SOCIOMETRIC STATUS AND PEER PREFERENCE IN THE PRESCHOOL AS RELATED TO ORDINAL POSITION, AGE, SEX, RACE, SOCIOECONOMIC CLASS, AND FAMILY BACKGROUND CHARACTERISTICS

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ABSTRACT

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By

Karen Elizabeth Tracy

The major purpose of this study was to examine whether certain family background factors, as well as age, sex, and race influenced peer choice and peer status in the preschool class. Another purpose was to compare samples of 3 1/2- to 5-year-olds taken from two different populations; 67 middle class, mostly white children from Michigan State University's Laboratory Preschool (LPS) and 116 lower class, mainly black children from Head Start classrooms in Pontiac and Detroit. The third purpose was to investigate various aspects of use of the instrument, Boger's (1969) Play Situation--Picture Board Sociometric Technique (PSPBS).

The children were tested using the PSPBS, and a sociometric status score was computed for each child. Regression analysis was used to determine whether relationships existed between various characteristics of an individual and his sociometric score level. In addition, characteristics of each individual were regressed against those of his first peer choice to test whether certain relationships existed between the two. Regressions were also run on negative peer scores for a subsample

of the LPS population and on individuals from the total sample who chose the same peer in all three choice situations.

Distributions of sociometric status scores for the LPS sample and for the HS sample were contrasted. Agreement between samples regarding hypothesis testing results was examined.

The LPS sample were retested at 2 to 4 week intervals. First, second, third, and negative choices were compared between test and retest and the percentages of choices reproduced were calculated. Individual sociometric status scores for both tests were correlated. Negative scores and weighted scores were compared with positive, unweighted scores.

Results indicated that sex, race, age, ordinal position, father-absence or -presence, and presence and spacing of just younger and just older siblings were significantly related to peer choice and/or sociometric status. The most highly significant results, that the children preferred friends of the same sex and of the same race as themselves, pertained to both LPS and HS samples although some significant results were different for each. Distribution of sociometric status scores differed between samples, a greater percentage of the HS than the LPS sample's scores falling into the very high and the never chosen categories.

Reliability results (for the LPS sample only) for the PSPBS Technique attained a very respectable stability coefficient of .70. Having each child give a single negative choice did not increase the test's significance. Weighted scoring held no advantage over unweighted scoring.

Differences between various classrooms indicated that social structure was more disparate among individual classrooms than between the lower and upper age halves of the sample.

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CHAPTER I: STATEMENT OF THE PROBLEM AND HYPOTHESES

The major purpose of this study was to examine whether certain family background factors, as well as age, sex, and race influence peer choice and peer status in the preschool class. A second purpose was to investigate various aspects of the use of the instrument, Boger's (1969) Play Situation-Picture Board Sociometric Technique. The third purpose was to compare results of samples taken from two different populations; middle class, mostly white children from Michigan State University's Laboratory Preschool (LPS) and lower class, mainly black children from Head Start (HS) classrooms.

The primary family background characteristic of interest in this study is ordinal position. Many ordinal position theorists have asserted that first-borns are less socially competent and popular than later-borns. Most of the research carried out on this issue, however, has been done on college students. Since the family comprises nearly all of a small child's social world, it would seem that family and peer influences would be more evident in a preschool child than in a college student. As personality structure and social patterns of an individual are established during the preschool years, tendencies towards social competence and congeniality, or the lack of them, should be evident by the age of three or four. The major issue concerning ordinal position in this study is thus to test the hypothesis that first-borns are less popular with their nursery school peers than are later-borns.

Critics of birth order research maintain that many studies concerning birth order effects are of doubtful validity because of the researchers' failures to control possible confounding variables. To avoid this pitfall and to increase the predictive value of this study, many variables other than birth order were included. Personal characteristics such as age in months, sex, and race of each subject were examined. Other family background characteristics such as family size, socioeconomic status, father absence or presence, sex of all siblings, and spacing between the subject and his closest siblings were additional variables used. Not only was a child's ordinal position examined but also his position among like-sexed siblings. Many of the hypotheses concerning these variables were based on work done by Toman (1969) and by Koch (1955, 1956, 1957, 1966) who theorized that individuals choose friends who bear similar characteristics in sex, age, and ordinal position to those of close siblings.

To establish peer desirability ratings, the children in the sample were tested using the Play Situation-Picture Board Sociometric Technique (Boger, 1969). A peer desirability (sociometric status) score was then calculated for each child on the basis of the total number of times he was selected by peers. Each subject's family background and personal statistics were regressed against his own peer desirability score.

The total sample included about 30% middle class children from Michigan State University's Laboratory Preschool (LPS) and 70% lower and working class children from Detroit and Pontiac Head Start classes. The LPS testing was done in the spring of 1974 by the experimenter and another trained tester. The Head Start testing had been done in the

spring of 1969 by a team from M.S.U.'s Head Start Evaluation and Research Center. The children ranged in age from 3 1/2 to 5 years when tested.

It was assumed that the first choice of three made by a child would represent his most preferred peer choice. Each child's first peer choice was then analyzed. Certain background and personal characteristics of the selector were then compared with those of the selectee.

Although most children chose a different peer for each of the three play situations presented, a few chose the same peer all three times. The hypothesis tested was that children who made the same choice all three times tended to have a similar cluster of characteristics which set them apart from those who chose three different peers.

Several aspects of use of the PSPBS were investigated. Weighted scoring was compared with unweighted scoring. One negative choice was asked of the upper half of the LPS sample in addition to the usual three positive choices. The LPS subjects were retested two to four weeks after initial testing to establish reliability scores on the test.

Another focus of this study was on socioeconomic differences in family background characteristics and in sociometric results. The middle class LPS sample was compared to the largely lower class (some working class) Head Start sample. As family size and child-rearing practices differ between middle and lower class families, it was theorized that the hypotheses regarding peer desirability and sociometric choice, based largely on studies and observations of middle class nursery school children, would be less likely to be supported by Head Start than LPS data.

Northway (1967) asserted that in nursery classrooms with programs emphasizing social development, the spread of sociometric status scores

would be greater than in those classrooms with lesser emphasis in social development. In the former type of classroom, thus, only one or two children would never be chosen and the highest scores would not be very much greater than modal scores. As LPS programs had more emphasis on social development than did the HS programs, which focused more on cognitive development, it was hypothesized that LPS scores would be more widely spread than HS scores with fewer children per class getting scores of zero or extremely high scores. In other words, more LPS than HS children would fall into the middle range of scores and fewer into either the high or low range.

As some researchers assert that asking for negative choices adds significance to one's results, a single negative choice was requested of the older half of the LPS sample. Scores of positive choices only were compared with scores of both negative and positive choices to ascertain whether the negative choice increased overall significance. In addition, the hypothesis that individuals who receive several negative choices have certain characteristics in common was tested.

Assumptions

Several important assumptions were made regarding the instrument used in this study. They are as follows:

(1) Preschool children do have social preferences.

(2) The Play Situation-Picture Board Sociometric Technique measures social preferences of preschool children.

(3) The choices on the PSPBS made by preschool children represent ideal playmate choices which may or may not correspond to actual play partners in the classroom.

(4) An individual's sociometric status score on the PSPBS is an index of his popularity with his peers.

(5) An individual's first choice on the PSPBS is his most preferred playmate.

(6) An individual's first negative choice on the PSPBS is his least preferred playmate.

The first assumption, that preschool children do have social preferences, has been recognized as a fact by enough researchers (Northway, 1967; Biehler, 1954; Dunnington, 1957b) that it will not be discussed here. The other five assumptions are dealt with in the ensuing paragraphs.

The sociometric questioning technique used in this study is aimed at eliciting a child's choice of ideal playmates. A child's idea of whom he would like to play with may be very different from his statement of whom he does play with. One child may indeed wish to play with the same peers as he actually does play with; another may admire a peer from afar but be too shy to approach him and thus settle for playing with less desired peers. It is questionable, however, if all preschool children understand the difference between the conditional and straightforward nature of such a question. Some children may interpret the question as a direct inquiry as to whom one plays with while others may grasp the ideal sense of the question.

As the hypotheses in this study rest on the assumption that the instrument actually measures peer preferences, the results are very much dependent upon the validity of the instrument. Unfortunately, the validity of a child's opinion about whom he would like to play with is impossible to establish. A tester can sometimes make an accurate

judgement as to whether a given child is actually making a considered judgement or just a random response on the test. Although the 4-year-olds tested seemed to make their peer choices deliberately and discriminatingly, some of the 3-year-olds simply chose the photographs nearest them. Such subjects often displayed a short attention span and other signs of relative immaturity. At the lower age ranges, therefore, the test may not have 100% validity, but with most children over 48 months of age, the investigator believes it to be a valid measure.

Another assumption which has been made is that the child's first peer choice corresponds to his most preferred playmate. Indeed, many subjects tested prefaced their first peer choice statements with the comment, "Here's my best friend." If this assumption is warranted, one would expect this choice to remain more constant over a two- to four week period than less preferred choices. In like manner, if a child's negative choice represents his least preferred playmate, this choice should also remain constant. To test these expectations, the LPS subjects were retested after the time periods stated (half after each time period) and reliability indices were established.

Socioeconomic Differences

Socioeconomic differences in individual characteristics of young children have been widely examined; most recent studies, however, seem to be oriented towards academic and cognitive potential and achievement. Little research has been done concerning socioeconomic effects on patterns of peer interaction within groups of homogeneous socioeconomic composition. In a research project which did focus on such a comparison, Berk (1971) found fewer actual interactional differences based on

socioeconomic differences than had been expected. Writers who assume that lower class preschool children are as socially inexpert with their peers as they are academically handicapped compared to middle class children may be on unsteady ground. Lower class children, who come from bigger families and usually have more opportunity for neighborhood peer interaction than middle class children, may be more skilled at interaction with peers from the same subculture at an early age than middle class children.

Nursery School Socialization

Why preschool children choose the friends they do is not well understood; it is a complex phenomenon. It is hoped that this study might uncover some of the factors involved in nursery school peer preference and peer idealization. It is also hoped that it will add to the body of knowledge on sibling position effects. More knowledge in these areas might help professionals in early childhood education to enhance the social climate in the classroom and to prevent a lack of skill in early social interaction from becoming a permanent handicap to a child. Such knowledge might also be useful for experts in the area of self-concept development and group dynamics. Understanding the framework underlying the social preferences of very young children might provide increased insight into the development of adult prejudices, preferences, sociability, and group behaviors.

Definition of Terms

PSPBS - Play Situation-Picture Board Sociometric Technique - The test, developed by Boger (1969), used in this study to measure peer preferences.

LPS - Michigan State Laboratory Preschool

HS - Head Start

Peer desirability - (Sociometric status)score - Score based on the number of times a child is selected as a positive choice by classmates on the PSPBS. This score reflects a child's popularity among his peers; the higher the score, the higher the degree of popularity. A score of zero means a child was never chosen.

Negative peer desirability score - Number of times a child was selected as an undesired playmate; measured in negative units.

Ordinal position - The rank order held by a child in the birth sequence of the children in his family.

First-born refers to an only or eldest child.

Later-born refers to a child who is not the eldest or only child in his family.

The lowest ordinal position rank is first-born; the highest in this particular study is tenth-born.

Father-present - Father lives with the family.

Father-absent - Father lives apart from the family. Mother may be widowed, divorced, separated, or unwed.

Standard age - The age of a given individual relative to the average age in his classroom; measured in terms of standard deviations.

Dominant or major race - The race which the majority of children in a given class belong to.

Age gap between subject and sibling - the difference in age between the two, measured in months.

Sole member of sex - Child is the only one of his sex in his sibship.

Selector - Individual making a choice on the PSPBS.

Selectee - Individual chosen by another on the PSPBS.

Single-sex sibship - Members of one sex only are represented in the child's sibship, including the child.

First-of-sex - Child is the oldest member of his sex in his sibship.

Hypotheses

I. Concerning peer desirability

A. Peer desirability increases as ordinal position increases.

B. Peer desirability increases as standard age increases.

C. Peer desirability is higher for children from homes with a father present than for those from homes with a father absent.

D. Peer desirability is positively related to membership in the predominant race in the class.

E. As the age gap between a subject and his closest older sibling decreases, the subject's peer desirability will increase.

F. As the age gap between a subject and his closest younger sibling increases, the subject's peer desirability will increase.

G. Subjects with younger brothers will be less popular than those with no younger siblings or younger sister(s).

H. Males who are the sole members of their sex in their families will be less popular than those with brothers.

II. Concerning the first peer choice

A. The selectee will be of the same sex as the selector.

B. If the selector comes from a family in which the father is present, so will the selectee.

C. If the selector is high in peer desirability, he will choose a friend of low peer desirability.

D. If the selector is low in peer desirability, he will choose a friend of high peer desirability.

E. The higher the selector's standard age, the more likely the selectee will be of his own sex.

F. The higher the selector's standard age, the more likely the selectee will be of the major race.

G. The selector's standard age will be dissimilar to the selectee's.

H. The selector will be of a different ordinal position from the selectee.

I. If the selector is from a single-sex sibship, the selectee will be of the same sex.

J. If the selector is first-of-sex, the selectee will be of the same sex.

K. If the selector is first-of-sex, the selectee will be first-of-sex.

III. Regarding the choice of the same peer three times

A. The selector will be of a low standard age.

B. The selector will tend to be female.

C. The selector will have a younger sibling.

D. The selector will have a low peer desirability score.

E. The selector will be from a father-absent family.

F. The selector will be from a small family (1- to 3-child).

G. The selector will be the first of his sex in the family.

H. The selector will be of a low ordinal position (first is lowest).

I. The selector will be of a younger age than average for the total sample.

J. The selector will be of a non-predominant race.

K. The selector may be influenced by a specific tester.

IV. Regarding a comparison of LPS versus Head Start samples

A. Results in the predicted directions for hypotheses under sections I, II, and III above will be stronger for LPS than for Head Start subjects.

B. The spread of the sociometric status scores will be wider in the middle range for LPS than for Head Start classes.

C. Fewer children per class will receive sociometric scores of zero in LPS than in Head Start classes.

D. Fewer children will receive very high sociometric scores in the LPS than the Head Start sample.

V. Regarding subjects who obtain negative scores in the LPS subsample

A. The more negative choices a subject receives, the more likely it is that he will be male.

B. The more negative choices a subject receives, the more likely he is to be male and only one of his sex in his family.

C. The more negative choices a subject receives, the more likely he is to have a younger sibling.

D. The more negative choices a subject receives, the more likely he is to have an opposite-sexed sibling.

Overview

Five chapters follow this one. Chapter II contains a review of the literature and implications of this review for the present study. In Chapter III, the method used in the study is presented including sampling, procedure, statistical methods used, and experimental design.

Results are reported in Chapter IV in tabular form supplemented by textual explications. Chapter V is a discussion of the results obtained with emphasis on the relevance of the results to findings and theories reported in the literature. Finally, in Chapter VI, major results are summarized, implications are drawn, and suggestions are made for further research.

CHAPTER II: REVIEW OF THE LITERATURE

Since this study involves several important areas, several topics are covered in this chapter. The primary topic, ordinal position, is discussed in the first half of this chapter. Major wholistic theories on ordinal position as well as empirical studies and specific explanatory theories regarding ordinal position are presented. Directly related factors such as family size, parental satisfaction, and socioeconomic influences are also dealt with. Next, social behavior in the preschool is described with a particular emphasis on socioeconomic, sex, and age influences on behavior. Finally, sociometric testing is introduced with a discussion of two studies which relate birth order to sociometric status and choice. This section concludes with a discussion of sociometric testing of young children including procedural techniques, scoring methods, validity, and reliability of the test.

Ordinal Position Theory

Freud wrote, "...a child's position in the sequence of brothers and sisters is of very great significance for the course of his later life.." (Freud, 1933, p. 281). Freud's major interest was in the ways that sibling structure affects family dynamics. He stressed the enormous hostility which inevitably exists between siblings who are in continual rivalry for parental love and in conflict over rights and possessions. A first-born who is 2 1/2- to 4-years old when a sibling is born will often actively state that he doesn't like the baby at all. Eventually,

closely spaced siblings may develop true affection for each other, but initially, they have considerable antipathy towards each other.

If the age gap between siblings is greater than four years, Freud averred, the situation is different; the baby is apt to be looked upon as an object of curiosity rather than hate. When the gap increases to eight years, particularly if the elder child is a girl, the baby might evoke protective, motherly impulses in the older child. In some cases, children model themselves after siblings rather than their parents; this phenomenon greatly affects total family dynamics. Also, the birth of a second child will sometimes cause the first child to reject his mother and attach himself from that point on to his father instead; this attachment can not only alter parent-child relationships but can also affect marital relationships. Sibling factors therefore have far-reaching effects on family dynamics and on the individual development of various siblings according to Freud's theory.

Alfred Adler discussed ordinal position and family constellation factors in even more depth than did Freud (Adler, 1956). He is perhaps best remembered for his concept of "dethronement", a term signifying the radical shock felt by a first-born child when a second child arrives and usurps some of the affection and attention previously solely given the first-born. Adler asserted that the first-born is particularly traumatically affected by the birth of a new child as he has had no experience in cooperating with siblings. He stated that first-borns are most often prone to psychological disturbances during childhood than other-borns because of harmful effects due to this dethronement on his developing personality.

In contrast to the first-born, Adler stressed, the youngest child is immune to dethronement. Although the youngest can be spoiled by the whole family and thus become a problem, he may also be so stimulated by his older siblings that he eventually outstrips them all. Another child safe from dethronement is the only child. He, however, has no siblings to relate to and can therefore easily become an egocentric, demanding adult, warned Adler. As a middle child has both a peer model to follow and one to set, he may be better suited to getting along with people than any other-borns.

In addition to ordinal position, Adler addressed himself to other issues related to sibling dynamics. He averred that to be the only boy in a family of girls or the only girl in a family of boys could lead to the overstressing of either masculinity or feminity accompanied by life-long feelings of isolation and insecurity. Spacing is also important; Adler stated that a child born many years apart from another resembles an only child. Finally, Adler introduced the idea that siblings can be dynamically related to each other; if one greatly outshines another, the other may fail to the same degree that the first succeeds.

Many of Freud's and Adler's original insights into the effects of family position can be of help to the practicing family counselor; they are, however, difficult concepts to test empirically. Forer (1969) and Konig (1963) have both written recent psychoanalytically oriented books on sibling position aimed at counselors. They are, however, more experiential than empirical and more focused on the abnormal than the normal so that they are not of much use to the empirical investigator of normal human development.

Three books have been published within the last ten years in the area of sibling position which are more empirically based than the books just mentioned; Irving Harris' The Promised Seed (1964), Walter Toman's Family Constellation: its Effects on Personality and Social Behavior (1969), and Sutton-Smith & Rosenberg's The Sibling (1970). Harris surveyed biographies of hundreds of eminent men, contemporary and historical. From this study, he concluded that first-borns tend to have a more intense relationship with their parents than do later-borns (Harris, 1964, p. 285) and thus have different psychic tendencies than the latter. First-borns, he stated, are "connectedness-prone" while later-borns are "disconnectedness-prone" in their thinking. First-borns therefore tend to excell in wholistic, abstract thinking while later-borns excel in discrete, concrete thought. While first-borns adhere to inner controls (conscience) in their behavior, later-borns obey external dictates (laws). Later-borns are more apt to be powerful mainpulators or iconoclastic thinkers than are first-borns. First-borns, however, can synthesize and formulate wholistic theories better than can later-borns.

Although Harris amassed much support for his theory from the biographies he surveyed, his method was rather subjective; unfortunately, his study was also limited to the male sex. It is, however, a very persuasive and thought-provoking work.

Toman's book is a remarkably extensive study of specific sibling sex and position factors. Toman divided ordinal position into four categories: oldest, youngest, intermediate, and only child. He then subdivided each of these categories according to the sex of the child and the sex composition of his sibship. For each of these cases he sketched a complete personality profile. He then predicted what

sibling positions would characterize optimal friend and spouse choices for each case. In the last part of the book, Toman also discussed how a parent's particular sibling position would affect his treatment of each of his children.

Toman's theory is that people interact most harmoniously with others of different sibling positions from their own; i.e., an oldest son often chooses a younger son as a best friend. Toman described an empirical study which he had carried out on a random sample of 108 divorced couples. He found that wife and husband of the same ordinal position were more prone to divorce than those of complementary position, i.e., an oldest son marrying a younger daughter. He hypothesized that couples whose ordinal positions were identical had trouble establishing a balance of power in their marriages as they were both used to assuming similar power positions in their families of orientation. He also found that divorced individuals were more apt to be from a one-sex or only-child family than were married individuals. This finding, he asserted, was related to the fact that such individuals had had insufficient experience in living closely with peers of the opposite sex. On the basis of this research, he concluded that there is an ideal sex and birth ranking of children in a family: first a boy, then a girl, then a boy, then another girl. For healthy personality development, Toman affirmed, all-girl and only-child configurations are the least desirable.

Sutton-Smith & Rosenberg's The Sibling is by far the most empirically oriented of the three books; it contains an excellent review of the literature on sibling position. The authors stated that much research done on sibling position is defective. One glaring deficiency is that most studies have been carried out on middle class subjects only;

many are further limited to college students as subjects. Furthermore, most researchers do not control the many variables affecting sibling position such as spacing, age, specific ordinal position, sibling sex configuration, family size, family completion, and parental characteristics.

Sutton-Smith & Rosenberg asserted that too many ordinal position studies have been undertaken by first-born academics who emphasize the importance of the parent-child relationship on human development while ignoring the vital impact of siblings and peers. They therefore undertook their research to try to probe into the area of sibling relationships. They concluded from their research that siblings often form dyads within the family, each sibling pairing up with another, usually the closest in age, for both stimulation and conflict. Dyads of varying sex and ordinal composition function very differently with correspondingly different results for each dyadic member. Sex order of the sibship, they concluded, had much more effect on individuals than did simple ordinal position.

Empirical Investigations of Birth Order Effects

Achievement

One of the most widely investigated relationships in sibling order is that between birth order and academic achievement. Altus asserted that first-borns are more likely to go to college than later-borns (1966). Russell Adams (1972), in a study of fourth graders of three races, found first-borns highest in achievement across race and social class lines. Boroson (1970) stated that first-borns, although no more intelligent than later-borns are better readers as children, better high school

students, and better performers on National Merit and S.A.T. exams. Unfortunately, most of these studies did not control for family size and socioeconomic class.

Solomon and Hirsch (1972) did control for family size and social class in their study on fifth grade achievement in a black ghetto. They found a strong Birth Order X Family Size interaction, with children from small (1- to 3-child) families performing best, first-borns from large families (6 or more children) outdoing their sibs, and last-borns from intermediate-sized families (4- or 5-child) outshining their sibs. Interestingly, the father's presence or absence in the home had no significant effect on achievement.

Responsibility

Harris and Howard (1968) investigated the frequently made claim that first-borns are more responsible than later-borns. A questionnaire was administered to college and graduate students. On it, they were requested to state at what age a child should be given certain responsibilities and at what age he should be given certain privileges. First-born and first-of-sex subjects set the age for various responsibilities lower than did later-borns. Later-borns correspondingly set the age for various privileges lower than did first-borns. First-borns thus believed that children should accept responsibilities at a younger age but obtain privileges at an older age than did later-borns. The authors therefore concluded that first-borns were more responsible than were later-borns.

Creativity

Another area of investigation is creativity. Cicirelli, in a study of middle class sixth graders, found creativity scores highest for

first-borns with brothers (1967). Lichtenwalner and Maxwell (1969) compared middle class and lower class preschoolers in creativity. They found both social class and ordinal position effects; middle class children tended to be more creative than lower class children and first-borns were more creative than later-borns.

Dependency

Stanley Schachter (1959) stimulated a great deal of research regarding sibling order and social-psychological characteristics with his The Psychology of Affiliation. His experimentation demonstrated that first-borns react to an anxiety-producing situation with more fright than do later-borns. First-borns also prefer to be with others when anxious to a greater extent than do later-borns. Schachter thus postulated that first-borns have greater social dependency needs than do later-borns. To support this position further, he cited a study by Haeberle indicating that the most dependent nursery school children come from 2- and 3-child families, the most highly dependent being first-borns, the least dependent being last-borns. Waldrop and Bell (1964), however, in a study of 2- and 3-year-old males, found that males from large, dense families are more dependent towards the teacher than those from small, low density families. Since this study did not include girls, however, the discrepancy between these results and those of the Haeberle study might be attributable to a sex difference in dependency.

Related to dependency is the need for approval. Moran (1967) found that females had more need for approval than did males and that first-born females had a greater need for approval than did later-born females.

This sex difference in need for approval might explain the difference in results between the Haeberle study and the Waldrop study.

In another dependency-related study, Hines (1973) investigated the relationship between birth order and social versus non-social reinforcement effectiveness. Although both first-borns and later-borns performed better under the former condition, first-borns performed better than did later-borns under social reinforcement conditions; under non-social reinforcement conditions, both groups performed equally.

Motivation

Glick, Grosse, and Zigler (1971) used elementary school subjects in an experiment measuring the performance of a monotonous task under conditions of adult-support and adult-non-support. They found that first-borns persevered longer than did later-borns in the non-support condition while later-borns and only-borns persisted longer in the support condition. The authors hypothesized that first-borns are spurred on by non-responsiveness on the part of an adult, perhaps as a result of their experience in trying to regain parental affection after "dethronement." Later-borns and only-borns are motivated more naturally and directly by adult continual support.

Empathy

Another landmark study was done by Stotland and Walsh (1963) on birth order and empathy. Among their undergraduate subjects, they found later-borns to be more empathic than first-borns. They theorized that later-borns have a greater capacity than do first-borns to identify sympathetically with a peer due to their childhood experience of identifying with siblings as well as parents.

Anxiety

Weiss (1970), investigating the often-made assumption that first-borns are more anxious than later-borns, found for his adolescent male sample that heart rates, but not respiratory rates, were higher for first-borns than later-borns under all the kinds of stress conditions induced in the study, indicating that the first-borns were indeed more intensely anxious than were later-borns. In previous investigations, Weiss reported, he had found first-born athsmatics more prone to attacks induced by emotional upset than later-borns.

Sibling Sex Position Effects

Several studies indicate that sex order and composition of sibship are more useful in explaining certain traits in an individual than ordinal position alone. Schmuck (1963), in a study of family position and female tendency to conform, chose a sample of female undergraduates from two-child families. He found no ordinal effects but discovered that a female with a brother conformed more than a female with a sister. In another study in which female undergraduates were used as subjects, Landers (1969) found that women who had younger brothers participated more in masculine sports and scored lower on a femininity profile than did females from other family constellations.

Sterner (1973) built on Schachter's research on birth order and affiliation by investigating Birth Order X Self-esteem effects. A sample of Navy enlisted men was divided into two groups, one composed of men whose self-esteems were high, the other of men whose self-esteems were low. He found that the high-esteem subjects, regardless of ordinal position, preferred affiliation when under stress. Low-esteem subjects,

if first-borns, followed the same pattern, as did later-borns with older sisters. Later-borns who had an older brother fairly close in age to themselves, however, avoided affiliation when under stress.

Critiques of Ordinal Position Studies

Numerous critiques of ordinal position studies have been written within the last decade. The most comprehensive is Sampson's "The Study of Ordinal Position: Antecedents and Outcomes" (1965). Although Sampson averred that certain generalizations can be made on ordinal position effects on the basis of numerous research studies, he believed that a child's psychological position in the family, not necessarily related to birth order, is the most important influence on his personality development. Sampson also asserted that the interaction of Ordinal Position X Sex is highly important but too often ignored by researchers. Finally, he warned that many researchers overstress the advantages of being a first-born. In general, he stressed, although first-borns tend to be responsible, highly motivated, and hard-working, they are less friendly, relaxed, cooperative, sociable, and independent than later-borns.

Boroson (1970) took a firmer stance than Sampson on ordinal position effects, avowing that they are proven and powerful. He warned that the U.S. is a society geared to first-borns and discriminatory of later-borns to the detriment of its quality of life. Although first-borns are highly motivated and financially successful, they are not warm, empathic, and congenial as are later-borns. Boroson recommended that parents make a conscious effort to give time and attention to their later-borns and that colleges try to recruit later-borns in the same way that they

recruit racial minorities. By raising more later-borns to influential positions, he asserted, the U.S. could become less of a compulsive, driving, competitive society.

Schooler's (1972) review of ordinal position studies is full of scepticism regarding the scientific validity of most ordinal position studies. She cautioned that many such works are invalid as they contain no provision for matching the sample population with a control group on the bases of age, social class, and family size. Schooler stressed the fact that family size is inversely related to the level of the father's educational level. Since the level of the father's education is directly related to socioeconomic level, many experimenters who don't control for family size or socioeconomic level may actually be measuring social class effects rather than ordinal position effects. Unless family size, subject age, and social class variables are accounted for, concluded Schooler, ordinal position studies are of dubious validity.

Bert Adams (1972) divided ordinal position theory into seven groupings on the basis of explanatory orientation: (1) physiological causation, (2) only-child uniqueness, (3) dethronement effects, (4) variation in state of tension of parents, (5) waning of affectional display towards first-borns over time, (6) sibling influence, (7) economical factors. Of these, Adams seemed to favor the only-child uniqueness theory and the dethronement theory. He stated that the physiological causation theory, the sibling influence theory, and the family economics theory were each too limited in scope and demonstrated effectiveness to be useful as predictive theories.

Explanatory Theories

Physiological Causation Theory

Some theorists believe that physiological causation factors underlie the differences found between first-borns and later-borns. Boroson (1970) theorized that since the mother is younger when she delivers her first-born than she is with any succeeding child, she may be healthier and apt to exercise more care prenatally with the first child. In addition, he hypothesized that the uterus might be in poorer condition during later than in first pregnancies and later-borns may thus be less well-nourished prenatally than first-borns.

Jensen (1969) stated that world-wide being first-born is advantageous in regard to intelligence and success. First-borns thus, reasoned Jensen, must have some kind of genetic or prenatal advantage over later-borns as the variety in world cultural and social conditions preclude any social-psychological explanation. Upon these assumptions, Jensen concluded that the middle class is genetically superior to the lower class as it contains a greater percentage of first-borns (family size is generally larger in the lower class). Many researchers have questioned Jensen's evidence and logic in this study.

Sutton-Smith & Rosenberg (1970) presented a very different point of view from Boroson's and Jensen's. They argued that later-borns have physiological advantages over first-borns. They cited evidence indicating that first-borns are more susceptible to both paranatal and prematurity disorders than are later-borns. Bert Adams (1972) concluded that physiological causation theories are of limited usefulness as available research indicates that there are both advantages and disadvantages

physiologically to being first-born or later-born. Adams' viewpoint seems a judicious one.

Sibling Effects

The major investigator into direct sibling effects on child development was Helen Koch. She found that sex order and spacing between children very much affected the degree of influence they had on each other (1955, 1956, 1957, 1966). She established that when spacing between sibs was close, they had more direct interaction with each other than when spacing was wide. When spacing was wide, they had much more direct interaction with their parents than with each other (1956). In regard to sibling-sex factors, Koch discovered that opposite-sexed sibs effected not only more stress but also more stimulation on each other than did same-sexed sibs. In all sibling-sex configurations, differences in spacing have more effect on males than on females.

In a large sample study of middle-class 6-year-olds from two-child families, Koch asked each child to name his playmates. First-born girls with a brother named the greatest number of choices while second-born boys with a sister named the fewest. Most children reported three to five playmates (1957). When asked to name a best friend, the largest proportion of children chose a child of the same age. Of those children who chose older friends, more were second-borns than first-borns. Most of these second-borns had elder siblings less than two years older than themselves. Twins tended overwhelmingly to play with others of their own age (1966). Koch therefore concluded that children prefer playmates with similar age characteristics as their sibs, particularly when they are close in age to those sibs.

Although Koch's subjects generally preferred friends of their own sex, those from mixed sex, closely spaced sibships chose opposite-sexed friends more than did any other group (1957). Koch therefore came to the overall conclusion that age and sex of a child's sibling in a two-child family did influence his friendship choice at the age of six.

Dethronement

In the beginning of this chapter, Adler's dethronement theory was described. Several theorists attribute many differences between first-borns and later-borns largely to the dramatic effects of dethronement for the first-born (Sutton-Smith & Rosenberg, 1970; Forer, 1969; Harris, 1964; Sampson, 1965; B. Adams, 1972; Boroson, 1970). After an initial period of being of central importance, a first-born child is suddenly forced out of his supreme position by a tiny, helpless, squalling infant. According to Harris (1964), this jolting dethronement may stimulate a drive for achievement in a first-born which motivates him throughout life: "By doing great deeds, by creating great things, one can demonstrate to himself that he is still invulnerable, that the stopping of external and internal admiration was just a bad dream. Thus the first son tends to ask himself, 'What must I be, what must I do to win for myself a perpetual source of admiration, so that I can feel as omnipotent and overestimated as I once felt?'" (Harris, 1964, p. 76).

Sampson expressed a similar point of view to Harris', that the first-born spends his life trying to regain the centrality he once had. He further posited that dethronement might lower the first-born child's self-esteem; available evidence demonstrates that first-borns do indeed tend to have lower self-esteem than later-borns (1965). Especially if

the first child is relatively non-verbal when the second is born, he doesn't truly understand why he loses his parents' exclusive attention and thus may attribute the loss to his own undesirability.

When a second child displaces the first from his central position, the first-born child is apt to have many of his dependency needs frustrated and may carry these unfulfilled needs into adulthood. As a young child, the first-born will often try to win parental affection by striving to show his superiority over his younger sib; this striving to compete may persist throughout adulthood. A first-born's dependent use of others as anxiety-allaying objects could handicap them in making friends. His tendency to compete rather than cooperate may also make him less popular than later-borns. Also handicapping a first-born in social relationships is his tendency towards more intense anxiety than later-borns (Sampson, 1965).

Sutton-Smith & Rosenberg (1970) suggested that the high anxiety level of first-borns may be due to dethronement effects as only-borns demonstrate remarkably less anxiety than first-borns. That self-concept may suffer as a result of dethronement is also supported by the finding that only children have the highest self-esteem of all ordinal positions while first-borns have relatively low self-esteem.

Forer (1969) stated that first-borns are more likely to be leaders of groups in which intimate contact between members is at a minimum, such as a large political group. In attaining leadership of a large group, competitiveness and drive could be advantageous; in maintaining control of a small group, however, these same qualities could be disadvantageous. If, as is hypothesized, dethronement effects are responsible

for the first-born's competitiveness and drive, they could thus also be responsible for his leadership characteristics.

Taylor and Kogan (1973) sought to test the dethronement theory by empirical observation. They observed eight first-born 2 1/2- to 3 1/2-year-old childrens' interactions with their mothers shortly before and shortly after the birth of a second baby. They found a consistent decrease in expression of warmth on the part of both mothers and children after the birth of the new sib. Both children and mothers displayed a significant amount of emotional flatness post partum. The mothers yawned frequently and seemed to respond to their first-born children only with effort. It was the researchers' conclusion therefore that the birth of the second child does indeed lessen the quantity and quality of interaction between the mother and her first child thus lending support to the dethronement theory.

Socialization Theories

Many theorists believe that parents treat children of varying ordinal positions differentially. Sears, Maccoby, and Levin investigated this issue in Patterns of Child Rearing (1957). They found that first-borns were more often awaited for joyfully by prospective parents than were later-borns. First-borns were more likely to be breastfed, weaned late, and be emotionally upset over weaning than were later-borns. Their toilet training was begun earlier than their siblings and tended to be non-problematic. Fathers were more likely to participate in the rearing and disciplining of first-borns than of later-borns. First-borns were permitted more aggression towards their sibs than were later-borns but also were asked to do more chores than were the youngest. By age five,

first-borns had more strongly developed consciences than later-borns. Sears, et al, found only-borns to be treated similarly as first-borns were except that their movement outside the home was considerably more restricted.

Middle-born children were weaned earlier but toilet-trained later, often with emotional upset accompanying the latter. They were asked to do chores more often than were older or younger sibs but were praised less often for good behavior. In families with more than three children, mothers spent less time playing with middle children than with oldest and youngest children.

Youngest children were more indulged by their parents than were other-borns and were least often asked to do chores. Fathers spent less time with them than they did with their older children. Mothers therefore played the greatest role in disciplining the youngest.

Family Size Effects

Although the Sears, et al, study did not include large families, it did cover 2- to 4-child families. In 2-child families, the children were treated less differentially on the basis of ordinal position than those from larger families. The younger child was, however, treated more strictly regarding noise and aggression than was the older. In the 3- and 4-child families, oldest children were shown less affection and were physically punished more than were the youngest. In such families, the mother treated the youngest child more warmly than the others. Family size therefore did affect parental treatment of their children from each ordinal position.

Ordinal Position and Parental Behavior

Although Sutton-Smith & Rosenberg stated that sibling differences seem to be caused by more than differential parent-child interactions, they cited several differences found among parental treatments of various children according to ordinal position (1970). They cited Lasko's 1954 study which indicated that parents give their first-borns more intellectual and verbal stimulation during their first two years than they do other-borns. The same study showed that parents treat first-borns more like adults and demand more of them than they do of other-borns.

Only-borns, stated Sutton-Smith & Rosenberg, are unique. They have no particularly disadvantageous traits and possess the great advantage of being highest of all-borns in self-esteem. Perhaps this is partly due to the fact that their mothers interact with them to a greater extent than mothers of more than one child interact with any one sibling.

Sampson maintained that first-borns are trained more inconsistently than are later-borns and also have more frustration of needs during infancy because of their parents' inexperience (1965). In his early life, the first-born tends to be overprotected and over-indulged by his parents only to experience a sharp reversal in these trends when another sib is born. Sampson quoted a study by Orbison which indicates that parental anxiety and neurotic conflicts are most evident in the rearing of their first child. Sampson cited Lasko's research as showing parents to be warmer and more permissive with second-borns than with first-borns, particularly during the preschool years.

Role Theory

Sampson (1965) suggested a role theory model for the explanation of ordinal differences. As the first-born identifies with and competes against his parents, he is likely to be highly achievement-oriented and responsible but awkward at achieving warm, intimate, cooperative relationships with peers. As a later-born has both sibling and parental models to emulate, he can cooperate and empathize with his peers as well as achieve satisfactorily. Interestingly, it has been often reported that later-borns are over-represented in the acting professions; they can apparently assume and cast off various roles much more skillfully than can first-borns.

Parental Variables

Individual parental characteristics help to determine how each parent will treat a given child. Toman (1969), Forer (1969), Adler (1956), and Sampson (1965) all stressed the fact that a parent's own sex and birth order will affect how he relates to each of his own children. Sears, et al, (1957) found that maternal age, which changes for each child at birth (except for multiple births), affected child-rearing methods, younger mothers being stricter and more impatient than older mothers.

Some theorists base much of their ordinal position theory on the assumption that all parents are anxious and inept with their first children thus creating personality characteristics in the first-borns which are not found in later-borns. According to Dyer's study of middle class parents' reactions to the birth of the first child, however, parents of even similar age and social class react in very different ways. While

some viewed the event of the first birth as a serious crisis, a disruption of major proportions, others considered it only very mildly disrupting. Those parents who had the latter reaction tended to have happier marriages before the child was born, had had some sort of marital training course in school, had been married three or more years, and had planned for the baby (Dyer, 1963).

In a similar kind of study to Dyer's, Hobbes, (1965) using a random sample of couples from a small city who had recently had their first baby, found that poverty-level and middle class mothers viewed the birth as more of a crisis than did working class mothers. It would therefore seem that more factors than new parenthood are involved in parental level of anxiety regarding their first-borns and that theories resting on the assumption that all first-time parents are anxious and incompetent are faulty.

Family Size

Some research regarding family size has already been alluded to; in this section, the relationship of family size to marital satisfaction and family functioning is the factor of interest. Christensen (1968) studied the relationship of number and spacing of children to marital success and discovered that actual size and spacing seemed to be less important in marital success than the convergence of the actual pattern with the desired one. Aldous (1969), however, found that marital satisfaction declined as the number of children increased beyond two or three, especially for the husband. As many large families are not planned, Aldous' findings might actually be compatible with Christensen's. Family size seems therefore to be related to marital harmony, which can affect parenting quality.

Hurlock (1972) divided family size into four categories: the one-child family, the small family (2-child), the medium family (3- to 5-child), and the large family (6-child or greater). The one-child family, she theorized, is characterized by a democratic style of child-rearing, close parent-child relationships which contribute to good peer relations, and parental pressures for achievement. The small family (which may include three children if spacing is wide) is similar except that sibling rivalry is intense and parents give their children little freedom to determine their own roles. The medium-sized family (which includes 3-child families if spacing is close) bears many of the small family's characteristics except that control becomes less democratic as family size increases and pressures to achieve are focused largely on the first-born.

Large families, stressed Hurlock, are the most different from other types of family. Usually unplanned, these families often are beset with marital friction and financial difficulties. Control is authoritarian with strict role assignments, parental crushing of sibling rivalry, and little pressure for achievement except for first-borns. Hurlock judged optimal family size to be three or four children. Least desirable, in general, is the large family.

Socioeconomic Influences

One difficulty in examining socioeconomic differences in child-rearing is that so few empirical studies have been done concerning specifically lower class child-rearing techniques. Kohn (1965), however, did not believe this problem to be serious. He stated that the differentiating factor in determining what general cluster of child-rearing

practices a parent will use is his occupational class. According to Kohn, parents in the entire manual worker category will use working class techniques while parents in the whole non-manual category will use middle class techniques. Child-rearing practices which apply to the "working class", asserted Kohn, also apply to the lower class.

Rodman pointed out, however, that lower class families have a different structuring than do middle class or working class (1965). He cautioned that lower class adults have a "fluidity of marital bond" (1965, p. 227) which doesn't exist in other social classes. A lower class fatherless family is not the same kind of phenomenon among the lower class that it is among other classes; it is an adaptive solution to economic and social problems rather than a deficient, unwished for family form.

Rodman also stressed that lower class individuals have more fluid values than do people of other classes. It may be that researchers have difficulty in specifying a definite established pattern of child-rearing characteristic of lower class parents simply because no such universal, sharply defined pattern exists. I believe also that it is not always possible to differentiate between working class and lower class families. The boundary between the two classes seems to be rather indistinct and easily traversed. In a given family's life cycle, the family could cross back and forth across this boundary several times. In this chapter, therefore, the emphasis will be primarily in terms of working class/middle class differences in child-rearing.

Socioeconomic theorists argue that first-borns and only-borns are overrepresented in colleges and successful careers because their families gave them the resources necessary to pursue their educations. In

large families, they assert, the youngest similarly often excels because he reaps the most benefit of the family's resources. The economic fluctuations over the family life cycle affect children of varying ordinal positions differently according to their staggered rates of development. For example, the youngest child is often spoiled because the family has the material and time resources to lavish on him. A middle child, however, may be comparatively neglected because of a paucity of time and money when he is growing up (Sampson, 1965; Boroson, 1970; Sutton-Smith & Rosenberg, 1970; Bert Adams, 1972; Schooler, 1972).

Schooler (1972) asserted that many improperly controlled ordinal position studies were actually measuring socioeconomic differences rather than ordinal differences. She noted that family size and social class are closely connected. Since the middle class has a greater proportion of first-borns than the working or lower classes, it is not surprising that first-borns are overrepresented in the middle class-dominated college population. In like manner, many personality characteristics attributed to first-borns versus later-borns may be more a function of social class than ordinal differences. If position in the family does affect personality, moreover, the effects might differ for the same ordinal position depending upon age or social class.

Franklin and Scott (1970) found a value difference in goals which parents set for their children between blue collar and white collar parents. Blue collar parents strongly desired that their children obey external controls while professional parents equally strongly desired that their children establish internal control. While working class parents set deference and popularity as highly desired goals for their children, professional parents established industriousness and

independence as supreme goals for their children. These different value orientations affect child-rearing patterns greatly; such basic value differences, I believe, would affect parent-child interactions to a much greater extent than would sibling position factors.

The degree of marital harmony and cooperation in child-rearing may also be partly a function of social class. Kerckhoff (1972) discovered that working class couples had significantly lower marital value consensus than did professional couples. According to Bott (1964), working class husbands participate less in child-rearing than do middle class husbands. Sears, et al, (1957) found that working class women were more critical of their husbands than were middle class women; the former also fought more with their husbands over child-rearing issues.

Sears, et al, (1957) also discovered other significant differences regarding child-rearing between the two classes. Working class mothers were more severe in toilet training, punishment of dependency, and sex-training than were middle class mothers. The former also used physical punishment, deprivation of privileges, and ridicule more often in disciplining their children than did middle class mothers. Although working class mothers were more worried about their children's progress in elementary school than were middle class mothers, working class mothers were less apt to have aspirations that their children attend college.

Kohn (1965) asserted that middle class parents see child-rearing as more problematic than do working class parents. Jacoby (1969) stated further that the working class woman puts more intrinsic value on having and rearing children than does the middle class woman. While the working class woman may find children a relief to care for in an incompatible marriage, a middle class woman may find child-care duties

disruptive of conjugal intimacy. Working class women tend to have more child care experience and access to help from kin than have middle class women. Thus, although middle class couples have fewer problems with unplanned children and with financial worries than do working class couples, they may find child-rearing more arduous, frustrating, and anxiety-producing than do working class couples.

Preschool Social Behavior

Many people attach little importance to a child's social functioning in the preschool as they believe that a child of preschool age is simply too young to function truly socially. According to Hurlock (1972), however, patterns of social behavior are established at the preschool age and tend to persist throughout life. Positive early social experiences, she stressed, tend to enhance an individual's self-concept. Chamberlin and Nader (1971) in a study of upper-middle class grade school children, found that all children who had had social problems in nursery school of an aggressive-resistant nature had been referred to school guidance counselors by elementary school teachers. If such children had been helped in establishing more positive social patterns at the preschool level, perhaps they would not have continued to manifest behavioral problems in elementary school.

Selfishness. One source of social conflict in the preschool is competition over playthings. Selfishness, stated Hurlock (1972), is at a peak in children from small families and wealthy homes while generosity is high among middle class children from intermediate or large families. If generosity is positively related to peer desirability,

the latter children could therefore have an advantage. As such children would not be likely to be first-borns, later-borns might, in general have the social advantage.

Succorance and aggression. Sutton-Smith & Rosenberg (1970) cited evidence on the behavior of nursery school children indicating ordinal differences in modes of interaction. They stated that only and youngest children are the most succorant in nursery school, a finding congruent with the theory that these particular children are themselves well-cared for at home. First-borns were shown to be least aggressive while middle-borns were most aggressive. Younger and only children were most popular with their peers while first-borns were least popular.

Socioeconomic Differences and Preschool Behavior

Laura Berk (1971) measured the number of frustrating situations with nursery school children encountered in the classroom in two lower class Head Start and in two upper middle class private nursery school settings. She found that the number of instances of frustration was about the same for each group; the lower class children, however, responded more with physical attacks than did middle class children while the middle class children were more likely to use explanations than were lower class children. The total percentage of verbal adaptations, however, was not an effect of social class.

McKee and Leader (1955) compared lower class and middle class nursery school children in aggressive and competitive behavior with nursery school peers; children were observed in pairs of like social class. The experimenters found lower class children both more competitive and

more aggressive than were middle class children. Lower class boys were more physically aggressive while lower class girls were more verbally aggressive.

Verbal functioning. Much has been written concerning the verbal deficiencies of lower class preschool children. Although such children are lacking many verbal skills necessary for early academic success, are they lacking verbal skills necessary for interacting socially with their peers? Bernstein (1960), in his comparison of middle class and lower class language use, found that although lower class language is limited in utterance length and syntax, it is effective in communicating concrete information and is often of a very high level of expressive functioning. Since at the preschool level, language is more often used concretely, expressively, and in short sentences, perhaps verbal peer interaction is as effective or even more effective for lower class than for middle class children, except in cases of very severe speech deficiency. Unfortunately, although much has been written about the academic handicaps of disadvantaged preschool children, little has been written about their social interaction skills.

Conclusion. If more were known specifically about special social problems or attributes of children from various sex and ordinal positions and from various family size and socioeconomic backgrounds, the nursery school teacher would be alert to possible characteristic problems or strengths in children right from the time she read their admission applications. She could then arrange strategies for grouping the children, designing the program, and working with parents early in

the term so that each child would benefit maximally from his early socialization experience. This study was designed to help further these ends.

Birth Order and Sociometric Choice

The study which stimulated the investigator to undertake this particular research project was the one carried out by Schachter (1964) on a sample of over 600 college fraternity and sorority members. A sociometric questionnaire was administered to each subject. Each subject was requested to choose three house-mates with whom he would like to room and to report three house-mates with whom he actually associated with most frequently. He found that first-borns as a group assigned their choices to fewer individuals than did later-borns as a group and that they chose more popular people than did later-borns for desired roommates. He discovered, moreover, that later-borns were considerably more popular than were first-borns. Schachter theorized that first-borns, being more dependent than later-borns, chose their ideal friends on the basis of what others thought rather than on their own judgement. As dependent people tend to be less popular than non-dependent, first-borns were, he reasoned, unsurprisingly low in popularity.

Alexander (1966), using a standard sociometric questionnaire (name your three best friends) with male high school seniors, found first-borns more popular than later-borns and more apt to be involved in reciprocal choices. First-borns also tended to choose lower sociometric status friends than later-borns.

In explaining the opposite direction of his findings from Schachter's, Alexander hypothesized that later-borns who achieve college fraternity

or sorority memberships are likely to be of a higher socioeconomic class than first-borns in the same situation since otherwise they would not even attend college and normally could not afford sorority or fraternity fees. Since socioeconomic status is correlated with peer desirability, Schachter's later-born population therefore could have been more popular than the first-borns solely because of their social status.

Alexander's study is not truly comparable to Schachter's. Alexander's sample was limited to males from middle class families of two to three children only while Schachter controlled for none of these variables. In addition, Alexander used high school seniors living at home while Schachter used college students living together as subjects; Alexander's subjects were probably on less intimate terms with their peers than were Schachter's. As previously stated, first-borns are not as good at establishing intimate relationships as are later-borns, but perhaps they do well at establishing more superficial bonds. Finally, Alexander's study differed from Schachter's in that the former dealt with only actual and not ideal sociometric choices. Since Schachter's reported differences were based mainly on the ideal choice part of the questionnaire, Alexander's findings cannot be said to be truly comparable to Schachter's.

Sociometric Testing and Preschool Children

Since the late 1950's, numerous research studies on sociometric testing of nursery school children have been published. A variety of testing procedures and methods of analysis have been used. Dunnington (1957b) used a direct, simple approach. She took each child in turn to a testing room and asked him whom he liked to play with at school and

then, whom he didn't like to play with. Each child made three positive and three negative choices. Then, each child was asked whether he did or didn't like to play with each of the other children; these choices were called "forced" choices.

Northway (1967) added a situation specific dimension to the test asking each child to name three peers he would like to play with in each of three different play situations at nursery school. She did not use negative choice or forced choice questions.

Biehler (1954) used a more complex procedure than those just described with kindergarten children. He developed three pictures of line drawings portraying children in play groups of varied sizes; missing on these drawings were the children's heads. Each child was asked to complete each picture by choosing photographs of heads of themselves and of favorite playmates.

McCandless and Marshall (1957a) developed a picture sociometric technique in which individual pictures of all the children in a class were mounted on a board. Each child was asked to point to the picture of some one he liked to play with three times.

An elaboration of the pictureboard sociometric test was designed by Horowitz (1961), who placed a button attached to a timer underneath each child's picture. Each child then indicated his selection of a best friend by pressing the appropriate button. Horowitz thus was able to record not only choice but latency of choice for each subject.

Moore and Updegraff (1964) used the same questioning technique that Dunnington had used but also employed a pictureboard presentation. Hartup, Glazer, & Charlesworth (1967) also used a pictureboard

technique, recording three negative as well as three positive choices but not requesting forced choices.

The technique used in this study, the Play Situation-Picture Board Sociometric Technique, was developed by Robert Boger in 1967 to 1968 for the 1968-69 Head Start evaluation (Boger, 1969). As previous nursery school sociometric testing had been confined to university laboratory nursery schools whose population was largely upper middle class, Boger felt that no previous test design was adequate for use with Head Start children from working and lower class backgrounds. The latter have been demonstrated to be less formally verbal than upper middle class children, especially during the preschool years (John & Goldstein, 1967). Boger therefore developed a test which relied very little on verbal instructions. In this test, the subject first chose three favorites from the five toy picture cards. Then, from a picture board, he selected the peer whom he wanted to play with for each toy. Thus, even a fairly non-verbal child could be tested.

Scoring

In analyzing the results of sociometric tests, all the researchers mentioned have compiled peer status scores and rank ordered all the children in a given group according to their status scores. Some researchers, having asked only for positive responses from the children, used only positive scoring. Northway (1967) is one such researcher; she stated that negative choices take on so many different significances that they cannot be handled well statistically. Several researchers (Dunnington, 1957b; Hartup, et al, 1969; and Moore & Updegraff,

1964), all, however, affirmed that negative choices significantly contributed to the information they obtained.

Most researchers recorded only the spontaneous choices of each child, usually three positive and three negative (when negative choices were requested). Dunnington reported that forced choices added significantly to her information, but Moore & Updegraff (1964) in a later study found that they were of no use. Currently, the trend seems to be towards requesting three positive choices only.

In scaling the sociometric peer status scores, unweighted scoring seems now to be preferred. In two reviews of sociometric techniques (Northway, 1967; and Witryol, 1953), it was reported that many studies had established that weighting the scores did not alter the results obtained by unweighted scoring. Dunnington (1957b), however, found that weighting the scores added significantly to her results. Perhaps the reason for this significance was that by weighting the scores differentially, Northway could count spontaneous choices more heavily than urged choices. As most researchers used only spontaneous choices, however, unweighted scores were as significant as weighted ones.

Despite the evidence against weighting sociometric choices, many investigators continue to use weighting schemes. Campbell (1960) suggested that although weighting choices in a large group situation has no effect, it may be appropriate in certain small group situations.

Validity

Quite a controversy rages over the question of the sociometric test's validity for preschool children. Central to this issue is the form in which the sociometric choice question is asked of the child.

Dunnington (1957a) adopted the position that a sociometric test should be a direct measure of actual preference; she therefore phrased her question straightforwardly, "Whom do you like at school?" Northway (1967), by contrast, believed that a sociometric test should measure ideal choice; the question should therefore be phrased in the conditional tense, "Whom would you like to play with?" Boger (1969) used this particular approach.

If one accepts Dunnington's method, it therefore becomes legitimate to relate sociometric choice with actual classroom interactions or teacher judgements. Many such studies have been carried out by researchers of Dunnington's persuasion. Hartup, et al,(1967) found that sociometric choice did correspond to observed classroom interactions as did Dunnington (1957b). Dunnington (1957b) and Horowitz (1961) found a high correspondence between teacher predictions and sociometric scores, but Marshall & McCandless (1957b) found that individual teachers varied markedly in their predictive ability.

If one accepts Northway's approach, however, sociometric results are neither validated or invalidated by such comparisons. As Lorber (1969) stated, asking "Whom would you like to play with?" is asking for an attitudinal response. Who can judge if an individual's attitude is valid or invalid? Thus, using the ideal choice method, one cannot really establish validity.

Reliability

Reliability of sociometric tests in the nursery school is another area of controversy. Some critics argue that social relationships in the preschool are of a very changeable nature and that one would

expect a retest, especially after a month or so, to yield very different results than the initial test. Others argue, however, that even nursery school children enter into relatively permanent relationships with school peers. Published reliability results differ very widely according to experimenter, method, time elapsed before retest, and specific group. Dunnington found that although individual choices changed over a two-month period, the status hierarchy of the class remained relatively constant (1957b). Witryol (1953), in his review of sociometric studies, found that scores obtained by the partial rank order method were indeed fairly stable over time although the range of coefficients of stability among various studies is extremely wide. Northway (1967) found in a longitudinal study of children from preschool through sixth grade that sociometric scores correlated well as far apart as two to three years.

Intensity

One caution is voiced by most experimenters using the sociometric test; that is that the test does not measure intensity of affection or of dislike. Some researchers believe that all positive choices are on the same affective level while others believe that there is a difference of intensity between choices. Horowitz (1961) attempted to measure intensity by having teachers rate bonds between children who were friends as strong, moderate, or weak. He then measured the length of time each child studied the sociometric pictureboard before pressing the button for best friend choice. He theorized that a child with strong ties would choose more quickly than one with weak ties. His theory was upheld by the 3-year-olds in his sample but completely

reversed by the 4-year-olds. Because of this puzzling discrepancy, he could offer no firm conclusions. The measurement of intensity thus remains a problem in sociometric testing.

Peer Desirability and Personality

Several researchers have attempted to relate sociometric status positions with specific personal attributes. Moore & Updegraff (1964) found that children are prone to make positive choices of the same sex as themselves and negative choices of the opposite sex (this tendency did not exist among the older 4-year-olds but held for all younger groups). They also found that dependence on adults is negatively related to popularity with children close to three, but not with those close to five. Dependence on other children, however, is positively related to popularity.

Dunnington (1957b) discovered that high status children initiated verbalizations independently and showed a greater proportion of positive expressions than did low status children. Low status children sought more attention of adults, but also rejected adult stimulation more than did high status children. Hartup, et al, (1967) similarly found that high positive status children reinforced others positively more often than average. In like manner, low-rated children reinforced others negatively more often than average. These studies give additional support to the theory that sociometric tests do measure to some degree a given child's skill in social interactions.

Implications for the Present Study

It is obvious that controversy reigns in almost every area discussed in this section. If solid theory is to be built in any of these areas, therefore, more research needs to be done. The present study is directed towards this goal.

Many theoreticians state that first-borns are less popular and sociable than later-borns, but empirical verification of this hypothesis is lacking. Although Schachter's (1964) study supports this hypothesis, Alexander's (1966) refutes it. Both of these studies, like so many others on ordinal position, used samples composed of late adolescent individuals. This study is designed to test the hypothesis of first-born unpopularity using a sample of preschool children who are at the stage in life when their families influence perhaps more highly than at any other stage. If ordinal position does influence an individual's sociability, this influence should be clearly evident during the preschool years when so much of the child's experience focuses around his home.

Another area of controversy is sociometric testing of young children. It has been questioned whether young children, particularly underprivileged children, have the conceptual and verbal skills necessary to give valid responses on the test. Boger's Play Situation-Picture Board Sociometric Technique, which is used in this study, relies almost entirely on pictorial representation and thus may provide a superior sociometric measure for preschoolers when compared to tests relying solely on verbal questions. Several issues regarding use of the test are also analyzed in this study. To ascertain whether weighted or unweighted scoring yields better results, both are used and

compared. To discover whether negative choice adds to the effectiveness of the sociometric technique, the addition of a negative choice is suggested for half the children in the LPS sample and positive only scoring compared to positive and negative combined scoring. As reliability results in previous studies varied markedly, a retest is proposed (on the LPS sample) to ascertain how reliable the particular instrument used in this study is.

Perusal of the literature revealed several factors as likely to produce important results in this study. Age, sex, race, socioeconomic class, and ordinal position of a child seemed vital factors. Family size and father-absence or -presence seemed valuable. Regarding sibling influence on a subject, the sibling just older and the sibling just younger appeared to have the greatest impact on the subject; sex and age gap between the subject and each of these two siblings were important factors. In this study, therefore, each of the foregoing factors is investigated.

In the literature, studies done on ordinal position, on nursery school interaction, and on sociometric testing, subjects were recruited mainly from two specific populations; from college student bodies and from university laboratory preschool enrollments. These populations are overwhelmingly white, culturally advantaged, and middle class. In the present study, lower class children are compared to middle class children in an attempt to discover whether class differences do exist in the phenomena of interest and in hopes that some findings could be generalized to a larger population than to just white, middle class preschool children.

CHAPTER III: METHOD

This chapter is composed of five parts. In the first section, sampling is explained. Next, the testing method used with the PSPBS is described. In the third part, statistical procedures employed in the study are explicated. Then, the models used in the analysis of the data are presented. Finally, issues concerning the statistical analysis of the data are discussed.

Sampling

Samples from two different populations taken at two different segments of time were used in this study. The Head Start (HS) sample was given the PSPBS during April and May of 1969 by a research team from Michigan State University's Head Start Evaluation and Research Center. Head Start children were mostly black and from lower class homes. The Laboratory Preschool (LPS) sample was given the PSPBS during April and May of 1974 by the researcher and another trained tester. The LPS children were mostly white and from middle class homes. Children in both samples had been in the same classroom four to five half-days a week for six to eight months prior to testing; class size ranged from 11 to 18. Ages ranged from 41 to 65 months at the time of testing in both samples; the average age, however, was younger for the LPS than for the HS sample.

The total number of children used in the study was 183, 67 from LPS and 116 from HS. For parts of the study, however, only those children who gave responses on the PSPBS could be used. A total of 164 children took the PSPBS, 63 from LPS and 101 from HS. Absence, refusal of parents to permit testing, and refusal of the child to be tested were the major reasons that 19 of the total sample were not tested. The LPS sample and the HS sample are described separately in the following paragraphs.

Laboratory Preschool Sample

All the children enrolled in the Michigan State University Laboratory Preschool 3-year-old and 4-year-old classes were used, 67 children from four classrooms in all. One child was excluded from the sample as his mental age was below the average for his class while his chronological age was substantially above average for his class. It was decided not to use the two remaining LPS classes, the 2-year-old and the 3- and 4-year-old mixed classes; the former might be too young to respond meaningfully to peer choice questions and the latter had such a wide age spread that age differences might confound other variables.

The age range was 41 to 65 months at the time of initial testing. All but three of the Ss had been together in the same classroom four half-days a week since mid-September, 1973. The majority of Ss were Caucasian, but other racial groups, black, Oriental, Indian Eurasian, Mexican-American and American Indian were represented. All the children were from middle class homes with fathers in business or the professions. In only a small minority of homes was the father absent. Family size ranged from one to six children.

Head Start Sample

All the children who were enrolled during 1968-69 in the ten Head Start programs which were evaluated by M.S.U. Head Start Evaluation teams were used. After all the data had been recorded, however, one of the ten classes had to be discarded because so much necessary data was missing. In all, 116 Ss from nine Pontiac and Detroit HS classes were used in the study.

The age range of the HS Ss, when tested, was the same as that of LPS Ss, 41 to 65 months. All Ss had been together in the same classroom five half-days a week from the beginning of the school year. Ss were predominantly black, although other races, Caucasian and Mexican-American, were represented. They were largely from lower class backgrounds although a minority were from working class homes. No distinctions were made between these two classes, however, as it was not possible to determine fine class distinction from available data and the few homes which did appear to be working class were only marginally so. The majority were from fatherless homes in which the mother was unemployed. When the father was present and working, he had a manual job. Family size ranged from one to twelve children. In cases in which a child lived together with cousins under 12 years of age, these cousins were treated as siblings in the data of this study.

See Table 1 for a detailed breakdown of specific sample characteristics.

Table 1: Sample Characteristics

Characteristic		Sample LPS	Sample HS	Total
Sex	Male	35	60	95
	Female	32	56	88
Age	41-53 months	32	22	54
	54-65 months	35	94	129
Race	Black	7	103	110
	White	51	10	61
	Other	9	3	12
Father Present	Yes	63	42	105
	No	4	74	78
Ordinal Position	First-born	24	31	55
	2nd or 3rd born	37	16	73
	4th or 5th born	5	23	28
	6th, 7th, 8th, 9th, 10th born	1	26	27

Both Samples

Both the LPS and HS samples were included in the study so that a comparison could be made between the two groups which represented populations which differed vastly in family structure, socioeconomic class, and cultural background. The same factor, for example, family size, might have radically different effects for each of the groups. Adding the HS Ss also increased statistical power in analyzing results as the total sample size was thus increased yielding additional degrees of freedom. The inclusion of the HS Ss, moreover, also expanded the range of family size and ordinal position in the study.

Testing Procedures

Although the testing procedure followed for both the LPS and the HS samples was similar, there were a few differences, mainly in regard to apparatus used. In the following section, testing procedure for the LPS sample is first explained in detail. Testing procedure for the HS sample is then briefly summarized with emphasis on any departures from the procedure used for the LPS sample.

Testing Procedure for the LPS Sample

Apparatus

The picture board was constructed from a 22" x 28" piece of light blue posterboard. Three 28" x 3/4" strips of posterboard were stapled across the posterboard beginning at the bottom at 6 1/2" intervals so that photographs could be easily inserted between board and strip. Black and white photographs, 5" x 4", taken of the face and shoulders of each child in a given class were inserted in the strips creating three rows of six photographs each (for the classes of less than 18,

photographs were suitably spaced so that no one picture was set apart from the others). The photographs used were exact copies of the photographs attached to each child's classroom locker in order that the photographs would be familiar to and thus easily recognized by the Ss. Because the photographs were placed in the open strips, they were easily removed and replaced.

The six play situation cards, designed by Boger (1969), are colored drawings of toys printed on 12" x 10" pieces of heavy cardboard. The pictures are: (I-A) Dolls (a girl rag doll and a boy rag doll); (I-B) Trucks (one dump truck and one cattle truck); (II) Sandbox; (III) Horses (one live brown horse in foreground, one spotted horse of visually smaller dimensions in the background); (IV) Dual swing; (V) Teeter totter. In the Head Start testing only five cards were presented to each child; I-A was given only to girls, I-B only to boys. For the LPS testing, all six cards were presented to each child as it was felt that both I-A and I-B would appeal to certain individuals of both sexes.

Setting

A corner of a basement testing room of LPS was partitioned off using large cardboard dividers to create a 6' x 12' area. The walls were devoid of pictures and there was no furniture in the area. The picture board was placed flat on the carpet and child and tester sat on the rug in front of it.

Testers

Both testers were graduate students in Child Development and had had much experience in dealing with young children. One tester, who tested the two afternoon classes, had had previous experience in

administering the PSPBS. He demonstrated then how the testing was done. A uniform procedure was followed by both testers. Each tester tested one 3-year-old and one 4-year-old group.

Procedure

The LPS Ss were tested during their free play period, the first hour of the preschool session, during April and May of 1974. Prior to actual testing, each tester spent one to two free play periods in the classroom to establish rapport and learn the names of the children. Once this had been done, the tester entered the classroom, located a child who did not seem to be too involved with anything at the time, and asked, "Would you like to go downstairs and play a picture game with me?" If the child consented, he accompanied the tester to the testing room. If he did not, the tester moved on to another child or sometimes enlisted the teacher's aid in coaxing the child to go down to the testing room.

Once in the testing room, the tester asked the child to be seated on the rug in front of the picture board and then sat down next to the child. It was felt that the child would be more relaxed sitting on the rug than at a table. First, the tester spread out all six play situation cards (in rows of 2 x 3) before the child. To put the child at ease before asking questions requiring choice, he said, "Can you tell me what these toys are?" After the child had named the toys, the tester said, "What toy would you like to play with the best?" He picked up the card indicated by the child and proceeded, "Next best?" and "Is there anything else you'd like to play with?" The tester then recorded the first three choices, stacked the three cards chosen in order, and put them aside.

After clearing the remaining cards away, the tester said, "Here are pictures of all the children in your class. Can you find your picture?" When the child had correctly identified his own picture, the tester asked, "Can you tell me who each of these other children is?" The child was then left free to point out and name each of the other children in whatever order he wished. The experimentor then pointed to the pictures he'd missed, if any, so that each child was named. If the child forgot a name, the tester supplied it.

The tester then placed the first play situation card in front of the child saying, "Here is the picture of the toy that you told me you liked best. Put your picture on it. Whom would you like to play with you?" The first response of the child was then recorded. If the child did not respond, the tester coaxed him until he did. In these cases, "urged" rather than "voluntary" was marked on the score sheet. The same procedure as has been described for the first card was repeated with the second and third cards also so that three peer preferences were recorded in all. Between Ss, photos and cards were put into a new random order.

With the Ss from the 4-year-old classes only, the S was asked, "Is there anyone you would not like to play with?" If the child said "No", no further response was urged. If he gave another response, the first name he mentioned was recorded. Both testers initially tried to ask the negative question of the Ss from the 3-year-old classes but found that those children did not comprehend the question so it was dropped from the testing of the two younger classes of the LPS sample.

Retesting. Retesting was done after 2-week and 4-week intervals. Approximately half of each age group was retested at each interval, more

than half of the 4-year-old group in fact being retested after 4 weeks. The same procedure was followed as had been used for initial testing.

Testing Procedure for the Head Start Sample

With a few exceptions, the procedure followed was identical to that described for the LPS sample. Testing was done in April and May of 1969 (a pretest had been given in the fall which was not used at all in this study). The apparatus used with the HS Ss was slightly different from that used with LPS Ss; the pictures were smaller but full-view Polaroid photographs and the board was slightly smaller and was made from masonite. As mentioned, with the HS sample, only five play situation cards were presented to each S, the dolls being presented only to girls, the trucks only to boys. No retests or negative choices were done on the HS sample.

Statistical Procedures

Previous studies regarding family position factors have been criticized for the failure of the researcher to include or control for relevant variables. One method of control would be to limit the sample to include children from only one specific family size, social class, and so on. In limiting the sample in this way, however, one limits oneself in terms of the population to which results may be generalized. One also is restricted in sample size from a given population. Information is thus lost. It was therefore decided that a multivariate approach would be used in this study. Multiple regression analysis was selected as the most effective statistical procedure to use with the hypothesized model.

Regression Analysis and Correlation Coefficients

The basic equation for linear regression, from which the equation for multiple regression is directly derived (see Kmenta, 1971, pp. 347-380 for the exact derivation), is:

$$y = E(y|x) + \varepsilon$$

where y is the observed value, $E(y|x)$ is the predicted value, and ε is the disturbance term (error term). This can also be written as:

$$y = \beta_0 + \beta_1 x + \varepsilon$$

where β_0 is the y intercept, β_1 is the regression slope, and x is the independent variable.

The equation

$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x$ is the estimated equation of the regression line, that is, the equation of the line minimizing the sum of squared errors.

It will now be shown how regression is related to the correlation coefficient. Defining s_{xy} as the sample covariance and s_x^2 and s_y^2 as the sample variances of x and y, respectively, and r_{xy} as Pearson's Product Moment Correlation, $\hat{\beta}_1$ can be written as:

$$\hat{\beta}_1 = \frac{s_{xy}}{s_x^2} \qquad \text{and } r_{xy} \text{ as:} \qquad r_{xy} = s_{xy}/\sqrt{s_x^2 s_y^2}.$$

It then logically follows that

$$\hat{\beta}_1 = r_{xy}\sqrt{\frac{s_y^2}{s_x^2}}.$$

Since r_{xy} is the estimator of ρ_{xy}, the correlation coefficient, it is evident that the two processes, regression and correlation, are closely related in the single variate case. Since, however, correlation coefficients are not suitably defined for multivariate analysis while regression analysis is, regression analysis is the better technique to use in this study.

In addition, regression analysis is better for significance testing. Testing the significance of a correlation coefficient can be done in two ways. One can either test whether the correlation coefficient is significantly different from zero or that it is different from some predetermined correlation (using Fisher's r to z conversion). Since, however, there is no absolute agreement as to what correlation level is definitely significant, this test is of limited value. With regression analysis, however, a t test can be run to either prove or disprove the significance of a given relationship at a pre-defined α level (.05 in this study). Regression analysis is thus superior to correlation coefficient techniques as a statistical tool for this study.

Regression Analysis and ANOVA

Both multiple regression and analysis of variance (ANOVA) are based on a linear model. Both methods take error of prediction into account in their models (unlike correlation coefficient methods). In addition, both can also be used to test hypotheses using the F test.

ANOVA can be a less flexible method of analysis than regression, however. One of the assumptions which ANOVA is based on is that dependent variables come from a normal distribution. Since a normal population is composed of continuous random variables, ANOVA requires that dependent variables be continuous. Some basic statistics texts also assert that regression analysis requires continuous dependent variables. Jan Kmenta (1971, pp. 425-7), however, stated that multiple regression is flexible enough to be used with binary dependent variables (which are non-continuous) although efficiency will be lost.

In two-way ANOVA designs, all individual data must be grouped while in multiple regression, data can be treated individually. When comparing different groups in two-way ANOVA, therefore, the number of Ss per group must be the same. In regression analysis, however, since observations can be handled individually, no such constraint exists (Kmenta, p. 416); groups of differing size can therefore be compared without randomly eliminating Ss as required by ANOVA.

One of the often stated advantages of two-way ANOVA is that interaction effects between variables can be studied. Interaction terms can, however, also be introduced into regression analysis (Kmenta, pp. 418-19). In this respect, therefore, ANOVA has no advantage over regression analysis.

To illustrate the equivalence of the ANOVA and regression analysis models, the two techniques are compared as follows. The two-way ANOVA model is written as:

$$y_{ijk} = \mu + \alpha_j + \lambda_k + \varepsilon_{ijk}$$

where y_{ijk} is the ith observation on the dependent variable y, in the jth column and the kth row, μ is the grand mean, α_j is the deviation of the mean of the jth column from the grand mean, λ_k is the deviation of the mean of the kth row from the grand mean, and ε_{ijk} is the error term. The comparable regression model is:

$$y_{ijk} = \beta_1 + \beta_2 x_{i2} + \ldots + \beta_j x_{ij} + \gamma_2 z_{i2} + \ldots + \gamma_k z_{ik} + \varepsilon_{ijk}$$

where x_{ij} is 1 if the observation is in the jth column and is otherwise zero; likewise, z_{ik} equals 1 if z is in the kth row but otherwise equals zero. β refers to the slope of the regression, and ε_{ijk} to the disturbance term (error).

Comparing the means of y for each cell, we get:

ANOVA	REGRESSION	COLUMN	ROW
$E(y_{i11})=\mu+\alpha_1+\lambda_1$	$E(y_{i11})=\beta_1$	1	1
$E(y_{i12})=\mu+\alpha_1+\lambda_2$	$E(y_{i12})=\beta_1+\gamma_2$	1	2
$E(y_{ijk})=\mu+\alpha_1+\lambda_k$	$E(y_{i1K})=\beta_1+\gamma_K$	1	K
$E(y_{i21})=\mu+\alpha_2+\lambda_1$	$E(y_{i21})=\beta_1+\beta_2$	2	1
$E(y_{i22})=\mu+\alpha_2+\lambda_2$	$E(y_{i22})=\beta_1+\beta_2+\gamma_2$	2	2
$E(y_{ijk})=\mu+\alpha_j+\lambda_k$	$E(y_{ijk})=\beta_1+\beta_J+\gamma_K$	J	K

Using this table, we obtain:

$$\mu=\beta_1+1/J(\beta_2+\ldots+\beta_J)+1/K(\gamma_2+\ldots+\gamma_K)$$

$$\alpha_1=-1/J(\beta_2+\ldots+\beta_J)$$

$$\alpha_J=\beta_J-1/J(\beta_2+\ldots+\beta_J)$$

$$\lambda_1=-1/K(\gamma_2+\ldots+\gamma_K)$$

$$\lambda_K=\gamma_K-1/K(\gamma_2+\ldots+\gamma_K)$$

(Kmenta, 1971, p. 417).

Therefore, since all the elements contained in the ANOVA model can be explained in regression terms, regression is equivalent to ANOVA.

Regression analysis is therefore equivalent to ANOVA in phenomena explained and F tests performed. In regression analysis, unlike ANOVA, the dependent variables can be both continuous and binary. Also, as

mentioned, multiple regression can be used with unequal sample sizes and with binary dependent variables. Since all of these factors are important to this model, regression analysis is the appropriate technique to use.

Reliability Measures

For the LPS sample only, two sets of sociometric scores were compared for reliability. First, each set of scores for each individual were compared to determine the percentage of individual responses that were replicated exactly. Choices of the same rank (for example, first choice on the test with first choice on the retest) were compared. Raw sociometric status scores were then analyzed for reliability. Correlation coefficients between the test and retest scores were then calculated for each class and for the whole group.

LPS and HS Scores Compared

Finally, two scatter diagrams were drawn of sociometric status score distributions. One was drawn for LPS test scores while the other was drawn for Head Start scores. The two diagrams were then compared to determine whether distribution differences did exist between the two samples.

Model

The model which was used to set up the equations for this study is the model for multiple regression:

$$y = \beta_1 + \beta_2 x_1 + \beta_3 x_2 + \beta_4 x_3 + \ldots + \beta_K x_{K-1} + \varepsilon.$$

where y and $x_1 \ldots x_{K-1}$ are n x 1 vectors, the parameters $\beta_1 \ldots \beta_K$ are scalers, and ε, the disturbance term, is an n x 1 vector satisfying

the classical regression assumption $N(0, \sigma^2 I_n)$, that is, ϵ is normally distributed, has zero mean, is homoskedastic and nonautoregressive.

So that the reader can understand the symbols used in the ensuing statistical models, an explanation of the variables and their corresponding symbols are given in Figure 1. As indicated, each variable is described with its assumed value and assigned symbol.

Description of Variable	Value Assumed	Symbol
Sex of S	0=male; 1=female	S
Socioeconomic status of S; also differentiation between LPS & HS	0=LPS; 1=HS	H
Number of children in family	Direct number	N
Ordinal position of S	Rank number	O
Sex of sib just younger than S	0=male; 1=female	S_Y
Sex of sib just older than S	0=male; 1=female	S_O
Father present in home	0=yes; 1=no	F
S is of major race in class	0=no; 1=yes	R
No. children in family squared	Number squared	N^2
Ordinal position of S squared	Rank squared	O^2
S is only male child of sex in family	0=no; 1=yes	M
Proportion of children in family who are same sex as S	Percentage	C_P
Sib just younger is male	0=no; 1=yes	M_Y
Age gap between S and just younger sib in months	Number	G_Y
Age gap between S and just older sib in months	Number	G_O
Average age of a class	Number	A
Standardized age (months) of S	Z score	A_S

Description of Variable	Value Assumed	Symbol
Child is only one of sex in family	0=no; 1=yes	S_A
S is first of sex in family	0=no; 1=yes	S_P
Weighted positive peer preference score of S	10=1st; 7=2nd; 5=3rd	P_w
Unweighted positive peer preference score of S	1 for each time chosen	P_u
No. of children of same sex in family, S included	Number	S_N
Constant	Number	C
Tester	Tester No.	T
Age gap between S and just younger sib in months squared	Number squared	G_Y^2
Age gap between S and just older sib in months squared	Number squared	G_O^2
Tester 1	If tested by 1, 1; if not, 0	T_1
Tester 3	If tested by 3, 1; if not, 0	T_3
Tester 9	If tested by 9, 1; if not, 0	T_9
S chose same peer all 3 times	0=no; 1=yes	C_T
Sex of S's 1st choice	0=male; 1=female	S_F
1st choice is same sex as S	0=no; 1=yes	S_{SF}
Race of 1st choice	0=non-major; 1=major	R_F
1st choice is same race as S	0=no; 1=yes	R_{SF}
Ordinal position of 1st choice	Rank number	O_F
Standard age of 1st choice	Z score	A_{SF}
Father present in home of 1st choice	0=yes; 1=no	F_F

Description of Variable	Value Assumed	Symbol
Positive weighted peer desirability score of 1st choice	Same scoring as P_w	P_{wF}
Age gap between 1st choice and just younger sib	Number	G_{YF}
1st choice is 1st of sex in family	0=no; 1=yes	S_{PF}
Sex of negative choice	0=male; 1=female	S_E
Sex of negative choice is same as S's	0=no; 1=yes	S_{SE}
Race of negative choice is major race	0=no; 1=yes	R_{SE}
Race of negative choice is same as S's	0=no; 1=yes	R_E
Ordinal position of negative pick	Rank number	O_E
Standard age of negative choice	Z score	A_{SE}
Positive weighted peer desirability score of negative choice	Same as P_w	P_{wE}
Age gap between negative choice and just younger sib	Number	G_{YE}
Negative choice is first of sex	0=no; 1=yes	S_{PE}
Weighted peer desirability score of negative choice, - and+	Same as P_w for + -14 for negative	P_{w+-E}
Unweighted peer desirability score of negative choice, + and-	+1 for positive, -1 for negative	P_{u+-E}
Weighted peer desirability score of S, + and-	Same as P_{w+-E}	P_{w+-}
Unweighted peer desirability score of S, + and-	Same as P_{u+-E}	P_{u+-}

Figure 1: Variables, Value Assumed, and Symbol

The remainder of this section is divided into five parts according to the category of each specific model.

Peer Desirability

The first model relates each S's positive peer desirability score (sociometric status score), first weighted, then unweighted, to the characteristics of that S. Under the weighted scheme, each time an S was chosen first, he received 10 points; second, 7 points; third, 5 points; under the unweighted scheme, he received 1 point for each time chosen. The model is:

$$(1)\quad P=\beta_1+\beta_2 S+\beta_3 F+\beta_4 N+\beta_5 O+\beta_6 S_Y+\beta_7 S_O+\beta_8 O^2+\beta_9 M+\beta_{10} C_P+\beta_{11} M_Y$$
$$+\beta_{12} R+\beta_{13} H+\beta_{14} G_Y 2+\beta_{15} G_O 2+\beta_{16} A+\beta_{17} A_S+\beta_{18} N^2+\varepsilon.$$

The first time this model was used, P_w was the dependent variable; the second time P_u was the dependent variable.

Peer Preference Relationships

The second group of models relates the characteristics of the first peer chosen by a given S to the characteristics of that S. The first model is:

$$(2)\quad S_{SF}=\beta_1+\beta_2 S+\beta_3 F+\beta_4 O+\beta_5 S_Y+\beta_6 R+\beta_7 S_A+\beta_8 A_S+\beta_9 S_N+\beta_{10} S_P+\beta_{11} N+$$
$$\beta_{12} P+\varepsilon.$$

The first time the model was used, the last independent variable (P) was P_w; the second time it was P_u.

The other model used in this section is:

$$(3)\quad (.)=\beta_1+\beta_2 S+\beta_3 F+\beta_4 O+\beta_5 S_Y+\beta_6 S_A+\beta_7 A_S+\beta_8 S_P+\beta_9 R+\beta_{10} C_S+\beta_{11} N$$
$$+\beta_{12} P_w+\varepsilon.$$

Each of the following dependent variables is used in turn in this model: S_F, R_F, R_{SF}, O_F, A_{SF}, F_F, P_{wF}, G_{YF}, S_{PF}. Then, each of the above

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dependent variables is used again in the model identical to that above except that P_u is exchanged for P_w as the last independent variable.

Chose All Three

The third part of this study involves a comparison of certain characteristics of all Ss who made the same peer choice three times. Here is the model:

(4) $$C_T = \beta_1 + \beta_2 T + \beta_3 S + \beta_4 N + \beta_5 O + \beta_6 G_Y + \beta_7 G_O + \beta_8 R + \beta_9 A + \beta_{10} A_S + \beta_{11} S_P + \beta_{12} T_1 + \beta_{13} T_3 + \beta_{14} T_9 + \beta_{15} F + \beta_{16} S_Y + \beta_{17} P_w + \varepsilon.$$

The same model was used a second time changing the last dependent variable from P_w to P_u.

Scoring on LPS Negative Subsample

In the fourth section, using the older half of the LPS Ss only (those who were asked to make a negative choice), the effect of using both positive and negative choices to determine peer preference scores is compared to that of using just positive choices. Unweighted scoring is again contrasted with weighted scoring. Models (1), (2), (3), and (4) are each used 4 times. The first time, P_{w+-} is used in place of P_w; the second time, P_{u+-} is in place of P_u; the third time P_{w-} is used in place of P_w; the fourth time, P_{u-} is used in place of P_u.

Negative Peer Choice

In the final section, traits of a S's negative choice were compared to that S's own traits. The first model is:

(5) $$S_{SE} = \beta_1 + \beta_2 S + \beta_3 O + \beta_4 G_Y + \beta_5 S_A + \beta_6 A_S + \beta_7 S_N + \beta_8 S_P + \beta_9 R + \beta_{10} P_{w+-} + \varepsilon.$$

The same model was used a second time with the last independent variable changed from P_{w+-} to P_{u+-}.

The second model is:

$$(\cdot) = \beta_1 + \beta_2 S + \beta_3 O + \beta_4 G_Y + \beta_5 S_A + \beta_6 A_S + \beta_7 S_{SF} + \beta_8 S_P + \beta_9 R + \beta_{10} P_{w+-} + \varepsilon.$$

Each of the following dependent variables was substituted into this model in turn: S_E, R_E, R_{SE}, O_E, A_{SE}, G_E, S_{FE}, P_{wE}. Then, each of the above dependent variables was again used in a model identical to that above except that P_{w+-} is changed to P_{u+-} as the last independent variable.

Discussion

Three problems were foreseen in carrying out regression analysis of the data. First, it is believed that there is some degree of heteroskedasticity in the data as it is derived from a cross-sectional sample. That is, the variance of the error is not constant over all observations. Because of this, one of the assumptions on which regression analysis is based, homoskedasticity of the error term, is not met.

Unfortunately, since this heteroskedasticity is probably a function of each child's developmental maturity, a quality which is difficult to measure, no satisfactory solution to this problem exists. Fortunately, however, even with heteroskedasticity present, the estimates of β obtained are still unbiased and consistent although the estimate of the variance, σ^2, is biased. This bias causes all estimates to be inefficient and tests of the hypotheses to be more conservative than their stated alpha levels would indicate (Kmenta, p. 254).

Having a binary variable as a dependent variable violates another assumption of regression analysis, that dependent variables be

distributed normally. Unfortunately, however, no better method exists than regression analysis for dealing with this condition. The penalty of violating this assumption is the same as the one just mentioned, that is, a loss of efficiency.

Finally, problems were foreseen due to multicollinearity. Multicollinearity signifies that various independent variables are correlated with each other. It is known that some degree of multicollinearity exists among the variables in this model, but prior to running the regressions, it is not known how high the degree of multicollinearity is. If it proves too high, the power of the test is weakened. Evidence of a high degree of multicollinearity is therefore sought when the regressions are run so that certain of the variables are removed in order to increase the power of the tests (When two independent variables are correlated at a .60 level or above, the degree of multicollinearity is excessive).

CHAPTER IV: RESULTS

This chapter consists of seven sections. In the first five parts, the results of hypothesis testing under the following categories are stated: Peer desirability, peer preference, choice of the same peer three times, comparison of the LPS and HS samples, and negative peer scores. Testing was done separately for the HS sample, the LPS sample, and the whole sample (HS and LPS combined). In the last two sections, the use of the instrument is described; in part six, results of reliability testing on the LPS sample are reported, and in part seven, unweighted and weighted scoring methods are compared.

Although .05 is the significance level adopted in this study, results at the .10 level will also be mentioned in the text. If appropriate results above the .10 level will be reported as indicative of a given trend. In the first six sections, multiple regression analysis was the technique used to obtain the results reported. In the text, only the significance level and direction of a relationship will be given. Tables will include the regression coefficient (β) and the standard error of the regression coefficient ($\hat{\sigma}_{\hat{\beta}}$) for each relationship. Significance is also indicated at the appropriate level for all significances under .20. Also included are statistics regarding each overall multiple regression model. These statistics are located in the last five rows of the results tables. For each regression, the number of observations (n); the coefficient of determination (R^2), which is a

"goodness of fit" measure; the F-test statistic; the significance level; and the error ($\hat{\sigma}$) are given. See Figure 1 in Chapter III for a list of the variables.

Since each S in the total sample received a peer desirability (sociometric status) score, all Ss were used in this section of the study. For the preference relationship and choice of the same peer sections, however, only those Ss who took the PSPBS test were used.

Peer Desirability

The model for peer desirability was changed from:

(1) $$P = B_1 + B_2S + B_3 F + B_4 N + B_5 O + B_6 S_Y + B_7 S_O + B_8 O^2 + B_G M + B_{10}C_P + B_{11} M_Y + B_{12} R + B_{13} H + B_{14} G_Y^2 + B_{15} G_O^2 + B_{16} A + B_{17}A_S + B_{18} N^2 + E$$

to:

(1a) $$P + B_1 + B_2 S + B_3 F + B_4 R + B_5 N^2 + B_6 O^2 + B_7 C_P + B_8 M_Y + B_9 G_Y^2 + B_{10}G_O^2 + B_{11} A + B_{12} A_S + E$$

The reason for this change was that the first model was found to have a high degree of multicollinearity. To correct for this, the independent variables were examined in pairs to determine which ones were correlated with each other at the .60 level or above. Each time this was the case, the variable judged to be the lesser in importance was discarded. Model (1a), the resultant model, was the one used to obtain the findings reported below. For these two cases, the original model was used as the particular variables relevant to these cases had had to be dropped in the new model. See Table 2 for complete results. Peer desirability is used as synonymous with sociometric status.

Table 2: Results: Regression Coefficients and Standard Errors[a] of Peer Desirability Models

Variable	P_w WS	P_u WS	P_u HS	P_u LPS
C	18.83(17.24)	2.52(2.28)	-5.94(8.31)	3.54(2.69)*
S	1.68(2.67)	.20(.35)	.08(.48)	.33(.56)
F	.77(2.75)	.07(.36)	.03(.51)	2.72(1.19)***
R	5.08(3.70)*	.62(.49)	.62(.78)	.84(.63)*
N^2	.03(.29)	-.0008(.04)	-.002(.04)	-.15(.15)
O^2	-.21(.35)	-.02(.05)	-.02(.05)	.06(.17)
C_p	-2.68(5.62)	-.39(.74)	-.54(1.04)	-1.07(1.15)
M_Y	-2.35(3.64)	-.28(.48)	.39(.61)	-.19(.82)
G_Y^2	-.0003(.001)	-.00004(.0001)	-.00007(.0002)	-.0003(.0003)
G_O^2	-.0004(.0002)*	-.00005(.00003)*	-.00003(.00004)	-.0002(.0001)***
A	.03(.31)	.006(.04)	.15(.14)	.03(.05)
A_S	2.12(1.41)*	.31(.19)**	.34(.25)*	.38(.29)
H	-1.41(3.26)	-.18(.43)	------	------

Item	Total Regression Statistics			
	P_w WS	P_u WS	P_u HS	P_u LPS
n[b]	183	183	116	67
R^2[c]	.06	.06	.06	.20
F-statistic	.94	.99	.59	1.25
Significance	.50	.46	.84	.28
Error	17.53	2.32	2.46	2.10

* $p < .20$
** $p \leq .10$
*** $p \leq .05$

a. Standard error is given in parentheses following each regression coefficient
b. n = number of observations
c. R^2 is the coefficient of determination

Table 2 (cont'd)

Variable	P_{W-} Neg.	P_{U-} Neg.	P_{W+-} Neg.	P_{U+-} Neg.
C	1247.54(-974.20)	158.03(403.63)	1157.83(3935.69)	138.69(626.52)
S	-1.69(5.98)	-.24(.81)	.35(7.91)	.16(1.26)
F	-3.03(18.23)	-.75(2.47)	.54(24.12)	-.04(3.84)
R	7.89(7.12)	1.10(.97)	14.23(9.43)*	2.37(1.50)*
N^2	-1.34(1.43)	-.21(.19)	-.59(1.89)	-.06(.30)
O^2	.78(1.76)	.14(.24)	.12(2.34)	.005(.37)
C_P	20.16(14.31)*	2.59(1.94)*	21.70(18.94)	2.90(3.02)
M_Y	2.07(9.40)	.37(1.28)	9.75(12.44)	1.91(1.98)
G_Y^2	-.00007(.004)	-.00002(.0005)	.002(.005)	.0003(.0007)
G_O^2	-.0006(.001)	-.00007(.0002)	-.0005(.002)	-.00004(.0003)
A	-21.11(50.55)	-2.66(6.86)	-19.85(66.89)	-2.40(10.65)
A_S	3.66(3.58)	.52(.49)	3.52(4.73)	.49(.75)
H	-------	------	------	------

Item	Total Regression Statistics			
	P_{W-} Neg.	P_{U-} Neg.	P_{W+-} Neg.	P_{U+-} Neg.
n^b	35	35	35	35
R^{2c}	.23	.22	.24	.24
F-statistic	.63	.60	.67	.66
Significance	.79	.81	.75	.76
Error $\hat{\sigma}$	15.61	2.11	20.65	3.29

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$

a. Standard error is given in parentheses following each regression coefficient
b. n = number of observations
c. R^2 is the coefficient of determination

Hypothesis Testing

A. Peer desirability increases as ordinal position increases. This hypothesis was rejected. Results were non-significant and were in fact in the opposite direction from that predicted for the whole sample (WS) and the HS sample.

B. Peer desirability increases as standard age increases. For the whole sample, this hypothesis was accepted at the .098 significance level. Although results for the LPS and HS samples did not attain significance, they were in the same direction.

C. Peer desirability is higher for children from homes with a father present than for those from homes with a father absent. For the LPS sample, the findings were opposite from those hypothesized; peer desirability was higher for children from fatherless homes, significant at the .026 level. Results for the whole sample and the HS sample were non-significant, but in the same direction as LPS results.

D. Peer desirability is positively related to membership in the predominant race in the class. Although testing did not yield results at the significance level desired, results were in the predicted direction in all three groups, reaching the .19 level of significance with the LPS sample.

E. As the age gap between a subject and his closest older sibling decreases, the subject's peer desirability will increase. This hypothesis was accepted at the .044 significance level for the LPS sample. It was also supported by whole sample and HS findings, but not to the same level of significance as for LPS.

F. As the age gap between a subject and his closest younger sibling increases, the subject's peer desirability will increase. Testing yielded no significant results, but all results were in the predicted direction.

G. Subjects with younger brothers will be less popular than those with no younger siblings or younger sisters. Again, results did not reach significance, but were in the direction predicted.

H. Males who are the sole members of their sex in their families will be less popular than those with same-sexed sibs. To test this hypothesis, the original model was used. Although the HS results were in the predicted reaction, whole sample and LPS results were in the opposite direction. LPS results just missed the .10 significance level (.123) in the opposite direction.

A summary of results in this section is given in Table 3. The only hypothesis which was supported at the .05 level is that as the age gap between a subject and his closest older sibling decreases, the subject's peer desirability will increase; only with the LPS sample were these results at this significance level. At the .10 level, with the whole sample only, the hypothesis that standard age is positively related to peer desirability was supported. For three hypotheses, all or some of the results obtained were in the opposite direction from the one predicted. Peer desirability was higher for children from fatherless homes than for those with fathers for the LPS sample at the .05 significance level; for the whole sample and HS sample, results were non-significant, but in the same direction, which is opposite that

Table 3: Summary of Sociometric Status Results; Regression Coefficients and Standard Errors[a]

Hypothesis	$\hat{\beta}$ ($\hat{\sigma}_{\beta}$)		
	Whole Sample	LPS	HS
Sociometric status increases as ordinal position increases	-.02(.05)†	.06(.17)††	-.02(.05)†
Sociometric status increases as standard age increases	.31(.19)*	.38(.29)††	.34(.25)††
Sociometric status is higher for Ss with fathers present	.07(.36)†	2.72(1.19)†**	.03(.51)†
Sociometric status is positively related to being of the major race	.62(.49)††	.84(.63)††	.62(.78)††
As the age gap between the S and his just older sib decreases, S's sociometric status increases	-.00005 (.00003)††	-.0002 (.0001)**	-.00003 (.00004)††
As the age gap between the S and his just younger sib increases, S's sociometric status increases	-.00004 (.0001)†	-.0003 (.0003)†	-.00007 (.0002)†
Ss with a younger brother will be less popular than others	-.28(.48)††	-.19(.82)††	.39(.61)††
Males who are sole members of sex in family will have lower sociometric status	.24(.73)†	2.29(1.46)†	-.31(.98)††

* $p \leq .10$
** $p \leq .05$
† Result is not in predicted direction.
†† Result is in predicted direction.
a Standard error ($\hat{\sigma}_{\beta}$) is given in parentheses after each regression coefficient ($\hat{\beta}$).

predicted. Also, peer desirability was negatively related to ordinal position rank (1 is low) for the whole sample and HS sample although for the LPS sample, results were in the opposite and predicted direction. Finally, for the whole sample and LPS only, males who are the only ones of their sex, have higher peer desirability scores than those with brothers; for the HS sample, results were in the predicted direction. In regard to all other hypotheses, results were all in the predicted direction although non-significant.

Peer Preference

Just as for the preceding section, testing was done separately for the total sample, the LPS sample and the HS sample. In addition, the negative choice subsample of LPS was tested separately and a comparison made between the traits of the selector and those of his negative choice. Complete results are given in Tables 4, 5, and 6.

Hypothesis Testing

A. The selectee is of the same sex as the selector. This hypothesis was accepted at the .0005 level for all three samples.

B. If the selector comes from a family in which the father is present, so will the selectee. Results were non-significant, but in the opposite direction for all three samples.

C & D. If the selector is high in peer desirability, he will choose a friend of low peer desirability, and if the selector is low in peer desirability, he will choose a friend of high peer desirability.

These two hypotheses were accepted at the .001 level of significance for the HS sample and at the .009 level for the whole sample.

Table 4: Results: Regression Coefficients and Standard Errors[a] of the Peer Preference Models for the Whole Sample

Variable	S_{SF}	S_F	R_F	R_{SF}	O_F
C	.90(.18)****	.28(.19)*	.75(.14)****	.20(.14)*	2.17(.80)****
S	.01(.07)	.50(.07)****	.05(.05)	.08(.05)**	.47(.29)**
H	-.22(.09)***	-.03(.10)	.14(.07)***	.08(.07)	.80(.39)***
A_S	-.04(.04)	-.06(.04)**	-.02(.03)	-.006(.03)	-.12(.15)
F	.09(.09)	.0002(.09)	-.09(.06)*	.03(.06)	.80(.36)***
R	-.07(.10)	-.02(.10)	.27(.07)****	------	-.21(.40)
O	.03(.03)	.001(.03)	.003(.02)	.01(.02)	.05(.11)
G_Y	.003(.002)*	.0008(.002)	.002(.001)**	-.002(.001)*	.006(.007)
S_A	.01(.11)	.04(.11)	.03(.08)	-.002(.08)	.15(.46)
S_P	.05(.13)	.06(.13)	-.05(.09)	.02(.10)	-.02(.54)
P_u	-.01(.01)	.01(.02)	-.003(.01)	-.004(.01)	-.01(.06)
S_N	.09(.09)	------	------	------	------
S_{SF}	-----	-.07(.08)	-.07(.06)	.03(.06)	-.12(.34)

Item	Total Regression Statistics				
	S_{SF}	S_F	R_F	R_{SF}	O_F
n[b]	164	164	164	164	164
R^2[c]	.07	.29	.17	.34	.16
F-statistic	1.04	5.68	2.83	7.19	2.63
Significance	.41	.0005	.002	.0005	.004
Error	.43	.44	.31	.31	1.80

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$
**** $p \leq .01$

a. Standard error is given in parentheses following each regression coefficient.
b. n = number of observations.
c. R^2 is the coefficient of determination.

Table 4 (cont'd)

Variable	A_{SF}	F_F	P_{uF}	G_{YF}	S_{PF}
C	-.42(.41)	.39(.19)***	37.35(8.71)****	-43.78(9.35)****	.85(.22)****
S	-.36(.15)***	-.08(.07)	.03(3.14)	-9.82(3.37)****	-.02(.08)
H	.28(.20)*	.54(.10)****	3.63(4.30)	.70(4.62)	.08(.11)
A_S	-.02(.08)	-.05(.04)*	-3.33(1.62)***	-1.32(1.74)	.07(.04)**
F	-.34(.18)**	-.01(.09)	3.36(3.92)	3.97(4.20)	-.19(.10)***
R	.37(.21)**	.001(.10)	.76(4.43)	-3.39(4.75)	.05(.11)
O	-.007(.06)	-.03(.03)	.67(1.19)	1.07(1.27)	-.04(.03)*
G_Y	-.002(.004)	.002(.002)	-.04(.08)	-.03(.09)	.0004(.002)
S_A	-.14(.24)	.09(.11)	-5.20(5.05)	-2.69(5.42)	.03(.13)
S_P	.08(.28)	-.15(.13)	6.54(5.97)	3.31(6.41)	-.16(.15)
P_u	.06(.03)**	.0006(.02)	-.80(.69)***	-.83(.74)	-.01(.02)
S_N	------	------	------	------	-------
S_{SF}	.13(.17)	.005(.08)	-9.75(3.71)	1.61(3.98)	.05(.09)

Item	Total Regression Statistics A_{SF}	F_F	P_{uF}	G_{YF}	S_{PF}
n[b]	164	164	164	164	164
R^{2c}	.09	.27	.12	.09	.10
F-statistic	1.35	5.16	1.88	1.43	1.52
Significance	.20	.0005	.05	.17	.13
Error $\hat{\sigma}$	.92	.44	19.74	21.19	.49

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$
**** $p \leq .01$

a. Standard error is given in parentheses following each regression coefficient.
b. n = number of observations.
c. R^2 is the coefficient of determination.

Table 5: Results: Regression Coefficients and Standard Errors[a] of the Peer Preference Models for the LPS Sample

Variable	S_{SF}	S_F	R_F	R_{SF}	O_F
C	.80(.30)****	.27(.27)	1.00(.29)****	.07(.29)	2.27(.70)****
S	.10(.11)	.65(.11)****	.17(.11)*	.11(.11)	.12(.27)
A_S	.06(.05)	-.05(.05)	-.008(.05)	-.02(.05)	-.11(.13)
F	.11(.22)	-.04(.21)	.06(.23)	-.10(.22)	-.16(.54)
R	-.02(.13)	.04(.12)	.15(.13)	.54(.13)****	-.07(.31)
O	.05(.08)	-.06(.06)	.02(.07)	-.02(.07)	-.34(.16)***
G_Y	.002(.003)	-.001(.003)	.004(.003)*	-.005(.003)*	-.01(.007)**
S_A	.02(.20)	.16(.17)	.17(.19)	-.15(.19)	.16(.44)
S_P	-.12(.20)	-.11(.20)	-.20(.21)	.16(.21)	-.24(.51)
P_u	.01(.02)	.02(.02)	-.04(.02)*	-.02(.03)	.03(.06)
S_N	.02(.17)	------	------	------	------
S_{SF}	------	-.12(.14)	-.11(.14)	.06(.15)	-.22(.35)

Item	Total Regression Statistics S_{SF}	S_F	R_F	R_{SF}	O_F
n[b]	63	63	63	63	63
R^{2}[c]	.09	.53	.14	.32	.19
F-statistic	.51	5.83	.85	2.41	1.18
Significance	.87	.0005	.58	.019	.33
Error $\hat{\sigma}$	.38	.38	.40	.40	.96

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$
**** $p \leq .01$

a. Standard error is given in parentheses following each regression coefficient.
b. n = number of observations.
c. R^2 is the coefficient of determination.

Table 5 (cont'd)

Variable	A_{SF}	P_{wF}	G_{YF}	S_{PF}	F_F
C	.004(.67)	31.68(11.98)****	-30.31(14.10)***	.87(.36)***	.26(.24)
S	-.75(.26)****	.24(4.62)	-11.69(5.46)***	-.14(.14)	.03(.09)
A_S	-.16(.13)	-2.33(2.23)	.08(2.63)	.06(.07)	-.07(.04)*
F	-.59(.52)	25.85(9.25)****	8.74(10.93)	.10(.27)	-.08(.18)
R	-.15(.30)	-1.69(5.33)	-.83(6.30)	-.08(.16)	-.07(.11)
O	-.23(.16)*	.97(2.77)	4.80(3.27)*	.04(.08)	-.03(.05)
G_Y	-.005(.007)	.06(.12)	.23(.15)*	.003(.004)	.003(.002)
S_A	-.35(.43)	12.33(7.60)*	1.26(8.97)	.03(.23)	.02(.15)
S_P	.29(.49)	-8.76(8.67)	-3.88(10.24)	-.08(.26)	.01(.17)
P_u	-.004(.06)	-1.44(1.02)*	1.44(1.20)	-.01(.03)	.004(.02)
S_N	-------	--------	--------	--------	--------
S_{SF}	.95(.33)****	4.44(5.93)	-5.92(7.01)	.07(.18)	.06(.12)

Item	Total Regression Statistics				
	A_{SF}	P_{wF}	G_{YF}	S_{PF}	F_F
n[b]	63	63	63	63	63
R^{2}[c]	.25	.19	.26	.09	.12
F-statistic	1.69	1.25	1.83	.52	.70
Significance	.11	.29	.08	.87	.72
Error	.92	16.42	19.40	.49	.32

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$
**** $p \leq .01$

a. Standard error is given in parentheses following each regression coefficient.
b. n = number of observations.
c. R^2 is the coefficient of determination.

Table 6: Results: Regression Coefficients and Standard Errors[a] of the Peer Preference Models for the HS Sample

Variable	S_{SF}	S_F	R_F	R_{SF}	O_F
C	.81(.26)****	.39(.28)*	.64(.14)****	.38(.15)****	3.22(1.27)***
S	-.03(.09)	.40(.10)****	-.005(.05)	.03(.05)	.50(.44)
A_S	-.09(.05)**	-.06(.05)	-.01(.03)	.008(.03)	-.08(.23)
F	.05(.10)	-.006(.10)	-.10(.05)**	.03(.05)***	.95(.47)
R	-.15(.14)	-.11(.15)	.40(.08)****	.53(.08)****	-.34(.69)
O	.03(.03)	.01(.03)	.02(.02)	.01(.02)	.07(.15)
G_Y	.003(.002)	.001(.002)	.002(.001)*	.00009(.001)	.01(.01)
S_A	.07(.15)	.02(.15)	-.006(.08)	.10(.08)	-.007(.70)
S_P	.11(.17)	.13(.18)	.04(.09)*	-.03(.09)	-.04(.82)
P_u	-.02(.02)	.005(.02)	.02(.02)	.003(.01)	-.03(.09)
S_N	.06(.13)	-------	--------	-------	-------
S_{SF}	-------	-.07(.11)	-.05(.06)	-.05(.06)	-.09(.50)

Item	Total Regression Statistics				
	S_{SF}	S_F	R_F	R_{SF}	O_F
n[b]	101	101	101	101	101
R^{2}[c]	.11	.20	.30	.38	.07
F-statistic	1.13	2.22	3.85	5.57	.66
Significance	.35	.02	.0005	.0005	.76
Error $\hat{\sigma}$	.46	.47	.24	.25	2.18

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$
**** $p \leq .01$

a. Standard error is given in parentheses following each regression coefficient.
b. n = number of observations.
c. R^2 is the coefficient of determination.

Table 6 (cont'd)

Variable	A_{SF}	F_F	P_{wF}	G_{YF}	S_{PF}
C	-.75(.50)*	.95(.29)****	41.76(12.12)****	-54.97(12.93)****	.69(.29)***
S	-.21(.18)	-.19(.10)**	.42(4.22)	-6.02(4.50)*	.07(.11)
A_S	-.004(.09)	-.01(.05)	-4.81(2.22)***	-2.29(2.37)	.06(.05)
F	-.26(.19)*	-.05(.11)	.21(4.52)	2.38(4.82)	-.23(.11)***
R	.89(.27)****	.12(.16)	.26(6.57)	-5.75(7.00)	.19(.16)
O	.01(.06)	-.03(.03)	1.34(1.44)	1.36(1.54)	-.06(.03)**
G_Y	-.003(.004)	.003(.003)	-.07(.11)	-.17(.11)*	.0003(.003)
S_A	-.20(.28)	.15(.16)	-10.41(6.72)*	-4.18(7.17)	.04(.16)
S_P	.03(.33)	-.21(.19)	15.49(7.87)	9.26(8.39)	-.22(.19)
P_u	.09(.04)***	-.001(.02)	-.82(.90)****	-.15(.96)	-.02(.02)
S_N	--------	--------	--------	--------	--------
S_{SF}	-.04(.20)	.008(.11)	-16.90(4.79)	4.59(5.10)	.06(.12)

Item	Total Regression Statistics				
	A_{SF}	F_F	P_{wF}	G_{YF}	S_{PF}
n[b]	101	101	101	101	101
R^{2}[c]	.19	.07	.18	.08	.11
F-statistic	2.06	.63	1.94	.78	1.06
Significance	.036	.78	.05	.65	.40
Error	.83	.49	20.75	22.13	.50

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$
**** $p \leq .01$

a. Standard error is given in parentheses following each regression coefficient
b. n = number of observations.
c. R^2 is the coefficient of determination.

For LPS, the direction was the same, but the results did not attain significance.

E. The higher the selector's standard age, the more likely the selectee is to be of his own sex. For LPS, results were in the predicted direction. For the whole sample and the HS sample, however, results were in the opposite direction, attaining a .073 level of significance for the HS sample.

F. The higher the selector's standard age, the more likely the selectee is to be of the major race. Results were non-significant, but were in an opposite direction from the one predicted for all three samples.

G. The selector's standard age is dissimilar to the selectee's. Results were in the predicted direction for all three groups although non-significant.

H. The selector is of a different ordinal position from the selectee. This hypothesis was accepted at a .041 level of significance for the LPS sample. For the whole sample and for the HS sample, however, results were non-significant and in the opposite direction.

I. If the selector is from a single-sex sibship, the selectee will be of the same sex. Although results were non-significant, all were in the opposite direction.

J. If the selector is first-of-sex, the selectee will be of the same sex. Results were non-significant, but in the predicted direction for the whole sample and the HS sample. For the LPS sample, however, the results were in the opposite direction.

K. If the selector is first-of-sex, the selectee will be first-of-sex. Results for all three samples were non-significant and in the opposite direction.

Summary

The most highly significant finding, then, is that Ss chose like-sexed friends; this result was significant at the .005 level for all three groups. For the HS sample, the hypotheses that a S with low peer desirability chooses a friend of higher peer desirability and that a S with high peer desirability chooses a friend with low peer desirability was borne out at the .05 level; in the other two groups, results were also in the predicted direction. For the LPS sample only, selector and selectee were of dissimilar ordinal positions at a .05 significance level; for the whole sample and for the HS sample, results were non-significant, but in the opposite direction. For three hypotheses tested, all results were non-significant, but in an opposite direction than that predicted. For two more, all results were non-significant, but in the predicted direction. The remaining two hypotheses were in the predicted direction for some groups; in the opposite for others. These results are summarized in Table 7.

Additional Findings

Sex differences. For the whole sample, girls were more likely than boys to choose a friend of the same race (.096) and of a higher ordinal position (first is low) (.099) than were boys. Boys chose a friend of higher standard age than girls; this finding was at a .016 significance level for the whole sample and at a .006 level for the LPS sample. For the HS sample only, boys were more likely than girls to choose a friend

Table 7: Summary of Preference Relationships Results; Regression Coefficients and Standard Errors[a]

Hypothesis	$\hat{\beta}$ ($\hat{\sigma}_{\beta}$)		
	Whole sample	LPS	HS
S and selectee are like-sexed	.50(.07)**	.65(.11)**	.40(.10)**
S and selectee are both from same type of home (father-absent or father-present)	.01(.09)$^{\prime}$	-.08(.18)$^{\prime}$	-.05(.11)$^{\prime}$
S with high sociometric status chooses a friend of lower status.	-.80(.69)**	-1.44(1.02)**	-.82(.90)$^{\prime\prime}$
S with low sociometric status chooses a friend of higher status.	-.80(.69)**	-1.44(1.02)**	-.82(.90)$^{\prime\prime}$
The higher the S's standard age, the more apt he is to choose a friend of the same sex.	-.04(.04)$^{\prime}$	.06(.05)$^{\prime\prime}$	-.09(.05)$^{\prime}$*
The higher the S's standard age, the more apt he is to choose a friend of the major race.	-.02(.03)$^{\prime}$	-.008(.05)$^{\prime}$	-.01(.03)$^{\prime}$
S and selectee are of different standard ages.	-.02(.08)$^{\prime\prime}$	-.16(.13)$^{\prime\prime}$	-.004(.09)$^{\prime\prime}$
S and selectee are of different ordinal positions.	.05(.11)$^{\prime}$	-.34(.16)**	.07(.15)$^{\prime}$
If S is of a one-sexed sibship, selectee is of the same sex.	.09(.09)$^{\prime\prime}$	.02(.17)$^{\prime\prime}$	.06(.16)$^{\prime\prime}$
If S is first-of-sex, selectee is of same sex.	.05(.13)$^{\prime\prime}$	-.12(.20)$^{\prime}$	.11(.17)$^{\prime\prime}$
If S is first-of-sex, selectee is first-of-sex.	-.16(.15)$^{\prime}$	-.08(.26)$^{\prime}$	-.22(.19)$^{\prime}$

* $p \geq .10$
** $p \geq .05$
$^{\prime}$ Result is not in predicted direction.
$^{\prime\prime}$ Result is in predicted direction.

a. Standard error ($\hat{\sigma}_{\beta}$) is given in parentheses after each regression coefficient ($\hat{\beta}$).

from a fatherless home. At a .004 significance level for the LPS sample, girls were more likely to choose a friend with a younger sib close to himself in age than were boys.

Standard age. For the whole sample, Ss of low standard age tended to choose girls rather than boys as friends at the .077 level. For both the whole sample and the HS sample, at the .042 and the .033 significance levels, respectively, a S of low standard age tended to choose a friend of higher peer desirability more than did one of high standard age. Finally, a subject of higher than average standard age was more apt to choose a friend who was first-of-sex than one of lower standard age, significant at the .094 level for the whole sample only.

Father-absence or presence. Ss from father-absent homes chose children of lower standard ages than did those from father-present homes at the .065 level. For the LPS sample only, Ss from father-absent homes chose friends from a higher peer desirability level than did those from father-present homes at the .007 significance level. Finally, for both the whole sample and the HS sample, Ss from father-absent homes chose first-of-sex friends less than did those from father-present homes at .057 and .036 levels of significance, respectively.

Race. A striking result, at the .005 level of significance for the whole sample and for HS, was that a child who is of the major race tended to choose a friend of the major race. For these same two samples, tended to choose a S of the major race a friend of greater than average standard age (for the whole sample, results were at the .079 level; for the HS sample at the .027 level).

Other Findings

For the HS sample at the .10 level, a S of a high ordinal position tended to choose a best friend who was not first-of-sex. In the case of the LPS sample, only at the .07 level, a S with a large age gap or with no younger sib tended to choose a friend of a lower ordinal position than did others with closely-spaced younger sibs. Ss from the HS sample with higher than average peer desirability scores tended to select friends of an older standard age than average (.023 level).

The implications of all these unhypothesized results will be discussed in the next chapter. Caution must be exercised in interpreting them; some may simply be a function of population differences. Many of these results, however, may prove valid and important.

Negative Peer Relationships

A regression was run comparing peer traits of the S and the peer he said he would not like to play with for the 24 LPS Ss who made such a negative choice. It was expected that relationships between S and his negative choice would be different in this instance than those just described between S and his positive peer choice. For complete results, refer to Table 8. All results which attained a significance of .10 or higher are described in the text.

It was found at the .081 level that girls were more apt than boys to name a negative choice of non-major race. It was further found that Ss of the major race tended to make a negative choice of the opposite sex while Ss of the non-major race made a negative choice of the same sex (.079 level). Furthermore, at the .02 level, if a S was the only one of his sex in his family, he tended to make a negative choice of a non-major

Table 8: Results: Regression Coefficients and Standard Errors[a] for Negative Peer Relationships Models

Variable	S_{SE}	S_F	R_E	R_{SE}	A_{SE}
C	1.90(.71)***	-.43(.81)	.79(.72)	-.23(.63)	2.48(2.01)
S	--------	.04(.28)	-.47(.25)**	-.30(.22)*	-.20(.69)
A_S	.02(.13)	.11(.14)	-.07(.12)	-.08(.11)	-.20(.34)
S_N	-.36(.48)	-------	-------	-------	-------
R	-.59(.31)**	.45(.39)	-.06(.35)	--------	-.95(.96)
O	-.23(.21)	-.07(.19)	.002(.17)	.02(.15)	.16(.48)
G_Y	-.0005(.008)	-.01(.01)	-.001(.007)	-.001(.006)	.04(.02)**
S_A	.66(.47)*	-.26(.53)	.15(.48)	-1.10(.42)***	.82(1.32)
S_P	-1.07(.52)	.29(.63)	-.08(.56)	1.37(.49)***	-.92(1.55)
P_{u+-}	.01(.05)*	-.01(.05)	-.06(.05)	-.07(.04)*	.13(.13)
S_{SE}	-------	-------	.13(.27)	.24(.23)	-.64(.74)

Item	Total Regression Statistics S_{SE}	S_F	R_E	R_{SE}	A_{SE}
n[b]	24	24	24	24	24
R^{2c}	.40	.22	.40	.55	.30
F-statistic	.87	.36	.88	1.62	.56
Significance	.58	.94	.57	.21	.82
Error $\hat{\sigma}$	.53	.58	.52	.45	1.44

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$

a. Standard error is given in parentheses following each regression coefficient.
b. n = number of observations.
c. R^2 is the coefficient of determination.

Table 8 (cont'd)

Variable	P_{wE}	G_{yE}	S_{PE}	P_{u+-E}	O_E
C	31.40(14.96)**	-52.61(35.91)*	.99(.75)**	2.46(4.87)	.73(1.55)
S	-4.89(5.13)	-1.53(12.31)	-.23(.26)	-1.04(1.70)	.33(.53)
A_S	-1.50(2.56)	-1.72(6.14)	-.17(.13)	-.72(.85)	.10(.27)
S_N	-------	-------	-------	-------	-------
R	-4.32(7.18)	4.76(17.22)	-.17(.36)	-1.19(2.39)	.27(.75)
0	1.35(3.57)	1.57(8.56)	.04(.18)	-.44(1.19)	.19(.37)
G_Y	.28(.15)**	.04(.37)	.004(.008)	.04(.05)	-.004(.02)
S_A	7.14(9.85)	-11.21(23.65)	.02(.50)	.55(3.28)	.46(1.02)
S_P	-3.22(11.58)	6.49(27.80)	.06(.58)	-.21(3.85)	-.37(1.20)
P_{u+-}	.31(.96)	-2.47(2.30)	-.01(.04)	-.12(.32)	.12(.10)
S_{SE}	-4.32(5.54)	5.48(13.28)	-.05(.28)	-.56(1.84)	.31(.58)

Item	Total Regression Statistics				
	P_{wE}	G_{yE}	S_{PE}	P_{u+-E}	O_E
n^b	24	24	24	24	24
R^{2c}	.40	.12	.24	.23	.27
F-statistic	.87	.18	.41	.38	.47
Significance	.58	1.00	.92	.93	.88
Error	10.72	25.73	.54	3.56	1.11

* $p \leq .20$
** $p \leq .10$
*** $p \leq .05$

a. Standard error is given in parentheses following each regression coefficient.
b. n_2 = number of observations.
c. R^2 is the coefficient of determination.

race peer. Ss who were first-of-sex, by contrast, were likely to make a negative choice of a peer of the same race as themselves (.019 level). First-of-sex subjects were also likely to make an opposite-sexed negative choice at the .061 level of significance. Subjects who had a younger sib close in age were more likely to make a negative choice of a peer of higher than average standard age and a higher than average peer desirability score than were Ss without a younger sib or with a large gap between themselves and the sib. These results were significant at the .10 and .09 levels, respectively. All results are summarized in Table 9.

Same Peer Chosen Three Times

The majority of the children who offered choices on the PSPBS chose a different peer for each of the three play situations. Regression analysis was used to determine if the minority of children who offered the same choice each time have characteristics which distinguish them from the rest of the sample. Results from each of the three sample groups are given in Table 10.

Hypothesis Testing

A. The selector is of a low standard age. Results were non-significant, but in an opposite direction from that predicted for all three groups.

B. The selector tends to be female. Results were non-significant, but were in the hypothesized direction for the whole sample and for the HS sample; for the LPS sample, however, results were in the opposite direction.

C. The selector will have a younger sibling. Results were non-significant, but in the opposite direction for all three samples.

Table 9: Summary of Negative Peer Trait Results; Regression Coefficients and Standard Errors

Unhypothesized result	$\hat{\beta}$ [a]	$\hat{\sigma}_{\beta}$ [b]
Girls chose enemy of non-major race more than boys did.	-.47*	.25
Major race Ss chose enemy of opposite sex.	-.59*	.31
Ss who were only one of sex in family chose enemy of non-major race.	-1.10**	.021
First-of-sex Ss chose enemy of same race as selves.	1.37**	.49
First-of-sex Ss chose enemy of opposite sex.	-1.07*	.52
Ss with younger sib, small age gap, chose enemy of high standard age.	.04*	.02
Ss with younger sib chose enemy of higher sociometric status than did others.	.28*	.15

* $p \leq .10$
** $p \leq .05$
a. $\hat{\beta}$ is the regression coefficient.
b. $\hat{\sigma}_{\beta}$ is the standard error.

Table 10: Results: Characteristics of Ss Who Chose Same Peer Three Times; Regression Coefficients and Standard Errors[a]

Variable	$\hat{\beta}$ ($\hat{\sigma}_{\hat{\beta}}$)		
	Whole Sample	LPS Sample	HS Sample
C	.25(.41)	.06(.49)	-.59(3.07)
T	-.10(.08)*	-.07(.10)	-.12(.08)*
S	.04(.06)	-.0007(.10)	.06(.07)
H	-.25(.11)***	-------	-------
F	.24(.07)****	.57(.21)****	.19(.08)****
N	.002(.04)	.11(.12)	-.02(.05)
O	-.002(.05)	-.06(.12)	.01(.05)
S_Y	-.08(.07)	-.16(.15)	-.05(.09)
S_O	-.10(.07)*	-.26(.13)***	-.006(.08)
R	-.03(.08)	-.18(.12)	.09(.11)
A	.001(.007)	.005(.008)	.01(.05)
A_S	.04(.03)	.03(.05)	.01(.04)
S_P	-.14(.08)**	-.11(.13)	-.12(.11)
T_1	.04(.12)	-------	-------
T_3	.13(.09)*	-------	.15(.15)
T_9	.13(.10)	-------	.16(.21)
P_u	.01(.01)	.01(.02)	.01(.01)

Item	Total Regression Statistics		
	Whole Sample	LPS Sample	HS Sample
n[b]	164	63	101
R^{2}[c]	.17	.31	.20
F-statistic	1.91	1.88	1.57
Significance	.02	.06	.11
Error $\hat{\sigma}$	.35	.37	.33

* $p < .20$
** $p < .10$
*** $p \leq .05$
**** $p \leq .01$

a. Standard error ($\hat{\sigma}_{\hat{\beta}}$) is given in parentheses following each regression coefficient ($\hat{\beta}$).
b. n = number of observations.
c. R^2 is the coefficient of determination.

D. The selector will have a low peer desirability score. Results were non-significant, but in the opposite direction for all three samples.

E. The selector will be from a father-absent family. From all three samples, results strongly support this hypothesis. For the whole sample, significance level was .001; for LPS, .008; for HS, . 012.

F. The selector will be from a small family (one to three-child). Results were non-significant. They were in the indicated direction for the whole sample and the LPS sample, but in the opposite direction for the HS sample.

G. The selector will be the first-of-his-sex in the family. Results for all three samples were in the opposite direction from that predicted, but were significant at the .09 level only for the whole sample.

H. The selector will be of a low ordinal position (first is lowest). Results were non-significant and in the predicted direction for the HS sample, but in the opposite direction for the whole sample.

I. The selector will be of a younger age than average for the total sample. Results were non-significant and in the opposite direction for all three samples.

J. The selector will be of a non-predominant race. Results were in the predicted direction for the whole sample and for LPS, but in the opposite direction for HS.

K. The selector may be influenced by a specific tester. The three testers out of ten who had four or more Ss in one class choose the same

peer three times were investigated. Results were non-significant, but in the predicted direction.

Results for this group of hypotheses were largely in opposite directions from those predicted. However, one hypothesis, that the S who chose the same peer all three times will be from a fatherless home, was accepted for all three samples at the .01 level. One other hypothesis tested yielded results in the appropriate direction for the two samples it applied to. All other results, however, were in opposite directions for at least one of the three groups. An additional finding, not hypothesized, but at the .05 level was that LPS Ss who choose the same peer all three times tended to have either no older sibs or older brothers rather than older sisters. For a summary of these results, see Table 11.

Comparison of LPS and HS Samples

Comparison of LPS and HS samples results for this section were obtained in two ways. First, regression analysis was used on the whole sample only to determine whether differences existed between the LPS and HS groups in regard to peer preference and choosing the same peer three times. Second, the distribution of individual peer desirability scores was portrayed graphically for both groups and percentages were calculated for each group of certain score categories. See Figures 2 and 3 for complete score distribution.

Hypothesis Testing

A. Results in the predicted directions for hypotheses under Sections I, II, and III above will be stronger for LPS than for HS Ss. A simple

Table 11: Summary of Characteristics of Ss who Chose the Same Peer Three Times; Regression Coefficients and Standard Errors[a]

Hypothesis	$\hat{\beta}$ (σ_{β}) Whole sample	HS	LPS
S is of low standard age.	.04(.03)††	.01(.04)††	.03(.05)††
S is female	.04(.06)†	.06(.07)†	-.0007(.10)††
S has a younger sibling.	-.08(.07)†	-.05(.09)†	-.16(15)†
S has a low sociometric score.	.01(.01)†	.01(.01)†	.01(.02)†
S is from a father-absent family.	.24(.07)*	.19(.08)*	.57(.21)*
S is from a small family.	.002(.04)††	-.02(.05)†	.11(.12)††
S is first-of-sex.	-.14(.08)†**	-.12(.11)†	-.11(.13)†
S is of low ordinal position.	-.002(.05)†	.01(.05)†	-.06(.12)††
S is of a younger age than average.	.001(.007)†	.01(.05)†	.005(.008)†
S is of a non-major race.	-.03(.08)††	-.006(.08)†	-.18(.12)††
S may be influenced by a specific tester.	-.10(.08)†	-.12(.08)†	-.07(.10)†

† Result is not in predicted direction.
†† Result is in predicted direction.
* $p \leq .01$
*** Result is not in the predicted direction and $p \leq .10$.
a. Standard error (σ_{β}) is given in parentheses following the regression coefficient ($\hat{\beta}$).

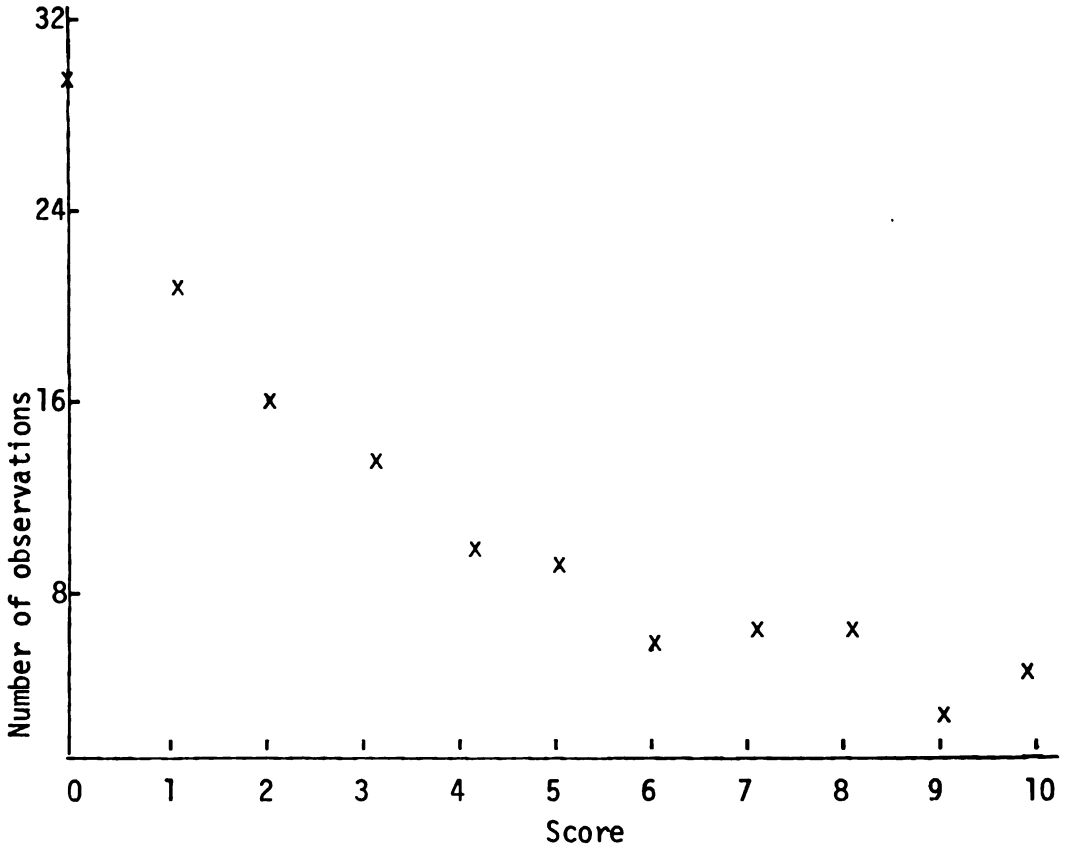

Figure 2: Distribution of Sociometric Status Scores for the Head Start Sample

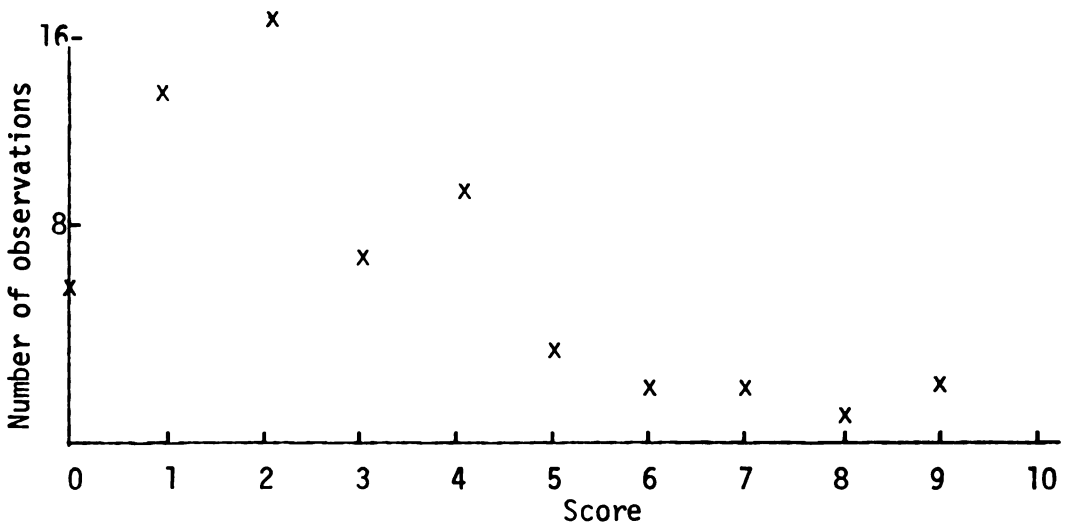

Figure 3: Distribution of Sociometric Status Scores for the Laboratory Preschool Sample

tally of results supporting hypotheses at the .05 level yields five for LPS and four for HS. Counting the instances in which results, LPS, thus, has a slight edge over HS in supporting the hypotheses.

B. The spread of the sociometric status scores is wider in the middle range for LPS than for HS classes. Overall, the raw scores extended from 0 to 9 for LPS and from 0 to 10 for HS. Breaking these scores into three groups (Low = 0; middle = 1 to 5; high = 6 to 10), 82 percent of the LPS scores and 60 percent of the HS scores fall into the middle category. The mean score is slightly under three for each group (had each S taken the sociometric test, the mean would have been exactly three). It is seen, therefore, that for the middle scores, 1 to 5, the range is indeed wider for LPS, 82 percent versus the HS 60 percent. See Figures 2 & 3.

C. Fewer children per class will receive sociometric scores of zero in LPS than in HS classes. In the four LPS classes combined, seven percent received zero scores. In the ten HS classes combined, 25 percent received zero scores. It is thus apparent that a lesser percentage of LPS Ss than HS Ss received zero scores.

D. Fewer children will receive very high sociometric scores in the LPS than in the HS sample. In the high range, six to ten, were 15 percent of the HS Ss, but only 11 percent of the LPS Ss. This difference, although small, is in support of the hypothesis.

Additional Findings

Peer preference. It was found that a LPS S was more likely than a HS S to choose a friend of the same sex at the .018 level. A HS S,

however, was more apt than a LPS S to choose a friend of the same race at the .045 level. In addition, the HS S was more likely than a LPS S to choose a friend of high ordinal position at the .043 level and to choose a friend from a fatherless home at the .0005 level.

Chose all three. Only one result reached significance. A LPS S was more apt than a HS S to choose the same peer all three times at the .027 level.

These unhypothesized, but significant, findings will be discussed in the next chapter. Some may simply be a result of differences in population composition between the two groups, but others may be truly illuminating.

Negative Scores

It was hypothesized that Ss who were chosen more than one or two times as a negative choice might have distinguishing characteristics.

Regression analysis was used with the negative-only peer desirability score as the dependent variable and with the same independent variables as had been used for the positive peer desirability model. Complete results are given in Table 2. Except when specifically mentioned, the model corrected for multicollinearity in an identical fashion to model 1a has been used.

Hypothesis Testing

A. The more negative choices a S receives, the more likely he is to be first-of-sex in his family. Results were not significant, but in the predicted direction.

B. The more negative choices a S receives, the more likely he is to be first-of-sex in his family. Results were not significant, but in the predicted direction; the original model was used in this instance.

C. The more negative choices a S receives, the more likely he is to have a younger sibling. Results were in the predicted direction, but were non-significant.

D. The more negative choices a S receives, the more likely he is to have an opposite-sexed sibling. Results were non-significant, but in the opposite direction.

No results reached even the .10 level of significance. Three hypotheses yielded findings in the predicted direction. For one hypothesis, however, results were in the opposite direction. See Table 12 for a summary.

Reliability

The entire peer preference section of this study rests on the assumption that the first choice given by a child on the PSPBS is indeed his strongest preference choice. One way to test this assumption is to investigate whether or not first choices are more reproduceable over time than are second and third choices.

The percentage of first choices in the test which were reproduced in the retest was compared against the replication percentages for second and third choice for each class and then for each combined half of the total age group. See Table 13 for complete results.

First choices were indeed more reliable than second choices, as seen in Table 13. They were also more reliable than third choices except for

Table 12: Summary of Negative Score Results; Regression Coefficients and Standard Errors

Hypotheses	Result	
	$\hat{\beta}$[a]	$\sigma_{\hat{\beta}}$[b]
A S with a high negative score is male.	-.24††	.81
A S with a high negative score is first of sex.	.52††	.49
A S with a high negative score has a younger sib.	-.00007††	.004
A S with a high negative score has opposite-sexed sib.	20.16†	14.31

† Result is not in predicted direction.
†† Result is in predicted direction.
a. $\hat{\beta}$ is the regression coefficient.
b. $\sigma_{\hat{\beta}}$ is the standard error.

the morning three-year-old group in which they were equally reliable. Second choices were more reliable than third choices for the four-year-old, but not for the three-year-old classes. Combining both three-year-old classes, reliability of first choice was 44 percent, of second choice 24 percent, and of third choice 28 percent. Combining both four-year-old classes, reliability was 58 percent for first choice, 30 percent for second choice, and eighteen percent for third choice. Although age differences in reliability thus seem evident, as shown in Table 13, differences among specific classes are also substantial, particularly between the morning and afternoon three-year-old classes.

Table 13: Percentages of Rank Choices Reproduced

Class	N Number of Ss tested and retested	Percentage reproduced			
		First choice	Second choice	Third choice	Negative choice
Morning 3-year-old	14	36%	29%	36%	--
Afternoon 3-year-old	11	54%	18%	18%	--
Morning 4-year-old	16	69%	38%	19%	54%
Afternoon 4-year-old	17	47%	24%	18%	45%
Both 3-year-old classes	25	44%	24%	28%	--
Both 4-year-old classes	33	58%	30%	18%	50%

When raw unweighted sociometric status scores were matched on test and retest for each individual and a correlation coefficient calculated for the entire sample, it was .676. When the correlation coefficient was calculated for each classroom individually, however, it was found that the correlation coefficient for three of the classrooms was above the .700 level, while for the fourth, the morning four-year-old class, it was only .460.

Looking at the negative only scores, a large difference between classes is also evident. The correlation coefficient for the morning four-year-old class on negative scores was .884 while for the afternoon four-year-old group, the correlation coefficient was .397. Combining Ss

from the two classes, the overall correlation for reliability of negative scores was at the .736 level. Interestingly, only seven of the seventeen Ss from the morning four-year-old class ever received a negative choice while 12 of the 18 afternoon four-year-olds did.

All results concerning sociometric status score reliability are shown in Table 14. For three of the classes, positive scores were fairly reliable. For one of the two classes in which negative choices were given, negative choice was extremely reliable. In the next chapter, possible reasons for variation between classes will be discussed.

Unweighted Versus Weighted Scoring

Since for the LPS sample, first peer choice was more often reproduced on a retest than second or third choices, it would seem to be a more important choice. It was, therefore, decided to try a weighted scoring method in which a first choice yielded 10 points, a second choice seven points, and a third choice five points. This particular scoring scheme was suggested by Campbell (1960). Also tried was an unweighted method; first, second, and third choices were each given a value of one. All regression analyses were done twice; once using a weighted socioeconomic status score; once using an unweighted score.

In the peer desirability segment of the study, the unweighted sociometric status (peer desirability) score and the weighted sociometric status score were used in turn as the dependent variable. In the negative peer desirability section, negative weighted and unweighted scoring were compared with weighted and unweighted negative and positive scoring methods.

Table 14: Reliability of LPS Sociometric Status Scores in Correlation Coefficient Terms

Class	Number of Observations	Positive scores			Negative Scores		
		Correlation Coefficient	Slope	Intercept	Correlation Coefficient	Slope	Intercept
Morning 3-year-olds	17	.79	.58	.88	--	--	--
Afternoon 3-year-olds	15	.73	.77	.04	--	--	--
Morning 4-year-olds	17	.46	.42	1.64	.90	1.49	-.20
Afternoon 4-year-olds	18	.71	.73	.76	.40	.40	.44
All 4 classes	67	.68	.61	.88	--	--	--
Both 4-year-old classes	35	--	--	--	.74	1.06	.02

As shown in Table 15, there was no important difference between weighted and unweighted scoring methods for any of the four samples tested. For the negative subsample, both weighted and unweighted and both negative and positive combined scoring methods yielded similar R^2's (correlations of multiple determination), F-statistics, and significance levels.

Although there were thus no differences between weighted and unweighted scoring techniques in increasing the predictive power of the model, there were differences between samples. The R^2 and F-statistics indicate that both weighted and unweighted scoring techniques were more significant for the LPS than the HS sample. Using unweighted scoring, the R^2 was .20, the F-statistic 1.25 for LPS while the R^2 was only .05 and the F-statistic .59 for HS. This may indicate that validity of the PSPBS is higher for the LPS than the HS sample.

In the following chapter, the results given in this chapter will be discussed.

Table 15: Sociometric Scoring Technique Comparisons: Total Regression Statistics

Sample	Type of Scoring	n[a]	R^{2b}	F-statistic	Significance	Error
Whole Sample	Weighted positive	183	.06	.94	.50	17.53
	Unweighted positive	183	.06	.99	.46	2.32
LPS	Weighted positive	67	.20	1.25	.28	15.47
	Unweighted positive	67	.20	1.25	.28	2.10
HS	Weighted positive	116	.05	.54	.87	18.83
	Unweighted positive	116	.06	.59	.84	2.46
LPS Negative Subsample	Negative weighted	35	.23	.63	.79	15.61
	Negative unweighted	35	.22	.60	.81	2.11
	Weighted negative and positive combined	35	.24	.67	.75	20.65
	Unweighted negative and positive combined	35	.24	.66	.76	3.29

a. n = number of observations.
b. R^2 is the coefficient of determination.

CHAPTER V: DISCUSSION

This chapter, like the last one, is divided into several sections. The first five sections are discussions of the results reported in the previous chapter on the following categories: Positive peer status, peer preference, choice of the same peer three times, comparison of the LPS and HS samples and negative sociometric status scores. The last three sections are discussions on use of the instrument; they are on reliability, scoring, and testing procedure. For precise figures regarding results, the reader may want to refer back to Tables two through fifteen and Figures two and three all, in Chapter IV.

Sociometric Status

The only hypothesis which was accepted at the .05 level was that as the gap between a S and an older sibling decreases, his sociometric status increases. Only for the LPS sample did this finding reach significance although for the whole sample and the HS sample, results were in the same direction. Stated more simply, this hypothesis states that children with no older siblings or siblings several years older are less popular with preschool peers than those with older sibs close in age to themselves. Role model theory explains this result well; a child who has a sibling just older than he can model his behavior and learn from his example how to get along with peers. To survive in his family, such a child has had to learn to cooperate and interact with a more powerful

peer; in the preschool, these social skills might serve him well in interacting with others.

The reason that this hypothesis was supported at a more significant level for LPS than HS might lie in differences in family size and density between the two samples. As demonstrated by Hurlock (1972) and by Sears (1957), quality and quantity of parental attention per child, particularly for middle children in the family, declines as family size increases. As LPS children were largely from smaller, less dense families than were HS children, the amount of parental attention the average LPS child received was likely to be greater than that received by the typical HS child. A HS child with a closely spaced elder sibling might often be from a large, closely spaced family in which case the disadvantage of lack of parental attention might offset the advantage of having a just-older sibling. According to Waldrop and Bell (1964), three-year-old males from large, dense families were more dependent on the teacher than others were; this dependency on adults decreases popularity with peers (Dunnington, 1957).

The hypothesis that sociometric status is higher for Ss from father-present than father-absent homes was supported in the predicted direction for the whole sample and HS sample, but rejected for the LPS sample at the .05 significance. According to Moore (1964), dependency on adults tends to make a preschool child unpopular with his peers while dependency on peers tends to enhance a child's popularity. Since all of the LPS Ss from father-absent families had had fathers at home until 12 to 6 months before testing, perhaps they were unsure about their relationships with adults and did indeed depend more on their peers than on their teachers. Only 6 percent of the LPS Ss came from father-absent homes; these Ss

suffered no financial deprivation, compared with their classmates, and came from families of one to three children. By contrast, 64 percent of the HS Ss came from father-absent homes; these Ss tended to suffer more financial deprivation than did those from father-present homes and came from families with as many as eight children. In many HS homes, a father had never been present. Due to these very different implications of father-absence for the LPS group, therefore, different results are not surprising. Having no father at home was no handicap for children at LPS in peer acceptance, but it may have been a handicap for HS children.

At the .10 significance level, sociometric status increases as standard age increases for the whole sample. Results were non-significant, but in the same direction for the HS and LPS samples. Since social skills tend to improve with age, it is logical that peer popularity would also increase with age. During the preschool years, however, different children develop at different paces so that chronological age is not always an accurate indication of social maturity level. For this reason, the relationship between increased standard age and sociometric status is not to be perfect.

For two hypotheses in this section, results were non-significant, but in mixed directions. These results could very well be attributeable to chance alone, but they could also be indicative of differing trends between the LPS and HS samples. The hypothesis that sociometric status increases as ordinal position increases yielded directional support from the LPS sample, but opposite directional results from the whole sample and the HS sample. If these indications show the actual trends, with differences between the HS and LPS samples, increasing ordinal position may

be advantageous up to a certain point after which further increase becomes disadvantageous. The other hypothesis is that Ss who are the sole members of their sex in the family will have lower sociometric status than those who do not; whereas results for the HS sample were in this direction, results for the whole sample and LPS sample were in the opposite direction. The direction of the HS results, if accurate, lends credence to Adler's theory that being the only one of one's sex in a sibship can be devastating to one's self-esteem and ability to get along with others. Perhaps the opposite direction of the LPS results is due to the fact that family size is smaller than in the other sample; being the only boy in a sibship of two would seem not at all devastating whereas being the only boy in a sibship of six might well be difficult. Because of multicollinearity difficulties regarding this variable, the validity of these results is questionable, however.

In summary, the only hypothesis which was accepted at a .05 level of significance was that sociometric status increases as the age gap between a child and his closest older sibling decreases. This finding, which attained significance only for the LPS sample, was explained in terms of role model theory. At the .10 level of significance for the whole sample only, sociometric status increased as standard age increased. The fact that this finding failed to attain significance for either the LPS or HS samples individually was accounted for by the fact that developmental level of a preschool child does not always correspond exactly with chronological age. Some non-significant results were discussed; it is hoped that further research could be done to either refute or verify the directional, but non-significant, results in this study.

Peer Preference Relationships

Four hypotheses in this section received support at the .05 significance level. The first is that a child and his first peer choice will be like-sexed; this was supported at the .0005 level by all three groups. This finding was also reported by Moore, et al., (1964). A related, non-hypothesized finding was that LPS children are more likely than HS children to choose a friend of the same sex (at the .05 significance level). At the preschool age, perhaps the sex role identification-process is more intense for middle class than for lower class children.

Significant at the .01 level for the HS sample and the whole sample and in the predicted direction for the LPS sample were the hypotheses that a child with high sociometric status will choose a friend of lower status than his own and that a child with low sociometric status will choose a friend of higher status than his own. This finding is congruent with findings by Schachter (1964) and by Alexander (1966) in studies on college and high school students, respectively. Schachter's explanation for this phenomenon is that individuals of high sociometric status are more self-confident and independent than are those of low status and thus, choose their friends according to their own judgment rather than choosing them on the basis of how they are rated by others. The reason that the result is more significant for the HS than LPS sample may be that more HS Ss scored dramatically low or high in sociometric status than did LPS Ss; contrasts between individuals were thus likely to be greater on the average for the HS sample, therefore, raising the significance level.

The hypothesis that a child and his chosen friend will be of dissimilar ordinal positions was significant for the LPS sample at the .05 level while for the whole and HS samples, results were non-significant,

but in the opposite direction. The LPS results support Toman's (1969) theory of role complementarity, i.e., that individuals choose friends who play or have played complementary, not similar, roles in their families to their own roles. The reason for the discrepancy in results between the LPS and HS samples may again have to do with family size. According to Hurlock (1972), parents of two to three children compare their children to each other much more than do parents of five or more children; sibling rivalry is also more intense in the former than in the latter case. It may therefore be that specific ordinal differences have a sharper effect in small than in large families and that the drive to choose a friend of dissimilar, but complementary ordinal position is thus stronger in a child from a small family than in one from a large family.

Non-Hypothesized Findings

Most of the additional non-hypothesized findings which were significant at the .05 or .10 level had to do with sex, age, father-absence or-presence, or race. First, sex differences are discussed. At the .10 significance level for the whole sample alone, girls were more likely than boys both to choose a friend of the same race and to choose a friend of a high ordinal position. The first result may indicate that girls are more aware of individual differences at an early age than are boys as they usually display an earlier social interest than do boys and may feel a need to ally themselves with others of similar racial characteristics. This feminine social precocity may also include an earlier adoption of societal racial prejudices, thus leading the girl to avoid friendships with others of a different race.

Standard age. For both the whole sample and the HS sample, at the .05 level, a child of low standard age tended to choose a friend of high peer desirability more than did those of higher standard age. As higher standard age is correlated with higher sociometric status, this result is congruent with two results already discussed; that a child of high sociometric status will choose a friend of lower status and that a child will select a friend of dissimilar age to himself. At the .10 level for the whole sample only, children of low standard age tended to choose girls rather than boys as friends. This finding may be related to the fact discussed by Freud (1933) that many girls have a tendency to "mother" younger children as part of their sex role identification process. Finally, at the .10 level for the whole sample only, a child of high standard age was more apt than one of low standard age to select a friend who was first-of-sex. This result is of questionnable significance due to high multicollinearity between the first-of-sex variable and another independent variable which can result in invalid results.

Father-absence or -presence. For the LPS sample only, children from father-absent homes chose friends of a higher peer desirability level than did others at a .01 significance level. As has been previously suggested, this subsample of children who had only recently lost their fathers from the home may be more peer-dependent than others. Since according to Schachter (1964), peer-dependency is related to the choice of a friend who is highly valued by peers, this result is reasonable. For the whole sample and the HS at the .05 level, children from father-absent homes chose first-of-sex friends less than did others; these results were in the opposite direction for the LPS sample. Although no explanation is offered for the specific finding, the difference between

LPS and HS results again supports the theory that the father-absent home has very different implications for children of the two samples. Due to multicollinearity problems involving the first-of-sex variable however, this result may be invalid.

Race. The most striking non-hypothesized result was that a child of the major race tends to choose a friend of the major race and, in like manner, a child of a minor race tends to choose a friend of a minor race at the .0005 significance level for both the whole and the HS samples. LPS results, although non-significant, were in the same direction. This finding indicates that children of preschool age do indeed realize racial differences and associate preferentiably with peers of their own race. Again, for the whole sample at the .10 level and for the HS sample at the .05 level, a child of the major race tended to choose a friend of greater standard age than did a child of the minor race. This finding may be accounted for by the fact that a child of the minor race who tends to wish, as just reported, to play with a friend of a minor race, has a more limited range for selection than does a child of the major race.

Assorted other results. For the HS sample at the .10 level, a child of a high ordinal position tended to choose a best friend who was not first-of-sex; for the LPS sample, results were non-significant, but in the opposite direction. The difference between these two results again points to the possibility that ordinal position effects differ between the LPS and HS samples. Again, for the HS sample, only, at the .05 level, children of high sociometric status tended to select friends of higher standard age. Again, multicollinearity problems may have caused this result to be more significant than it is in reality. Finally, for the LPS sample only, at a .05 level, a child with no younger sib or a wide

age gap between himself and a younger sib chose a friend of a lower ordinal position than did others. This result is directly related to the already discussed result that children choose friends of dissimilar ordinal position; as most of the children without younger sibs are themselves later-borns in this sample, it follows that they would select first-borns as friends. A child who chose a friend of the same sex was also apt to choose a friend of higher than average standard age at the .01 level for LPS.

This result may be related to a sex difference; as already discussed, males tended to choose older friends than females. Perhaps LPS males tended to choose friends of the same sex more often than did females.

Negative Peer Relationships

No specific hypotheses were made in regard to negative peer relationships. It was, however, assumed that relationships between the chooser and his negative choice would differ from those between the chooser and his positive choice. This assumption was borne out by the results which are discussed in the following paragraphs.

It was discovered at the .10 level that girls are more likely than boys to name a peer of a non-major race as a negative choice. This result is congruent with a previously mentioned finding that girls are more apt than boys to choose a friend of their own race; girls may be more precocious in social awareness, of which prejudice is a part, than boys.

While children of the major race tended to make negative choices of opposite sexed peers, children of a non-major race made negative choices of same-sexed peers at the .10 level of significance. Perhaps this is

due to the fact that sexual antipathy is felt strongly by many children of this age, but children of a non-major race might have stronger feelings of antipathy towards a like-sexed peer who treats him in a discriminatory fashion.

While a child who was the only one of his sex tended to make a negative choice of a peer of a different race at the .05 level, a child who was first-of-sex made a negative choice of a peer of the same race at the .05 level.

These results are obviously logically inconsistent and are due to a high degree of multicollinearity between the two independent variables; they are, therefore, invalid results.

Two results were significant at the .10 level regarding the age gap between a child and his younger sib. A child with a younger sib close in age to himself was more likely to make a negative choice of a peer of higher than average sociometric status and (2) higher than average standard age. Since a child with a closely spaced younger sib is likely to be less popular himself than other children, as indicated previously, he may thus be jealous of children of higher status and age and make a negative choice of an older, higher status child, who had perhaps rejected him.

Summary. Although few hypothesized results were significant in this section on positive and negative peer relationships, it is obvious that results for positive relationship were quite different from those for negative relationships, thus indicating that the first positive peer choice is made on a different basis than a negative peer choice and that the test, therefore, has validity. Unpredicted, but significant results as well as differences between HS and LPS samples in results merit further investigation. This model would also be improved if the

multicollinearity between the first-of-sex and only-one-of-sex variables were corrected for. Those hypothesized results which did attain significance indicate that family background factors do indeed influence both the best-liked and most disliked peer choices of a child.

Chose All Three

The hypothesis that a child who chose the same peer for all three play situations is from a father-absent home was accepted at the .01 level for all three samples. A child from a father-absent family may wish for a more secure, stronger peer bond than a child from a father-present family and may reflect this desire in choosing only one peer all three times.

An additional non-hypothesized finding at the .05 level was that for the LPS sample only, children who chose the same peer three times tended to have either no older sibs or older brothers rather than older sisters. It may be that a child from a father-absent home or a family with no older sibs or older male sibs (who might offer more competition and threat to their younger sibs than do sisters) wants the security of having one very special devoted friend at preschool. He may feel unsure enough about his abilities to form friendships to want to hold on tenaciously to one friend. Of course, the results may also be due to an interaction effect of tester and child. More extensive investigation into this issue is needed.

Comparison of HS and LPS Samples

The hypothesis that LPS results would support the hypotheses stated in the first three parts of this section more than would HS results was

not accepted by a large enough margin to warrant more than a cautious statement of acceptance. Interestingly, on 30 different hypotheses, the direction, sometimes significant and sometimes not, was the same for both groups 21 times, or about 70 percent of the time. Although it is realized that directionality is not always a valid trend indicator, it often is. Despite differences between the two samples in family background factors, socioeconomic status, and age, and race group composition, many of the relationships accepted as significant or indicated by the direction of results in this study were very similar for the two samples.

The hypothesis that a greater percentage of sociometric status scores will fall in the middle range for LPS than the HS sample was substantiated as 82 percent of the LPS scores versus 60 percent of the HS scores fell into that range. Akin to this hypothesis are the hypotheses that fewer LPS than HS children will receive (1) scores of zero and (2) very high scores. These hypotheses were also borne out, the first by a large margin, 7 percent of LPS Ss versus 25 percent of HS Ss and the second by a narrower margin, 11 percent for LPS versus 15 percent for HS. The distribution curve represented in Table 2 of the LPS scores was similar to that reported by Northway (1967) in many sociometric tests done at other laboratory preschools.

The reason for the difference in LPS and HS score distribution may be due to differences in programs. While the LPS program was directed towards the development of the whole child, socially, physically, emotionally and cognitively, the HS program was focused more on the cognitive than on other aspects of development. A major goal of the LPS program was to integrate each child into the group. Efforts were directed towards helping each child realize his potential; social engineering efforts were

frequently made to try to prevent a given child from becoming an isolate, a scapegoat, or a prima donna. If the goals of this program were fully attained, therefore, there would be no isolates or "stars" in the classroom. Since HS program personnel were compelled to devote more energy than were LPS personnel to academic goals, however, they could not do as much "social engineering" to integrate isolates and discourage idolization as could LPS staff.

Other Findings

Several non-hypothesized, but significant findings regarding LPS and HS differences appeared in regression analysis results for the whole sample. In regard to peer preference, it was found at the .05 level that a LPS child was more likely than a HS child to choose a friend of the same sex, but that a HS child was more apt than a LPS child to select a friend of the same race. It was found that a HS S was more likely than a LPS S at the .05 level to choose a friend of higher ordinal position and at the .0005 level to choose a friend from a father-absent home.

As noted before, LPS children may be encouraged at an earlier age than HS children to adopt a strong sex role identity and, thus are more likely to choose a best friend of the same sex to reinforce this sex role identity. The other three results are best explained as results due to basic differences in composition of the two samples. The most probable reason that a HS child was more apt to select a friend of the same race was that 89 percent of the HS Ss were of the same race while only 79 percent of the LPS Ss were of the same race. It is not surprising that a HS child was more apt than a LPS child to choose a friend of a higher ordinal position and from a father-absent family as the average ordinal

position for the HS sample is 3.39 in contrast to LPS's 2.04 and 64 percent of the HS Ss are from father-absent homes while only 6 percent of LPS Ss are.

One other finding of significance at the .05 level is that a LPS child was more likely than a HS child to choose the same peer for all three play situations. It may be that LPS children coming from fairly settled, but more peer-isolated neighborhoods in comparison with the HS children,who experience more flux,like to form a more intense, stable relationship with one other preschool peer than do HS children,who may have more opportunity and experience to form ties with peers.

Negative Scores

No significant results were obtained for this part of the study. The following hypothesis yielded results in the predicted direction: (1) The more negative choices a child receives, the more likely it is that he will be male, (2) The more negative choices a child receives, the more likely he is to be first-of-sex in his family, (3) The more negative choices a child receives, the more likely he is to have a younger sibling. In the opposite direction were results regarding the hypothesis that the more negative choices a child receives, the more likely he is to have an opposite sexed sibling.

The reason that a male would be more likely than a female to receive negative choices is that preschool males exhibit more physically aggressive behavior, which tends to be unpopular, than do females. McKee and Leader (1955) verified this fact that males are more physically aggressive. It was hypothesized that first-of-sex children would receive negative points as they have no like-sexed, older peer to learn appropriate

social skills in interacting with like-sexed peers according to role model theory. Because of the sometimes unsettling effects attributed to dethronement on a young child's developing personality and self-concept, it was hypothesized that children with high negative scores are likely to have a younger sibling. All these theoretical statements are somewhat supported by the direction of the results although not statistically significantly supported.

The hypothesis which yielded results in a negative direction was that a child who receives many negative points will be of a mixed-sex sibship. According to Koch (1957), having a sibling of the opposite sex is not only more stimulating but also more stressful for a child. Perhaps the stress between siblings does not carry over in preschool peer interaction, however. A child from a mixed-sex sibship may indeed be popular with peers as he has had experience in dealing with an opposite sexed peer and because he may conjure up more stimulating, imaginative play ideas than children from one-sexed sibships. According to Sutton-Smith & Rosenberg (1970), children from mixed-sex sibships tend to be more creative than others.

Although no significant findings were elicited from this part of the study, the direction of results lead to interesting theoretical speculations. One difficulty with this part of the study was that only 24 children in all gave a negative choice and that not three, but only one choice was requested. With only 24 negative points available, only a few children accumulated more than one of these points. Such a small sample made statistical inferences difficult to make.

Interestingly, when a negative choice was initially asked of the first three-year-olds tested, no meaningful responses were obtained.

The question, "whom would you not like to play with?" was apparently not comprehensible to these younger children. They did, however, seem to understand the question, "whom would you like to play with with this toy?" Since the negative question was asked without the use of a play situation, maybe the question was too abstract for these younger children.

Reliability

Reliability results done on the LPS sample compare favorably with those of other sociometric studies. Reproduceability of individual peer choices at 2 to 4-week intervals (see Table 13) was higher for LPS children than it was for the Head Start children in Boger's study (1969) at a two-day interval. Since percentages of reproduceability generally declines as more time elapses between test and retest, (Witryol and Thompson, 1953) this result is particularly significant. It must be noted, however, that the children from the LPS sample may have formed more stable peer attachments or ideals, particularly with their first choice, than did children in the Head Start program.

Reliability of individual positive sociometric status scores between test and retest as measured by correlation coefficients (see Table 14) was above .70 for three of the four LPS classes, .68 overall. This compares favorably with the results, obtained by Moore and Updegraff (1964) for first and second graders, .62 and .52, for a 1-2-week interval.

According to Witryol et al. (1953, pg. 255), results from sociometric studies across all age groups generally yield coefficients of stability above .60, but cover the range of .16 to .96. This stability coefficient, they stated, will generally be lower for younger children than

for older ones. That LPS results are comparable with results obtained from older groups makes them the more significant.

Results for the reliability of negative only scores were calculated for the two four-year-old classes (see Tables 13 and 14). While about half the children in each class gave the same response in both test and retest, individual negative only sociometric scores varied a great deal in reproduceability between the two classes.

While the stability coefficient was .90 for the morning four-year-old class, it was only .40 for the afternoon four-year-old class. Inspection of the distribution of negative choices in each class revealed that only 41 percent of the morning children were ever named as a negative choice while 67 percent of the afternoon children were. Since most of the morning children, therefore, received scores of zero both times, the correlation between the two sets of scores was naturally high.

In reproduceability of first, second and third choices, the morning three-year-old class stands apart from the others; its first choice reproduceability is lower and its third choice reproduceability higher than for any other class. Inspection of the data indicates that the levels of reproduceability shown are due almost entirely to the effect of a few children who chose the same friend all three times on both test and retest. This indicates that for most of the children in this particular class, reproduceability of any one of the three choices was close to zero. Another result which was inconsistent from majority results was the .46 morning four-year-old stability coefficient when all other classes had coefficients of .70 or higher.

The fact that differences were greater between individual classes than between three-and four-year-old age groups indicates that differing

social structures may exist in various classrooms. The morning three-year-olds, for example, were the only group of children tested in which a majority of the children could not name each picture of others in their class. Testing children in this group was more difficult than in any other because of reluctance of many children to leave the classroom, distractability and extremely short attention spans, and unusual difficulty of several children in understanding many of the questions. Members of the LPS supervisory staff mentioned that children in that particular classroom at the end of the year were involved in more solitary and parallel play than were children in the other three classrooms who engaged in extensive cooperative play. Although children in this classroom were two months older, on the average, than those in the afternoon three-year-old class, it seems as though they may, as a group, have been more socially immature.

The low positive sociometric status stability coefficient of the morning four-year-old class might be related to its extremely high negative status coefficient. Since a few children were consistently named as disliked, the least popular segment of that class was relatively fixed.

As long as a child was not in that "disliked" segment, he may have been considered an acceptable playmate by most of his other non-disliked peers and could go up or down in social status depending upon daily circumstances. The majority of the children, united in their dislike of a few individuals, may not have formed into smaller "cliques" in the fashion that children in a classroom with no fixed lower segment might.

The reliability results, therefore, indicate that social structures may differ among different classrooms of like-aged children. Two factors are likely to be involved in this difference. The first factor is that

classrooms vary in population characteristics; age, sex, race, and personality differences might lead to differing social structures. The second factor is that teachers vary in their approach to the classroom as a whole and to different individuals; the effect of the teacher could be a crucial one in determining the social structure of a given class. Also important is the joint effect of teacher-child interactions in different group situations; different children are affected differently by various teachers, who, in turn, are affected differently by various children or combinations of children.

Scoring

Although no advantage was revealed in using a weighted over an unweighted scoring technique, as also asserted by Northway (1967), Witryol (1953) and Campbell (1960), it appears that the sociometric status scores may be more valid for the LPS than the HS sample as shown by their comparative statistics in Table 15. This hypothesis is supported by the lower reliability results between another Head Start sample obtained by Boger (1969) than were obtained for the LPS sample. Perhaps peer relationships are more changeable in Head Start types of classrooms than in laboratory nursery school classrooms. Perhaps also, LPS children are easier to test. Although verbal instructions are minimal in the PSPBS, the fact that a child fully understands the verbalizations of the tester may be an important factor in eliciting the type of response which the test is presumed to elicit.

CHAPTER VI: CONCLUSION

This chapter is divided into three parts. In the first part, major results of the study are summarized. In the second section, suggestions for improving the instrument and the statistical analysis of the data used in this study are made. In the final section, implications of the study and recommendations for further research are discussed.

Major Results

Sociometric Status

The relationship of greatest interest to the investigator was that between ordinal position and sociometric status. Results failed to indicate any significant relationship between them; first-born preschool children did not seem to be any more or less popular than later-borns.

Results did indicate that a middle-class preschool child with an older sibling close in age to himself is more popular than one with no older sibling or an older sibling distant in age from himself. Although only at the .10 significance level, results also indicated that peer popularity increases as a preschool child's comparative age in a preschool group increases.

Peer Preference

Both middle-class and lower-class preschool children tended to choose a best friend of the same sex and of the same race as themselves. They also tended to choose a best friend of dissimilar ordinal position and of dissimilar sociometric status to themselves. A child who came

from a father-absent family was more apt than a child from a father-present family to choose the same peer in all three choice situations on the sociometric test.

Head Start and Laboratory Preschool Results Compared

The distribution of sociometric status scores was different for the two groups; a greater percentage of LPS than HS scores fell into the middle status range. More HS children were never chosen at all than LPS children. A LPS child was more apt than a HS child to choose the same peer in all three choice situations and to choose a peer of the same sex as a first choice. Sociometric status scores were more significant measures for the LPS than for the HS sample.

Use of the Instrument

Reliability results for the LPS sample on the Play Situation-Picture Board Sociometric test compared very favorably with reliability figures published for other preschool sociometric studies. First, positive peer choices were reproduced substantially more frequently than were second and third choices. The single negative choices were reproduced almost as often as were first positive choices. The relative status in the classroom of a given individual changed little over a two-week or four-week period. Differences in reliability were greater between individual classes than between the older and younger half of the LPS sample. A weighted scoring technique was not superior to the less complicated, unweighted method; the negative choice did not contribute significantly to the results obtained.

Suggestions for Improvement

Instrument

In the course of administering the PSPBS over 60 times, the experimentor obtained some insight regarding use of the instrument. In general, Ss responded well to the test. For the younger half of the Ss particularly, the concreteness of the play situation seemed to be a help in conceptualizing the preference questions. As mentioned, these younger subjects did not seem to understand the negative peer question, which was not used with a concrete play situation,while they appeared quite comfortable with the positive preference questions which were introduced as concrete play situations.

Two of the six play situation cards were interpreted by many children in a way not compatible with the aims of the test. The picture of the horses portrayed a large brown horse in the foreground with a white, black-spotted horse, which was drawn much smaller as it was in the distance. Many children, however, noted that one horse was 'big' while the other was 'little'. One child stated, "I'm going to put my picture on the big horse. I'll pick Susie to ride the small horse because she's dumb." Two black children placed their own pictures on the white horse and chose another child for the brown horse. Obviously, the particular way in which this card was drawn may lead a child to interpret the play situation and peer choice in a negative or only mildly positive rather than straightforward strongly positive fashion.

The other card which presents a problem, depicts a female and a male rag doll. Almost every S who chose that card put his own picture on the doll whose sex matched his own and chose a peer of the opposite sex for

the other doll. This choice constraint perceived by the child may cause him to choose a peer who is not especially well-liked by him. Because preschool children tend to prefer like-sexed friends, this unwanted effect is especially likely to interfere with spontaneous positive selections.

Although the tester is directed to indicate whether each peer choice offered by a child is spontaneous or 'urged', he is not encouraged to make any other comments on the attitude of the child being tested. Sometimes the present experimentor tested a child who was very distractible, moody, unresponsive, or hostile through the whole first part of the test, but who volunteered all three peer choices spontaneously. In such a case, it is possible that the child just gave three random choices so that he could get through with the test. In like manner, no instruction is given a tester regarding a child who quickly choose all three peer pictures from the row closest to him on the board. If the tester were to note such factors on each test sheet, it might be easier to determine which children gave honest preferences and which simply gave random responses.

Statistical Analysis

The multiple regression technique used in the major part of this study yielded adequate results. Results would, however, have been better if certain multicollinearity difficulties had been overcome. A more detailed use of regression analysis to test for interactions between variables might yield additional significant findings. To increase the statistical power, a more complex statistical technique which specifically provides for heteroskedasticity could be utilized. Another way of treating the data, factor analysis, could also be tried.

Implications and Recommendations for Further Research

On many application forms for preschools and for elementary schools, there are questions not only on the sex, age, and race of the child, but also on certain family background factors. After a parent has filled out such an application, the application is usually quickly scanned and permanently filed. Many vital statistics concerning a child's family background are thus never used. If more were known about the implications of these factors for the child and for the composition of a group of children, perhaps these easily obtained statistics would be utilized for the benefit of both the individual child and the group.

Teachers and school administrators often find it necessary to group children. In the beginning of each school year, they decide which children are to be enrolled in each particular classroom. Throughout the year, they group and regroup children for small group lessons, sports and games teams, research committees, and the like. When trying to organize the children into groups which will function harmoniously and constructively, the teacher often considers sex, age, and what she perceives as the personality of each child. Results from this study indicate that a teacher would also do well to consider ordinal position and popularity of each child. As the preschool children in this study preferred friends of different ordinal positions and popularity levels from their own, heterogeneity of ordinal position and peer status seems to be a desirable goal to strive for when grouping young children.

In this study, it was found that young children tended to choose friends similar to themselves in certain salient characteristics. At the

preschool age, when children are assuming a personal identity, it is not surprising that they prefer friends of the same sex and same race as their own. Why then do they prefer friends of dissimilar ordinal positions and popularity ranks? The answer to this question may be given in terms of role theory. While a child is assuming a unique identity, he is also learning to play a certain role in his family which complements those roles of his parents and siblings. In the preschool, the child may thus seek out friends who will complement the role which they have learned to play in their families rather than one who will play the same role and have the same status in the group.

The finding that preschool children tend to prefer friends of dissimilar peer status from themselves has further implications. It indicates that the social structure in the preschool provides for much vertical mobility rather than being restricted to horizontal mobility only. In other words, highly popular children tend to play with less popular children rather than playing only with other very popular children. This tendency prevents the formation of a "highly popular" elite clique and permits children with less well developed social skills to learn from others with more highly developed skills. There is evidence, however, that if a child is actively disliked by more than 3 or 4 other children in a group, he may be excluded from participation with children who are accepted by the group. He thus often is compelled to associate with another unpopular child and his maladaptive behaviors may thus be reinforced. Understanding such dynamics within the preschool group could provide a teacher with a framework for facilitating the entry of a new child into the group and for designing strategies for helping individuals overcome social deficiencies.

In this study, there was evidence that various preschool classrooms differ a great deal in social structure. In some classrooms, individual relationships between children seemed to remain constant over several weeks time while in others, such relationships fluctuated a great deal. Whereas peer status rank remained stable for a given individual over a period of several weeks in some classes, in others it fluctuated. In some classes, no child seemed to be particularly highly liked or disliked; in others, a couple of children could be highly admired while a couple of others could be intensely disliked. How much these differences are due to differences in children and how much are due to teacher effects is an issue worth investigation. How a teacher could act as a catalyst to facilitate cooperation, acceptance, and learning for preschool groups of different combinations of individuals would be a valuable focus for further research.

Standard age did not appear as a very significant factor in either peer acceptance or peer relationships in this study. Since in most cases, the age span for each group was only 12 months, chronological age differences indeed may be minimal in significance. A more pertinent variable, which should be included in further research, is the child's degree of social maturity.

The fact that children with older sibs close in age to themselves were more popular than were others in this study has important implications. Perhaps for only and oldest children, a nursery school experience is especially important as they have no siblings to model themselves after in developing social skills with peers. Also, mixing age groups within a preschool might prove more beneficial than segregating ages because of the fact that older children can serve as valuable models for younger ones.

The results of this study also indicated that children from father-absent homes desire a more intense relationship with a favorite peer than do other children. Particularly in cases in which separation of the parents has been relatively recent, children often want a strong relationship with another child. Perhaps because he is somewhat uncertain about the permanency of ties with his mother and father, such a child turns to a peer for permanency and warmth of relationship. It may thus be especially important for a child undergoing a family transition to have an opportunity to interact with a group of peers on a regular, stable basis.

When socioeconomic status was used as a variable in this study, no overall significant differences between the middle class and lower class groups were found. Results which attained very high significance levels were usually significant for both groups. It may be, therefore, that the reasons that young children choose specific friends are very similar across social classes. Unfortunately, the data used in this study was less exact and less familiar to the experimenter than that for the middle class sample. Further research could be carried out comparing a homogeneous lower class preschool group, a homogeneous middle class preschool group, and a heterogeneous preschool group in which both classes would be represented, all under supervision of the same researcher.

Further research should be done using multiple factors to explain preschool social structure and relationships. Interaction effects among family background, age, sex, and race factors should be examined perhaps using factor analysis technique. The reason that research on specific birth order effects has been relatively unfruitful is that birth order effects cannot be studied apart from family structure and dynamics.

APPENDICES

APPENDIX A

BACKGROUND CHARACTERISTICS DATA

Key for Background Characteristics Data

Column Numbers	Number of Columns	Range of Valid Cards	Item Description
1-3	3	001-840	Child identification number
4	1	-------	Blank
5	1	1-9	School identification number
6	1	-------	Blank
7-8	2	01-14	Classroom ID code
9	1	-------	Blank
10	1	0=a.m. 1=p.m.	Time of class
11	1	-------	Blank
12	1	0=male 1=female	Sex of teacher
13	1	-------	Blank
14	1	0=male 1=female	Sex of child
15	1	-------	Blank
16-17	2	41-65	Age of child in months
18	1	-------	Blank
19	1	0=middle class 1=lower class	Socioeconomic class of child
20	1	-------	Blank
21	1	0=yes 1=no	Father is present in home
22	1	-------	Blank
23	1	1=white; 2=black; 3-Indo-Eurasion; 4=Oriental; 5-American Indian; 6=Mexican	Race of child
24	1	------- American	Blank
25-26	2	01-12	Number of children in family
27	1	-------	Blank
28-29	2	01-10	Ordinal position of child
30	1	-------	Blank
31	1	0=male 1=female	Sex of just younger sibling
32-34	3	-.1 - -64	Age gap in months between child & just younger sib

Key for Background Characteristics Data

Column Numbers	Number of Columns	Range of Valid Cards	Item Description
35	1	-------	Blank
36	1	0=male 1=female	Sex of just older sibling
37-39	3	.1 - 240	Age gap in months between child & just older
40	1	-------	Blank
41	1	0=male 1=female	Sex of next closest sibling
42-44	3	-55 to 260	Age gap in months between child & next closest sib
45	1	-------	Blank

The rest of the columns follow a similar pattern. Isolated 0's and 1's symbolize sex of other sibs. If the 0 or 1 is followed by 3 other numerals or a blank and 2 other numerals, the numerals represent the age gap between that particular sibling and the child in months.

```
001 1 01 0 0 0 44 0 0 1 02 01 1-33
002 1 01 0 0 1 54 0 0 1 02 02      1 17
003 1 01 0 0 0 52 0 0 2 02 01 1-14
004 1 01 0 0 1 42 0 0 4 02 02      0 23
005 1 01 0 0 0 45 0 0 3 03 03      0 18 0 68
007 1 01 0 0 1 43 0 0 1 02 02      0 34
009 1 01 0 0 0 45 0 0 1 06 06      1 44 0 84 0107 0123 1137
009 1 01 0 0 1 52 0 0 1 01 01
010 1 01 0 0 0 47 0 0 1 02 02      0 39
011 1 01 0 0 0 48 0 1 1 01 01
012 1 01 0 0 1 50 0 0 1 01 01
013 1 01 0 0 0 48 0 0 2 03 02 0-48 0 29
014 1 01 0 0 0 48 0 0 5 05 04 1-24 0 20 0 40 0 70
015 1 01 0 0 0 50 0 0 1 03 02 1-14 1 22
016 1 01 0 0 0 47 0 0 1 02 01 1-26
017 1 01 0 0 1 46 0 1 1 03 03      0 70 1102
018 1 01 0 0 1 48 0 0 1 02 01 1-19
019 1 03 1 1 0 20 0 0 2 03 03      1 35 1 50
020 1 03 1 1 0 48 0 1 1 02 01 0-17
021 1 03 1 1 0 44 0 0 2 02 02      1 35
022 1 03 1 1 0 45 0 0 1 02 02      1 27
023 1 03 1 1 1 42 0 0 1 01 02 1-17 0 23
024 1 03 1 1 1 42 0 0 3 02 01 0-27
025 1 03 1 1 1 52 0 0 1 03 03      0 50 0113
026 1 03 1 1 1 45 0 0 1 02 01 0-28
027 1 03 1 1 0 44 0 0 1 01 01
028 1 03 1 1 0 44 0 0 1 04 03 0-.1 0 30 1 81
029 1 03 1 1 0 44 0 0 1 04 04      0 .1 0 30 1 81
030 1 03 1 1 0 49 0 0 1 03 03      0 35 0 77
031 1 03 1 1 1 41 0 0 1 02 02      0 75
032 1 03 1 1 1 46 0 0 1 02 02      1 20
033 1 03 1 1 1 45 0 0 1 03 03      1 29 1 48
034 1 02 0 1 0 64 0 0 4 02 01 1-23
035 1 02 0 1 0 64 0 0 1 02 01 0-18
036 1 02 0 1 0 58 0 0 1 03 03      1 18 1 33
037 1 02 0 1 1 53 0 0 2 02 02      0 30
038 1 02 0 1 0 62 0 0 3 03 02 0-16 1 50
039 1 02 0 1 1 58 0 0 1 02 01 0-45
040 1 02 0 1 1 62 0 0 2 03 02 1-36 0 33
041 1 02 0 1 1 57 0 0 1 03 03      0 66 0 93
042 1 02 0 1 0 55 0 0 1 02 01 1-12
043 1 02 0 1 1 54 0 0 1 02 01      0 52
044 1 02 0 1 1 64 0 0 1 02 01 0-24
045 1 02 0 1 0 57 0 0 3 02 02      0 68
046 1 02 0 1 0 54 0 0 1 02 02      1 39
047 1 02 0 1 1 60 0 0 1 02 02      0 17
048 1 02 0 1 1 58 0 0 1 02 01 0-22
049 1 02 0 1 0 64 0 0 1 03 03 0-17 0 21 1-44 0 45
050 1 02 0 1 1 56 0 0 1 04 04      1 60 0106 0126
051 1 04 1 1 1 59 0 0 1 02 02      0 64
052 1 04 1 1 0 57 0 0 1 02 02      1 18
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053	1	04	1	1	0	59	0	0	1	02	02		1 17						
054	1	04	1	1	1	57	0	0	1	02	02		1 26						
055	1	04	1	1	1	64	0	0	1	03	01	1-21		1-45					
056	1	04	1	1	0	64	0	0	1	03	01	1-21		1-39					
057	1	04	1	1	0	59	0	0	4	04	04		1 73	1106	1134				
058	1	04	1	1	1	54	0	0	2	04	04		1 25	0 41	0 56				
059	1	04	1	1	0	56	0	0	1	02	01	1-18							
060	1	04	1	1	1	63	0	1	1	02	02		1 56						
061	1	04	1	1	0	57	0	0	1	02	01	1-46							
062	1	04	1	1	0	65	0	0	1	02	01	1-25							
063	1	04	1	1	0	63	0	0	4	02	02		0 26						
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065	1	04	1	1	1	57	0	0	1	03	03		0 19	1 63					
066	1	04	1	1	1	44	0	0	1	02	02		1 20						
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068	1	04	1	1	1	58	0	0	1	02	01	0-15							
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502	4	08	0	1	1	57	1	1	2	02	02		0 12						
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707	7	12	0	1	1	[illegible]	1	1	2	04	04		1 24	0	0 60			
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782	6	11	0	1	0	5?	1	1	2	04	01	0-12		1-24	1-36			
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785	6	11	0	1	1	54	1	0	2	03	01	0-24		0-36				
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789	6	11	0	1	0	61	1	1	1	05	05		0 36	0	0	0 96		
790	6	11	0	1	0	54	1	1	2	01	01							
801	2	05	0	1	1	57	1	1	2	08	08		0 36	0	1	0	1	
802	2	05	0	1	0	64	1	1	2	03	01	1-18		1-33				
805	2	05	0	1	1	60	1	1	2	01	01							

804	2	05	0	1	1	05	1	1	1	02	02			0	36										
805	2	05	0	1	1	06	1	1	2	03	03			0	36	0	48								
807	2	05	0	1	0	56	1	0	2	02	01	1-42													
808	2	05	0	1	0	04	1		1	00	00	1-00		0	24	1-44		0		0		1		0	84
809	2	05	0	1	0	05	1	1	2	02	02			1	24										
810	2	05	0	1	0	05	1	1	2	03	01	1-24				0-46									
811	2	05	0	1	1	55	1	1	2	04	02	1-24		0	18	1-36									
812	2	05	0	1	0	04	1	1	2	06	06			0	36	0		0		1		0108			
813	2	05	0	1	0	05	1	1	2	05	03			1	24	0	48								
814	2	05	0	1	1	03	0	1	1	04	04			0	15	1		1	84						
815	2	05	0	1	0	05	1	1	1	04	03	1-12		1	24	1	60								
825	2	07	1	1	1	02	1	1	2	01	01														
826	2	07	1	1	0	01	1	1	2	02	01	0-59													
829	2	07	1	1	1	03	1	0	2	02	02			1	48										
830	2	07	1	1	1	03	1	0	2	05	03			1	48	0	96								
831	2	07	1	1	0	59	1		0	04	03	1-32		0	18	0	36								
832	2	07	1	1	1	56	1	1	2	01	01														
833	2	07	1	1	0	59	1	0	2	00	00	0-31		0	30	1		0		0		0		0	96
835	2	07	1	1	0	52	1	0	6	07	07			0	36	0		1		0		1		1144	
836	2	07	1	1	0	59	1	1	2	02	01	0-56													
837	2	07	1	1	0	54	1	1	2	08	07	1-24		1	10	1		1		1		0		0	96
838	2	07	1	1	1	54	1	1	2	03	01	0-24				0-36									
839	2	07	1	1	1	01	1	0	2	01	02	1-24		0	84	0-36									
840	2	07	1	1	0	52	1	1	1	04	04			1	24	0		0	48						

APPENDIX B

SOCIOMETRIC TEST DATA

Key for Sociometric Test Data

Column Numbers	Number of Columns	Range of Valid Cards	Item Description
1-3	3	001-840	Child I.D. No.
4	1	-------	Blank
5	1	0=no 1=yes	Child gave same choice all 3 times
6	1	-------	Blank
7	1	0-5	Tester I.D. No.
8	1	-------	Blank
9-11	3	001-840	Child I.D. No. of 1st choice
12	1	-------	Blank
13-15	3	001-840	Child I.D. No. of 2nd choice
16	1	-------	Blank
17-19	3	001-840	Child I.D. No. of 3rd choice
20	1	-------	Blank
21-23	3	001-840	Child I.D. No. of negative choice
24	1	-------	Blank
25	1	0=voluntary 1=urged	Attitude of child
26	1	-------	Blank
27-29	3	001-840	Child I.D. No. of 1st choice on retest
30	1	-------	Blank
31-33	3	001-840	Child I.D. No. of 2nd choice on retest
34	1	-------	Blank
35-37	3	001-840	Child I.D. No. of 3rd choice on retest
38		-------	Blank
39-41	3	001-840	Child I.D. No. of negative choice on retest

RAW SOCIOMETRIC DATA

001	0	1	017	015	012	000	1	014	011	011	000
002	0	1	009	004	018	000	0				
003	0	1	011	015	017	000	0	011	016	012	000
004	1	1	017	017	017	000	0	017	017	017	000
006	1	1	015	015	015	000	1	015	015	015	000
007	0	1	017	017	005	000	0	014	009	010	000
008	0	1	016	013	006	000	1	006	011	010	000
009	0	1	003	011	011	000	0	002	012	004	000
010	0	1	016	003	011	000	0				
011	1	1	015	015	015	000	0	015	015	015	000
012	0	1	007	017	002	000	0	004	011	006	000
014	0	1	016	001	015	000	0	010	016	007	000
015	0	1	011	011	006	000	0	006	006	001	000
016	0	1	004	012	012	000	0	009	001	008	000
017	1	1	004	004	004	000	0	004	004	004	000
018	0	1	002	002	017	000	0	017	017	017	000
019	0	0	032	026	027	000	1				
020	1	0	022	022	022	000	0				
022	0	0	019	031	026	000	0	030	023	019	000
023	0	0	022	026	025	000	0	022	031	025	000
024	0	0	025	023	031	000	0				
025	0	0	024	023	032	000	0	032	024	023	000
026	0	0	033	025	019	000	0	033	019	025	000
027	0	0	033	023	030	000	0	033	028	028	000
028	1	0	027	027	027	000	1	027	027	027	000
029	0	0	028	028	032	000	1	028	023	027	000
030	0	0	019	027	032	000	0	019	027	025	000
031	0	0	025	023	019	000	0	023	033	025	000
032	0	0	031	026	024	000	1	026	020	025	000
033	0	0	023	026	020	000	0	026	031	023	000
034	1	1	035	035	035	000	0	035	045	039	000
035	0	1	034	049	045	047	0	045	034	034	036
036	0	1	049	045	046	000	0	038	046	042	034
037	0	1	040	048	047	041	0	043	047	050	041
038	0	1	042	035	036	034	0	042	035	035	034
039	0	1	045	035	044	034	0	046	041	044	035
040	1	1	037	037	037	045	0	037	046	043	034
041	0	1	043	048	039	036	0	043	048	044	034
042	0	1	038	045	036	035	0	038	046	038	034
043	0	1	047	036	041	000	0	040	049	038	035
044	1	1	048	048	048	037	0	048	048	048	037
046	0	1	048	040	038	037	0	036	038	040	000
047	0	1	043	050	048	034	0	043	050	039	034
048	0	1	050	043	040	000	0	050	043	046	036
049	1	1	035	035	035	000	1	035	035	035	000
050	0	1	043	047	040	034	0	043	040	041	034
051	1	0	054	054	054	000	0	054	066	064	058
052	0	0	062	067	053	000	0	053	056	061	000
053	0	0	067	062	057	000	0	063	057	067	061

053	0	0	060	054	062	000	0	068	060	062	000
054	0	0	064	064	068	058	0	064	064	055	000
056	0	0	053	062	052	064	0	062	067	061	059
057	0	0	063	055	061	067	0	063	061	053	067
058	0	0	059	065	061	059	0	066	068	065	056
059	0	0	068	062	065	061	0	060	054	068	061
060	0	0	054	064	051	000	0	054	068	066	062
061	0	0	063	053	057	056	0	053	055	066	052
062	0	0	061	055	052	067	0	061	053	056	056
063	0	0	057	053	059	061	1	062	053	062	061
064	1	0	054	054	054	058	0	054	054	054	053
066	0	0	060	051	054	052	0	060	051	054	000
067	0	0	053	056	062	066	0	053	063	053	068
068	0	0	065	066	060	063	0	060	065	055	056
500	1	3	510	510	510	000	0				
501	0	3	508	508	514	000	0				
502	0	3	514	508	510	000	0				
503	1	3	505	505	505	000	0				
504	0	3	502	506	510	000	1				
505	1	3	510	510	510	000	0				
506	0	3	514	508	510	000	0				
508	0	3	514	502	500	000	0				
510	1	3	500	500	500	000	0				
511	0	3	510	500	502	000	0				
513	0	3	511	502	511	000	0				
514	0	3	508	511	502	000	0				
516	0	3	508	502	502	000	1				
517	0	3	505	502	503	000	1				
550	1	9	560	560	560	000	0				
553	0	9	557	559	990	000	0				
554	0	9	560	563	560	000	0				
555	1	9	550	550	550	000	0				
556	1	9	557	557	557	000	0				
557	1	9	556	556	556	000	0				
559	1	9	990	990	990	000	0				
560	0	9	554	550	561	000	0				
561	0	9	563	990	560	000	1				
562	0	9	553	559	550	000	0				
563	0	9	562	562	561	000	0				
564	0	9	563	990	559	000	0				
601	0	3	921	607	610	000	0				
602	0	3	605	606	921	000	0				
603	0	3	607	921	610	000	0				
604	1	3	605	605	605	000	0				
605	0	3	607	921	607	000	0				
606	0	3	605	611	612	000	1				
607	0	3	604	605	613	000	0				
608	0	3	607	613	605	000	0				
609	0	3	921	607	610	000	0				
610	0	3	605	613	607	000	0				
612	0	3	613	607	607	000	0				
613	0	3	611	612	616	000	0				
615	0	3	607	607	921	000	0				
616	0	3	605	607	611	000	0				
651	0	9	667	652	667	000	0				

652	0	9	662	651	652	000	0
653	1	9	654	651	652	000	0
657	0	9	653	652	000	000	1
660	0	9	662	661	667	000	0
661	0	9	660	662	667	000	0
662	0	9	653	652	662	000	0
663	0	9	654	662	661	000	0
664	0	9	653	652	653	000	0
665	0	9	652	661	653	000	0
700	0	8	713	714	717	000	0
701	0	8	981	714	714	000	0
702	0	8	703	703	704	000	0
703	0	8	707	981	712	000	0
704	0	8	707	712	703	000	0
705	0	8	702	713	701	000	0
707	1	8	703	703	703	000	0
709	0	8	712	702	703	000	0
712	1	8	709	707	709	000	0
713	0	8	703	703	714	000	0
714	0	8	709	707	981	000	0
751	1	6	753	753	753	000	0
752	0	6	763	757	753	000	0
753	0	6	757	751	750	000	0
754	0	6	753	765	758	000	0
755	0	6	750	758	765	000	0
757	0	6	991	991	750	000	0
758	0	6	750	991	753	000	0
760	0	6	754	752	765	000	0
761	0	6	753	757	758	000	0
763	0	6	753	758	757	000	0
765	0	6	753	753	750	000	0
775	0	7	784	773	780	000	0
776	0	7	787	775	782	000	0
777	0	7	781	780	779	000	0
778	0	7	780	781	779	000	0
780	0	7	781	778	765	000	0
781	0	7	776	782	779	000	0
782	0	7	781	777	789	000	0
784	0	7	779	782	781	000	0
785	0	7	781	779	780	000	0
787	0	7	781	780	782	000	0
788	0	7	789	780	787	000	0
789	0	7	781	775	782	000	0
790	0	7	777	787	777	000	0
802	0	2	813	759	800	000	0
803	0	2	752	804	814	000	0
804	0	2	752	801	752	000	0
805	0	2	815	807	815	000	0
807	0	2	802	813	802	000	0
808	0	2	802	810	752	000	0
809	0	2	801	802	752	000	0
810	0	2	811	813	809	000	0
811	0	2	801	804	813	000	0
813	0	2	802	810	759	000	0

814	0	2	752	804	752	000	0
815	0	2	814	802	814	000	0
825	1	4	829	829	829	000	0
826	0	4	831	836	835	000	0
829	0	4	831	835	830	000	0
830	0	4	826	825	836	000	0
831	0	4	836	837	900	000	0
832	0	4	829	835	840	000	0
833	0	4	825	832	831	000	0
835	0	4	831	826	837	000	0
836	0	4	831	825	829	000	0
837	0	4	831	825	826	000	0
838	0	4	825	837	839	000	0
839	0	4	825	831	836	000	0
840	0	4	835	836	831	000	0

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