and indoor activity in

TABLE V

RANK ORDER OF EACH SUBJECT IN THE JUNIOR GROUP ACCORDING TO ACTIVITY
ON SOCIOMETRIC TESTS I AND II

Code	(1) Rank on Sociometric Test I		(2) Composite Sociometric Rank	(3) Rank on Sociometric Test II		(4) Composite Sociometric Rank	(5) Rank on Outdoor Activity		(6) Composite Activity Rank	(7) Rank on Indoor Activity		(8) Composite Activity Rank
	Outdoor	Indoor		Outdoor	Indoor		Test I	Test II		Test I	Test II	
A	17	14	17	3	9.5	4.5	17	3	8.5	14	9.5	13
B	1	2	1	4.5	2	3	1	4.5	1.5	2	2	1
C	6	10.5	8	14	15	15.5	6	14	10	10.5	15	16
D	12	8	10.5	10.5	15	12.5	12	10.5	12	8	15	14.5
E	18	8	9	10.5	15	12.5	18	10.5	18	8	15	14.5
F	13.5	17	16	15	3	8	13.5	15	15	17	3	9.5
G	2	3	2	1	4.5	1	2	1	1.5	3	4.5	2.5
H	6	6	7	8.5	12.5	11	6	8.5	7	6	12.5	11.5
I	6	14	10.5	18	7	15.5	6	18	16.5	14	7	11.6
J	10.5	14	13.5	12.5	17.5	17	10.5	12.5	12	14	17.5	17
K	15	14	15	6.5	1	2	15	6.5	12	14	1	2.5
L	8.5	5	5.5	4.5	9.5	6	8.5	4.5	4	5	9.5	7
M	16	18	18	2	17.5	9.5	16	2	6	18	17.5	18
N	13.5	8	12	16	11	14	13.5	16	16.5	8	11	7
O	3	4	4	12.5	8	9.5	3	12.5	5	4	8	5
P	10.5	14	13.5	8.5	4.5	4.5	10.5	8.5	8.5	14	4.5	7
Q	4	10.5	5.5	6.5	6	7	4	6.5	3	10.5	6	9.5
R	8.5	1	3	17	12.5	18	8.5	17	14	1	12.5	4

TABLE VI

RANK ORDER OF EACH SUBJECT IN THE SENIOR GROUP ~~ACCORDING~~ TO ACTIVITY
ON SOCIOMETRIC TESTS I AND II

Code	(1) Rank on Sociometric Test I		(2) Composite Sociometric Rank	(3) Rank on Sociometric Test II		(4) Composite Sociometric Rank	(5) Rank on Outdoor Activity		(6) Composite Activity Rank	(7) Rank on Indoor Activity		(8) Composite Activity Rank
	Outdoor	Indoor		Outdoor	Indoor		Test I	Test II		Test I	Test II	
A	6	5	3	4.5	3.5	3	6	4.5	4	5	3.5	3
B	2.5	13	8	15	10	14.5	2.5	15	11.5	13	10	12
C	1	1	1	2	1	1	1	2	1	1	1	1
D	13.5	15.5	16	18	15.5	17	13.5	18	18	15.5	15.5	16.5
E	6	3	2	7.5	3.5	5.5	6	7.5	6.5	3	3.5	2
F	16	8.5	13.5	9.5	10	10.5	16	9.5	13	8.5	10	8
G	4	17	13.5	14	17	14.5	4	14	8.5	17	17	18
H	11.5	3	4.5	16	18	18	11.5	16	15	3	18	16.5
I	11.5	10	10	1	5.5	2	11.5	1	2	10	5.5	6.5
J	2.5	11.5	7	3	10	5.5	2.5	3	3	11.5	10	11
K	17	14	17	11.5	15.5	13	17	11.5	15	14	15.5	14.5
L	8	6.5	7	4.5	10	7	8	4.5	5	6.5	10	6.5
M	9.5	11.5	11.5	11.5	7	10.5	9.5	11.5	10	11.5	7	10
N	13.5	3	7	9.5	10	10.5	13.5	9.5	11.5	3	10	5
O	15	8.5	11.5	6	13.5	8	15	6	8.5	8.5	13.5	9
P	6	6.5	4.5	7.5	2	4	6	7.5	6.5	6.5	2	4
Q	9.5	15.5	15	17	13.5	16	9.5	17	15	15.5	13.5	13
R	18	18	18	13	5.5	10.5	18	13	17	18	5.5	14.5

Sociometric Tests I and II for the junior group was obtained from Cornell (8, p. 306). The correlations are as follows:

	Test I Outdoor	Test II Indoor
Test I Indoor	.59	.08
Test II Outdoor	.02	.12

A significant correlation at the .01 level, .59, was obtained for the junior group on Test I between outdoor and indoor activity. No significant correlations were found between test and retest according to outdoor and indoor activity.

The significant correlation found for the senior group was between outdoor and indoor activity on Test II, as shown in the following results:

	Test I Outdoor	Test II Indoor
Test I Indoor	.28	.43
Test II Outdoor	.30	.64

The significant correlation of .64, which was significant at the .01 level, was slightly higher than the significant correlation found for the junior group. Probability may be that by running correlations for the four variables, a significant correlation may have resulted by chance, but with such a high correlation as obtained in each of the groups, there was the indication that the correlation in each group was significant beyond chance.

Teacher Judgments

The Spearman rank-correlation coefficient formula was used to determine the correlation between the two teacher judgment ranks in the

junior group, as shown on Table VII. The correlation of .51 between the two teacher judgment ranks in the junior group was significant at the .05 level. As shown in Table VIII, a significant correlation of .57 was obtained at the .02 level of confidence between the two teacher judgment ranks in the senior group. Thus, a substantial relationship was indicated between the two teacher judgment ranks in both junior and senior groups.

Correlations were computed between the teacher judgment composite ranks and the child sociometric composite ranks for outdoor and indoor activity for both the junior and senior groups. No significant correlations were obtained between the teacher judgment composite ranks and the child sociometric composite ranks for the junior group, as shown in the following results:

	Test I Outdoor	Test II Indoor
Test I Indoor	.04	-.02
Test II Outdoor	.38	.19

Three correlations between the teacher judgment composite ranks and the child sociometric composite ranks for outdoor and indoor activity on Tests I and II were found significant at the .05 level, as shown below:

	Test I Outdoor	Test II Indoor
Test I Indoor	.53	.34
Test II Outdoor	.49	.50

Thus, a substantial relationship was found between the teacher judgment composite ranks and the child sociometric composite ranks for

TABLE VII

RANK ORDER OF THE SUBJECTS IN THE JUNIOR GROUP
BY TWO TEACHER JUDGMENT RANKS

Subject Code Letter	(1) Sociometric Rank by Teacher I	(2) Sociometric Rank by Teacher II	(3) Composite Sociometric Rank
A	11	15	14.5
B	12	14	14.5
C	4	10	7
D	5	16	10
E	18	18	18
F	1	4	2
G	9	8	9
H	7	3	3.5
I	15	9	12
J	16	11	16
K	10	13	11
L	3	7	3.5
M	6	6	5
N	17	17	17
O	13	12	13
P	8	5	6
Q	2	2	1
R	14	1	8

Correlation .51; significant at the .05 level.

TABLE VIII

RANK ORDER OF THE SUBJECTS IN THE SENIOR GROUP
BY TWO TEACHER JUDGMENT RANKS

Subject Code Letter	(1) Sociometric Rank by Teacher I	(2) Sociometric Rank by Teacher II	(3) Composite Sociometric Rank
A	3	8	3.5
B	6	12	10
C	5	6	3.5
D	17	4	11.5
E	8	7	6.5
F	15	15	15
G	12	13	13
H	9	5	7
I	7	9	9
J	2	2	1
K	14	17	16
L	13	14	14
M	16	16	17
N	10	3	6
O	11	10	11.5
P	1	11	5
Q	18	18	18
R	4	1	2

Correlation .57; significant at the .02 level.

the senior group on Test I between outdoor and indoor activity, between Tests I and II for outdoor activity, and on Test II between outdoor and indoor activity. It may be suggested that teachers in the senior group are better able to estimate the sociometric rank of the subjects in the senior group; whereas, the teachers in the junior group may not be as aware of the sociometric position of each individual in the junior group. The fact that lower correlation was obtained for the junior group with respect to the indoor and outdoor activity in Tests I and II may have accounted for the low correlation between the above variables. If a child's position changes the entire group structure, it will not be likely for a teacher to take this change into consideration, especially since the two teacher judgment ranks were secured only once, whereas, the children were given a test and a retest.

Preference Patterns According to Age and Sex

In order to determine whether there was a difference in preference patterns according to age and sex, the total number of votes given on each test were divided into four groups: boy-boy, girl-girl, boy-girl, and girl-boy relationships. The important question to be answered was whether there were more inter-sex preferences (girl-boy or boy-girl) or intra-sex (boy-boy or girl-girl) in the junior and senior groups according to outdoor and indoor activity for Tests I and II.

Table IX serves as a guide for all of the chi-square values found in the present study. Each variable which has had a chi-square value computed is shown along with the critical value of chi-square, the degrees of freedom, and the level of significance.

TABLE IX
CHI-SQUARE VALUES

Age Relationships	χ^2			df	Level of Significance		
	Jr.	Sr.	Jr.-Sr.		Jr.	Sr.	Jr.-Sr.
Sociometric Test I							
Outdoor			15.72	3			.01
Indoor			9.35	3			.05
Sociometric Test II							
Outdoor			11.01	3			.02
Indoor			11.78	3			.01
Sex Relationships							
Sociometric Test I							
Outdoor	4.34	30.30		1	.05	.01	
Indoor	5.53	26.99		1	.05	.01	
Sociometric Test II							
Outdoor	6.98	23.39		1	.01	.01	
Indoor	1.11	13.78		1		.01	
Reciprocal Choices by Age							
Sociometric Test I							
Outdoor			.08	1			
Indoor			3.29	1			
Sociometric Test II							
Outdoor			.39	1			
Indoor			.03	1			
Reciprocal Choices by Sex							
Sociometric Test I							
Outdoor			6.51	2			
Indoor			.17	2			
Sociometric Test II							
Outdoor			1.67	2			
Indoor			2.26	2			

Table X shows the frequencies and proportions of the inter- and intra-sex preference patterns according to the first, second, third, fourth, and fifth choices, separately and then as a composite number. From the total, the proportion of choices was computed by dividing the total number possible to receive into the number of choices for a particular relationship. For example, in Table X, thirty-eight choices were boy-boy relationships in the junior group. The total number of choices given in the test was eighty-seven. The proportion of .44 was obtained by dividing eighty-seven into thirty-eight. The other proportions were computed in the same manner. Looking at the frequencies and proportions for both junior and senior groups, it was evident that boys tended to choose boys more than girls chose girls. The number of boy-girl and girl-boy choices were high. Mathematically, there were almost twice as many intra-sex preferences given as inter-sex preferences in the junior group. In the senior group, there were more than three times the number of intra-sex preferences as inter-sex preferences, indicating that the senior group members tend to give more preferences to individuals within their own sex group.

To determine statistically relationships with regard to preference patterns according to age on Tests I and II for outdoor and indoor activity between the junior and senior groups, the chi-square formula as given by Cornell (8, p. 196) was used. The results are shown in Table XI. A chi-square value of 15.72, significant at the .01 level, was obtained on Test I for outdoor play between the junior and senior groups;

TABLE X

FREQUENCIES AND PROPORTIONS OF INTER- AND INTRA-SEX
CHOICES ON SOCIOMETRIC TESTS I AND II IN THE
JUNIOR AND SENIOR GROUPS

Junior Group Tests	Boy-Boy		Girl-Girl		Boy-Girl		Girl-Boy		Total	
	f	%	f	%	f	%	f	%	f	%
Sociometric I										
Outdoor	38	.44	18	.21	16	.18	15	.17	87	1.00
Indoor	32	.39	21	.25	17	.21	12	.15	82	1.00
Sociometric II										
Outdoor	41	.46	19	.21	14	.15	16	.18	90	1.00
Indoor	33	.38	18	.20	20	.23	17	.19	88	1.00
Sociometric Composite	144	.42	76	.22	67	.19	60	.17	347	1.00
Senior Group Tests										
Sociometric I										
Outdoor	29	.33	43	.48	10	.11	7	.08	89	1.00
Indoor	29	.33	40	.46	8	.09	10	.12	87	1.00
Sociometric II										
Outdoor	28	.34	37	.44	9	.11	9	.11	83	1.00
Indoor	22	.30	32	.43	7	.09	13	.17	74	1.00
Sociometric Composite	108	.32	152	.46	34	.10	39	.12	333	1.00

TABLE XI

CHI-SQUARE ASSOCIATIONS FOR TESTS I AND II, OUTDOOR AND
INDOOR ACTIVITY, AND PREFERENCE PATTERNS BY AGE
AND SEX FOR THE JUNIOR AND SENIOR GROUPS

	Outdoor			Indoor		
	Age		Sex	Age		Sex
	Jr.	Sr.	Jr.-Sr.	Jr.	Jr.	Jr.-Sr.
Test I						
Boy-Boy	38	29		32	29	
Girl-Girl	18	43		21	40	
Boy-Girl	16	10		17	8	
Girl-Boy	10	7		12	10	
χ^2	4.34	30.30	15.72	5.53	26.99	9.35
Test II						
Boy-Boy	41	28		33	22	
Girl-Girl	19	37		18	32	
Boy-Girl	14	9		20	7	
Girl-Boy	16	9		17	13	
χ^2	6.98	23.39	11.01	1.11	13.78	11.78

a chi-square of 11.78, significant at the .01 level, was obtained on Test II for indoor play between the two groups; a chi-square of 9.35, significant at the .05 level, was obtained on Test I for indoor play; and a chi-square of 11.01, significant at the .02 level, was obtained on Test II for outdoor play. The significant results indicate that age is significantly related to preferences made within a group. The senior group tends to discriminate more when choosing members of the group as "friends," choosing more members of the same sex than of the opposite sex; whereas, in the junior group, the members do not discriminate as much.

The fourfold table was used to determine the relationships between inter- and intra-sex preference patterns within a group. The shortened computation for the fourfold table is: (i, p. 215)

$$\chi^2 = \frac{(ad-bc - \frac{n}{2})^2 n}{(a+b)(a+c)(b+d)(c+d)}$$

Table XI shows the chi-square values obtained on Tests I and II for outdoor and indoor activity for the junior and senior groups in determining the relationships of preference patterns according to sex. The significant chi-square value for the junior group was 6.98, which was obtained on Sociometric Test II for outdoor activity; thus it was concluded that the junior group members exhibited a slight tendency to discriminate between choices of "friends." By the time of senior group level, there are very high values which show that the members are choosing members within their own sex group and not as many members in the opposite sex group.

One aspect of determining relationships of preference patterns according to age and sex was to study the number of reciprocal choices given according to age and sex. The frequencies and proportions of inter- and intra-sex reciprocal choices on the two sociometric tests for outdoor and indoor activity are shown in Table XII. According to the total number of reciprocal choices recorded, it can be seen that the senior group tended to have more reciprocal choices than the junior group. There are fewer reciprocal choices given by the boy-girl:girl-boy relationships in the senior group than in the junior group. This may be due to the fact that there are more boys in the junior group, whereas there are more girls in the senior group.

The chi-square test was used to determine if there were any significant differences according to age and sex in the two groups with respect to the number of reciprocal choices given. The chi-square values are shown on Table XIII. Results indicated no significant relationship between age and sex and the number of reciprocal choices given.

TABLE XII

FREQUENCIES AND PROPORTIONS OF INTER- AND INTRA-SEX
 RECIPROCAL CHOICES ON SOCIOMETRIC TESTS I AND II
 IN THE JUNIOR AND SENIOR GROUPS

Junior Group Tests	Boy-Boy		Girl-Girl		Boy-Girl Girl-Boy		Total	
	f	%	f	%	f	%	f	%
Sociometric I								
Outdoor	8	.47	4	.24	5	.29	17	1.00
Indoor	3	.30	5	.50	2	.20	10	1.00
Sociometric II								
Outdoor	9	.56	5	.31	2	.13	16	1.00
Indoor	4	.27	5	.33	6	.40	15	1.00
Sociometric Composite	24	.41	19	.33	15	.26	58	1.00
Senior Group Tests								
Sociometric I								
Outdoor	7	.35	12	.60	1	.05	20	1.00
Indoor	7	.33	11	.53	3	.14	21	1.00
Sociometric II								
Outdoor	7	.37	10	.53	2	.10	19	1.00
Indoor	6	.46	5	.39	2	.15	13	1.00
Sociometric Composite	27	.37	38	.52	8	.11	73	1.00

TABLE XIII

CHI-SQUARE VALUES WITH REGARD TO RECIPROCAL CHOICES
ACCORDING TO AGE AND SEX IN THE JUNIOR AND
SENIOR GROUPS

<u>Reciprocal Choices According to Age</u>		χ^2
Sociometric Test I		
Outdoor		.08
Indoor		3.29
Sociometric Test II		
Outdoor		.39
Indoor		.03
<u>Reciprocal Choices According to Sex</u>		
Sociometric Test I		
Outdoor		6.51
Indoor		.17
Sociometric Test II		
Outdoor		1.67
Indoor		2.26

CHAPTER V

DISCUSSION

The present chapter is devoted to a discussion of the results as presented in Chapter IV. Comparisons of the obtained results are discussed under three main divisions as they appeared in the previous chapter: (1) sociometric position; (2) teacher judgments; and (3) preference patterns according to age and sex, including reciprocal choices.

Sociometric Position

As can be seen from the correlations computed for Test I and II on outdoor and indoor activity for the junior and senior groups, a significant correlation of .59 was obtained for the junior group on Test I between outdoor and indoor activity. A significant correlation of .64 was obtained on Test II between outdoor and indoor activity for the senior group. Only one out of four correlations was found significant for each group, indicating that at the age levels under consideration choices are relatively unstable. Hankley (10) states that theoretically stability of choice is a positive function of age. Even though the correlations are not significant, those for the senior group are higher, indicating that as children grow older they tend to maintain the same friendships. Considering all correlations for the junior and senior groups as estimating the change in sociometric posi-

tion, it would be plausible to conclude that the sociometric position does change from test to retest and from activity to activity. It could be interpreted, since both significant correlations were found between indoor and outdoor activity, that choices are more stable, even though given on different criteria, if given on the same day. A child might tend to select the same individuals for the second time since these would be his main friends for the day. No significant results were obtained from test to retest in either group, which may mean that children do not discriminate as much from test to retest as they do from outdoor to indoor activity on a given test.

The data were not analyzed according to first, second, third, fourth, and fifth choices. As the studies of Biehler (1), Bjerstedt (2), Hankley (10), and Moreno (19) have indicated the number of choices a child is able to express is significant in obtaining stability of choices. Biehler and Hankley (1, 10) found that preference patterns changed rapidly except for "first choices," and that other choices "revealed no clear-cut trends." Bjerstedt (2) found the first choice to be dynamically different from other choices. When first choices were changed, they were transformed into second choices, but when second or subsequent choices were changed, they were transformed to indifference. Moreno (19) concluded that children between the ages of two and four years did not always understand the questions, they were able however to express first choices, but were greatly limited in expressing other than first choices. From these studies, it was

concluded that the number of choices given a child influences the stability of choices, suggesting that the number of choices allowed in the present study may have been too many for the subjects in both the junior and senior groups.

Teacher Judgments

It is important for teachers to be aware of the approximate sociometric status of each child in their group. As stated earlier, a teacher can guide the child toward greater acceptance by the group or toward a better understanding of his position within the group if she is aware of the child's position in the group. A moderate correlation of .51 would be significant at the .05 level; this however does not indicate a relation of the .02 level which was set as the level of significance. It does suggest a strong possibility that there is a relationship between the two teacher judgments ranks within the junior group. A higher correlation which was significant at the .02 level, .57, was obtained between the two teacher judgment ranks in the senior group. Lippitt (14) found agreement between the two teachers' estimates of child popularity in preschool groups. McCandless and Marshall (15) found that teachers varied in ability to rank the children, but there was a significant correlation between the two teachers' estimates. Hankley (10), using children of the same ages as those in the present study, found a correlation of .75 between the two teachers' estimates of the sociometric ranks. Since most of the studies were concerned with older preschool age children, there was no comparison to be made according to the junior group.

The age difference between the two groups may have influenced the ability of the teachers to rank the children.

The correlations between the teacher judgment ranks and the child sociometric composite ranks were higher for the senior group than for the junior group, being a significant correlation of .53 between outdoor and indoor play on Sociometric Test I; a significant correlation of .49 between Tests I and II for outdoor play; and a significant correlation of .50 between outdoor and indoor play on Sociometric Test II. There were no significant correlations between the teacher judgment ranks and the child sociometric composite ranks for the junior group, possibly supporting Lippitt's (14) conclusion that children and teacher estimates seem to be based upon different criteria. The significant results found between outdoor and indoor activity may add further emphasis to the fact that there seems to be less change from activity to activity than from test to retest. It may indicate that the teachers were fairly well aware of the sociometric status of the members of the senior group, but that for the younger age group, either the teachers are not as aware of the sociometric status of the subjects or the change in sociometric position was greater for the younger group members than for the older group members.

Other investigators (10, 12, 14, 15, 22) reported significant correlations between teacher judgment composite ranks and child sociometric composite ranks. Hankley (10) found a correlation of .72 between the rating of Teacher I and the sociometric rank; .70 correlation between

the rating of Teacher II and the sociometric composite rank; and .74 correlation between the combination rank of Teachers I and II and the sociometric composite rank. Lippitt (14), McCandless and Marshall (15), and O'Brien (22) concluded that a significant relationship beyond chance existed between the two variables, suggesting that teachers are fairly well aware of the sociometric status among older preschool age children.

Preference Patterns According to Age and Sex

The results of the present study were analyzed in relation to inter-sex preferences (boys choosing girls and girls choosing boys) and intra-sex preferences (boys choosing boys and girls choosing girls) in the junior and senior groups on Tests I and II for outdoor and indoor activity. From Table X, it can be seen that individuals tend to choose members of the same sex more often than members of the opposite sex. When analyzing the numbers statistically, it was concluded that a significant difference was evident between the two groups when choosing "friends." Relationships were computed with regard to preference patterns according to age on Tests I and II for outdoor and indoor activity. A significant chi-square value of 15.72 was obtained on Sociometric Test I for outdoor activity; a chi-square value of 9.35 was obtained on Sociometric Test I for indoor activity; a chi-square value of 11.01 was obtained on Test II for outdoor activity; and a significant chi-square value of 11.78 was obtained on Test II for indoor activity. The chi-square values of 9.35 and 11.01 were significant at the .05 and .02

levels but not at the set .01 level of significance specified.

It was concluded that there was a significant difference in preference patterns according to age. Boys chose more boys in the junior group, with a higher number of inter-sex preferences given; whereas, in the senior group girls tended to choose more girls, with a decrease in the number of inter-sex preferences. One factor which could have influenced the results was the fact that there were more boys in the junior group and more girls in the senior group, which may have caused a weighting of scores toward this particular relationship.

The relationships of preference patterns according to sex were computed for the junior and senior groups on Tests I and II for outdoor and indoor activity. A significant chi-square value of 6.98 on Sociometric Test II for outdoor activity was obtained in the junior group. In the senior group, a significant chi-square value of 30.30 was obtained on Sociometric Test I for outdoor activity; a significant chi-square value of 26.99 was obtained on Sociometric Test II for indoor activity; a significant chi-square value of 23.39 was obtained on Sociometric Test II for outdoor activity; and a significant chi-square value of 13.78 was obtained on Sociometric Test II for indoor activity, thus concluding that the relationships with regard to preference patterns according to sex are consistently more significant for the senior group than for the junior group. From the results obtained on the relationships according to sex, it can be seen that even though only one relationship was significant in the junior group, most of the chi-square values are approaching

significance, which may indicate that even at the younger preschool age level, there is a certain amount of discrimination according to sex.

Other investigators (7, 10, 12, 22, 23) have found significant relationships with regard to preference patterns according to age and sex. Challman (7), Koch (12), and Parten (23) have indicated that children over four tend to associate with members of the same sex. Hankley (10) and O'Brien (22) found that intra-sex preferences were greater than inter-sex preferences, but that children had some heterosexual interest, which increased with age.

Another aspect of analyzing preference patterns was to examine the reciprocal choices given according to age and sex on Tests I and II for outdoor and indoor activity. Table XII shows that the senior group members received more reciprocal choices, but the preference patterns according to age and sex were not statistically significant. As stated before, the number of reciprocal choices recorded may be deceptive, showing that the boys had more reciprocal choices in the junior group and that girls had more reciprocal choices in the senior group. The fact that there were more boys in the junior group and more girls in the senior group may have influenced the number of reciprocal choices given. To what extent this could have affected the results is not known.

One of the main limitations found in doing the present sociometric study was that by working with so many variables, it was difficult to ascertain when each variable had been dealt with with sufficient precision. Comparing the junior and senior groups with regard to Tests I and II

for outdoor and indoor activity was quite involved. Very few studies were found in which the different age levels were used. For further studies, it is recommended that either test and retest on outdoor and indoor activity be used as variables in comparing the junior and senior groups and that not all of the variables used in the present research be included. In order to determine the effect of unequal numbers of boys and girls in groups, further studies might be designed using a balanced sample of both sexes.

CHAPTER VI

SUMMARY AND CONCLUSIONS

To become better acquainted with peer status at the preschool age level, the present study was concerned with an investigation of factors which were considered important in determining a child's sociometric status. The purpose of the study was to determine the preference patterns of nursery school children as shown by two sociometric tests administered two weeks apart to the junior and senior groups at The University of Tennessee Nursery School. The hypotheses which were tested were as follows:

1. There would be no change in sociometric position from test to retest or from outdoor activity to indoor activity.
2. There would be no relationship between teacher judgments and the child's sociometric status.
3. There would be no relationship between preference patterns according to age and sex.
 - a. Reciprocal choices would not vary according to age and sex.

There were eighteen three-to-five year old subjects (eleven boys and seven girls) in the junior group, and eighteen four-to-five year old subjects (eight boys and ten girls) in the senior group. The "Picture Sociometric Technique" developed by McCandless and Marshall (16) was used during the Spring quarter, 1964, to obtain the sociometric scores

for each subject in both groups. Teacher judgments were obtained from both head and assistant teachers in each group to judge the sociometric rank of each child within the group. The Spearman rank-correlation coefficient was used to obtain the relationship between Tests I and II and outdoor and indoor activity for each group. Correlations were computed for the two teacher judgment ranks of the two groups, and between the child's sociometric composite rank on Test I and II for outdoor and indoor activity and the teacher judgment composite ranks. The chi-square test of independence was used to determine if there were significant relationships according to age and sex with respect to preference patterns. The results of the analyses are summarized as follows:

1. A significant correlation for the junior group was obtained on Test I between choices of friends for outdoor and indoor play. A significant correlation for the senior group was obtained between choices of friends for outdoor and indoor play on Test II. From the data presented, it was concluded that there was more change in sociometric position from test to retest than from outdoor to indoor activity for the junior and senior groups.
2. (a) Higher correlations were obtained between the two teacher judgment ranks in the senior group, indicating that the teachers in the senior group ranked the subjects more nearly the same than teachers ranked the subjects in the junior groups.
(b) The significant correlations, which were found between the teacher judgment composite ranks and the child sociometric

composite ranks in the senior group but not in the junior group, indicated that teachers were fairly well aware of the sociometric status of the older preschool age children; whereas, they were not as aware of the sociometric status of the younger preschool age children or that the changes in sociometric position was greater for the younger group members.

3. (a) Intra-sex preferences (boy-boy and girl-girl) were greater than inter-sex preferences (boy-girl and girl-boy) on the two sociometric tests for outdoor and indoor activity for both junior and senior groups, but there was an even greater number of intra-sex preferences given in the senior group than in the junior group. There was a significant difference in preference patterns according to age on Tests I and II for outdoor and indoor activity.
- (b) Relationships with regard to preference patterns according to sex were consistently more significant for the senior group than for the junior group on Tests I and II for outdoor and indoor activity.
- (c) No statistically significant results were obtained with regard to reciprocal choices according to age and sex differences for Tests I and II for outdoor and indoor activity between the junior and senior groups.

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11/14/58

APPENDIX

WEIGHTED ORIGINAL CHOICES GIVEN AND RECEIVED IN THE JUNIOR GROUP
FOR OUTDOOR ACTIVITY ON SOCIOMETRIC TEST I

Subject Code Letters	Boys											Girls						
	J	N	C	Q	M	K	B	H	A	D	F	I	O	E	R	L	P	G
Boys																		
J		1	3				4					5		2				
N	2						5					1		3				4
C					1		2	5	4						3			
Q	4		2							1	5	3						
M		3					5					2		4				
K				4							3		5		1			2
B	3	1		5				2			4							
H			3		5	1			2	4								
A				2			1	4								3	5	
D					2		5		1			4						
F			4	2			3	5		1								
Girls																		
I		1					2								4	3		5
O		3		4		5	1									2		
E			3							4		5						
R	5	3				4						2						1
L			4							3		2		1		5		
P												3	4	1	5			2
G					1		2					5				3	4	

Votes received read down and votes given read across.

5 = first choice
 4 = second choice
 3 = third choice
 2 = fourth choice
 1 = fifth choice

WEIGHTED ORIGINAL CHOICES GIVEN AND RECEIVED IN THE JUNIOR GROUP
FOR INDOOR ACTIVITY ON SOCIOMETRIC TEST I

Subject Code Letter	Boys											Girls						
	J	N	C	Q	M	K	B	H	A	D	F	I	O	E	R	L	P	G
Boys																		
J		1		3			5					4			2			
N					1	5								4		3	2	
C	5				3					2		4		1				
Q			4					3			5							
M						4	5									3		2
K			5					4						3				
B		2	4			1			5								3	
H		5		3			2								4			
A				4				2			1				5			3
D		3				1	5								4			2
F				3				4	2	5							1	
Girls																		
I							1				2				3	4		5
O		3					2					1		5				4
E								3	4				5					
R		3	1				4					2	5					
L										2			1		4		5	3
P													4	1	3	5		2
G			2							5			4		1	3		

Votes received read down and votes given read across.

5 = first choice
 4 = second choice
 3 = third choice
 2 = fourth choice
 1 = fifth choice

WEIGHTED ORIGINAL CHOICES GIVEN AND RECEIVED IN THE JUNIOR GROUP
FOR OUTDOOR ACTIVITY ON SOCIOMETRIC TEST II

Subject Code Letter	Boys											Girls						
	J	N	C	Q	M	K	B	H	A	D	F	I	O	E	R	L	P	G
Boys																		
K				4		5	2				1							3
N	3						5							4	2			1
C	2			1	5		3											4
Q			1			4	3		2							5		
M				3			4	5	1		2							
K			3		1						2	5		4				
B	2	3			5	1			4									
H			1		4				5	2			3					
A		1			4					2							3	5
D										2			3			1	4	5
F	1		5		4			3	2									
Girls																		
I				4		3				2			1					5
O		2						5		3						4	1	
E		1					4		2	3								5
R						4							3			2	1	
L			2						4				3					
P													3	1			5	
G				5				2						5	2	4		1
														4		3	1	

Votes received read down and votes given read across.

5 = first choice
 4 = second choice
 3 = third choice
 2 = fourth choice
 1 = fifth choice

WEIGHTED ORIGINAL CHOICES GIVEN AND RECEIVED IN THE JUNIOR GROUP
FOR INDOOR ACTIVITY ON SOCIOMETRIC TEST II

Subject Code Letter	Boys											Girls							
	J	N	C	Q	M	K	B	H	A	D	F	I	O	E	R	L	D	G	
Boys																			
J				1		5					2					3		4	
N						5				3		1		2	4				
C		4				2					5					3		1	
Q						4	5										3		
M		3		2			4	5										1	
K		5		4	1				2		3								
B				5		3		1				2			4				
H						3					2	1					4	5	
A		5		2			3	1									4		
D							5		3				4			1		2	
F						4			5	1		2						3	
Girls																			
I			5		4			1	3								2		
O						5	4				3				2			1	
E		1						3				5				4	2		
R		5					4				2	3					1		
L			2							3			4	1			5		
P												2	5		1	3		4	
G				3					1		5		2	4					

Votes received read down and votes given read across.

5 = first choice
 4 = second choice
 3 = third choice
 2 = fourth choice
 1 = fifth choice

WEIGHTED ORIGINAL CHOICES GIVEN AND RECEIVED IN THE SENIOR GROUP
FOR OUTDOOR ACTIVITY ON SOCIOMETRIC TEST I

Subject Code Letter	Boys									Girls									
	R	A	D	I	M	E	F	L		C	Q	K	H	G	B	N	P	O	J
Boys																			
R		1		4	2		3	5											
A			4			5		3	1	2									
D		4			1	3	2											5	
I		4	2			3		5	1										
M						3								4	5		2		1
E		5			1		2											3	4
F	4	1	3	5															
L		2	4	5		3			2										
Girls																			
C					2		1			3				5					4
Q									2		5			3		4			1
K									2	1						5	3		4
H									2	3			1	4			5		
G								1		4			5		2		3		
B									5				2				4	3	1
N		2							1		3		4						5
P					4				3				1	2	5				
O					5		3		1	2					4				
J									5				2	3		4		1	

Votes received read down and votes given read across.

5 = first choice
 4 = second choice
 3 = third choice
 2 = fourth choice
 1 = fifth choice

WEIGHTED ORIGINAL CHOICES GIVEN AND RECEIVED IN THE SENIOR GROUP
FOR INDOOR ACTIVITY ON SOCIOMETRIC TEST I

Subject Code Letter	Boys								Girls									
	R	A	D	I	M	E	F	L	C	Q	K	H	G	B	N	P	O	J
Boys																		
R		2		4		3	1	5										
A			4			5	3											
D					3		4		1	2							5	
I	4	2				1	3	5										
M								1				2	4		5	3		
E		5	2		1			4		3								
F	1	4		5		3		2										
L		2	4	5		3												
Girls																		
C					1				2		4			3		5		
Q										5	1	2		4				3
K											4			5	2	3	1	
H				1					2					3	5			4
G	1	3				5				2				4				
B					3				4		2			1	5			
N									4	1		3	2					5
P					1				4			2	3	5				
O		1			4		5		2	3								
J									5		3	4	2	1				

Votes received read down and votes given read across.

5 = first choice
 4 = second choice
 3 = third choice
 2 = fourth choice
 1 = fifth choice

WEIGHTED ORIGINAL SCORES GIVEN AND RECEIVED IN THE SENIOR GROUP
FOR OUTDOOR ACTIVITY ON SOCIOMETRIC TEST II

Subject Code Letter	Boys									Girls									
	R	A	D	I	M	E	F	L		C	Q	K	H	G	B	N	P	O	J
Boys																			
R		3	1	5		2		4											
A				4		5	2	3											
D		1			4		5		2	3									
I	4	3	1			2		5											
M										1					5	2	4	3	
E		5					4	3			2								1
F	3			5				4											
L	2	3	1	5		4													
Girls																			
C				4						1	3							2	5
Q										1			2		3	5			4
K										3					5				4
H				4						2			1			3	5		
G		4		1		3							5						2
B										3						4	5		
N	3									2	4		1						5
P					4					5			1	3	2				
O					5		3			2	1		4						
J										5	3	1			4		2		

Votes received read down and votes given read across.

5 = first choice
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 1 = fifth choice

WEIGHTED ORIGINAL SCORES GIVEN AND RECEIVED IN THE SENIOR GROUP
FOR INDOOR ACTIVITY ON SOCIOMETRIC TEST II

Subject Code Letter	Boys								Girls									
	R	A	D	I	M	E	F	L	C	Q	K	H	G	B	N	P	O	J
Boys																		
R				5				4										
A						5	4											
D	5									4			2				3	
I	4	3				2	1	5										
M						1			3						4		5	2
E	2	5			4		3											
F				5				4										
L	1	3	2	5		4												
Girls																		
C			4		2		1							3		5		
Q					4					5						3		
K									3						5			4
H		4			1				3	2			5					
G					3		4		5	2	1							
B									3	2						5	4	
N	3								4	2			1					5
P		3				5				4			1	2				
O			4			1								5		3		2
K									5				2	1	4	3		

Votes received read down and votes given read across.

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 2 = fourth choice
 1 = fifth choice