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Negative behavior exhibited by preschool children in same-age versus mixed-age groups

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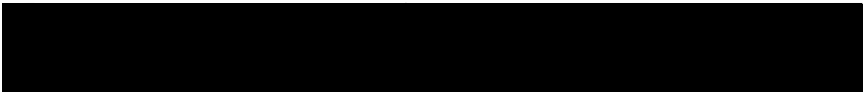
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AN ABSTRACT OF THE THESIS OF Laura Janine Sheppard for the Master of Science in Psychology presented July 19, 1985.

Title: Negative Behavior Exhibited by Preschool Children in Same-age Versus Mixed-age Groups

APPROVED BY MEMBERS OF THE THESIS COMMITTEE


Cathleen L. Smith, Chair


David L. Cressler


Frank Wesley

Perhaps due to the increase in the workforce of mothers with young children, much attention has been directed in the past decade towards the subject of out-of-home child care.

In order to gain further understanding of the socialization of preschool children, an observational study was carried out which was designed to measure the amount of negative behavior expressed by children participating in mixed-age versus same-age preschool groups.

An observational code was developed to test the

hypothesis that three- to five-year-old children in a same-age group would exhibit more negative behavior than would those in a mixed-age group.

Sixteen children in each group (matched for age, sex, and number of hours in school per week) were observed for a total of sixty minutes each. All children included in the study had been enrolled in the facility used for at least eight months.

Analysis of variance determined no significant group effect, indicating that there was no difference in the negative behavior of children in the same- versus mixed-age groups.

However, the Rank-Sum test revealed a striking gender effect, indicating that the frequency of negative behavior exhibited by boys in this sample was much greater than that of the girls.

These findings are consistent with those of previous researchers, and clearly demonstrate a gender difference in rates of aggression for children as young as three.

Implications for gender and age groupings within the preschool classroom are discussed.

NEGATIVE BEHAVIOR EXHIBITED BY PRESCHOOL CHILDREN
IN SAME-AGE VERSUS MIXED-AGE GROUPS

by

LAURA JANINE SHEPPARD

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CHAPTER I

INTRODUCTION

Since the 1950s there has been a major shift in the work and child-rearing patterns of American families. The percentage of women who have preschool and school-age children and who work outside the home has risen from 20 percent at the end of World War II to almost 50 percent today (Cohen & Brandegee, 1978).

There are many reasons for this trend towards more women with young children in the paid work force: economic necessity, a wish to increase the family's standard of living, and personal motivation of the parents. As the necessity for existence of two-income families increases, so does the need for quality child care. It is perhaps due to this increase of mothers in the work force that so much attention has been directed towards the subject of out-of-home child care.

When the preschool child is placed in daycare for eight to ten hours a day, often for several years, the daycare setting becomes an adjunct to the family in determining the kind of person that the child will eventually become (Cohen & Brandegee, 1978).

This realization of the importance of the daycare

environment has led to the study of many factors in an attempt to provide the best possible physical, social, emotional, and educational environment for young children.

One issue that has undergone much scrutiny in the past decade is the role played by peers in the social and intellectual development of children in out-of-home placement. However, most of the literature concerning peer influence has been devoted to interactions between children of the same age. It is only since the late 60s or early 70s that much research has been directed towards a comparison of same-age and mixed-age peers. The main focus of this research has been on the positive influences of children's social interactions with peers of various ages.

One issue which appears to have been overlooked is that of negative behavior and its expression by preschool-age children. Much of the negative behavior that occurs in groups of children is a relatively "normal" part of child development. However, if the daycare environment can be manipulated in such a way as to reduce the occurrence of this "normal" negative behavior between children, it may have the effect of reducing the stress that some children may feel as a result of spending much of their time in large groups.

The present thesis is directed towards an investigation of the difference in amount of negative behavior expressed by preschoolers attending either same- or mixed-age

classes. Opinions are divided concerning the developmental significance of same-age versus mixed-age interaction. Konner (cited in Lougee et al., 1977) believes that children derive unique adaptational advantages from cross-age experiences: the older child protects the younger one and facilitates his integration into a wider social world. At the same time, development of communication skills and other abilities in the older child is fostered. This view contrasts with others (e.g., Piaget, cited in Lougee et al., 1977) who say that children derive adaptational advantage through interaction with individuals of coequal status (same-age peers). I would venture to say that both views are valid and are not mutually exclusive. Social adaptation would seem to require skills learned in interaction with both same- and cross-age peers.

Definition of Negative Behavior

Negative behavior has been defined in various ways. Several articles reviewed for the present study had easily discernible categories or definitions of negative behavior.

1. Goldman (1981) defined negative behavior as " ... the child engaging in an interaction which involves a physical or verbal threat or attack, interfering with the ongoing activities of another, or denying activities or privileges" (p. 646).

2. The "negative socialization" categories utilized

by Lougee, Grueneich and Hartup (1977) were: derogation, interference, noncompliance, and attacks.

3. Leiter (1977) defined two out of three of his "social initiation" codes in terms of negative behavior: demanding (aggressive) -- to command, shove, take away, initiate in a coercive manner with accompanying blow, screams or demands; and whiny (passive) -- to whine, beg, cry, stand in proximity to rather than actively join, or ask for direction.

4. Yarrow and Waxler (1976) and Maccoby and Jacklin (1980) used the term "aggression" to denote negative behaviors, differentiating them into physical and verbal categories. A broad definition of verbal aggression included insults, threats, warnings, and quarrels over food or toys. Physical aggression included assaults, fights, pulling and hitting.

5. In an earlier study, Jacklin and Maccoby (1978) defined their behavior category "aggress" as "hitting, pushing, threatening, and throwing object at someone ... physical anger (is defined as) throwing or hitting a toy in anger, knocking over furniture, or other forms of 'tantrum' behavior" (p. 555).

It appears from this review that there is precedent for considering two general classes of negative behavior: physical and verbal. The present study will further differentiate negative physical behavior, defined in terms

of those negative physical behaviors that involve social interaction (e.g., disrupting, hitting, failing to cooperate) and those that do not (e.g., object destruction). Negative verbal behavior will be considered separately.

In the literature review which follows, observational studies that examined preschoolers in mixed- versus same-age groups in laboratory situations will first be considered. Similar studies in naturalistic settings will then be summarized. Finally, studies of gender differences in negative behavior will be examined as observed in same/mixed-age and same/mixed-sex groups.

CHAPTER II

REVIEW OF THE LITERATURE

Observational studies of mixed-age versus same-age groups in a laboratory setting

Although it may seem that the younger child in a mixed-age group would derive the most benefit from social interaction with older children, the older child may benefit as well by having the opportunity to model nurturing and otherwise responsible behavior and to practice leadership skills.

For example, the social skills of withdrawn four-year-olds improved markedly when they were placed in play groups with normal three-year-olds (Furman, Rahe, and Hartup, 1979). In this study, twenty-four socially withdrawn preschool children were assigned to one of three conditions: socialization with a younger child or with an age mate for ten play sessions, or no treatment. These socialization sessions, particularly those with a younger partner, were found to increase the sociability of the withdrawn children in their own classrooms. Significant increases occurred mainly in the rate of positive social reinforcement emitted by children in the treatment groups.

The authors concluded that the play sessions must have

provided the "social isolates" with experiences that did not occur often in their regular classroom. Experiences with the younger child, as opposed to those with age mates, may have provided the socially withdrawn child with the most opportunity to initiate and direct social activity. Given the opportunity to practice these social skills in a possibly less threatening environment, the previously withdrawn children carried over their new found abilities into their regular class.

The following study of peer tutoring supports the notion of cross-age interaction in the field of education. Allen (1978) suggested that when an older child teaches a younger child, they both benefit by engaging in constructive social interaction. An improvement in behavior in school was found (Allen, 1978) in the younger child who was being tutored, possibly due to emulation of the positive behavior of the older child who had been placed in a position of trust and responsibility.

The facilitative effect of mixed-age groups may also hold cross culturally. Whiting and Whiting (cited in Furman, Rahe, and Hartup, 1979) in their cross-cultural studies of children across a wide age range have observed that aggression occurs more frequently with age mates, and that nurturance occurs more commonly when older and younger children interact.

Langlois, Gottfried, Barnes and Hendricks (1978), in a

study of previously-acquainted same-sex pairs of preschool children, hypothesized that more social behavior would be seen in same-age than in mixed-age dyads, and that five-year-olds would show higher levels of social behavior than three-year-olds.

For the first two (of four) ten-minute observation sessions two, three-year-old (same age), and four, mixed-age, dyads were randomly formed for each sex. For the last two sessions, half of the children were placed in a new dyad in which the age of the partner was different from that of the first pairing. The other half of the subjects received new partners who were the same age as that of the initial partners.

The authors reported a higher magnitude of verbal behavior in both sexes and of aggression in boys when the children were placed in same-age pairs following experience with an older or younger playmate. These data suggest that verbal behavior in both sexes and aggression in males is suppressed when children initially interact with different age peers and are then paired with an older or younger child. This is consistent with the observations of Parten (cited in Langlois et al., 1978), who reported higher levels of social and object-directed behavior exhibited by children paired with same-age peers.

Results obtained by Lougee, Grueneich, and Hartup (1977) do not support the notion that a greater amount of

social behavior occurs between same-age as opposed to mixed-age peers. These researchers studied social interaction in pairs of preschool children in which the individuals differed in age by either two months (same-age dyads) or sixteen months (mixed-age dyads). The mixed-age condition produced more appropriate social behavior than the same-age condition, generally accelerated social behavior in the younger child, and generally lowered it in the older one. The appropriateness of the communications between the children indicated that each child was accommodating to the developmental level of the other. According to Lougee et al. (1977), evidence suggests that children are sensitive to age differences between themselves and other children and make a variety of behavioral adjustments.

Lougee et al. (1977) ran into an interesting problem in the course of their study. They began by coding (from videotape) both positive and negative behaviors. They found that negative behavior occurred infrequently and required high-level inferences by the observer, resulting in poor inter-observer reliability for those measures (assessment of which was not discussed). The portion of the study on negative behavior was subsequently dropped.

In summary, the research reviewed to this point has demonstrated that children's social behavior is different in same- and mixed-age peer groups.

For example, mixed-age groupings tend to accelerate

social behavior in the younger child and lower it in the older child (Lougee et al., 1977), and higher levels of aggression are found in same-age groupings (Furman et al., 1979; Langlois et al., 1978).

However, most of these studies have been limited to investigations of interactions in isolated dyads or triads, leaving unanswered questions about ways in which children are influenced by peers of various ages when they are interacting as members of larger, ongoing groups, such as preschool classes (Goldman, 1981).

Observational studies of mixed- versus same-age groups in a naturalistic setting

As previously mentioned, use of the naturalistic observational method to study differences in behavior of same- and mixed-age groups is rare. One investigator who used an approach similar to the one used in the present study is Goldman (1981). Using point-time sampling procedures, she investigated the amount of time that children in same- versus mixed-age groups spent in various forms of social participation, and the age relationship of children in mixed-age groups.

Behaviors were classified according to eight categories of social participation: unoccupied, onlooking, solitary play, parallel play, teacher-directed activity, positive interaction, negative interaction, and adult-only

relationships.

Social participation was observed in existing classes of three-year-olds, four-year-olds, and mixed-age classes, all selected to minimize the influence of confounding variables. All groups were morning classes which met at least three times a week, were located in the same neighborhood, and were sponsored by community groups.

The observations indicated that age composition of children in preschool groups did influence the pattern of social participation. Children in the mixed-age group were more sociable and spent less time with adults, and also spent less time in parallel play (considered by some to be the least mature level of play). From these findings, the author concluded that mixed-age groups have a facilitative influence on the social participation of preschool-age children.

In her examination of negative behavior as one aspect of social participation, Goldman (1981) indicated that for girls, negative interaction (defined earlier) was equally likely to occur with both boys and girls; boys, however, engaged in negative interaction more frequently with other boys than with girls.

This aspect of Goldman's investigation was not discussed in enough detail to get clear examples of the negative behavior she was actually recording, nor was any mention made regarding a difference in amount of negative

interaction between children in the same-age versus mixed-age groups. Nonetheless, it is the only study I have found using the observational method in a naturalistic setting that also looked at negative interaction between preschool children in same- versus mixed-age groups.

Field (1982) examined same-sex preferences of preschool children as an artifact of same-age grouping. She compared the sex of playmate preferences of the same group of preschool children while playing with mixed-age classmates and then with same-age classmates. A number of social behaviors including verbal interactions, imitation, and fantasy play were coded as well.

Behaviors were recorded by two observers, who simultaneously recorded 80 of the 752 observations to determine inter-observer agreements. The mean inter-observer reliability coefficient, as determined by Kappa, averaged over all behavior categories was .84.

An initial comparison of same- and mixed-age groups yielded no effects, so the data from these two groups were combined for further analyses. Results indicated that same-sex play occurred more frequently in the same-age than the mixed-age situation. Field (1982) suggests that matching verbal fluency may be a factor that influences playmate preference. Girls engaged in significantly more verbal interaction than boys at this stage of development. Thus, a girl may prefer to play with another girl and a boy with

another boy when only same-age playmates are available. However, when a combination of different-age children are available, a girl may choose to play with an older boy, or a boy with a younger girl, because their verbal fluencies are similar (Field, 1982).

Roopnarine and Johnson (1983) designed an experimental program which enrolled previously unacquainted preschoolers, kindergartners and schoolagers (ages 3-8) for two months. Each of 20 children was observed for ten, five-minute sessions during the morning semi-structured free play time. The research focus was on the kindergartners, as each of them had an opportunity to interact with both older and younger peers, whereas the preschoolers (being the youngest) and the schoolagers (the oldest) did not. Observations were made of the cognitive and social features of play interaction between kindergartners and preschoolers, kindergartners and kindergartners, and kindergartners and schoolagers. Results indicated, among other findings, that kindergartners showed a slight tendency to play with age mates, although considerable cross-age play did occur.

In summary, it appears that naturalistic studies of children's social behavior in same versus mixed-age groups share a common finding: children, even when in mixed-age groups, tend to play with children of the same age. However, the cross-age play that does occur may also be cross-sex, indicating again that children seek playmates who are at a

similar developmental level.

Gender differences in negative behavior (or aggression)

If we are proposing an observational study of negative behavior, it would seem that a brief review of gender differences in aggression is indicated, although there is much support for the view that aggression is expressed much more frequently by male than by female children.

The specific operationalization of aggression used by researchers observing children varies from study to study. A linking definition across various dependent measures in many studies appears to be an inferred intent of one individual to hurt another. (This might be termed physical aggression, as previously discussed.) For purposes of the present study, we will assume that negative behavior and aggression are interchangeable terms, with one caveat; the definition of negative behavior will also include verbal aggression as well as physical aggression.

In an apparently ongoing argument, Tieger (1980) disagrees with the contention of Jacklin and Maccoby (cited in Tieger, 1980) that males are biologically predisposed to aggressive behavior. In his review, the author argues for an interactional theory of the etiology of aggression. Tieger (1980) and Maccoby and Jacklin (1980) agree that aggression is expressed more frequently by boys than by girls; however, the etiology of this phenomenon is the question.

Maccoby and Jacklin (cited in Tieger, 1980) thoroughly reviewed 94 studies on sex differences in aggression, including data on subjects from age two through adult. Of these 94 studies, 52 showed that males aggress more than females, five showed the reverse, and 37 showed no differences in aggression.

Tieger's (1980) main argument in support of a social learning rather than a biological explanation for this sex-difference rests on the question of whether it has been established for children under the age of six. Tieger (1980) reanalyzed the data (involving samples of children age six or younger) reviewed by Maccoby and Jacklin (cited in Tieger, 1980), using meta-analysis, a technique for examination of generalizations from many studies of a given empirical finding. On the basis of this meta-analysis procedure, Tieger (1980) concluded that the pattern of results in these observational studies of aggression in young children did not meet acceptable significance levels. As there appears to be no reliable gender difference in aggression for children under six, a biological theory of etiology is questionable.

However, in none of over 30 studies of preschoolers reviewed by Maccoby and Jacklin (1980, in a rebuttal to Tieger) were there reports of higher rates of aggression for girls than for boys. This review of preschool children's behavior suggests strongly "that males are the more

aggressive sex and that this sex difference is evident at least as early as the preschool years and continues through subsequent phases of development" (p. 964). In summary, it appears that as far as Tieger (1980) and Maccoby and Jacklin (1980) are concerned, the issue of a biological versus interactional etiology of aggression is still in question.

However, several examples of this difference in aggression between boys and girls at the preschool level have been documented. For example, Langlois, Gottfried, and Seay (cited in Maccoby & Jacklin, 1980) studied two age levels, three and five-year-olds, by observing mixed-sex and same-sex dyads in a playroom. Rates of hitting another child with an object or hand were very low among three-year-olds (averaging less than one incident per session). Among five-year-olds, the boy-boy pairs clearly exceeded all other dyads in frequency of aggressive acts, averaging 16 incidents per 30-minute session.

Jacklin and Maccoby (1978) studied the social behavior of 90 unacquainted 33-month-old children. Observed in a laboratory playroom were 12 girl-girl pairs, 12 boy-boy pairs, and 21 mixed-sex pairs. Aggressive as well as other behaviors were recorded, using definitions for "aggress" and "physical anger" previously detailed. In support of the findings of Langlois et al. (cited in Jacklin and Maccoby, 1978), boy-boy pairs exhibited the highest level of aggression. Girl-girl pairs were next highest. The authors

noted that there were higher rates of overall social behavior observed for children playing with same-sex partners. The authors concluded that even by the age of 33 months, the foundations have already been laid for children to select same-sex playmates when they later enter preschool.

Field (1982) might argue that this same-sex preference in same-age children is due to similarity in verbal fluency. As previously discussed, her observations of preschool children showed that those in mixed-age groups did not show the same-sex preference of those in same-age groups. Given that girls are more verbal than boys of the same age, it may be that girls in a mixed-age group would choose to play with older boys, and boys with younger girls, equalizing verbal ability. When only children of the same age are available, same-sex preferences develop, again equalizing verbal fluency.

Sears, Rau, and Alpert (cited in Maccoby and Jacklin, 1980) report a much higher standard deviation in boys' aggression scores. It may be that there are more boys than girls who are highly aggressive, with the bulk of boys being in the same range as the girls. Similarly, Hoving (cited in Maccoby and Jacklin, 1980) says, "Aggression level interact(s) with sex of the subject, with the difference between high and low-aggressive males being almost twice the difference found in high and low-aggressive females. The

high-aggressive males (are) much more aggressive than the high-aggressive females, with little difference existing between those classified as low-aggressive" (p. 197). This finding will be checked against data for the present study.

CONCLUSIONS AND OVERVIEW OF PRESENT STUDY

It is hoped that the literature review presented here has made clear the following conclusions:

1. Compared to same-age groups, mixed-age groups are more facilitative of the social and emotional growth of preschool children.

2. Children in mixed-age groups tend to interact with peers at a developmental level similar to themselves.

3. Children in mixed-age groups exhibit some cross-age interaction, much of which may be cross-sex, due to No. 2 above.

4. Levels of aggression (or general negative behavior) are greater in boys than in girls.

5. Aggression is highest in boy-boy pairs and lowest in boy-girl pairs.

Although no directly relevant data were available, this literature, coupled with my own observation of preschool children's behavior, generated the hypothesis that there will be fewer instances of negative behavior in mixed-age groups of preschoolers (possibly due to increased cross-sex interaction), as compared to same-age groups,

observed in a naturalistic setting.

An attempt was made in this study to measure the types of negative behavior exhibited by a normal population of three- and four-year-old children. Although the present study was not a replication, it was designed in such a way as to minimize the problems encountered by Lougee et al. (1977). Instead of behavior codes which required high-level observer inferences, resulting in poor measures of reliability, proper sampling procedures and well-defined behavior categories were used. In pilot observations, we found that negative behavior occurred fairly infrequently and quickly, as noted also by Lougee et al. (1970), and Goldman (1981). Sackett (1978) suggests that the use of real time or interval sampling and long observation sessions will increase the chance of detecting infrequent momentary behaviors; both of these procedures have been integrated into the present thesis.

CHAPTER III

METHOD

Facilities

The facility utilized for the present study was a large and well-established private preschool in a suburb of Portland, Oregon.

There are two options available to children at this preschool. The first is called "playschool," which is defined by the school director as a "flexible hours preschool." This program meets daily and is designed for working parents and others in need of a flexible childcare schedule. The age range in "playschool" is from two-and-one-half to five years (the mixed-age group). Children participate on various schedules.

The second option is called "preschool." Preschool for three-year-olds meets two mornings per week, and for four-year-olds, three mornings per week (the same-age groups).

The activities in the mixed- and same-age groups are very similar. All teachers at the school are trained childcare providers. Two of the teachers work with both the same- and mixed-age groups, providing some continuity in teaching style and directed activities. The school director

states that she has made a concerted effort to make the two groups as equivalent as possible.

Subjects

A total of 35 subjects were selected from pre-existing groups of three- and four-year-old children in regular attendance in either mixed-age or same-age preschool classes.

Using Goldman's (1981) definition, classrooms were defined as mixed-age groups if at least 40% of the children were three-year-olds and 40% were four-year-olds at the beginning of the observation period. Children classified as three-year-olds ranged in age from 37 months to 47 months ($\bar{X} = 42$ months). Children classified as four-year-olds ranged in age from 48 months to 64 months ($\bar{X} = 57$ months).

Classes were split almost equally in the number of boys and girls enrolled. Due to dropouts throughout the school year, the three-year-old preschool class had the fewest students ($\underline{n} = 16$, $R = 13-16$, $\bar{x} = 15$). The four-year-old class had the greatest number ($\underline{n} = 24$, $R = 20-24$, $\bar{x} = 23$). The mixed-age group ($\underline{n} = 24$) had a range of 13 to 24, and averaged 20.

Because random assignment to groups was not possible in this setting, a number of techniques were utilized in order to reduce the effect of potential confounding variables between same- and mixed-age groups. Subjects were

selected from a larger pool of children attending on a part-time basis only, operationally defined as from six to twenty hours per week. This procedure was followed because the same-age group in this facility attended on a part-time basis. Subjects in each group were matched as closely as possible for age (within six months), sex (an equivalent number of each sex in each age group), and number of hours in preschool per week. Also considered was total number of months in preschool. In order to assure that the children were all very familiar with the school, teachers and classmates, all subjects chosen had been in attendance for at least eight months (since the beginning of the school year).

All children came from the same middle- and upper-middle-class neighborhood, and had one or more professional parents. Only children whose parent(s) had provided fully informed, signed consent were included in the study.

Behavior categories

An observational code was developed by the principal investigator to measure the amount of negative behavior exhibited by preschool children. Behavior coding categories were defined as follows:

Non-compliance - disobedience (not following teacher instructions), refusing to cooperate (with teacher or another child), not sharing when asked (by teacher or

child), not following established rules of the classroom (e.g., running or gunplay indoors).

Interference - interrupting (teacher or child), taking toy away from another child, grabbing, disrupting or interfering with ongoing activity.

Personal attack - pushing, shoving, hitting person with object or body part, pulling, fighting, kicking, threat of attack (e.g. raised fist over child's head).

Object destruction - breaking, throwing, knocking things down, kicking toys or other objects.

Negative verbalizations - utterances containing one or more recognizable words - insults, blaming, tattling, demanding, whining.

Negative vocalizations - utterances containing no recognizable words - screaming, crying, yelling.

Wastebasket category - any other negative behavior that does not fit into one of the above categories.

A priority rule was established whereby if a negative verbalization or vocalization occurred in conjunction with another codeable behavior, it would be ignored. This became increasingly meaningful as observers discovered that, due to the noise level in the classrooms, verbal output was difficult to hear. It was decided also to combine the negative verbal and vocal categories into an overall negative verbal category as observers often found it difficult to distinguish one from the other.

The wastebasket category was utilized only once during the entire observation period and was dropped from the final analysis.

Group design

Group one consisted of four three-year-old girls, four three-year-old boys, four four-year-old girls, and four four-year-old boys ($n = 16$) who attended the mixed-age class.

Group two consisted of four three-year-old girls and four three-year-old boys ($n = 8$) attending a same-age class.

Group three consisted of four four-year-old girls and four four-year-old boys ($n = 8$) attending a second same-age class.

Also observed were one three-year-old and two four-year-old boys who attended both the same-age and mixed-age groups. Data from these three children were examined anecdotally, as a matter of author interest, but were not combined with that of other subjects.

Procedure

The principal investigator and two co-observers met briefly with each group of subjects to make them aware that there would be observers in the classroom for several weeks "watching their free-play activities." Children were also told that these observers would not be able to interact with them during observation sessions but would be happy to talk

with them at other times. Children were given no other specific instructions as they were not to be aware that they were under individual observation.

Observations were made by the author (the school cook) and two trained assistants (teachers at the school). Observers memorized the observational code and practiced observing for approximately two weeks, then began collecting pilot data. The children were already familiar with the observers as staff members. By the end of the pilot study, they seemed accustomed to our presence in the classroom and virtually ignored us.

Subjects were observed each morning during "free play" time, roughly from 10 to 11 a.m. During that one-hour period, three children could be observed for 20 minutes each. As previously discussed, negative behavior exhibited by preschoolers is infrequent. Thus, the length of observation sessions was set at 20 minutes in order to maximize the chances of observing such behavior. Each child was observed for three 20-minute sessions distributed over an eight-week period (to be described).

Before beginning each observation session, observers recorded the following information on a small, hand-held tape recorder: total size of the group in which the subject was participating, day of the week, subject name, group (same- or mixed-age), and beginning time of observation session.

Observations were made by continuous real-time sampling (Sackett, 1978), also referred to as focal/instantaneous sampling (Blurton-Jones, 1972). Coded behaviors were noted by the observer as they occurred. Time of occurrence and code titles were spoken into the recorder. Tape recorded data were transcribed daily onto data sheets. In this way, data on each subject were kept current and easy to assess.

During each of three 20-minute sessions in the "free play" hour, one child was observed. The observer watched each subject continuously, noting on tape the negative behavior that occurred according to the now memorized observational code. In the mixed-age group, observers also recorded the name of the child towards whom the negative behavior was being directed by the subject in order to obtain a measure of cross-age and cross-sex interaction.

A number of techniques were used to help control for extraneous factors which might influence negative behavior. An attempt was made to vary the time subjects were observed over sessions. The observation sessions available were 10:00 a.m., 10:20 a.m., and 10:40 a.m. (recorded as positions one, two, and three). Each subject was observed once each at position one, two, and three, if at all possible, in order to control for activities occurring in the classroom during those times. Also varied was the day of the week that each subject was observed. For example, children on a Monday,

Wednesday, Friday schedule were observed once on each of these three days, if at all possible. Observation sessions on each subject were separated by a three- to five-day period to help control for mood changes, illnesses, or "bad days," which might result in either extreme negative behavior or withdrawal from the group. Observations of each subject were rotated between observers. Each subject was observed by at least two and sometimes by each of the three observers.

An observation schedule was drawn up weekly, taking into account the above procedural steps, and enabling observers to plan in advance whom to observe, in what order, on what day, and in which group. This schedule, of course, assumed that the children and observers were present on the days and time at which they were scheduled, which was not always the case.

Due to availability of the observers, the bulk (58%) of the independent observations ($n = 90$) were made by the principal investigator. Observer two collected 26% of the data, and observer three, 16%. Of the co-observations ($n = 24$), observers one and two made 44%, observers one and three, 56%.

Reliability

The coding system developed for the present study was the result of much revision and re-definition, before and

during the pilot study. Behavior categories were developed in terms of behavior observed in the facility used. Researchers attempting to utilize this system may need to re-define certain categories in order to make them better fit the facility under study.

Of particular importance is that consensus be reached by co-observers as to precise operational definitions of the specific words used to define categories of behavior. To that end, observers in the present study spent many hours during piloting in "casual" co-observation of children, continually checking each other's perception of behavior exhibited. In this way, observers were able to reach consensus as to what the specific behavior categories meant to them.

In order to obtain an ongoing measure of reliability, two observers conducted four days of simultaneous observations at each of three points during the study, during the second week (the end) of the pilot study, and during the second and sixth weeks of the main study. A final measurement was planned for the last (eighth) week, but was not made, due to unexpected observer absences.

As there were three observers, these co-observations were accomplished by comparing the observations of the principal investigator (observer one) and observer two for two days, and of observer one and observer three for two more days of the same week. This yielded a total of six

observations of subjects per pair of observers per week of
co-observation.

CHAPTER IV

RESULTS

Reliability

Cohen's Kappa (K) was used as an index of inter-observer reliability. Data collected by the three observers at three points during the study (as previously described) were compared in the following manner: observer one with observer two, and observer one with observer three. Values of .64, .58, and .70 ($x = .64$), and .81, .71, and .72 ($x = .74$) were obtained, respectively. As the present study is of an exploratory nature, and Kappa is a rigid test of reliability (Sackett, 1978), the obtained scores were deemed acceptable.

Reliability of individual codes was measured by the percent agreement method, giving a rough estimate of trouble spots, i.e., codes that may have demanded high-level observer inference. Scores for non-compliance and interference yielded the lowest percent agreement at 69% and 61% respectively. Scores for personal attack and negative verbal yielded the greatest, at .93 and .94. Object destruction obtained 75% agreement.

Observational data

Data have been analyzed in terms of the mean frequency

scores of the three 20-minute observation sessions.

Striking differences were found in the range, standard deviation, and variance of the raw scores for boys and girls. Boy's scores had a range of 7.33, variance of 4.94, and a standard deviation of 2.22. For girls, $R = 2.66$, $s^2 = .62$, and $s = .82$. The large difference in variances was tested and upheld using Bartlett's test for homogeneous variances.

Because the analysis of variance (ANOVA) assumption that variance is constant for the groups of boys and girls was violated, a decision was made to perform a square root transformation of the data before subjecting the data to ANOVA.

A three-way analysis of variance was then performed on the transformed data using a 2 x 2 x 2 factorial design (age x gender x group). Significance of the expected main effect for group was not obtained, $F(1, 24) = .36$, $p = .553$. The main effect for age was not significant, $F(1, 24) = 1.52$, $p = .229$ (see Appendix).

Although statistical significance for age was not achieved, frequency of negative behavior appeared to increase between the ages of three and five with the exception of four-year-old girls in the same-age group ($N = 4$) (See Figures 1 and 2).

A highly significant main effect was obtained for gender, $F(1, 24) = 45.85$, $p = .000$. (The gender effect is

illustrated in Figure 3). However, this analysis assumes independence of groups, which is lacking in the present study, as the children in the mixed-age group freely interact with each other regardless of age. In order to carefully qualify the meaning of the significant gender effect, a Rank-Sum test was performed. With a critical value for $T' = 6$, for a one-tailed test at the $p = .05$ level, the Rank-Sum test revealed an ordering of the six group means such that the smaller means all belonged to groups of girls ($n = 3$) and the larger three belonged to boys. Thus the gender effect appears to hold for these data in an analysis that does not depend upon the assumption of independence of observations (using the group rather than the individual child as the unit of analysis).

As these initial analyses revealed no group differences, data for same-age and mixed-age groups were combined. T-tests for independent means were performed on the data for individual behavior codes, comparing boys to girls. As a highly significant main effect had been obtained by ANOVA for gender, significant t-ratios were also expected. However, determination of the rank order of differences between behavior codes was desired. Table 1 presents a complete summary of these comparisons. It appears that boys and girls in this sample differed most in terms of non-compliance ($x_1 - x_2 = .83$), $t(30) = 5.18$ $p = .001$. They differed least on the measure of personal attack ($x_1 - x_2 =$

.33), $t(30) = 2.66$, $p < .01$, possibly due to its low frequency (\bar{x} boys = .53, \bar{x} girls = .04).

A correlated t-test performed on data from the three boys attending both the same- and mixed-age groups yielded a non-significant $t(2) = -1.24$.

As mentioned previously, observers were instructed to note the name of the child towards whom the subject's negative behavior was directed. Only a small fraction of total observed negative behaviors directed towards a specific individual was noted. It was impossible to determine whether this was actually the case or whether it was due to observer neglect. In either case, there were not enough data generated to warrant analysis.

TABLE 1
 COMPARISON BETWEEN BOYS AND GIRLS BY BEHAVIOR CODE

Code	Mean frequencies ¹ Boys	Girls	Mean Differences	t-ratio	df	Level of significance
Noncompliance	.89	.06	.83	5.19	30	.001
Interference	1.50	.41	1.09	4.73	30	.001
Negative verbal	1.08	.22	.86	3.18	30	.005
Object destruction	.54	.02	.52	2.88	30	.005
Personal attack	.33	.00	.33	2.66	30	.01

1 Mean number of responses per 20-minute session

Figure 1: Rates of negative behavior by group and gender

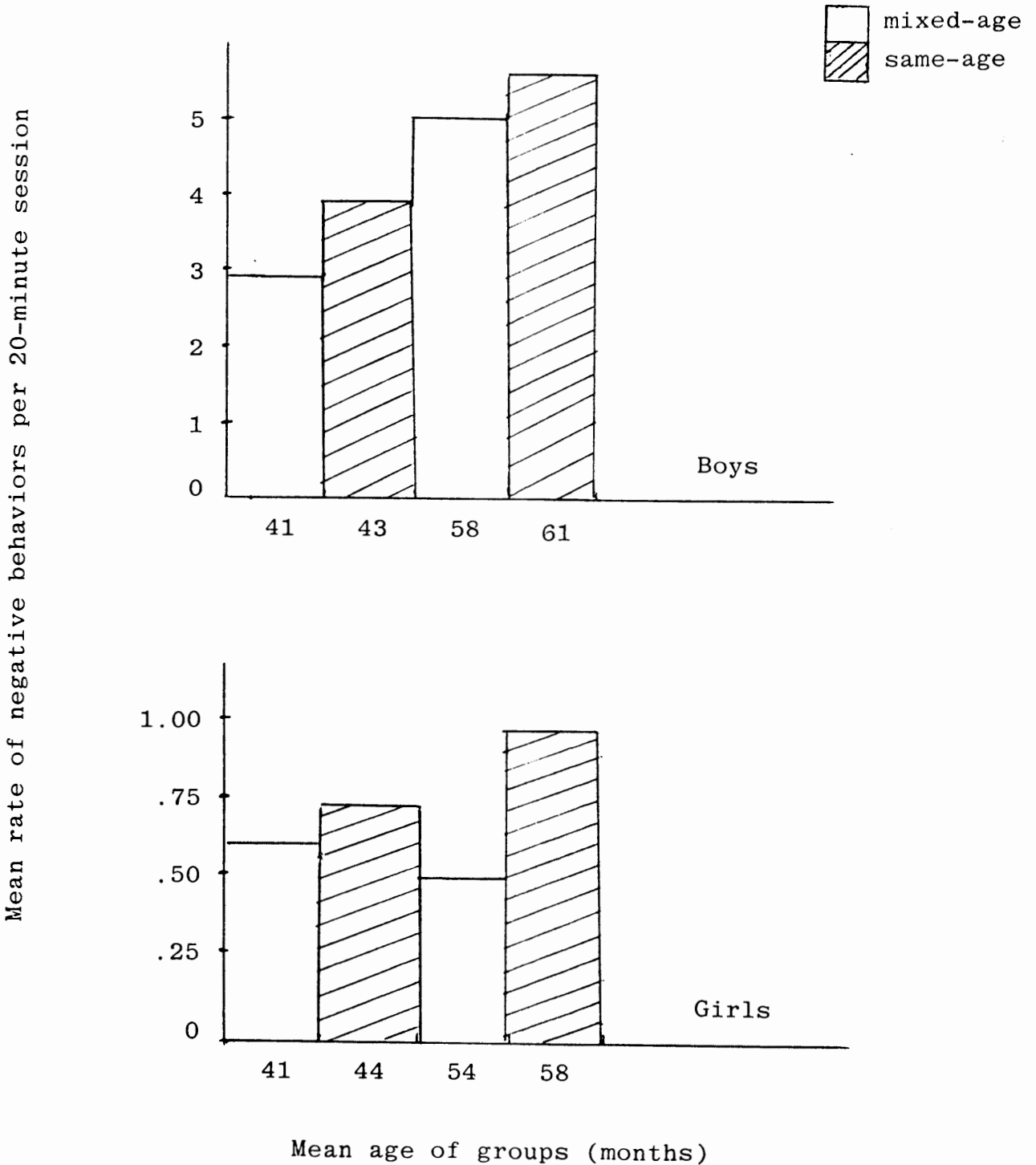


Figure 2: Scatterplot of individual scores by age and gender.

mean number negative behaviors per 20 minute session

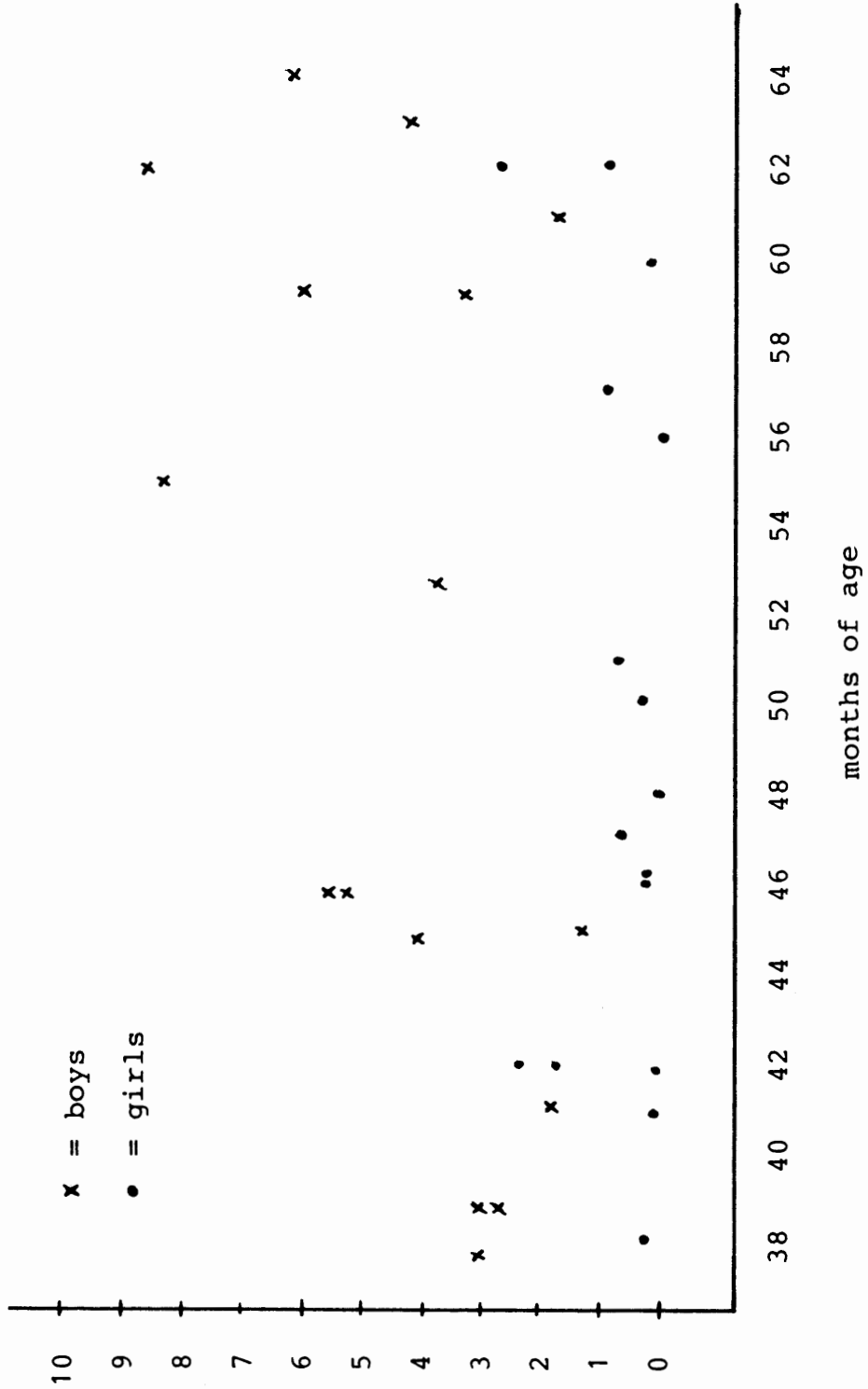
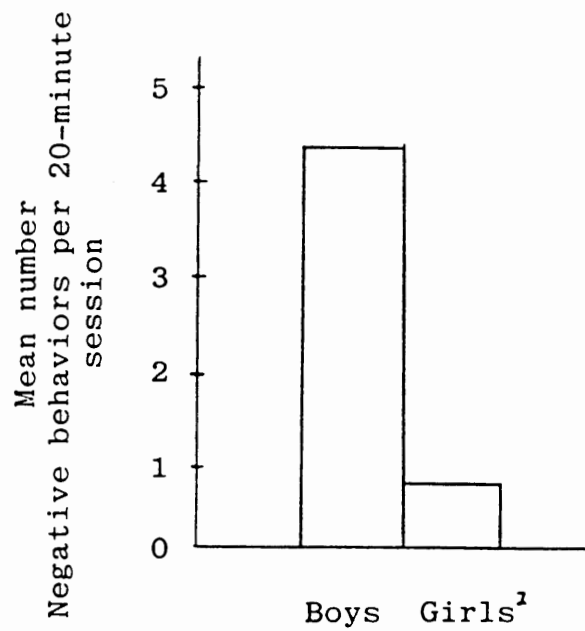


Figure 3: Gender distribution.



¹ n=16, each group

CHAPTER V

DISCUSSION

Because inter-observer reliability coefficients were maintained at acceptable levels across observation sessions and across behavior categories, we can realistically assert that the observational code categories developed for the present study did not require a high level of observer inference, and may be useful in further research involving the naturalistic observational study of preschool children.

Researchers using laboratory and naturalistic methods have had varied success in obtaining significant differences between mixed- and same-age groups of preschool children on a variety of independent measures. The results of the present study did not support the hypothesis that there is an observable difference in the frequency of negative behaviors in children who attend mixed-age versus same-age preschool classes.

It may be possible that altering certain aspects of the design used (e.g., increasing the length of observation sessions and increasing number of subjects) would yield results supportive of the hypothesis. It is also possible that the population sampled (i.e., white, middle- to upper-middle-class children) may not be representative of

the general population of preschool-age children. This group may exhibit lower levels of negative behavior than would normally be expected.

The purpose of this study was to add to the observational literature on aspects of preschool-age socialization. Results presented here do substantiate a large gender effect (which held up during rigorous tests of significance) and are consistent with those of Maccoby and Jacklin (1980) and others, who report that the incidence of negative behavior or aggression is much greater for boys than for girls. As mentioned earlier, Maccoby and Jacklin (1980) have suggested that although a mean sex difference can be clearly demonstrated in studies which they reviewed, the distribution of boys and girls greatly overlap. The authors contend that rates of aggression are actually very low for both sexes, and that most males are seldom aggressive, but are over-represented among the small group of children who are extremely aggressive.

The results of this study do not support that contention, as the bulk of negative behavior scores for males were higher than those of females (with very little overlap of distributions). Rates of aggression among individuals were not extremely high (except for those of two of the older boys), but clearly demonstrated a gender difference, as there were no highly aggressive females.

Hoving (cited in Maccoby & Jacklin, 1980) has

indicated that high-aggressive males are much more aggressive than high-aggressive females, with little difference existing between those classified as low-aggressive. This latter statement tends to be more descriptive of the data obtained in the present study.

Data obtained here may also provide support for Maccoby and Jacklins' (1980) contention that aggression is biologically inherent. Clearly demonstrated here is a gender difference in rates of aggression for children as young as three. However, by this age, much gender differentiated socialization has already taken place. For example, sex role training in females may suppress aggressiveness at a very early age. A child who is told to keep her dress clean on the playground is effectively segregated from rough and/or dirty play activities.

Thus, it is still not certain that boys are more aggressive than girls due to biological factors alone. I would hypothesize that aggression develops out of a combination of biological and interactional factors, and cannot be determined solely by one or the other.

Field (1982) has asserted that same-sex playmate preferences will be observed more frequently when same-age children are grouped together than when children of different ages are grouped together for free-play. This finding, in my opinion, holds great promise in terms of future research in the area of preschool socialization. In the

present study (as well as in several other investigations) aggression was exhibited to the greatest extreme by the older preschool boys. It would follow that any situation which may facilitate cross-sex interaction might decrease levels of aggression in this group; this may be another argument in support of mixed-age preschool grouping.

Although we found quite a difference in the frequency of negative behavior between boys and girls, both groups exhibited roughly the same pattern in the types of negative behavior most frequently observed. The most frequent occurrence was that of interference; next highest, for both boys and girls, was negative verbal; third was non-compliance. In terms of the developmental level of this age group, this pattern of results would not come as a surprise. Children at the preschool level are beginning to gain and test their independence and control over others. Four-year-olds especially tend to be concerned with positions of leadership in a group. Their social behavior seems to be dominated by a need for self-assertion; they challenge each other with name-calling and bragging, and engage in much competitive play. These factors exert an influence on the observed levels of interference, non-compliance and negative verbal behavior.

Personal attack and object destruction were infrequently demonstrated, and then only by the few older boys who contributed the extreme scores to the data. This

supports the previous findings of Goldman (1981) and others, who assert that in a normal population of children, the occurrence of hostile and/or destructive behavior is rare.

A more recent study by Roopnarine and Johnson (1984) focused on childrens' rates of dispensing and receiving positive and negative behaviors in a mixed-age group of preschoolers, kindergartners and school-age children. Negative behavior rates were not discussed in detail. However, it appears that rates of negative behavior were very low, except among kindergartners. The authors contend that the higher rates in this group were due to a greater number of boys in the kindergarten class.

The findings indicated that the mixed-age setting produced different patterns of interactions among the three groups of children, as has been previously documented. The preschoolers in this group showed a tendency to interact more frequently with kindergartners than with either preschoolers or school-agers. The kindergartners interacted more frequently with other kindergartners, and the school-age children also showed a preference for age mates during social interaction.

Roopnarine and Johnson (1984) concluded that age rather than gender was the major factor influencing playmate selection. These findings are incongruent with those of Goldman (1981), who contended that sex rather than age is the salient factor determining choice of playmate within

groups of three- and four-year-olds.

It may be that age is a major factor influencing playmate selection among children who are more heterogeneous in terms of age whereas gender might be more important among children who are more homogeneous in terms of age (Roopnarine & Johnson, 1984). This hypothesis has yet to be documented, however, the above authors indicate an article in press regarding this subject.

Unfortunately, limitations of the present thesis prevented data collection on the age and gender of play partners, at least in terms of negative behavior. Either the negative behavior observed was not directed towards another individual very frequently, or else observers tended to omit that information from their reports. In any case, further research should address this issue and take cross-sex interaction into account when studying groups of preschool children.

In summary, there have been various outcomes to research involving the observation of preschool children in mixed- versus same-age groups. However, there has been much data presented in support of mixed-age socialization. For example, researchers have shown that the presence of younger children may foster the development of communicative and social skills (Allen, 1978; Furman et al., 1979), caretaking and nurturing behaviors (Whiting & Whiting, cited in Furman et al., 1979), and prosocial behaviors (Furman et al., 1979)

in older children. Similarly, it can be argued that younger children in a mixed-age group are exposed to a more socially diverse peer group, and to older and more competent peers. Thus, younger children may have the opportunity to learn social and cognitive skills through peer tutoring and through the observation and imitation of older children's behavior (Allen, 1978; Goldman, 1981; Roopnarine & Johnson, 1984).

Mixed-age groups may also foster an attitude of interdependence among children, and provide them with an opportunity for successful interaction with others who may differ from them in age and gender.

Further research might include a longitudinal study of children in mixed-age versus same-age classrooms, to test for the interplay of individual maturation (developmental differences between girls and boys) and reinforcement contingencies in the development of same-sex preferences. In addition, future researchers might do well to concern themselves with the increase of cross-sex interactions and its impact on the reduction of the development of aggression in boys.

In 1970, Urie Bronfenbrenner (cited in Allen, 1978) stated, "we are coming to live in a society that is segregated not only by race and class but also by age (and sex)" (p. 10). The trend in this decade towards the mixing of ages at the preschool level may be one step towards the

development of a more heterogeneous society, in which individuals will feel free to interact across the age, race, class and gender barriers still in existence today.

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APPENDIX

MEAN FREQUENCY SCORE AND AGE OF EACH SUBJECT BY SEX AND GROUP

	BOYS				GIRLS			
	Three-year-olds	Four-year-olds	Three-year-olds	Four-year-olds	Three-year-olds	Four-year-olds	Three-year-olds	Four-year-olds
	score ¹	age ²	score	age	score	age	score	age
<u>Mixed-age</u>								
<u>group</u>								
	3.00	38	3.66	53	.33	38	1.00	62
	1.66	41	1.66	61	2.33	42	2.66	62
	4.00	45	8.33	55	.00	42	.33	60
	2.66	39	6.33	64	.00	41	.00	48
<u>Mean</u>	2.83	41	5.00	58	.66	41	1.00	54
<u>Same-age</u>								
<u>group</u>								
	1.33	45	4.33	63	.33	46	.66	51
	3.00	39	3.33	59	1.66	42	.33	50
	5.66	46	5.66	59	.66	47	1.00	57
	5.33	46	8.66	62	.33	46	.00	56
<u>Mean</u>	3.83	43	5.50	61	.75	44	.50	58

1 mean frequency of negative behaviors of three observation sessions
 2 age in months

BARTLETT'S TEST FOR HOMOGENEOUS VARIANCES

(before data transformation)

Num DF = 7, Den = 576

F = 1.95, Significance level = .059

(after data transformation)

Num DF = 7, Den = 576

F = 0.55, Significance level = .794

ANALYSIS OF VARIANCE SUMMARY

Source	DF	SS	MS	F	Sig Level
Total	31	22.44262			
Age	1	0.46281	0.46281	1.52310	0.22910
Gender	1	13.92969	13.92969	45.84217	0.00000
Group	1	0.10996	0.10996	0.36189	0.55310
Age x gender	1	0.35387	0.35387	1.16457	0.29125
Age x group	1	0.16034	0.16034	0.52766	0.47462
Gender x group	1	0.04615	0.04615	0.15189	1.00000
Age x gender x group	1	0.08712	0.08712	0.28670	0.59727
Error	24	7.29268	0.30386		