Effects of age and sex on proxemic behavior in same-sex dyads

Rita Flanagan Elander

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THE EFFECTS OF AGE AND SEX ON PROXEMIC
BEHAVIOR IN SAME-SEX DYADS

by

Rita Flanagan Elander

B.A., University of Montana, 1976

Presented in partial fulfillment of the
requirements for the degree of

Master of Arts

UNIVERSITY OF MONTANA

1979

Approved by:

Chairperson, Board of Examiners

Dean, Graduate School

6-1-79

Date
ABSTRACT

Rita Flanagan Elander
Interpersonal Communication

The Effects of Age and Sex on Proxemic Behavior in Same-Sex Dyads

Director: Dr. Duane D. Pettersen

The research reported in this paper has to do with the nonverbal area of communication known as personal space -- that area surrounding individuals which cannot be invaded without causing discomfort, antagonism or flight, unless, of course, both individuals have agreed on a closer positioning for a specific reason. Personal space has been shown to vary from race to race, culture to culture, and has also been shown to vary in the areas of age and sex.

In this study, trained observers observed and recorded measurements of spatial behavior by same-sex dyads of three and four year old children, and same-sex dyads of young adult college students. All subjects were engaged in the same activity, and were observed for approximately the same length of time.

It was hypothesized that the three and four year old dyads would interact significantly more closely to each other than the young adult dyads, and that female dyads would interact significantly more closely than male dyads. These hypotheses were derived from previous research in many areas.

Support was obtained for the first hypothesis. Age showed a statistical main effect. Sex, however, was not a significant factor. This was due in part to the significant interaction effect found between age and sex.

Further research was suggested to more clearly document developmental stages of spatial-norm acquisition.
ACKNOWLEDGMENTS

The writer would like to express her gratitude and appreciation to the faculty members at the University of Montana and Montana State University. The Co-Directors of this thesis, Dr. Duane Pettersen and Dr. Jim DiBerardinis, deserve special thanks, not only for the excellent guidance in the research and writing, but also for the extra effort involved in pioneering the Co-op Program.

Thanks are also extended to Dr. Del Sampson for his patience and thought-provoking comments and help. Dr. Ken Bryson, too, was an invaluable source of support and guidance. Also, deep appreciation goes to my proofreader, morale booster and confidant, Joyce Tone.

My husband, Eric, because he believed in me, is probably the main reason this thesis is completed. At times, it took a lot of believing.
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CHAPTER I
REVIEW OF LITERATURE

Overview

Virtually everything man is and does is associated with the experience of space.
--Edward Hall

Theory and research from a variety of disciplines and viewpoints attest to a growing realization that human communication is accomplished paralinguistically and nonverbally as well as linguistically (Beach 1972). The nature and impact of interpersonal distance has been emphasized across these disciplines under the broad heading of nonverbal communication. The concept of personal space has roots in the work of ethologists who have studied the natural life and habits of animals for years (Altman 1975).

The present study was designed to investigate the effects age and sex have on personal space. The research to be reported in this paper involved comparing spacing differences in three and four year old children as compared to young adults, and also comparing spacing differences between males and females in each of those groups.

Another term for personal distance is "proxemics". The term was coined by the anthropologist, Edward Hall, noted for his contributions to the investigation of territoriality, personal space and other behavioral aspects related to proxemity. Proxemics is concerned with
the ways people arrange or position themselves spatially. Hall himself defines the term as the interrelated observations and theories of man's use of space as a specialized elaboration of culture—the study of how people unconsciously structure the distance between themselves in conduct or daily transaction, in living arrangements, and in the overall spacial patterns in their towns and cities (Hall 1963).

Robert Sommer (1969) reflects two uses of the term "personal space" in his book by the same name: the first refers to the "emotionally charged zone around each person, sometimes described as a soap bubble or aura, which helps regulate the spacing of individuals" while the second refers to the ways people mark out and personalize the spaces they inhabit, such as office arrangements or room decorations. The first of these definitions is the one this study will concern itself with. Ervin Goffman refers to this zone around each of us as vehicular space, while Gerald Miller calls it our "psychic corset". This area is marked out by invisible boundaries which intruders may not violate without arousing negative reactions in the person. "Like the porcupines in Schopenhauer's fables, people like to be close enough to obtain warmth and comradeship, but far enough away to avoid pricking one another." (Sommer 1969).

Hall has specified eight dimensions of personal space. These dimensions have to do with parts of the body rather than feet and inches to delineate various distances between people. This is illustrated on the next page by a figure taken from Hall's work (Hall 1963).

Hall identifies cultural learning as a variable that has a bearing on personal space. The realization that people from varying cultural
Figure 1. Hall's Eight Dimensions of Personal Space

(Hall 1963)
backgrounds learn to define and utilize geographic space differently occurred relatively recently. O. Michael Watson (1966) found this to be true in testing Hall's observations of Arab spacing as compared to American spacing. David Thomas also supported this in his study of spacing with rural Indians and Fijians in 1974. Culturally differentiated groups tend to prefer different spacial arrangements in social interaction (Baxter 1970).

Experiments from such diverse realms as counseling sessions, family interactions, classroom exchanges and business interviews have shown significant effects, usually negative, when personal space was invaded. In a study on degree of client comfort as a function of dyadic interaction distance, Knight (1976) found that clients had a specific limited range in which they were most comfortable. In an earlier study, Sommer and Felipe (1966) demonstrated that spacial invasions are disruptive and can produce reactions ranging from flight to antagonistic display.

In an observational study, Baxter (1970) found that both participants in dyadic conversations contribute to establishing and maintaining their desired spacial arrangement. He said that observing the subjects' interactions led quickly to the impression that the spacing process is intricate, with both parties conjointly defining the space. As soon as one member leaned too close, or too far away, the other smoothly compensated. Apparently, this spacing process proceeds outside awareness for the most part, and usually operates smoothly and rapidly. Inappropriate spacing may leave the participants viewing the encounter as quite unsatisfactory.
Birdwhistell (1970) has suggested that awareness of culturally defined patterns of informal space is acquired early in life, though the exact age has not yet been determined. Most research and theory in this area pertains to adult forms of proxemic behavior. Very little has been done to specify the age and processes by which proxemic behavior becomes established (Beach 1974). Mark Knapp (197) hypothesizes that in early life, words accompany touch until the child associates the two. Eventually, language largely replaces touch. As they do, intimate closeness is gradually replaced by distance. This distance, once established and reinforced, becomes personal space (Peregoy, 1978).

Previous researchers have noted that interpersonal distance seems to increase with age, at least to young adulthood, regardless of culture (Baxter 1970, Argyle and Dean 1965). Various explanations have been offered for increases in interpersonal distance as individuals approach adulthood. Heshka (1972) suggests that changes in dependency behavior occurs with increased maturity. As the child grows, certain types of dependent behaviors are discouraged while independence is encouraged. Increased skills facilitate mastery of the environment, which also reinforces independent behavior. Perhaps more importantly, children strive to imitate parents and teachers, who serve as cultural models for appropriate interpersonal spacing.

A study on individual consistency in the proxemic behaviors of preschool children found support for the idea that personal space is a relatively stable individual characteristic which has its roots quite
early in development (Eberts and Lepper 1975). While the data are not extensive, they suggest that the process of learning self/other boundaries and controls begins early in the socialization process. By adolescence the personal space boundary system is probably well established (Altman 1975).

William Blum (1973) in a study of comfortable interpersonal distance and locus of control among selected groups in Israel, replicated previous findings relating the factors of race and age to interpersonal distance. Evidence for the capacity for positive change was obtained, particularly at younger age levels.

Another factor related to personal distance is sex. In modern society, sex differences and perceived sex differences are continually investigated (Tone 1976, McCroskey 1975). Guardo and Meisels (1971) compared boys and girls ages eight to sixteen. They found significant male/female differences at different age levels. Jones and Aiello (1973) found sex differences in directness of orientation and stated that the differences seemed to be established rather firmly somewhere within the elementary school years. These two studies will be examined more closely in the next section of this paper. Various sexual differences in personal spacing have been found, with females generally more at ease in closer circumstances than males (Simmons 1974, Ross 1973).

Further investigation of proxemic research would appear from these and numerous other studies to be necessary and quite useful (Lyman 1967, Little 1965, Sherer 1974, Duke 1974). Many promising implications can
be identified for areas such as interpersonal and intercultural communication, counseling, social processes and environmental design. Daily experiences in public buildings and conveyances may well subject us to stressful invasions of our personal space. Further knowledge of man's spatial requirements and understanding of our behavior is urgently needed (Barash 1973).

Comparative Discussion of Three Exemplary Studies

This section of the literature review will contain a brief explanation of three studies that had significant influence on the design and implementation of this thesis. The specific methodology and results of each study will be reported.

The first study to be discussed was conducted by Jones and Aiello (1973), who have worked in the area of children's proxemic behavior for a number of years. This particular study compared spacing behaviors of blacks and whites in three different grade levels. Same-sex dyads were used, and the teachers were asked to pair the children with friends.

Two rater-observers were trained to judge distance with Hall's distance delineations. Children were brought into the room where the observers instructed them to decide upon their mutually favorite advertisement and later be ready to act it out. Every twenty seconds, the spacing and axis position of the dyad was judged.

Blacks were found to stand closer than whites in the earlier grades, but this difference disappeared by the later grades. Whites oriented themselves more directly throughout, but the difference was less in the later grades.
In discussing the role of space in social interaction, Patterson (1978) points out that methods of studying spacing behaviors that most closely approximate the "real world" are the most externally valid. It is apparent that Jones and Aiello took this into consideration in designing their study. The judges resembled the students' teachers in behavior and age. The students were enthusiastic about their task and did not seem at all intimidated or suspicious. Males and females have been shown to differ in proxemic behavior, so the authors' took this into consideration by using same sex dyads. Jones and Aiello controlled for potential effects of varying degrees of acquaintedness by asking the teachers to pair the children with friends.

Age, sex and race were all considered in the study by Jones and Aiello, while in the present study, only age and sex were included. However, much of the methodology in designing this research was guided by the methodology, reasoning and variable identification used by Jones and Aiello and other similar investigations.

One difference between Jones' and Aiello's study and the present study is in the area of spacial measurement. Jones and Aiello stated that they used Hall's system of notation rather than feet and inches to alleviate the body size factor in spacing. In attempting to follow this pattern, a number of substantial problems arose. First, since the research involves very young children whose arms are not in the same proportions as adults, the arm length system is not an equal measure across ages. One category denotes much more space than another category.
The third problem involved training observers. Live dyads and video taped interactions were employed to train observers. A reliability score of .54 was the highest score achieved after three hours of training. Because of these difficulties, it was determined that feet and inches served as a more accurate and expedient form of measurement for the purposes of the author's research.

A study of adult proxemic behavior in an interview setting was conducted by McCroskey and Rosegrant in 1975. They used a total of 240 subjects, sixty black males, sixty white males, sixty black females and sixty white females. The confederate interviewers represented each category.

Subjects were told they were participating in short political interviews, and that the interviewers were volunteer workers. The interviews only lasted about five minutes. The subjects were allowed to place their chairs where they wanted to in relationship to the interviewer's chair. Measurement of the spacing was obtained by observing a taped grid on the floor.

The taped grid used to measure spatial behaviors in the study seemed a more accurate, concrete way of determining distance, so an adaptation of the grid procedure was used in the present study.

The results of their study indicated that the sex of the interviewer, sex of the subject, and race of the interviewer were all significant in influencing proxemic behavior. Males generally chose to place themselves further away, and black females placed themselves closest of all.
In a study of the factor structure of children's personal space schemata, Guardo and Meisels (1971) found significant male/female and age differences. They used a method where children placed figures together on paper according to various situations and relationships that were described. Their results corresponded with a number of other studies, but their methodology was not as reflective of real life as the other studies discussed, and therefore, according to Patterson (1978), not as externally valid.

The authors found that females in general had significantly greater consistency of placement throughout, and were especially advanced in the earlier grades as compared to males. They postulated that perhaps this may reflect earlier and greater sensitivity to social conditioning on the part of females. This idea will be further discussed later.

The authors did not reveal their reasoning for not starting at kindergarten age rather than third grade. It seems that three years in the school system would have equalized many differences or heightened them. Since the study dealt with progressive changes over time, it would seem appropriate to include why this particular age was chosen as the starting point.

These three studies discussed provided insight and ideas to the designing and implementing of this thesis, both in their strong points and also in their weak or unexplained areas. While numerous other studies were also included in this process, these seemed most representative.
General Hypotheses

The intention behind the design of the present study was not to cover new ground. The hypotheses have been derived from results obtained in many studies with strong similarities to this one. It is hoped that the results will shed light on the degree of cultural assimilation of spacial norms achieved by three and four year old children as compared to nineteen and twenty year old adults. Sexual differences in proxemic behavior will be observed in each group also.

The specific hypotheses are as follows:

$H_1$ Three and four year old children will interact significantly closer to each other than nineteen and twenty year olds.

$H_2$ Female dyads will interact significantly more closely than male dyads.

As the literature review reveals, these are expectations based on the results of many studies which found significant differences in the hypothesized directions. The uniqueness of this study lies in the use of very young children, and in the direct comparison of children to adults.
CHAPTER II
RESEARCH DESIGN

No single research technique is sufficient in scope to investigate a complex, multidimensional subject like proxemics.
--Edward Hall

The research study described here did not involve the manipulation of experimental variables. Rather, it involved observing proxemic behaviors of subjects, and then statistically comparing the differences in behaviors between males and females and between pre-school and college students.

Sampling Procedure

The subjects selected for the present study were selected primarily because of the age groups they represented. Subjects included thirty male three and four year olds, thirty-six female three and four year olds, thirty-two female college students and twenty-eight male college students. The age of the college students varied from eighteen to the late twenties. Most researchers agree that proxemic behavior is relatively stable in young and middle age adults (Altman 1975, Blum 1974, Mishara 1974), so it was not deemed necessary to ascertain the exact age of each subject in the young adult category of the present study.
Pre-school directors in the Bozeman area were contacted by telephone and the general study and research needs were explained. If the director felt willing to consider the involvement of his or her pre-school, then an appointment was made to further explain the present study. None of the pre-schools contacted refused to be involved, so four were selected because of the following characteristics:

1 - an empty, comfortable room available for the observations;
2 - a large number of children from varied backgrounds attended the school;
3 - scheduling was flexible enough to allow the research project to be included without disrupting the routine.

The instructors at the pre-schools were briefed on the study before the actual observations took place. They were asked to exclude any child who had reached his or her fifth birthday. They were asked to send the children who qualified in to the observation room in same-sex dyads. Same-sex dyads were used throughout the study, as it would have required a much larger sample to make adequate comparisons of mixed-sex dyads to male dyads and female dyads.

Another interactant characteristic (Watson 1972) that has a bearing on proxemic behavior is the degree of acquaintance of the participants. For this reason, the instructors were asked to pair the children with partners who were compatible and relatively well-acquainted, though not
best friends. Since it would be extremely difficult to assess the
degree of friendship much more closely than this, the enactment of
those instructions was left completely to the instructor's discretion.

The college students were selected from students enrolled in an
Introductory Speech Communication class in Bozeman. The class was
structured so that the students had been working in small groups
together for eight weeks prior to their involvement in this study. The
instructors sent the students to the observation room in same-sex
dyads, but the students themselves chose their own partners. It was
assumed that students would pair themselves with acquaintances from the
class with whom they felt at least some degree of compatibility.

In previous studies (Willis 1966, Heshka and Nelson 1972) the
degree of acquaintance and its effects on proxemic behavior was measured
in terms of strangers, acquaintances and close friends. The primary
focus of the present research is upon sex and age differences as they
effect proxemic behavior. The classroom environment has people that
would largely fall in the acquaintance category, so the subjects used
were neither strangers nor best friends. This control seemed sufficient
because it is the two extremes, i.e. intimate friends and strangers,
that yield significant proxemic differences when compared rather than
the broad acquaintance category.

Data Collection

Observations were conducted over a three week period in the months
of February and March, 1979. Trained volunteers who were unknown to the
subjects collected the observational data. The sex of the observers was kept constant so that this would not be a variable, as a much larger sample would have been needed to include the sex of the observer in the study.

The volunteer observers were required to attend four training sessions before beginning the actual observations. Video-taped interactions of both children and adults were used initially. In larger sessions, live dyads were used. The last five interactions were scored to test inter-rater reliability. The scores ranged from .95 to .97 with an average of .95.

A time interval of twenty seconds between proxemic judgments was used. This time interval corresponds with that used in numerous other proxemic studies (Jones and Aiello 1973). Observers used prepared data sheets (see appendix C) to record the distance each twenty seconds. Readings were taken for a maximum of five minutes. Any dyads that completed their viewing in less than three minutes were not considered.

The task devised for subjects to engage in while proxemic behaviors were observed was difficult to decide upon. It had to be one that would interest a wide span of ages, and stimulate each to remain involved for at least five minutes. It also had to be a mobile activity, since five locations were used. Baxter (1970) conducted an observational study at a large zoo. Viewing animals or other objects of common interest seems to have universal appeal, so it was decided to have some form of art object to ask dyads to view.
The art object chosen was a soft-sculpture quilt. It had numerous detachable parts and scenes. It was stretched on a frame and placed at eye-level on a table for each group.

As stated before, the room size was kept as constant as possible. The set up and observational angles were also carefully kept constant (see graph #1 below).

The judgment of the distance between the subjects was made by the use of a large carpet placed in front of the quilt. Other pieces of the same carpet were placed in other areas of the room to distract from the real purpose of the carpet. The carpet had six inch squares on it that the observers could easily count. The number of squares apart the subjects were standing was recorded. Half-squares were the smallest unit used, which was the equivalent of three inches. The use of
markings on the floor was also used in other proxemic studies (McCroskey and Rosegrant 1975). It provides a reliable, easily discernable way to assess spacing.

The subjects were informed prior to their involvement that the project involved viewing an art object and reaching a consensus on descriptive words about that art object. The subjects were met at the door by the observers, who worked in pairs. The observers then told the subjects a paraphrased version of the following:

"Hello. Thank you for being willing to view our art project. We are members of a group of art and communication students and are writing a paper on people's reactions to a quilt we made. Please look the quilt over for the next five minutes, and then we will ask you for some words to describe how you feel about the quilt. Don't worry about the time. We will tell you when the time is up."

After this introduction, the subjects walked over to the quilt and began viewing it. The observers seated themselves and began timing. One observer timed, and the other recorded the proxemic placement at each twenty second interval. Neither the pre-schoolers nor the college students raised any questions or objections. It seemed to be an appealing task and believable endeavor for each group.

The two hypotheses, (1) that the younger children would interact significantly closer than the adults, and (2) that females would interact significantly closer than males, were not known by the observers.
Statistical Analysis

A multiple analysis of variance was employed in this study. Analysis was performed on the dependent measure of proxemic behavior as determined by the number of squares recorded by the observers for each dyad.

Statistical analysis of mean scores of the spacing distance of each designated group were compared with the multiple analysis of variance. The purpose of this test was to determine if any significant variance between the designated groups--three and four year olds with young adults, and males with females--could be identified.

An analysis of variance comparing the mean distance score for each group at each twenty second interval was also run. The purpose of this was to obtain descriptive data on the general pattern of movement throughout the five minute observation.
This chapter reports the statistical analyses of the data collected. The .05 level of significance was required and is reported. As stated earlier, the purpose of the study was to assess some of the effects of age and sex on proxemic behavior. Therefore, the specific objectives involved were to: (1) measure the variance between three and four year old spacing choices and young adult spacing choices, and (2) measure the variance of spacing choices between males and females in each age group.

Analyses of variance as displayed in the following tables, revealed a significant main effect for age and a significant interaction effect between age and sex. No significant effect for sex was found.

Hypothesis #1: Three and four year old children will interact significantly closer to each other than young adults.

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
<td>1228.9</td>
<td>1</td>
<td>1228.9</td>
<td>16.965*</td>
</tr>
</tbody>
</table>

*significant at .05 level, F (1, 60) = 4.00

19
Hypothesis #2: Female dyads will interact significantly closer to each other than male dyads.

TABLE 2

Effects of Sex on Spacing Choice

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
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<tbody>
<tr>
<td>Sex</td>
<td>9.057</td>
<td>1</td>
<td>9.05</td>
<td>.125*</td>
</tr>
</tbody>
</table>

*not significant at .05 level, F (1, 60) = 4.00

TABLE 3

Interaction Effect of Age and Sex on Spacing Choice

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
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<tr>
<td>Age and Sex</td>
<td>348.7</td>
<td>1</td>
<td>348.7</td>
<td>4.814*</td>
</tr>
</tbody>
</table>

*significant at .05 level, F (1, 62) = 4.00

Table 1 indicates a significant F-value for the variable of age. Table 2, however, reveals no significant effect. The amount of variance accounted for by the sex factor was no greater than that occurring by chance, so the null hypothesis can not be rejected. Possible reasons for this finding will be discussed in the following chapter.
Table 3 reveals a significant interaction effect between age and sex. The figure below illustrates the direction of the interaction.

The computed mean (X) score representing the average number of six-inch blocks between members of the dyads in each group are displayed in Table 4.

<table>
<thead>
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<th>TABLE 4</th>
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<tr>
<td>Mean (X) Score Values for Each Group</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Preschool</td>
</tr>
<tr>
<td>Young Adult</td>
</tr>
</tbody>
</table>

1.00 = 6 inches
As is apparent from the table, pre-school males had an average distance between them of .97 of one block, or 5.9 inches, while young adult males averaged 2.38 blocks or 14.4 inches. The females from each group fell between these two extremes. Pre-school females averaged 1.34 blocks or 7.8 inches, and young adult females averaged 1.78 blocks or 10.8 inches.

Additional Descriptive Data

The computed mean (X) scores (1.0 = 6 inches) for each group at each twenty second interval are shown in the table and figure that follow.

### TABLE 5

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Pre-school female (N=18)</th>
<th>Pre-school male (N=15)</th>
<th>Young Adult female (N=16)</th>
<th>Young Adult male (N=14)</th>
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<tbody>
<tr>
<td>20</td>
<td>1.6</td>
<td>1.2</td>
<td>1.6</td>
<td>2.3</td>
</tr>
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<td>40</td>
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1.00 = 6 inches
Time is based on 20 second intervals from 0 to 5 minutes.

\( X \) = young adult males
\( 0 \) = young adult females

--- = pre-school female
---- = pre-school male

Figure 3. Illustration of Mean (\( \bar{X} \)) Scores at Twenty Second Intervals for Each Group.
Chapter IV
Discussion and Implications

Discussion

This study was designed to expand the boundaries of numerous research studies already conducted in much the same areas. There are two ways in which this study has expanded the area currently covered by research: direct comparison across adult-child barriers and the use of younger children than the author found reported used in any studies located in a relatively extensive literature review.

A number of researchers have investigated spacing patterns through progressive grades in school (Guardo and Meisels 1971, Aiello and Jones, 1973, Altman 1975). Their results have shown that older children space themselves further apart in interactions. By comparing very young children directly to young adults, further clear support was given to these findings. In effect, the present study took the far ends of the progressive age levels of the past research and compared them, finding, as hypothesized, that age has a significant effect on spacing. The significance found has to take into consideration the significant interaction effect. Males varied much more than females (see Fig. 2).

Research has also shown more stable spacing patterns in females than males at any given age (Eberts and Lepper 1975). The present research found less variance between pre-school females and young adult
females than between pre-school males and young adult males. This would perhaps suggest that three and four year old females are starting to space themselves more like their adult counterparts than three and four year old males. It has been suggested that the reason for this earlier stabilization of female spacing results from an earlier training process for females in our culture, or perhaps earlier receptivity on the part of the female to an overall training process in appropriate spacing in the given culture (Altman 1975).

It seems probable that the interaction effect found in the data analysis in this study should be considered for its effects on the other findings. Pre-school males stood the closest of any of the dyad groups involved, while the adult males stood furthest apart. Adult females stood closer than adult males, which replicates findings from numerous other studies (McCroskey 1975, Simmons 1974). However, pre-school females placed themselves further apart than pre-school males. This resulted in the male/female variable in the present study to be non-significant, which is an uncommon finding in previous proxemic studies.

To the author's knowledge, the subjects in the pre-school group were younger than most of the children studied in proxemic research to date. While preparing for the research, pre-school directors were interviewed for their opinion on a cut-off point in terms of age for the pre-school subjects. The directors agreed that there was a marked difference between three and four year old males and most five year old males. In the director's opinions, five was a noticeable turning point
for males in terms of touching and approachability. While three and four year olds would often sit on the instructor's lap or hold hands with other three and four year olds, these behaviors mostly disappeared by five, according to the directors.

The earlier social development of females (Eberts and Lepper 1975) may account for the smaller difference found between the pre-school female and the adult females. Even by the ages of three and four, females have begun to space themselves according to the guidelines considered appropriate in their culture. A little later, around five or six, this socialization process begins to develop in males (Aiello and Jones 1973), and eventually teaches males to interact even further apart than adult females, as supported in the present study.

**Implications**

**Methodological Considerations**

There are a number of possible changes and improvements that seem relevant to mention. A larger cell size for each category would allow for more generalized interpretation of the results, as would randomization of subjects.

While observer reliability was high for the present research, video-audio taping would have yielded much more information than is possible in a one-time observational set-up. Factors such as amount of conversation and instances of actual touch, could have been taken into consideration, allowing for the measurement of interactions among a number of dependent variables simultaneously.
The use of an art object as a stimulus, turned out to be a very satisfactory activity, in terms of general appeal. However, the results have to be interpreted in terms of that specific activity. The subjects were directing their attention to an object rather than to each other. Most of the subjects touched the art object and conversed about it. The results seem to be appropriately reflective of proxemic behaviors while dyads engage in watching or doing something together side by side.

Plainly marked carpeting seemed to be a reliable method of measuring space between subjects (inter-rater reliability, r = .95). The observers judged by counting the number of squares between the inside foot of each subject. Most of the time, this was an accurate measure of trunk placement, but not always. In a few instances, the observers noted extreme leaning behavior on the part of the subjects, so the main parts of their bodies were actually a different distance than the feet-measure indicated. This is one problem area that videotaping could alleviate, by allowing the researcher to stop the film later and estimate true trunk spacing.

The observations took place in different rooms for different groups of subjects. Although this has some obvious control disadvantages, it seemed expedient to conduct the observations in a room that would be familiar for the pre-schoolers. Otherwise, the newness of the setting may hold the potential of creating shyness in the children. The usual clinging behavior that could result would have marked effects on the study. As it was, the children participated eagerly, with no sign of shyness or reluctance to be involved.
Possible Directions for Further Research

It seems possible that the present research has located a crucial age for males in terms of changes in spacing behaviors toward adult norms. Replication of research with this age group and slightly younger and older groups could potentially uncover transitional trends in females and more clearly document proxemic changes in males.

The development and solidifying of proxemic norms are at this point, incompletely located and understood. The present study dealt with three and four year olds as compared to young adults. Further studies using intermediate ages and perhaps even extending the boundaries in either direction could yield greater insight into the acquisition of spatial norms.

Another factor that should be considered in looking at the results of the present study is that all of the children observed attended a pre-school. Many three and four year old children do not attend preschool. Perhaps, the socialization process involving spacing norms may be developed differently by attending pre-school and being exposed to other children of varying ages. Schools may de-emphasize male/female differences, thus potentially causing less significant spacing differences between males and females. It is difficult to predict the direction of the effect pre-school attendance would have on the significance of age on spacing behaviors; however, the author feels that studies in this area would add needed dimensions to the current knowledge of spatial norm acquisition.
It was the intent of this study to measure the effects of age and sex on spatial choices in same-sex dyads. Thirty-six three and four year old females, thirty-three and four year old males, thirty-two young adult females and twenty-eight young adult males were observed in same-sex dyads.

Each dyad was asked to view an art object for five minutes in order to give their opinion of it at the end of the viewing. Two trained observers recorded the spatial behavior of the dyads by counting the number of six-inch squares the two stood apart. The squares were marked on a large carpet placed in the room. The judgments on distance were made every twenty seconds throughout the five minute observation.

It was hypothesized that: (1) The three and four year olds would interact significantly more closely than the young adults; and (2) the females would interact significantly more closely than the males.

A multiple analysis of variance was used to determine the effects. The findings of this study may be summarized as follows:

(A) Three and four year old subjects interacted significantly more closely than young adult subjects engaged in the same activity for five minutes.

(B) Female subjects did not interact significantly more closely than male subjects engaged in the same activity for five minutes.
(C) A significant interaction effect occurred between the effects of age and sex, with three and four year old male subjects interacting more closely than three and four year old females, but young adult female subjects interacting more closely than young adult male subjects.

The results in A concur with previous research, while B and C may shed light on spatial-norm acquisition.

It was suggested that further research look at even young age levels and include a progressive look from the earliest possible ages through young adulthood.
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APPENDIX A

RECORDING SHEET FOR FIVE-MINUTE OBSERVATIONS
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