THE EFFECTS OF DEGREE OF SEXUAL HOMOGENEITY IN GROUPS
OF PRESCHOOL CHILDREN ON TASK PERFORMANCE

by

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Ann K. Reardon
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ABSTRACT

The Effects of Degree of Sexual Homogeneity in Groups of Preschool Children on Task Performance

by

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Utah State University, 1973

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The effects of degree of sexual homogeneity, in groups of preschool children, on performance of a task were studied. Twenty four-year-old male children from the Utah State Child Development Laboratories served as subjects. Each subject performed the task of placing pegs in a pegboard during a sixty-second time interval; once in a group of opposite-sex peers; once in a group of same-sex peers; and once on a one-to-one basis with the author.

The findings seemed to indicate that preschool children's rate of task performance is not influenced by the presence or absence of peers of the same- and opposite-sex. Differences between scores of subjects under each experimental condition were not significant.

(70 pages)
INTRODUCTION

It is generally accepted by educators that children are affected in their academic and social development by the peers with whom they are grouped. Kagan (1971) deals with this concept as a facet of motivation. He outlines four primary motives that are the bases for a great many secondary ones. These four motives—resolution of uncertainty, mastery, hostility, and sexuality—play an important role in understanding the child's behavior. In expanding on the resolution of uncertainty he states "... other people are a greater source of uncertainty for modern man than the physical environment." (Kagan, 1971, p. 493)

The importance of some aspects of the influence of people on an individual has been explored extensively. A survey of some related literature revealed an emphasis on the role of experimenter's attitude and/or sex on task performance, and the effect of positive, negative, or neutral reinforcement on performance of a task. In considering the area of personal interaction in a learning or school situation, studies seem to have neglected the area of pupil-pupil relationships, even though children constitute the immediate and most impactful environment for one another in the school setting. Jennings (1959, p. 1) wrote

All learning in school takes place within the setting of pupil-pupil relationships. Teachers, in general, realize that the individual's personal and academic growth can
be affected adversely or favorably by his position in the
group and that all pupils stimulate or thwart each other
in many ways.

Waetjen (1963, p. 261) included another dimension with the statement that
"... sex is a primary human difference and it makes a difference in behavior
generally and in learning particularly."

There is much emphasis on the social climate and whether or not it is
conducive to learning. It is necessary to discover how to create an atmosphere
which cultivates academic and social growth. In an emotionally congenial
atmosphere, in which satisfying associations are permitted, intellectual per-
formance improves because of group motivation (Taba, 1952). The individual
members of a group affect the atmosphere of the group. Studies have investi-
gated the various characteristics by which children choose friends. Age, sex,
and socio-economic status are some of the characteristics that have been
isolated. Children are generally segregated by age and socio-economic status
by the nature of the school system. Sex then is one area in which the indi-
vidual has an opportunity to make a choice in friends. Studies have reported
conflicting results in exploring social relationships of children with members
of the same and opposite sex. Campbell (1939) reported that social relation-
ships with the opposite sex are not differentiated from social relationship with
the same sex, by very young children. Whereas, Campbell (1964) suggests
that sex homogeneity is a prime factor in friendships from preschool through
adolescence.
Statement of the problem

Motivational studies, dealing with the individual, suggest that a picture of a best friend has more incentive value than a picture of a neutral peer (Horowitz, 1962). There appears to be a strong tendency for children to choose, as friends, members of the same sex (Abel, 1962; Anderson, 1939; Campbell, 1964; Challman, 1932; Seagoe, 1933). However, Campbell (1939) and Broderick (1961) have reported a trend toward selection of members of the opposite sex as close friends.

There is evidence that young children tend to be motivated by other children in the group. There is a need for further information on the effects of sex homogeneity or heterogeneity of a group on an individual's performance of a task.

Objectives

The purpose of this study was to investigate the effect of degree of sexual homogeneity, in groups, of preschool children on an individual's performance of a task. The study also included verbal reactions of children placed in each of the three experimental groupings.

Hypotheses

Four null hypotheses were tested during the course of the present study:

(1) There is no difference between individual performance of a task and performance of a task as a member of a group.
(2) There is no difference between individual performance of a task and performance of a task within a group of same sex peers.

(3) There is no difference between individual performance of a task within a group of opposite sex peers.

(4) There is no difference between an individual's performance of a task within a group of opposite sex peers.
**REVIEW OF LITERATURE**

Motivation and learning

In reviewing some literature dealing with motivation it is obvious that there is no consensus that one type of motivation is consistently superior to another nor has an "optimum" motivator been indicated. Chase (1932), in her study of the motivation of young children, found that there are several different types of motivation acting upon an individual as he performs a task.

The issue of the role of motivation in learning has provoked much controversy. Researchers have not yet accepted a common definition of motivation. Some make the distinction between motive and incentive, motive is seen as originating within the organism while incentive is considered extrinsic (Chase, 1932). If this distinction is made researchers can claim that motivation is not a crucial variable in learning, if the subject is supplied with sufficient, meaningful incentives learning will occur (Ausubel, 1958). Kagan (1971, p. 40) developed a system of primary and secondary motives which offers a compromise to the strict separation of motivation and incentive. "Wishes for praise, dominance, or closeness to others--and their accompanying actions--that result from the primary motive to resolve uncertainty are called secondary motives."
**Groups and motivation**

It is the motivating factor of the presence of others while performing a task that is the focus of this research. Much of the literature is concerned with the effect of peer group on individuals in the elementary school classroom. A large body of this research has used the sociometric questionnaire or interview to get a report of the social dynamics of the classroom group.

Taba (1952, p. 124) suggests that group life is an important part of the child's development. "In group life, children learn to use their own special abilities, learn to satisfy the profound wish to belong, to give and receive attention, and to make others feel wanted. There is some discrepancy as to how positive the effects of a group are on an individual's performance, and at what age children begin to participate in group activities." Sears (1964, p. 183) suggests that a need to affiliate with peers "... relates to performance by young children on concept formation, memory, and maze performance." Horowitz (1962), expanding on studies which had reported the effectiveness of the presence of a nurturant adult on the experimental learning situation, found that, for a group of children, aged three-five, social stimuli could be defined in terms of peers. However, Anderson (1939) reviewed a study in which it was found that in the age group two-four years the presence of other children acted as a distraction and tended to lower rate of task performance. In other words, children accomplished more on the same task by themselves than in a group. After the age of five, performance in the group was found to be more effective.

Some researchers (Green, 1933; Jersild, 1958) have discovered, through
systems of observation, that amount of group play quantitatively increases with age. Another factor that increases with age is the expression of preference for certain members of the group (Northway, 1947; Ransom, 1969). Northway suggests that it is important to consider age when measuring amount of group activity. "Younger children have been at school a shorter time, are learning the folkways, mores and laws of school life and have not yet developed the active techniques of language dealing with social intercourse." (1947, p. 24)

**Egocentrism**

In a sociometric study Taba (1947) referred to the Piagetian concept of egocentrism and its implications for age level at which group activities become effective. This study dealt primarily with sociometric techniques for the elementary school teacher. Taba suggested that the sociometric method may be of little use for the teacher of the young child because at this stage children do not seem to be aware of the effect they have on one another. The child is often referred to as "self-centered." Flavell (1963) and Pulaski (1971) give an outline of Piaget's theory of the development of egocentrism. Egocentrism is seen as being a characteristic of the Pre-operational period. The suggested age range of this period is two to seven years. Piaget (1926) found that children at this age demonstrate an inability to view an object or situation from the point of view of another. One area where this is seen quite clearly is the area of language. Piaget labeled the conversation of the child in this
period of development "collective monologue." This refers to the idea that the children parallel play, rather than cooperate, they also have parallel dialogues. Both Borke (1971) and Sigel (1969) agree with Piaget's point that social sensitivity occurs with age. Sigel (1969) believes that egocentrism can be hastened toward sociocentrism by confrontation with and participation in social situations. He states "The social context furthers children's learning the meaning of cooperation and consequently, objectivity." (p. 169) Borke (1971) challenged Piaget's suggested age range for egocentrism. Children between the ages of three and eight were presented a series of situations and asked how the child in each situation felt. The results supported Piaget's observation that social sensitivity increases with age but found that children as young as three years of age showed an awareness of other people's feelings and could correctly identify the response evoked by a specific situation. Borke concluded "This suggests that very young children are not totally egocentric but have some capacity for responding empathically to another person's feelings and point of view." (1971, p. 263)

In an article on what groupness means to young children Margolin (1969) suggests that cooperation comes only after children experience different activities in a group situation. In this way they learn to be aware of the reactions of others and "... the satisfactions that come from being thoughtful to others." (p. 257) Moreno (1953), the founder of sociometry, reported the results of sociometric questionnaires given to children of different ages. He discovered that there was a tendency for kindergarten subjects to form pairs
whereas, with increasing age, associations became more complex, with more choices being made and more of these reciprocated. In another vein, Jersild (1958) reviewed a study by Maudry and Nekula which investigated the social behavior of twenty-five month-old children. It was found that friendly, cooperative responses predominated over negative responses in a play situation. It was also suggested that the results seem to demonstrate that, at this age, children seem to be sensitive to being excluded from a group and showed a distinct preference for particular children. In speaking on the social development of children in relation to groups Issacs (1972, p. 213) made these observations:

When a number of (such) young children are brought together in a given space, but left free to play and move about as they wish, they do not at first constitute a group in the psychological sense. They behave simply as a number of independent persons, each mainly concerned with his own immediate ends, whether or not these ends cut across or chime in with the pursuits of others.

A study by Barnes (1971) investigated amount of group behavior of preschool children today compared with that of preschool children of forty years ago. Two possible explanations were related, one was the amount of time children are exposed to the mass media, and another was the reduction in family size which has occurred recently.

There are several differing opinions on what factors influence a child's awareness of and social interaction with others. Some feel that a child is not aware of others because he is still quite tied to self. Others attribute lack of
social interaction to the effects of being relatively isolated from both peer and adult contact for prolonged periods of time, due to the influence of television and decreasing family size. Nevertheless, other research has pointed to a trend toward social awareness and interaction occurring at an earlier age with amount of social contact increasing also.

**Competition and conformity**

Other studies, though not dealing specifically with children's awareness of others, investigated competition among young children. In order to express feelings of rivalry or competition a child must acknowledge the presence and work of those around him. Jersild (1952, p. 221) defined competition as follows, "Competition... an individual seeks to equal or excel another, or to secure objects, recognition, prestige, attainments, or honors also sought by others." Jersild also reviewed a study in which children, ages two to six years, were invited singly, and then in pairs to play with a peg board. In the youngest group the presence of another child did not influence what the subject said or did. With increasing age the children showed interest in the social situation, but also showed an awareness of what the other child was doing. In the age range four to six it was found that a majority of the children displayed an understanding of and a desire to excel. Mussen (1963) also suggested that competition might appear as early as the ages of three or four. It was also stated that, at this age, competition motives could produce improvement in performance.
Conformity is another facet of behavior which would tend to indicate a child's awareness of a group working with him. The studies dealing with conformity yield considerably different results from those dealing with competition. Hamm (1971) began his study of conformity with the assumption that children are significantly influenced by both adults and peers. He discovered, however, a slight tendency for older subjects to conform more to the peer norm than did younger children, but the observed differences were not statistically significant. In a study dealing with creativity, conformity, and originality Orcutt (1968) gave three-, four-, and five-year-old children a test of conformity. No significant differences were found between these age groups although five-year-old girls were found to be significantly more conforming than five-year-old boys. Although the results were not conclusive it was felt that there was some support for the statement that some sort of conforming behavior emerges at about the fifth year.

Sex roles

As was stated previously "... sex is a primary human difference and it makes a difference in behavior generally and in learning particularly." (Waetjen, 1963, p. 261) It is necessary at this point to consider some factors, related to sex differences, which affect the influence of a group on an individual. Before sex can be considered as an intervening variable in social relations the ages at which sex classification and sex identity occur must be suggested. Brown (1958) and Lynn (1961) define sex role identification as the basic process
in which the child involuntarily, and later consciously, incorporates the thinking, feeling and acting of a given sex. Brown (1958) discerned that as early as the age of two a child can distinguish between males and females. Kagan (1964) in reviewing literature related to this topic found much reported evidence for the idea that earliest sex classification is based on certain external characteristics such as body form and size, strength, distribution of hair, depth of voice, posture at the toilet, and characteristic occupations. In investigation sex identification Stone and Church (1968) concur, saying that although children of the age of four recognize genital difference these are regarded as secondary cues to labeling sexes. Brown's (1958) results suggest that between two-thirds and three-fourths of children are able to distinguish themselves as male or female by the age of three. Contributing to this awareness are television, the school system, and the family, all of which give precise examples of maleness and femaleness. Joffe (1971) in a study of kindergarten children found that although the children had correct gender identity there was no obvious assignment of sex roles. Joffe cited one example of use of sex differences. When a group wished to restrict play in one area they called "Girls only," whenever a male approached. Joffe viewed this as a final try, when all other means of control had failed.

The acceptance of appropriate sex roles is an area where research has reported conflicting evidence. Lynn (1961) hypothesized that both male and female infants learn to identify strongly with the mother. If this early learning is stronger than later learning boys may have a difficult time in
shifting to a masculine identification. It was found that young male children tend to identify more with the opposite sex than do young female children. Reporting conflicting results Brown (1958) found that boys, kindergarten through fourth grade, showed a much stronger preference for aspects of the masculine role than girls show for aspects of the feminine role. Kagan (1964) agrees with this in his article on sex role identity. It was Kagan's assumption that the young child has a strong desire to conform to what society defines as sex appropriate behavior. Schell and Silber (1968) reported that although children as young as three years of age had learned to make sex-type discriminations, accuracy increased with age. Children four years of age and older could make sex-type discriminations appropriate to their own sex as well as to the opposite sex. Minuchin (1965) tested the sex role identification of fourth grade children from "traditional" middle class schools and "modern" middle class schools. It was assumed that the former would stress socialization toward general standards while the latter would emphasize individual development. He discovered that there was significantly less perceptual deviation from conventional sex roles in those subjects attending the school with the traditional orientation than those subjects attending the more modern institution. Perhaps Goodman (1970, p. 27) offered a viable explanation

In any society the three-year-old knows his own identity as a boy or girl and he is rapidly learning what is considered appropriate behavior for boys and girls, for men and women. Even so, he may be quite willing, for another two years or so, to play games or perform chores that in his culture are generally the domain of the opposite sex.
Sex differences and socialization

Studies have found that, generally, the child, by four years of age, is aware of his gender and can discriminate activities proper to a given sex. In a slightly different direction it has been determined that boys and girls seem to vary in their perceptions, abilities, and social development. The results of some studies of the social relationships of boys and girls have suggested that girls are more interested in people, while boys are more interested in activities (Waetjen, 1963). Goodenough (1957) explored the problem of whether boys and girls of preschool age differed in their interest in persons. Through the analysis of spontaneous drawings it was found that the female child, between the ages of two and five, included both male and female figures. This indicated a higher degree of social attainment or interest in interpersonal relationships than the males who, when they drew human figures at all, more often drew only males. Goodenough also implied that this suggests societal permissiveness which allows feminine cross sex interests in girls but not boys. McCandless (1957) observed, too, that girls seemed to engage in more friendly social interaction than did boys. Waetjen (1963) suggests some interesting educational implications resultant to these findings. The greater feminine need for affiliation has bearing on learning. By being involved earlier in face to face contacts it is assumed that the girl is exposed to a great source of learning. Through social interaction the female can readily absorb the learning of others. Because the boy does not affiliate as readily he must engage in the less efficient trial and error learning.
The studies of group play and friendships of young children expand these theories. Green (1933b) favored the theory that girls become socialized at an earlier age than do boys. The findings suggested that sex differences in group play were small and perhaps inconsistent. Boys were observed playing alone slightly more than girls, while it was observed that girls play with one, two, or three companions more than boys do. In another study, investigating sex and age preference in friendship choice Green (1933a) found that five-year-old boys tend to choose as playmates boys of their own age most frequently. The next most frequently chosen companions were the four-year-old males, then the three-year-olds, followed by the two-year-olds. Both boys and girls were found to be more companionable with the opposite sex in their own age group than any other. It seemed that age was a stronger influence in choice of companion than sex in males. It was suggested that girls, in general, chose companions more on the basis of sex. Discussing the implications Green (1933a) stated that girls were more advanced in their social development than were boys. The possibility of differences in training as an influence in social behavior must also be considered in a study of this type.

Approaching this topic with another emphasis Jersild (1958) noted that cooperative play and group activities seem to increase after the age of three. With age social interaction seems to be facilitated. Jersild observed that children of preschool age seem to prefer groups limited to about three members, whereas children of five or six years will play in groups as large as five or six. Studies reviewed earlier seem to suggest though that girls
would be apt to form groups more readily at an earlier age than would boys.

Girls' superiority in social development is seen by Bonney (1942) as an important influence in other areas where sex differences occur. Language and intelligence are only two of these areas. Social interaction can be seen as facilitating success in these areas. Girls are reported to have more contact, earlier with other persons. Through this contact they are given a chance to practice and learn new verbal skills and are reinforced for it. It is also probable that girls have the opportunity to emulate the behavior and be influenced by the learning of those with whom they interact.

**Sex preference**

There appears to be many inconsistencies in the literature relative to sex differences and the emergence of sex preference. Sex role preference has been defined and generally accepted as referring to the desire or tendency to adopt the sex role behavior of one sex in contrast to the other sex, or the perception that such behavior is more preferable or desirable (Brown, 1956, 1958; Lynn, 1959). However, agreement on sex preference has not been achieved. Koch (1944) refers to the problem of sex identification. The infant has a tendency to identify with the caretaker who meets his basic needs. Boys, however, must make a separation and learn to identify with a male figure. This may take a protracted period of time, but some researchers feel that, because it is a more difficult task to master, boys that reach
masculine identification do so much more strongly than their feminine counterparts who have not had to make the change. Koch (1944) goes on to make the point that children who have achieved sex identification have a tendency to prefer members of their own sex. This has been backed up by several studies. The results of these studies (Abel, 1962; Ausubel, 1958; Campbell, 1939; Charlesworth, 1967; Jersild, 1958; Mussen, 1963; Seagoe, 1933) suggest that boys are more likely to form attachments to boys, and girls for girls, during the preschool years. However, the reasons for this sex cleavage show some variance. Furfey (1930) maintains that sex classification of activities causes this cleavage. Campbell (1939) also cites social approval as a cause of unisexual friendship. Boys and girls are not expected to interact except under certain conditions, such as dancing. Seagoe (1933) found that propinquity had some influence on friendship choice but not enough to outweigh the influence of sex similarity. In observing children's reinforcement of one another Charlesworth (1967) found that boys tend to reinforce boys and girls to reinforce girls. Bringing in the aspect of early training Campbell (1939) used this to explain a child's more favorable attitudes towards members of his own sex. Testing kindergarten children Abel (1962) discovered that boys showed a significantly stronger preference for members of their own sex than did girls.

Sex preference and sex cleavage have been the subject of sociometric studies from the origins of the sociometric method. Kanous (1962) reviewed Moreno's early work and reported the findings that pupils in grades
kindergarten, first, second, and sixth, seventh, and eighth made more opposite-sex friendship choices than did subjects in the middle three grades. Other studies have found that sex cleavage did occur in both the upper and lower age levels. Criswell (1939) in her study of race cleavage in the older level found her results complicated by sex cleavage. It was necessary to consider the male group and the female group separately. Moore (1964) tested nursery school children and discovered that there was a distinct tendency for children of both sexes to give their positive choices to the same-sex peers and their negative choices to opposite-sex peers. In a similar study of second and third grade children Bonney (1942) corroborated previous studies by noting the small percentage of boy-girl mutual choices.

Although not offering conflicting data Koch (1933) found that there was at least an interest in members of the opposite sex. Lippitt (1942) in a more recent study found only slightly more unisexual friendship choices in researching the friendships of four-year-olds. Broderick (1961) has suggested that there is an increasing trend toward heterosexual friendships. In a recent national survey of fourth, fifth, and sixth grade teachers some of the responses were that the children seemed less antagonistic, not picking on each other as much as formerly. They seem to get along better, in more mature social relationships. Broderick concludes with the idea that same-sex friendships still seem to predominate, but many children seemed to have bridged the gap. Davitz (1953, p. 175) gives a reason for why this unisexual choice continues
in the statement ". . . there is a positive relationship between perceived similarity and valuation of other people."

Supporting Broderick (1961) is a study conducted by Haskett (1970). In examining peer preferences it was discovered that although subjects preferred same-sexed peers as friends preference could be modified by inducing interaction between opposite sex peers. Campbell (1964) reported observing subjects, aged five through seven, ignore sex in choosing play groups. Supporting this, as well as Moreno's early work Cunningham (1951, p. 191) states that ". . . young children indicate no innate interest per sex." Chevalova-Janovskaja (1927) supports even more strongly this position with the finding of more bisexual than unisexual groups at the preschool level.

In suggesting some reasons for sex cleavage occurring in some instances, but not in others, Cunningham (1951) cites the sex assignment of tasks and the assignment of roles by textbooks and the mass media. In her analysis of textbooks Cunningham (1951, p. 194) discovered that ". . . whenever something fascinating was going on, the little boy was given the role of participant and the girl was observer." In this way it seems that boys are more highly favored and it is understandable that girls might be resentful or envious.

**Social influence and task performance**

Social influence covers a wide range of variables in the literature. Of particular interest in terms of the present study are the sex of the reinforcer
or the gender of group members and the effect of this on task performance. Stevenson (1961) explored the influences of sex of reinforcer in modifying children's performance in a simple game-like situation. The age of the subjects ranged from 3:0 years to 11:0 years. It was determined from the results that in the three-year and four-year-old group women were more effective in modifying the rate of response of both boys and girls than were men. Using pairs of children, same-sex and opposite sex pairs, Saltzstein (1967) studied the influence of one member on the other in making judgments. He discovered that girls displayed a significantly greater degree of influencibility when paired with boys than girls who had been paired with other girls. Hypothesizing along these same lines Bond (1961) stated that there seemed to be ample evidence for supposing that mixed sex groups will act differently than same sex groups. Using a game situation Bond observed that males tended to play more competitively, with a desire to win, than did females who seemed more concerned with maintaining a satisfying social situation for all members of the group. In mixed sex groups Bond found that males tend to form alliances when their position in the game is strong while females ally when weak.

Kagan (1964, 1971) agreed that males and females perform differently in mixed groups. He was especially interested in investigating this phenomenon occurring in the school situation. In his 1964 study Kagan taught children nonsense syllables which were to represent masculine, feminine, and farm. The children were then shown pictures and asked to label them using the nonsense syllables. The second grade subjects labeled school related objects
feminine more frequently than masculine. The third grade boys showed less
of a tendency to use the feminine label. Both second and third grade girls
labeled school related objects with the feminine nonsense syllable. Kagan
uses this to explain female superiority in the primary grades. Girls seem to
see school as more congruent with their sex roles whereas boys are less sure
that school is in keeping with their sex role. Kagan (1971) expands the expla-
nation of this phenomenon in his book. He suggests that the predominance of
female teachers in the primary grades and the emphasis of the value of
obedience rather than aggression suggests that school and school activities are
more appropriate to girls than boys. If boys perceived this they would tend to
resist complete involvement in school activities.

Educational implications of sex differences

Kagan's (1971) inferences lead directly into a topic that has been the
cause of much controversy among educators. Should the school system make
allowances for sex differences in learning, and if so, what types of allowances.
As Waetjen (1963) said educators may not reach a consensus on a solution but
at least they should be aware of the possibility of sex-linked learning behavior
and should make provisions as such. Clark (1959) notes that, although there
may be substantial differences between boys and girls, they are probably no
greater than the differences found among boys themselves and girls them-
selves. Strickler (1970) points out that males of kindergarten age need to
identify with a male figure. This could contribute to the cause of the
developmental lag between girls and boys. In the school situation females are able to become more feminized through identification with the female teacher and participation in activities that are considered to be more feminine. The males, on the other hand, must conform to the more feminine values and still find a way to establish the masculine sex role.

Ellis (1971) investigated the effects of same-sex class organization on a group of junior high school students. On the basis of the difference between a pre-test and post-test he concluded that separation of the sexes in classes did not significantly improve academic achievement, self-discipline, self-concept, sex-role identification, or attitude toward school. It is possible that children at this age level have passed the critical period for grouping to influence any of these areas. Strickler (1970) reports the results of separation of sexes at the kindergarten level. The all male classes experienced a male oriented curriculum. Large muscle activities were emphasized, stories had a majority of male characters, even music was involved with masculine things. Strickler stated that there was general agreement among teachers that the children had benefited from this separation. Also, teachers noticed a change in their awareness of individual differences among boys and girls.

Clark (1959) suggests, for the case of academic variance, that differences be diagnosed and males and females brought to the same level of competency by giving additional instruction to those that need it in different areas. Clark concluded that there is a wide range in variability in both mental
ability and achievement at each grade, there is a need to deal with individual
differences irrespective of the sex of the pupil.

Summary of review of literature

It is interesting to note the variance between the studies under each
topic. One trend seems to stand out and that is the development of different
aspects occurring with age. This theory, put forward by Piaget in regard to
socialization also appears in sex role assignment, gender identity, and even
conformity and competition. Also, it appears that the discrepancies are
greatest between the results of the oldest studies and the results of recent
work in this area. Perhaps this is an indication that there are different
influences acting upon the young child today than those affecting children forty
years ago.
METHODS AND PROCEDURES

Sample

An available sample, as described in Best (1970), was used in this study. It was comprised of twenty male children enrolled in the Child Development Laboratory of Utah State University. Ten of these children attended the Winter Quarter session of 1972 in the West Afternoon Laboratory. The remainder attended the Spring Quarter session of 1973 in the West Morning Laboratory. No attempt was made to make a random selection of the preschool children. Twenty female children participated in the experimental sessions. This was to allow for testing in mixed-sex groups. The scores of female children were not analyzed, nor are they included in the results. The average age of the male subjects was four years and four months. Seventeen of the subjects tested were attending their second consecutive quarter in the Child Development Laboratory. The scores of one subject were excluded from final analysis because he was absent from the laboratory for two weeks. It was felt that this prolonged absence would affect his response to the test situation and his scores would not be representative.

Setting

The University Laboratories operate on a quarterly basis. During the academic year there are five preschool groups that meet for approximately two and a half hours Monday through Thursday. There are three different
classrooms in the Family Life Building, where the children meet. Three groups attend during the morning while two groups attend afternoon sessions. Each group is composed of twenty children, a supervising teacher, and four student teachers. It is assumed by the researcher that children participating in this program would be middle class children. The criterion on which this assumption is based is that there is a twenty-five dollar per quarter fee for each child. The children ride to and from the preschool in carpools of two or more children.

The Child Development Laboratory serves the dual purpose of giving children experiences to foster cognitive, social and physical development, as well as train potential teachers, who serve in the laboratories as student teachers.

Part of each day, from one hour to one and one half hours, is spent on free play. During this time the children are allowed to play in any area of the room they wish and use facilities available to them. During these periods of free play, the author gathered subjects for the testing session.

The instrument

The data for this study was collected by the use of a simple pegboard task (Byrnes, 1972). The number of pegs each child placed in the pegboard during a sixty-second time period was used as a score. Comparisons were made of subjects' performance under three experimental conditions.
A pegboard measuring ten inches by ten inches, accommodating one hundred pegs, each 1/4 of an inch in diameter was the principle piece of equipment. The instrument was a wooden structure with a depth of 3/8 of an inch. Holes are drilled in the upper surface into which the pegs are inserted. Pegs, once inserted, can only be removed by lifting them out. This eliminates the possibility of pegs falling out after insertion. The board is natural finished wood. The pegs are six different colors: red, yellow, blue, green, orange, and purple.

An instrument, similar to the one described above, was used by Byrnes (1972) in assessing motivation of preschool children as affected by verbal incentives and researcher attitude.

Pilot study

A pilot study was run prior to the research study in order to determine the effectiveness of the procedures and clarity of instructions. Ten children, four girls and six boys, were randomly selected from the West Morning Child Development Laboratory at Utah State University. The subjects were taken from their room, during the free play period, in groups. Each group was taken at a different time. Group A consisted of three boys, Group B consisted of four girls, and Group C consisted of three boys. Subjects were invited to accompany the researcher to another room to play two games. They were assured that they would be returned to the classroom immediately following the games. The child was invited in this way:
My name is Ann. What is yours? (Name) I would like you to come play a game with me. We need (number) more boys/girls to play the game.

The subjects were then accompanied to the North Laboratory Room. A low, round table was set up in a corner with four or five child-sized chairs, depending on the number of subjects. A muffin tin with sections colored blue, yellow, and red, each section containing matching colored objects, was in the center of the table. A stop watch was also on the table. In order to relax the children they were asked to label the colors of their own and experimenter's clothing. They were then asked to name the colors of each section of the muffin tin. Each child was given a colored piece and the stop watch was demonstrated. The pre-task was explained in this way:

I want to see how fast you can put the pieces in the right colored dish. I will use my watch to tell you when to go. When you are finished I will stop the watch and we will see how fast you were. Are you ready? Go!

When this process was carried out for each child the experimenter continued:

That was good. There is one more game I want you to play. This is a pegboard (each subject was given a board) and these are the pegs. The pegs can go in the board like this (demonstrating). Everyone take a yellow peg and put it in the board, now a red peg. That's right. Take the pegs out of the board. For this next game I want you to put pegs in the board any way you want to. I will use the watch to tell you when to go and when to stop. When I say go put pegs in the pegboard as fast as you can until I tell you to stop.

The groups were allowed sixty-seconds to work at putting pegs in the pegboard. When time was up the subjects were returned to the classroom.

At this time the experimenter counted the number of pegs in each board,
recorded this and noted particular design, elements of conformity, and where
the subjects who conformed were situated in relation to one another. A new

group of subjects was then invited to "play the game."

The procedure was changed slightly following the results of the pilot
study. Changes in the instrument were made. It was determined that the
standard type peg is less frustrating, more easily manipulated, and will not
fall out of the pegboard as easily as the "beaded" type peg. The bead peg is
shorter than the standard peg used. The upper half of these pegs are rounded.
The beaded pegs come in six colors. The box of pegs was originally placed
in the middle of the table for common use. It was found that the subjects
worked more efficiently and wasted less time if they had an individual con-
tainer of pegs located above their dominant hand.

It was noted that the majority of the subjects needed further clarifica-
tion as to procedure following the instruction "Stop." The sentence, "When I
say stop do not put any more pegs in the pegboard," was added to the instruc-
tions.

During the pegboard section of the testing the author withdrew from the
table explaining that she would return. It was found that the author was more
of a distraction sitting apart from the subjects. The investigator remained at
the table holding the stop watch, offering no reinforcement verbally or through
facial expression.

Subjects were tested in groups of varying sizes. It was found that there
was more interaction between subjects in the group of four. Interaction between
group members is an important facet of this study. In order to encourage a favorable atmosphere for interaction group size was fixed at four.

The results of the pilot study and implications for research encouraged the investigator to further explore the study.

**Test administration**

The data were collected during a fifteen week period beginning February 7, 1973, and ending May 17, 1973. The researcher spent time in the classrooms becoming acquainted with the children. The test was administered in three separate operations. The first phase was heterogeneous grouping. Previously the investigator had chosen the name of a male subject and placed this child with a group of three girl students. The girls were rotated so that the same three were not always grouped together. Eighteen girls performed the task three times and two girls participated only twice. Each of the ten males participated only once in a heterogeneous grouping.

Each child was approached by the investigator during free play time and invited to "play the game." The child was asked to help the researcher find the other children necessary to complete the group. All of the children were assured that they would return to the classroom following the game playing session.

The testing equipment was set up in an enclosed room, familiar to the children which contained a minimum of visual stimuli. As determined in the pilot study the equipment was set up on a low, round table. All subjects and
the investigator sat in child-sized chairs around this table. Each subject's placement at the table was recorded along with his score. The equipment was displayed and demonstrated. The researcher repeated established instructions that had been tested in the pilot study and memorized and rehearsed for this purpose. As in the pilot study the children were asked to label the colors of the muffin tin sections. Each child was then given a colored toy and the stop watch was demonstrated. The children were given the command "Go," and were timed as to how long it took them to match their toy with the same colored muffin cup. The purpose of this pre-task was to eliminate the effects of any previous stimuli which might interfere with subjects' performance of the research task and to make the child feel positive. The pegboard task was then introduced as follows:

This is a pegboard (each subject had a pegboard in front of him) and these are the pegs (pegs were placed in small pie tine above the subject's dominant hand.) The pegs can go in the board like this (demonstrating). Everyone take a yellow peg and put it in the board, now a red peg. That's right. Take the pegs out of the board. For this next game I want you to put pegs in the peg board any way you want to. I will use the watch to tell you when to go and when to stop. When I say go put pegs into the pegboard as fast as you can until I tell you to stop. When I say stop do not put any more pegs in the pegboard.

The subjects were allowed sixty seconds to work at the experimental task. During this time period verbalizations of the subject were recorded. When sixty seconds had elapsed the children were stopped and returned to their classroom. Pegs were then counted. This score was recorded on a tally
sheet which also contained the subject's location at the table during testing, elements of design and color, and the subject's verbalizations.

In the second phase of testing only males were invited to come play the game. The subjects performed the task in groups of four. Nineteen subjects participated once in an experimental group and one subject participated in two experimental groups. This was to maintain a standard of four group members. The experimental setting and procedure remained standard.

The third phase of data collection involved individual performance of the pegboard task. Males were invited, one at a time to join the investigator in another room to play the game. The pre-task was introduced and carried out. Following this the individual was presented with a pegboard and pegs. The experimental procedure continued in the same manner as the two previous experimental conditions. Each child was allowed sixty seconds to work at the task. In the individual sessions children were allowed to remove and help score the pegs before returning to the classroom.

Reliability

In order to establish evidence of reliability it would have been necessary to tape record and film each testing session. This would have certified the necessary constancy of procedures. This was impossible to arrange due to the testing schedule of the author. It was the responsibility of the investigator to maintain consistency throughout each phase of the testing sessions and thus reliability.
Every attempt was made to insure that the investigator presented equivalent stimulus to each subgroup of each experimental phase. The investigator carried on some dialogue with children previous to each administration of the test. This was for the purpose of becoming reacquainted with the children and to reduce any feeling of anxiety they might be experiencing. During the test interval investigator comments were restricted to the previously stated directions. During performance of the task the investigator did not give the subjects any encouragement or criticism. Questions were answered in a straightforward manner but were not solicited or encouraged. The verbal components of this study were rehearsed to establish precision of test administration.
ANALYSIS AND FINDINGS

Scoring and statistical analysis

Scoring was accomplished through researcher count of pegs of each subject after each testing session. Records of the subject's score, group members, position at the table, verbalizations, and design of pegs in the pegboard were carefully kept on tally sheets. (See Appendix.)

After a total of twenty subjects were tested under three experimental conditions the scores for each trial were compared. The scores of each subject under each trial are included in Table 1.

A t-test of significance of difference between the means was performed on the scores to determine if significant differences did exist between the scores of each experimental grouping: heterogeneous, homogeneous, and individual. Results of these t-tests can be found in Table 2.

The data in Table 2 indicate that the computed t-values did not show significance of difference between the means of each experimental grouping or approaching significance at the .05 level. Therefore the differential effect of grouping a subject with members of the same and opposite sex is not statistically significant.

Through graphic representation of the data the researcher noted trends that warrant consideration. A survey of total scores of each experimental grouping indicates that there are no obvious quantitative trends. The range
Table 1. Raw scores for each subject under each experimental grouping.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Heterogeneous</th>
<th>Homogeneous</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>17</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>23</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>6</td>
<td>19</td>
<td>25</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>19</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>9</td>
<td>20</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>10</td>
<td>21</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>11</td>
<td>14</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>12</td>
<td>20</td>
<td>20</td>
<td>28</td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>21</td>
<td>25</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>15</td>
<td>19</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>16</td>
<td>20</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>17</td>
<td>23</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>18</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>19</td>
<td>12</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>352</strong></td>
<td><strong>366</strong></td>
<td><strong>340</strong></td>
</tr>
</tbody>
</table>
Table 2. T-test of significance of differences between the means of the experimental groupings.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Degrees of Freedom</th>
<th>Computed t-value</th>
<th>Two-tailed Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homogeneous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneous</td>
<td>36</td>
<td>0.52</td>
<td>0.60</td>
</tr>
<tr>
<td>Individual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homogeneous</td>
<td>36</td>
<td>0.33</td>
<td>0.74</td>
</tr>
<tr>
<td>Individual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterogeneous</td>
<td>36</td>
<td>0.24</td>
<td>0.81</td>
</tr>
</tbody>
</table>
of scores for each experimental grouping, Figure 1, indicates a certain directional trend apparent for each grouping.

**Hypotheses**

The first hypothesis stated that there is no difference between individual performance of task and performance of a task as a member of a group. When the means of both group testing sessions were compared with the mean of the scores of individual experimental condition no significant difference was found. On this basis the first hypothesis could not be rejected.

The second hypothesis stated that there is no difference between individual performance of a task and performance of a task within a group of same sex peers. Using the t-test of significance of difference between the means no significant difference was found between homogeneous group task performance scores and individual task performance scores. Therefore, the second hypothesis stated could not be rejected.

The third hypothesis stated that there is no difference between individual performance of a task and performance of a task within a group of opposite sex peers. No significant difference was found between the mean of the scores of individual task performance and the mean of the scores of heterogeneous group task performance, therefore, the third hypothesis could not be rejected.

The fourth hypothesis stated that there is no difference between an individual's performance of a task within a group of opposite sex peers and an individual's performance of a task within a group of same sex peers. No
Figure 1. Range of scores for each experimental grouping.
significant difference was found between the mean of the scores of heterogeneous group task performance and homogeneous group task performance. Therefore, the fourth hypothesis could not be rejected.

**Incidental findings.**

The comments made by subjects during each testing session were recorded. These verbalizations were classified by the researcher as either characteristic of egocentric speech or tending toward sociocentric speech. Piaget's theory of egocentrism was used as the criterion for classification. Table 3 summarizes the results of the categorization of the verbalizations of subjects participating in the first phase of the experimental conditions, heterogeneous sex groupings. Eleven subjects made comments during the sixty-second testing interval. Verbalizations related to other subjects, not the researcher, in the group were classified as examples of sociocentric speech and those not addressed to a particular subject were rated as examples of egocentric speech. Of those that made comments in this first phase, six made egocentric statements and four were rated as sociocentric statements and one was rated as a neutral statement.

In the second phase of testing, homogeneous sex grouping, the comments of all subjects were recorded. Method of scoring remained the same. Eight subjects made comments. One group sang throughout the testing procedure. Immediately prior to the testing session the entire class had been singing as a group. The three subjects sang the same songs that had been
Table 3. Verbalizations of subjects in heterogeneous sex grouping

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Score</th>
<th>Position</th>
<th>Verbalizations</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>17</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>B</td>
<td>&quot;When can I stop?&quot;</td>
<td>S</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>23</td>
<td>B</td>
<td>&quot;Can I play outside after?&quot;</td>
<td>E</td>
</tr>
<tr>
<td>6</td>
<td>19</td>
<td>B</td>
<td>&quot;I have more than Kari.&quot;</td>
<td>S</td>
</tr>
<tr>
<td>7</td>
<td>19</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>16</td>
<td>B</td>
<td>&quot;I think I'll use red then blue.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>9</td>
<td>20</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>21</td>
<td>B</td>
<td>&quot;I will make a line.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>11</td>
<td>14</td>
<td>B</td>
<td>&quot;I have a blue shirt at home.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>12</td>
<td>20</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>B</td>
<td>&quot;Oh, oh they dropped.&quot;</td>
<td>N</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>B</td>
<td>&quot;I'm going to put them all on.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>15</td>
<td>19</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>20</td>
<td>B</td>
<td>&quot;I have the same colors you do.&quot;</td>
<td>S</td>
</tr>
<tr>
<td>17</td>
<td>23</td>
<td>B</td>
<td>&quot;Do it as fast as I do it, Dionne.&quot;</td>
<td>S</td>
</tr>
<tr>
<td>18</td>
<td>19</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>12</td>
<td>B</td>
<td>&quot;I made a square.&quot;</td>
<td>E</td>
</tr>
</tbody>
</table>
introduced in the classroom. This was not originally rated as either an egocentric or a sociocentric statement. The eight scorable statements were considered within the total group verbalization. Four statements were rated as egocentric and three statements were rated as sociocentric. One statement was rated as both, having elements of both types. The results are illustrated in Table 4.

During the individual testing session five subjects made comments while performing the pegboard task. These were scored somewhat differently than previous statements because the author, in this session, was the only person to whom comments could be addressed, whereas in the previous groupings only peer verbal interaction was rated as sociocentric speech. Based on this premise the five statements were rated in this way: three as egocentric, one as sociocentric, and one as both egocentric and sociocentric. Table 5 contains a summary of these results.

Examination of the findings

Task performance in experimental groupings. No significant difference was found to exist between performance of a task within a group of same-sex peers, opposite-sex peers, or as an individual. This finding is consistent with previously stated literature which suggests that the preschool child is not influenced by his peers because he is in a state of egocentrism. A few studies, in reporting the effect of sex on friendship choice, implied that sex
Table 4. Verbalizations of subjects in homogeneous sex groupings

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Score</th>
<th>Position</th>
<th>Verbalizations</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17</td>
<td>A</td>
<td>Singing</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>23</td>
<td>C</td>
<td>&quot;I'm winning.&quot;</td>
<td>S</td>
</tr>
<tr>
<td>3</td>
<td>27</td>
<td>B</td>
<td>&quot;I'm beating.&quot;</td>
<td>S</td>
</tr>
<tr>
<td>4</td>
<td>23</td>
<td>B</td>
<td>Singing</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>24</td>
<td>A</td>
<td>Singing</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>25</td>
<td>A</td>
<td>&quot;I'm building a fence.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>7</td>
<td>27</td>
<td>C</td>
<td>Singing</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>C</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>13</td>
<td>A</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td>B</td>
<td>&quot;I've really done this before.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>11</td>
<td>14</td>
<td>A</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>20</td>
<td>C</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>21</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>B</td>
<td>&quot;We could put 'em anywhere we wanted, I'm gonna make a square.&quot;</td>
<td>B</td>
</tr>
<tr>
<td>15</td>
<td>20</td>
<td>B</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>15</td>
<td>C</td>
<td>&quot;Look what I'm making.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>17</td>
<td>25</td>
<td>B</td>
<td>&quot;Oh, oh, mine are rolling all over. I'm trying to put them in.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>18</td>
<td>19</td>
<td>C</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>18</td>
<td>A</td>
<td>&quot;Say stop.&quot;</td>
<td>S</td>
</tr>
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</table>
Table 5. Verbalizations of subjects in individual testing sessions

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Score</th>
<th>Verbalizations</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>&quot;I'm making a design.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>19</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>19</td>
<td>&quot;I built a fence.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>7</td>
<td>18</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>14</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>17</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>14</td>
<td>&quot;I'm doing all yellow. What if I get the whole board finished.&quot;</td>
<td>B</td>
</tr>
<tr>
<td>11</td>
<td>17</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>28</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>25</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>16</td>
<td>&quot;Red stick, yellow stick. Look how much. I'm making an airplane.&quot;</td>
<td>E</td>
</tr>
<tr>
<td>15</td>
<td>19</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>20</td>
<td>&quot;When are you going to say stop?&quot;</td>
<td>S</td>
</tr>
<tr>
<td>17</td>
<td>27</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>19</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>17</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
of companions might be a factor in performance of a task or learning. It is conceivable that lack of difference was due in part to sample size.

However, although there is no statistical difference between the grouping, the total of the scores for each experimental condition show a slight difference. The total of the all male group is slightly higher than the other groupings. The total of each of the task performance scores within groups was higher than the total scores of the subjects tested as individuals. This suggests that these preschool children perform better with a group of peers than on a one-to-one basis with the investigator. The range of scores for each experimental condition is not consistent with the total of the scores of each. In the heterogeneous group there was a range of eleven between the highest score and the lowest score. The homogeneous grouping had a range of nineteen and the scores of individuals had a range of fourteen. It was thought by the investigator that University lab children were more social, being accustomed to group activities, than a non-pre school group might be.

**Verbalizations during testing sessions**

An examination of amount of verbalization indicates that there was more verbalization in group performance of a task than in individual performance of the task. A criterion for rating responses of subjects as either egocentric or sociocentric is most difficult to determine with the isolated statement. The entire situation must be taken into account. When ratings
were checked for accuracy by Dr. Don C. Carter it was determined that some responses were neither egocentric nor sociocentric, but were indeterminant, classified as neutral or N, or a mixture of sociocentric and egocentric, classified as both or B.

In Table 3 a total of eleven verbalizations are recorded. The first statement, "When can I stop?" was addressed to the child sitting on the right side of the speaker. The child addressed did not respond to the subject. Nonetheless, it was a potential interaction between two peers and was thus rated as a sociocentric statement. Subject 5 addressed his question to the author. Another reason for rating this statement as egocentric was that he was concerned primarily with self. The statement "I have more than Kari," was a statement made directly to Kari. It seemed to be in the nature of a challenge as each child began to move faster in what appeared to be an effort to excel. The following three verbalizations each deal with the self as the primary focus. The statement made by subject 13, "Oh, oh they dropped," was originally rated as egocentric but was reclassified as a neutral statement. It was not related to "I" nor was it addressed to anyone in particular, it was a commentary on what was happening to the pegs. The following statement by subject 14 was related to the activity of the self. The statement made by subject 16 was a comparison which could have led to one subject's conforming to another or creating an opening for verbal interaction. Subject 17 addressed his comments to another child. Although there was no response there was a potential for verbal interaction. As a result of this comment the other child
began to put pegs in the board at the same speed as subject 17. It was determined that the statement made by subject 19 was egocentric in nature, referring directly to the activity of the subject and not being addressed to anyone, a commentary.

Table 4 illustrates eight examples of verbalizations during the sixty-second test interval of the homogeneous groups. Three responses were rated sociocentric speech and four were rated as egocentric speech. One statement, made by subject 14, had elements of both sociocentric and egocentric speech. The first sentence being an example of sociocentric speech and the second returning to a high degree of egocentrism. This might be an example of a child making the transition from egocentrism to sociocentrism. The statements made by subjects 2 and 3, when isolated, appear to be egocentric speech. These two statements were an interaction between the two subjects. Perhaps this could be tied to those studies which suggest that even young children compete when performing similar tasks at the same time. It could also be applied to the Anderson (1939) study which states that children, ages two to four, tend to distract each other from performance of a task within groups. The statements by subjects 6, 10, 16, 17 are also rated as egocentric because they describe what the individual is doing and are not preliminary statements in verbal interaction. These statements were addressed primarily to the investigator. The command "Say stop!" by subject 19 was rated as sociocentric speech because its focus was not the subject himself.
One entire group of subjects sang throughout the testing interval. This was not rated but it seems to the author that this is evidence of socialization. The children were participating, as a group, in an activity while simultaneously performing the experimental task. It is also supposed, by the investigator, that singing supports the premise that the testing environment was one in which the children felt comfortable. Another individual sang to himself while performing the task. Neither of the other subjects in his group joined him. If these singers were classified as sociocentric verbalizations, there would be a total of 12 verbalizations. Seven of the total would be rated as sociocentric speech and one as having elements of both sociocentric and egocentric speech with four classified as egocentric.

It is evident in Table 5 that there were fewer total utterances when the subject was on a one-to-one basis with the author. Of nineteen subjects five spoke during the testing session. Three of these verbalizations were in reference to the self alone while one was an attempt to get a response from the investigator. The statements by subject 10 demonstrated both egocentric and sociocentric elements.

In summary it is noticeable that the number of utterances occurring in the group testing sessions exceeds the number of utterances occurring when the subjects performed the task alone. This supports the notion that speech is stimulated by the presence of others. The greatest number of sociocentric verbalizations (including singing) occurred in the homogeneous sex group. The researcher interpreted this as an indication that, first, a preschool child is
affected by the presence of other peers and, second, that the sex of peers influences a subject's reaction to a group situation.

There is no statistical difference between the scores of each experimental condition, however, the difference seems to be in the degree of security felt in the group as indicated by the verbalizations of the subjects. These verbalizations also indicate that there are wide differences in the consistency with which the child maintains sociocentric or egocentric speech.

Summary of findings

The findings of this study were that there was no statistical difference between performance of a task on an individual basis and performance of a task in a group of same or opposite sex peers. Performance produced higher total scores in the homogeneous sex group, followed by performance in the heterogeneous sex group. There was a difference in the range of scores for each experimental condition. The widest range of scores was found in the homogeneous sex group. The range of individual scores was larger than the range of scores of the heterogeneous group.

Examination of verbalizations occurring under each experimental condition yielded the following information: more verbalization occurred in the heterogeneous sex grouping of male subjects, less verbalization was evident in the individual performance of a task. Variation between the groups as regards to sociocentric statements was slight. The majority of statements in the heterogeneous and individual testing phases were categorized as
egocentric. Among the homogeneous sex groups there was an equal number of egocentric and sociocentric statements.
DISCUSSION

Problems encountered during the study

The very nature of the study, specifically the number of potentially influential variables, made it difficult to maintain consistent control. The study focused primarily on the variable of sex of group members and focus of verbalizations, but many other variables such as number and sex of siblings of the subject; the physical abilities, fine muscle coordination of the subject; the attitude of the researcher; and the testing environment can all exert some influence on subject's performance of a task.

The author would have preferred a more stimulus controlled environment in which to conduct the testing. The time interval was of short duration to prevent subject disinterest in the task. However, it seems that there may have been some distraction. This is evidenced by one subject asking "Can I play outside after?" upon hearing other children playing in the yard outside. Byrnes (1972) suggested that testing of this type should be carried out in a soundproof, comfortable, well-lighted, and distraction-free room. The investigator supports this suggestion.

The researcher noted a drawback in the impossibility of scheduling testing sessions at regular intervals. In order to use the Utah State University Child Development Laboratory children as a sample it is necessary to conform to the varying daily schedule imposed by the head teacher. This is further
complicated by the author's available time for testing sessions. It is suggested that further investigation be carried out in close cooperation with the Child Development Laboratory teachers. This would enable a regularization of the time interval in between each testing session. It would also make it possible to test a larger sample which would increase the possibility of statistical significance.

Statistical analysis of means and range of scores.

The assumptions of a t-test fit, more accurately than other statistical tests, the data of the small sample of this study. The difficulty with this statistic is that it expresses only the difference between the means of the scores. It does not allow for differences which seemed evident to the investigator during each testing session. It was for this reason the author included the range of scores and verbalizations, both of which express certain differences, although not statistical. These incidental elements proved to be more indicative of differences than statistical analysis.

Discussion of verbalizations

Content analysis of verbalizations is beyond the scope of the present study. A survey of the number of verbalizations provides evidence of difference in response to the various experimental conditions. Five subjects made some statement in each of the experimental sessions. Three subjects spoke during the first session and did not make any verbalizations in the homogeneous sex grouping or when they were tested as individuals. The subjects who sang
when performing the task in homogeneous sex grouping did not make any
verbalizations under the other two testing conditions. As only five of the
subjects verbalized consistently it was thought by the author that the sex
grouping influenced the verbalizations of the subject. This, when combined
with the total number of utterances in each experimental grouping suggest
that children react differently in the various group situations. The fact that
there were more verbalizations suggest, to the author, that the subjects feel
different degrees of security, dependent on the members of the group with
whom they perform a task.

Piaget (1926) reports that children, the age of the subjects in this
study, are unable to take the point of view of another. Yet it seems, from the
findings, that some of the subjects demonstrated an awareness of the activities
of other subjects. When subject 17, in the heterogeneous grouping, instructed
another child "Do it as fast as I do it, Dionne," he was attempting to help her
perform more efficiently. In that same grouping subject 6 showed enough
awareness of another child's progress to note, "I have more than Kari."
Note that both of these statements, taken as indications of awareness of others,
occurred in the heterogeneous grouping and were addressed by males to
females.

It should also be noted that in the Child Development Laboratories there
is a high teacher-child ratio which promotes frequent experiences in small
groups. The children, on the basis of this wide variety of group experiences,
may have been better prepared to function in groups than children without
comparable socialization opportunities.
SUMMARY AND CONCLUSIONS

The study of the motivational effects of a group on a subject encompasses many variables and related influences. A survey of the literature dealing with the influence of peers on the young child revealed no consensus. There are those (Anderson, 1939; Piaget, 1926; Taba, 1947) who found that children, ages two through four, are largely "self-centered" and are not aware of the effect they have on one another. Jersild (1958) found that, in groups of two-year-olds friendly, cooperative responses predominate over negative responses. Research has pointed to a trend in social awareness increasing with age (Margolin, 1969; Moreno, 1953).

The possibility of peers as a form of extrinsic motivation must be further explored. This study has attempted to investigate differential response of subjects to the sex of the peers with whom they are grouped. In addition there has been some exploration of the amount of language and the type of language occurring under each experimental condition. A total of nineteen children from the Utah State Child Development Laboratory comprised the sample. These subjects were exposed to three different experimental conditions: homogeneous (same-sex) grouping, heterogeneous (grouping with the opposite sex), and as an individual with the author, for performance of a task. The task consisted of placing pegs in a pegboard during a sixty-second time period. A t-test of difference between the means was performed on the scores in order to determine if differences were significant.
Conclusions

This study leads to the conclusion that, for this particular child population, the degree of sexual homogeneity of the group in which the child is functioning does not appear strongly to influence his behavior. However, it must be noted that children in this study have been prepared, more extensively than may be true for most of their same-age peers, for a comfortable involvement in a variety of groups.

Recommendations for further study

Based on the results of the present study there seems to be a need for further investigation on the influence of sex of peer in groups on performance of a task. The following are suggestions for further exploration:

1. Children of different ages could be used as a sample in a study of the same design and purpose.

2. Since there is a possibility that children from the Child Development Laboratories are accustomed to working in groups, a similar study comparing non-preschool attending children and children who are attending the pre school would provide some evidence as to whether or not the pre school children are any more influenced by grouping than the non-preschool attenders.

3. A larger sample could be used in a study of similar purpose and design to determine if sample size affected the statistical lack of difference between the scores.
4. An identical study could be done employing female subjects of the same age as the male subjects in the present study and the results compared with the results of this study.

5. A systematic study of the verbalizations of children during the three experimental conditions could be done in an attempt to show differences in the influence of the sex of the group.

6. A study of similar design could be done with the focus on the variable of design of pegs in the board as an indication of differences in response to the three experimental conditions.

7. Verbalizations during task performance could be analyzed for elements of competition or conformity.
LITERATURE CITED


<table>
<thead>
<tr>
<th>Subject</th>
<th>Position</th>
<th>Score</th>
<th>Pattern, Color, Conformity</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>C</td>
<td>20</td>
<td>Began putting pegs in top row, left-to-right. Moved to second row after completion of top. Began in middle. Takes pegs from container with right hand, places them in left hand before placing them in the pegboard. No color, or specific pattern, random selection of colors.</td>
</tr>
</tbody>
</table>

"I'm making a design."
VITA

Ann K. Reardon

Candidate for the Degree of

Master of Science

Thesis: The Effects of Degree of Sexual Homogeneity in Groups of Preschool Children on Task Performance

Major Field: Child Development

Biographical Information:

Personal Data: Born in Boston, Massachusetts, December 23, 1950, daughter of Henry Curran and Joan Allen Reardon.

Education: Graduated from Xavier High School, Phoenix, Arizona, in 1968; received the Bachelor of Arts degree from Scripps College, Claremont, California, in 1972; completed requirements for the Master of Science degree in Family and Child Development at Utah State University in August, 1973.

Professional Experience: Future position as Instructor of Child Development at Idaho State University, Pocatello, Idaho.