PERSONAL SPACE RELATIONSHIPS OF THREE- AND FOUR-YEAR-OLD MALES AND FEMALES

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ABSTRACT

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By

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The understanding of the development of personal space and its use is essential to the understanding of the broader concept of interaction. The question proposed in this study was: To what degree are personal space norms internalized by children 3 or 4 years of age?

The 72 subjects were 3- and 4-year-old white middle-class children enrolled in two nursery schools in the East Lansing area. These children were paired into same-sex dyads in order that a direct observation of their proxemic behavior be taken. The measures of proxemic behavior consisted of the recording of the distance between the pair of children and the angle (orientation) they maintained during their interaction.

By using three projective techniques, PT I, PT II, and PT III, an indirect measure of personal space was provided. These techniques were used to assess whether children perceived a relationship between interaction distances and degrees of acquaintance. The independent variables were again age and sex. The dependent variable for PT I was that set of figures chosen by children as friend, acquaintance, or stranger. In PT II the dependent variable

was the distance the child placed figures identified as friends, acquaintances, and strangers. In an attempt to investigate the link between the direct and indirect measures, PT III involved the child's placing a self-referent figure with a figure identified as his or her dyad partner.

As predicted, there was a difference between 3- and 4-year-olds on the direct distances measure with younger children standing further apart than older children. Sex differences for the distance measure were found to be significant at only the $p < .07$ level, with females standing somewhat closer together than males.

Marginally significant ($p < .07$) age differences were found for axis with 3-year-olds maintaining a more direct orientation than 4-year-olds. No sex differences were found in axis orientation.

Upon analysis of the data for PT I, it was found that all groups of subjects perceived an inverse relationship between placed dyad distance and degree of acquaintance; thus, the dyad placed 1 inch apart was identified most often as friend, the dyad placed 3 inches apart as acquaintance, and the dyad placed 5 inches apart as stranger. No age differences were found for PT I.

On the PT II task, which involved the child's placing of the figure for the given affect state, the children performed differently than on PT I. Though an overall difference between distances placed existed, there was no significant difference between friend and acquaintance;

stranger, however, was placed significantly more distant from the other two. This perhaps relates to the significant main effect ($p < .007$) found for age. Four-year-old placements showed a distinct progressional pattern, while 3-year-olds showed no such pattern. No significant sex differences were found in the analysis of PT I or PT II.

The correlation analysis between the data of PT III and the actually observed distance data yielded a significant ($p < .05$) but low correlation ($r = .268$) between these variables.

In the development of personal space, age rather than sex seems to be the crucial factor at this early age. It appears that the period between age 3 and 4 is a very important one; this is evident when the differences between 3- and 4-year-olds are examined.

The lack of sex differences parallels such findings of other investigators, thus leading one to believe that sex differences in the area of nonverbal behavior as well as in other areas seem to be learned rather than innate.

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To my father who has always given me his support in both my personal and professional endeavors.

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CHAPTER I

INTRODUCTION

Research in the area of child-child interaction is sparse and often contradictory. Child-child interactions are an integral part of the socialization process. Peer interactions have effects not only on the verbal behavior of the child but also on his nonverbal behavior. The nonverbal aspects of these interactions provide dimensions which are helpful in achieving an understanding of socialization and sexual identification. By studying these child-child interactions we not only gain insight into the interactions but also into the developmental process of socialization.

Much of the literature has attested to male-female behavioral differences but there seems to be some confusion about the degree to which these differences are defined by the age of 3 or 4, and how consistently preschool children have internalized the very subtle nonverbal differences. The purpose of this study is to assess to what degree personal space norms are internalized by ages 3 and 4. Age and sex differences in the process will be examined as well.

Review of the Literature

The earliest form of social interaction between peers is play. There are three types of play, each occurring at certain stages of development (Parten & Newhall, 1943). Children play in parallel rather than with one another between the ages of 2 and 3. Following parallel play, children then engage in associative play in which they play games involving one another but each one being concerned only with his own behavior. Cooperative play, where joint efforts are involved, appears rarely before the age of 3 (Millar, 1968).

Two children when placed in a playpen together between the ages of 6 and 8 months most often will pay no more attention to each other than they do to the toys. By 9 months, however, the partner becomes more important. Between the ages of 19 and 25 months social contact with the partner predominates; from this point forward what one child does extensively influences the other.

As children grow older, they become more capable of cooperating with one another and learn to exercise more influence over other children and to be influenced by other children. Wolfe and Wolfe (1939) completed a study in which a child was given candy if he influenced his partner to pull a string. While older children accomplished this by telling the partner what to do, 2-1/2-year-olds were unsuccessful at accomplishing the task. Millar (1968), referring to these findings, noted that the "ability to

talk, although it obviously helps, is not essential, so long as some method of communicating with others has been learned and the task is within compass [ability] [p. 180]." Here we have the beginning of peer interaction.

The peer group affords the child an opportunity to experiment with social behavior. He learns how to interact with others of the same age, how to deal with his feelings and the feelings of others, and how to relate to others when he and they take on different roles. Most important of all, the child develops a concept of himself. The peer group may serve to strengthen or weaken old attitudes, or establish new ones, depending upon how important the group is to the child. Young children's peer groups are not usually characterized by stability (Hartup, 1970), and friendships are often fleeting. However, the peer group from the beginning facilitates the process of socialization by reinforcing sex type behaviors.

Sex typing begins at an early age and continues throughout life. Mussen, Conger, and Kagan (1963) and Jersild (1968) have shown that sex-role behavior is, in fact, culturally determined. In our society, girls are expected to be social, well-mannered, and neat, but frightened of appropriate objects. They are also expected to withdraw from problem situations. Boys, on the other hand, are expected to be strong, courageous, assertive, and ambitious (Kohn, 1959). It would seem to follow that parents would begin to foster these behaviors at an early age.

Goldberg and Lewis (1969) found sex differences between the behaviors of 1-year-olds. Each mother was placed in a playroom with her child and observed. It was found that girls made more physical and visual returns and also touched their mothers more. Girls also spent more time in closer proximity to their mothers, while boys spent more time in the area farthest away from their mothers. These behaviors most probably occur because they are reinforced by the mother; but, in any case, it seems to indicate that girls are more dependent than boys at this stage in development. More will be said about dependency later.

By the age of 3, boys are more overtly aggressive in play than girls (Millar, 1968). Sears, Maccoby, and Levin (1957) found that the greatest difference demonstrated by parents in the raising of boys and girls was in the area of aggression. Mothers reported that they permitted more aggressive behavior from boys when it was directed toward the parent or outside the family, but there was no difference in permissiveness when other siblings were the target of aggression. Parents have a tendency to condone overt aggression in males and to condemn it in females. Because of this, males appear to be more directly aggressive while females strike out verbally and in other indirect ways (Feshbach, 1969; Sears, 1961). Females also show more conflict over aggression and more anxiety concerning aggression than males (Kagan & Moss, 1962).

Feshbach (1956) investigated the effects of

aggressive play on children's social interactions. Teachers rated the children on the basis of high and low aggressiveness. Children were randomly assigned to an aggressive toy group, or a neutral toy group. The aggressive toy group listened to stories with aggressive themes and played with guns and soldiers while the neutral group was told nonaggressive stories and played with nonaggressive toys, such as farm toys. It was found that in activities which were not a part of the play activity (social interactions) aggressive responses occurred more frequently in the aggressive toy group than in the neutral toy group. Boys, who were initially rated low in aggression and who participated in the aggressive play sessions, showed an increase in aggressive behavior. This study shows a direct correlation between aggression and modeling. There is further evidence of a modeling effect when father presence or father absence from the home is considered (Bach, 1946). It was found that less aggression and less aggressive doll play fantasies involving the father were evident for both girls and boys whose fathers were absent from the home. Sears, Pintler, and Sears (1946) and Sears (1951) discovered that Bach's findings did not hold true when preschool girls were involved. Although there was a difference in aggressive doll play between the father-absent and father-present boys' groups, no such difference occurred when father-absent, and father-present girls were compared. This may be true because females identify strongly with the

mother and father absence or presence has no effect on this dimension. Interestingly enough, by age 5 the difference between father-absent and father-present boys was not significant. It is important to note that the greatest differences occurred during ages 3 and 4. At this time the father-absent boys performed in the same way as did the girls, but by age 5 they seemed to have performed in the same way as did the father-present boys. It is interesting to note the differences in the Sears and Bach studies. If there is indeed a difference as Sears found, there may be some crucial differences in socialization occurring between 3 and 5 years of age.

Again we find contradictions in the literature. Rothbart and Maccoby (1966) found that children are not reinforced consistently for sex-typed behaviors by both mother and father. Mothers tended to allow more aggression toward themselves from boys, and were also more accepting of comfort seeking from boys. These findings applied to girls when fathers were considered. Rothbart and Maccoby conclude, "In short, the sex of parent seemed to be a better predictor of his differential responses to boys and girls than does a sex-role stereotype [p. 242]." Rothbart and Maccoby interpreted this to mean that perhaps social learning is not the key. They go on to conjecture that perhaps there is a biological component responsible for sex typing or that the important factor in internalizing sex-typed behaviors is reinforcement coming from outside the

home, such as from the peer groups. I feel, however, that this may be a result of identification. The child may learn more from observing his same sex parent than he does from what that parent reinforces. Perhaps a girl learns to react similar to her mother by observing her mother's reactions to others, especially her father. If this is the case, when she is a parent, she will relate as her mother did to her son or daughter, while still remaining sex-typed. Rothbart and Maccoby indirectly offer this explanation by expounding upon possible causes of this opposite sex acceptance, same-sex rejection. They explain that the parent is reacting to the child as he would to the opposite sex partner, or that the same-sex child is rejected because of feelings of rivalry or perhaps that the parent may be punishing the child for those actions or thoughts he was punished for.

There is much support for the observational modeling theory, and it is believed by many (Bandura & Walters, 1963; Campbell, 1961; Hebb, 1966; Mischel, 1966a, 1966b) that the learning of sex-typed behaviors depends greatly upon observational learning, and can therefore occur without direct reinforcement. Bandura and Walters (1963) point out the importance of these models:

> A comparison of the results obtained with adult and peer models revealed that children were more influenced by the standard setting behavior and self-reinforcement patterns exhibited by adults [pp. 179-180].

The implication is that children form their standards by

observing the adults, especially the parents, which surround them and tend to imitate them. Bandura and Walters further point out:

> While playing with toys that stimulate imitation of adults, children frequently reproduce not only the appropriate adult role behavior patterns but also characteristics or idiosyncratic parental patterns of responses, including attitudes, mannerisms, gestures, and even voice inflections, which the parents have certainly never attempted directly to teach [p. 48].

Observation, therefore, gives rise to the learning of nonverbal behaviors. Perhaps in this way a child learns to structure his personal space and peer interactions.

Children particularly imitate their same-sex parent. Duhamel and Biller (1959) found that when given a choice, kindergarten children will imitate their same-sex parent, in both familiar and unfamiliar situations. More boys than girls gave non-imitative (independent) preferences which Duhamel and Biller attributed to the fact that our society fosters greater independent behaviors in boys.

Bandura and Huston (1961) place much importance on the role of observational learning in identification:

> The process subsumed under the term "identification" may be accounted for in terms of incidental learning, that is, learning that apparently takes place in the absence of an induced set or intent to learn the specific behaviors or activities in question [p. 311].

Mussen and Parker (1965) extended this identification to sex role identifications and found nurturance significantly correlated with incidental imitative learning in females. Others have also found a link between nurturance by same-sex parent and sex-type behavior (Mussen & Distler, 1959;

Mussen & Rutherford, 1963).

Bandura and Mischel (1965) explored observational learning further. They found that observing an adult model facilitated the learning of delayed or immediate gratification in fourth- and fifth-graders. They grouped children according to the ability to delay receiving of rewards and they had the adult confederate model the opposite reward-receiving behavior. The results demonstrated that observational learning is intense enough to bring about a total attitude change with children.

There is a wealth of literature attesting to the strength of observational learning. Mischel (1970) sums up the pervasive effects of observational learning with the following:

> Behaviors affected by exposure to models include such sex-typed patterns as physical aggression, as well as prosocial responses, psychotic syndromes, fears, and even linguistic judgmental styles. By attending to the verbal and nonverbal behavior of live or symbolic models, the observer also can change his own language, his standards and social judgments [p. 30].

Sears, Rau, and Alpert (1965) put the effects of observational learning on sex typing into perspective.

> A pervasive quality such as masculinity (or femininity) receives at least some intentional reinforcement by parents and peers, of course, by training tasks required for creating this kind of role. Conforming seems too great to permit an explanation in terms of direct reinforcement of each of the components that compose the roles [p. 2].

Many of the components of sex roles, therefore, must be learned through observation of the same sex parent.

This sex role typing influences many behaviors.

Because it would be impossible to review the literature on all of these characteristics, the author selected those which apply to the specific problem of this study.

Brown (1956) found that by age 5, relatively dichotomous sex role patterns exist. If indeed sex role typing is present by age 5, and the nonverbal behavior has also been sex-typed, what factor in socialization should account for a male-female imitative difference or even a precocity on the part of one sex? The research on this subject is far from complete. Sears, Maccoby, and Levin (1957) found that dependency itself facilitates imitative learning. Dependency, therefore, may indeed be the key. Each infant is born dependent. In order to survive, he must have a caretaker. If his development is normal, he is more dependent at this stage than he will be at any later period in his life. Dependency, therefore, is a descending rather than an ascending characteristic. This being the case, it would seem that males and females would be born equally dependent and if it were found later in life that sex differences did occur then there may be some reason in the socialization process that would account for these differences.

Kagan and Moss (1960), in a longitudinal study, found that passive and dependent behaviors were fairly stable for females but not for males. It is pertinent to the author's study that stability of the passivity rating for children ages 3 to 6 and 6 to 10 was quite high in

boys, but not as high as it was for girls. Among females there was also an inverse relationship between passivity and adult conflict over dependency. There was, however, a greater proportion of men, in comparison to women, who shifted from dependency during childhood to independence as adults. During a tachistoscope perception task, females recognized those pictures dealing with dependency significantly more rapidly than did males, and those pictures dealing with aggression significantly later than did males. Kagan and Moss explain this "weak perceptual hypothesis" in males concerning dependent behavior as resulting from dependent behavior being less acceptable in men and that more conflict over dependency therefore results. This is also supported by the fact that women who were dependent upon their parents as children tended to be dependent upon a love object rather than friends or authority figures as adults, but men who were dependent upon their parents as children were dependent upon friends and authority figures rather than love objects as adults. This seems to suggest the possibility that sublimation is occurring because, for males, being dependent upon friends or authority figures may be more acceptable than being dependent upon love objects. In conclusion, Kagan and Moss state:

> The differential stability of passive-dependent behavior for men and women is probably the result of several factors. However, one set of processes which may contribute to this phenomenon is derived from the commonly accepted hypothesis that passive and dependent behavior is less punished in females than in males. Further, females are often encouraged to be passive while men

> are expected to be independent and autonomous in the face of frustration. Parental and peer group punishment for passive and dependent behavior should result in some inhibition of this behavior in males. Thus, we would not expect this class of behavior to be as stable for men as for women. Studies of both overt behavior and fantasy all indicate that dependent responses are more frequent for girls than for boys [pp. 584-585].

There are many aspects of dependency. One which is very relevant to the author's study is proximity seeking. Sears, Rau, and Alpert (1965) found a strong positive correlation between "touching and holding" categories and "being near" for girls. Rosenthal (1967), who called this behavior proximity seeking, has also obtained similar results with children. Sears et al. (1965) found a tendency among girls for attention seeking, physical closeness or proximity seeking, and seeking comfort and reassurance in nursery school to correlate with demands the child made for attention from the mother. This was not true with boys. Since the author used same-sex dyads it is interesting to note that when dependent behaviors involved another peer, it was a same-sex peer the child sought out.

Heathers (1955) found that attention seeking of one child for another child or one child for an adult is similar but that the proximity seeking of a child for another child and of a child for an adult is not similar. The Sears et al. (1965) findings also support this. Maccoby and Masters (1970), in reporting these findings, claim:

> . . . with respect to some behaviors--certain aspects of proximity seeking versus play--there is justification for looking upon child-mother interactions and

> child-child interactions as different behavioral systems. With respect to attention seeking there is not. Let us underline some of the differences between these classes of behavior. 1. Proximity seeking declines with age, attention seeking does not; 2. Proximity seeking is increased under fear arousal, attention seeking is not; 3. Attention seeking is generalized from adult targets to child targets, proximity is not; 4. By preschool age attention seeking is a part of a behavioral cluster that involves not only asking for help, attention and nurturance, but giving help, attention, and nurturance to others--it is part of a reciprocal interaction system and is positively related to aggression and sociability as well. Proximity seeking tends to be negatively related to all these things, and is part of a different, more passive behavioral cluster [p. 146].

There is no mention made of sex differences, but it is interesting to have proximity described as being part of a more "passive" behavioral cluster. In light of the Kagan and Moss study, therefore, it would seem that there would be more proximity seeking among females. The factor of lack of generalizability from child-adult interactions to child-child interactions is an interesting one. Willis (1966) studied this by using a direct measure of proxemic behavior. Willis found that parents stood as distant from their children as their children did from strangers; the "children" were of college age, however. Many studies, to be discussed in a different section, have shown this is not the case for peer-peer interactions; in these cases, sex differences were indeed consistent with the adult population.

As mentioned above, females remain more consistently dependent than males. By this, I mean that males appear to shift more completely to attachments outside the

family than females (Douvan & Adelson, 1966; Ferguson, 1970; Kagan & Moss, 1962; Stone & Church, 1968). This is an essential concept for this study, since if sex differences are to be predicted, there must be evidence of them from early life to adulthood. Ferguson (1970) summarizes this female stability and gives possible reasons for its occurrence.

> While it is usual for girls to remain quite strongly attached to their families and identified with parental values even into adult life, a shift in allegiance to peers seems to predict greater self-reliance and generally positive adjustment in boys. This is only one of the many sex differences in the development of attachment and its relations to other behavior systems. It is certainly an oversimplification, but still a fair fit with the overall trend of the data, to suggest that the development of attachment and the generalization of affiliative behavior in girls is more purely a matter of positive reinforcement than it is for boys. In boys, the detachment process is normally facilitated by the more vigorous emergence of exploratory and aggressive behavior, and there is a more marked shift in middle childhood away from the primary object of attachment, the mother, towards affiliative response to peers. Overly "dependent" behavior in boys may thus be more a function of interference with the development of exploratory and assertive behavior than of the strength of the attachment system [p. 75].

It thus seems as though females are more dependent on parental figures and remain so throughout life. This dependency may facilitate the learning of certain types of behavior. In summary, sex differences in both verbal and nonverbal behavior would seem to occur. The nonverbal area of concern in this study is personal space. I will now turn to the review of the literature concerning direct and indirect studies of personal space.

Proxemic behavior. The systematic study of nonverbal behavior in humans is a relatively new development. Adequate summaries are provided by Argyle (1969), Duncan (1969), Mehrabian (1969), and Sommer (1967), each of whom emphasizes his own area of interest. My concern is specifically with the area which Hall (1963) terms "proxemics," the study of how man unconsciously structures microspace. Proxemics is synonymous with Little's (1965) term "personal space" and Mehrabian's (1967) term "immediacy." In the Silent Language (1959) and the Hidden Dimension (1966), Hall has outlined the distance zones in man (see Table 2) and has postulated cultural and subcultural differences in man's structuring of space. Watson and Graves (1966) were the first to test these hypotheses. They found large differences between the handling of space by Arab and American cultures as well as differences between geographical regions within these cultures. Jones (1971), on the other hand, found a cultural homogeneity among four lower-class subcultures in New York City. Forston and Larson (1968) found no evidence for the expectation that Latin American students would sit closer to one another than American students (but topic of conversation distorts this finding). Willis (1966), on the other hand, found race differences within the American culture. These results were all obtained with samples of adults.

The study of nonverbal behavior in children is less developed. Few "direct observation" studies have been

completed. The aforementioned Willis (1966) study, where parents were found to stand as distant from their children as their children did from strangers, is one of these. A later study by Fry and Willis (1970) was conducted with children of ages 5, 8, and 10. The personal space of adults was invaded in a public setting by the children while observers recorded the reactions of the adults. Five-year-old children received generally positive reactions, 10-year-olds generally negative reactions, and 8-year-olds were often ignored. Fry and Willis concluded that the capacity to elicit adult-like reactions in a spatial invasion appears between the ages of 5 and 10.

Castell (1970) was interested in assessing the effects of familiar and unfamiliar environments on the proxemic behavior of young children. The variables measured were child-mother distance, child-child distance, and child-child dominance in the two environments. Children and their mothers were paired and observations were recorded in the living room of each of their homes. The results of these observations showed that the child in a partially unfamiliar social and physical environment will stay closer to his mother than will a child in a partially unfamiliar social but familiar physical environment. The decrease in children's proximity to their mother, as familiarization with the environment took place, is accompanied by a trend throughout the experiment to come closer to one another. No significant differences were found in

dominance.

Aiello and Jones (1971) adapted Hall's proxemic notational code of distance and directness of shoulder orientation (axis) to be able to systematically observe interactions in natural surroundings. Observations of distance (in inches) and axis (using an 8-point compass-face scale) of dyads were recorded by trained judges in a school playground. First- and second-grade white, black, and Puerto Rican children were employed to test Hall's assertion of subcultural differences. White children were found to stand significantly more distant than either black or Puerto Rican children and white males stood significantly more distant than white females. Blacks also stood significantly less directly than whites. This latter finding intrigued the authors and gave impetus to another study (Jones & Aiello, 1973). To gain greater control of situation variables and communication content, the experimenters devised a situation in which children were observed in dyadic interaction by trained judges, while engaged in conversation about their favorite television programs. Large axis differences were found for both culture and sex; whites were more direct than blacks and females were consistently more direct than males, at each grade level. For distance, an interaction of grade and culture was found; that is, while blacks became more and more distant with age (having smaller distances than whites in the first grade), whites did not show this pattern. Except for first-grade

white children, girls were consistently found to stand closer than boys. Aiello and DeCarlo (1971) measured axis and distance of dyads with a coding procedure further refined from Aiello and Jones (1971). Subjects of the study were 400 elementary, junior high, and high school students paired in same-sex dyads at each of the first-, third-, fifth-, seventh-, ninth-, and eleventh-grade levels. From the third grade on, girls were found to stand more directly than boys and except for the third grade, females were observed to stand more closely than males.

Indirect personal space behavior. A variety of indirect measures have been used to explore the nature of the structuring of personal space. Again, most of these studies have adults as their subject population. Because these studies are the antecedents of child studies, I will summarize their findings first.

Kuethe (1962), the originator of the felt-board projective technique, did a series of studies on social schemata. Keuthe's technique requires individuals to free place felt figures on a field or to replace felt figures which had been previously placed. The physical distance between the figures is interpreted as representing the desired psychological distance. Direct front-facing figures were used.

In several studies, Kuethe (1962a, 1962b, 1964) found a pervasive social schema or indication that certain arrangements belong together. It was also found that

people were placed together and objects, when available, were not placed in any way which intervened.

The Kuethe (1962b) study used only males. These subjects showed a tendency to place child figures closer to the woman (all were front-facing figures). When subjects were asked to replace figures, the figures were placed closer together than the original placement. When using both male and female subjects in a similar task, Kuethe found the following sex differences: (1) females showed a strong tendency to form separate male-female subgroups (Kuethe explains this as a marriage orientation), and (2) males tend to keep figures together but form pairs within a group. These sex differences do not include interaction distance since front-facing figures were used.

Since Kuethe was interested in prevalent schemata rather than distances, he makes no mention of differences in distance placed. Higgins et al. (1969) found that male undergraduates demonstrating poor social adjustment placed the son closer to the father, while those displaying good social adjustment placed the son closer to the mother. Both groups placed the daughter closer to the mother. Weinstein (1965), applying this concept to children, found that emotionally disturbed boys placed child figures furthest from the adult female. In a comparison between emotionally disturbed and normal elementary school boys (Weinstein, 1965), the "normal" children placed child figures closer to the female rather than male figure; the

emotionally disturbed children, however, again placed females further from the adult female than from either an adult male or peer figure.

Tolor (1970), using another technique called the Psychological Distance Scale consisting of seven concepts, found that the only concept that normal and disturbed adults differed on was the distance placed in relation to the mother figure. The emotionally disturbed adults placed more distance between these figures than did normal adults. Also, inpatients showed a more deviant behavior than outpatients. These studies seem to support the Kuethe (1962a, 1962b) findings that a "normal" schemata associates mother with child. This also points toward stereotyped socialization schemata.

Little (1965) was one of the first researchers to use the profile technique. He also varied degrees of acquaintance (friend, acquaintance, stranger) and used different settings. In the reporting of two free-placement studies (one indirect and one direct), he concluded that degree of acquaintance had greatly influenced interaction distances whether figures or real people were used. Interaction distances for friend were closer than those of acquaintance and interaction distances for acquaintance were closer than those of stranger. Setting affected interaction distance of females, but not of males. Only same-sex figures were used.

Tolor and Salafia (1971) used same-sex and

opposite-sex figures in a free-placement technique with 160 males in order to assess the relationship between favorable characteristics and social schemata. Tolor concluded that positive attributes aresulted in significantly closer placement than did negative attributes. Mixed pairs were placed closer than same-sex pairs.

Fischer (1968) used Kuethe's front-facing figures, Little's silhouettes, some amorphous figures, and a rectangle. No male-female differences were found when subjects were asked to replace nonhuman figures. Males, however, replaced human figures closer together but females did not. These results were attributed to the observation that males viewed the placement figures more carefully. In a post-experimental questionnaire, males reported having tried to remember distances in inches. Females, however, seemed to be more impulsive in placement; they paid little attention to figures and placed them without studying them.

Tolor, Brannigan, and Murphy (1970) found evidence of psychological distance having different meanings for the sexes. Using the Psychological Distance Scale, the Future Events Test, and Rotters Internal and External Scale, they found no relationship between the Internal and External Scale for males whereas with females there was a difference. Closeness to both Sister and Father was associated, in the case of females, with an internal tendency (this means that the subject expected reinforcement to be contingent upon his behavior). In summarizing the differences,

they concluded:

> Turning to possible reasons why males failed to demonstrate the expected relationship between psychological closeness and internality, it might be that for internal males the positive relationship with parents that helped in the formation of such an adaptational style is offset by the more masculine self-reliance that characterized the adjusted male's role. Similarly, those males who have developed an external attitude because of negative (e.g. inconsistent or controlling) aspects of their former parental relationship, might also have grown more dependent upon and therefore closer to parents. Since the cultural expectation for adjusted (more internal) females does not require their drawing apart from their parents as is the case of males, females' responses on the PDS might provide a culturally more uncontaminated response than that of males [p. 292].

Thus, we have the adult indirect findings.

These findings stimulated curiosity and further studies began using children in order to explicate the developmental process involved. The findings of these studies can be divided into two areas: (1) whether or not children do indeed perceive a relationship between interpersonal distance and degree of liking, and (2) male-female differences in this perception.

Guardo (1969), modifying Little's indirect method for use with sixth-graders, found a relationship between psychological closeness and physical distance. As degree of acquaintance decreased, distance increased; thus, an inverse relationship was obtained. This was true for a placed and free-placed method. Guardo also discovered that girls, more than boys, placed significantly less distance between their self-referent figures and depicted friend, and between representations of those they like very much.

Boys, on the other hand, placed themselves closer to threatening peers than girls. These results were explained in terms of sex-appropriate behavior. This began a series of studies by Guardo and others in an attempt to understand the development of personal space in children.

Meisels and Guardo (1969), using males and females in the first through the tenth grades, found an inverse relationship between amount of distance and degree of liking and degree of acquaintance to be established as early as the third grade. Children were found to use less space as they grew older, and in positive and neutral affect situations both sexes placed themselves closer to same-sex peers in earlier grades and to opposite-sex peers in later grades. Females used more space than did males in negative affect conditions with both sexes and neutral-negative affect situations with the opposite sex. Guardo and Meisels (1971) further analyzed these data and concluded that girls have very similar personal space schemata across grade level, though patterns were more highly schematized for older girls. Boys, however, showed a developmental trend in spatial schemata across age with older boys having clearer patterns, while younger boys responded to cues of specific situations. Males were also more affected by the stimulus figure's sex. These findings led Guardo and Meisels to conclude that "this may reflect the earlier and possibly greater feminine sensitivity to social conditioning, at least in the spatial realm of behavior [p. 1310]."

Females, therefore, seem to exhibit a precocity in this area.

Bass and Weinstein (1971) studied the interpersonal distance of Canadian 5- to 9-year-old children, when settings were varied. They extended Guardo's lower limit by discovering that 5-year-old children have acquired schematized interpersonal distance behavior. No sex differences, however, were found. Males also showed a greater distance between friend and stranger in all situations, unlike the Guardo and Meisels and Guardo studies. Kindergarten children used the smallest amount of distance. The tendency to use less space continued to grade 2, then there was a sharp rise in distance between figures designated as friends. At grade 3 there was a smaller amount of distance used than at grade 2. They supported the Meisels and Guardo finding that younger children stay closer in same-sex pairs than do older children. The mean spatial distance for stranger was significantly greater for all settings (grades) than for friend. The discrepancies in these findings may be due to the age difference of the subjects or perhaps a cultural difference between American and Canadian children.

Estes and Rush (1971), in a developmental study using front-facing figures similar to those of Kuethe, found no sex differences in placement schemata for children 3 through 15 years of age. An age difference was found, however, in the set of figures using a woman and a man. The younger children showed no preference while the older

children preferred the male to be in the middle. The children did not place the child closer to the woman, as did the adults in the Kuethe study, but they did place the child next to the woman.

Baxter and Phelps (1970), using a doll placement with black lower-class preschool children, found relatively stable schemata at this early age. Sex differences were found in this case, which seem to support Guardo and Meisels (1971) and Meisels and Guardo (1969). Males' ability to understand spatial arrangement increased with age, while the females' ability seemed to be accelerated from the beginning. Using this to explain a lack of change in female behavior, they state: "If this were the case, the age range utilized in the present study would have been too advanced to span a period of primary development of these schemata in girls [p. 12]."

This concludes the review of the literature. Though many contradictions are apparent, male and female developmental sex differences seem to appear in many areas at an early age.

CHAPTER II

DEFINITIONS

Because the reader may not have previously encountered certain terms used in the text, the author will, in this section, provide definitions of these terms.

Proxemics. "The study of how man unconsciously structures microspace [Hall, 1963, p. 1003]."

Proxemic behavior. In this thesis, it refers to the interaction distance between dyads as determined by measuring the distance and axis components of the interaction.

Interpersonal distance. The closest distance between the torsos of the children at the time of recording. Measures were taken in arm lengths rather than inches and recorded using the scale shown in Table 1.

Axis. A scale for measuring the angle of interaction. This scale is analogous to a clock where "0" is a direct face-to-face orientation.

Personal space. "The area immediately surrounding the individual in which the majority of his interactions with others take place [Little, 1965, p. 237]." The reader should note the author's synonymous use of personal space and proxemic behavior.

CHAPTER III

STATEMENT OF THE PROBLEM AND HYPOTHESES

Statement of the Problem

The purpose of this study, as stated previously, was to analyze to what degree personal space norms are internalized by ages 3 and 4, with critical variables being age and sex.

Rationale and Hypotheses

To meet these objectives, a direct and indirect measure of personal space was used. Using the direct findings of Aiello and De Carlo (1971), Aiello and Jones (1971), and Jones and Aiello (1973), concerning the direct measure of proxemic behavior, and the findings of Douvan and Adelson (1966), Ferguson (1970), Kagan and Moss (1960, 1962), Rosenthal (1967), Sears, Rau, and Alpert (1965), and Stone and Church (1968), concerning sex differences in proximity seeking and dependency, the hypotheses involving direct measures of proxemic behavior were as follows:

> Hypothesis I: There will be a difference between males and females concerning interaction distance.
>
> Hypothesis II: There will be a difference between males and females in axis orientation.
>
> Because the findings of Kagan and Moss (1960),

Millar (1968), Pintler and Sears (1946), Sears (1951), and Wolfe and Wolfe (1939), concerning age difference in play, dependency, and passivity; and the findings of Aiello and De Carlo (1971), Baxter and Phelps (1970), Estes and Rush (1971), Fry and Willis (1970), Guardo and Meisels (1970), and Meisels and Guardo (1969), concerning personal space, the following hypotheses concerning age differences in the direct measure of proxemic behavior were generated:

> Hypothesis III: There will be a difference between 3- and 4-year-olds in distance.
>
> Hypothesis IV: There will be a difference between 3- and 4-year-olds in axis.

It should be noted that previous studies of proxemic behavior used an older subject population. Though from this literature there appears to be some observed differences, directional hypotheses would be premature at this time.

Previous studies using indirect measures (Bass & Weinstein, 1971; Baxter & Phelps, 1972; Estes & Rush, 1970; Guardo, 1969; Guardo & Meisels, 1970; Meisels & Guardo, 1971) have discovered that children, even very young children, demonstrate a schematized use of personal space. Along with this seems to come an inverse relationship between the amount of space used and the degree of acquaintance. Due to these findings, the following hypotheses were proposed:

> Hypothesis V: Subjects will equate closer distance with a greater degree of acquaintance when a placed

projective task (PT I) is used, such that closer distances will be equated with greater degrees of acquaintance.

Hypothesis VI: In a free-place projective task (PT II) there will be a difference in distance placed between figures identified as friend, acquaintance, and stranger for subjects, such that an inverse relationship between distance and degree of acquaintance will exist.

Developmental studies (Aiello & De Carlo, 1971; Bass & Weinstein, 1971; Estes & Rush, 1971; Guardo & Meisels, 1971; Meisels & Guardo, 1969) have shown that children use space differently at different ages. The author, therefore, hypothesized:

Hypothesis VII: There will be a difference in performance in the placed projective task (PT I), such that 4-year-olds will more consistently equate smaller distances with greater degrees of acquaintance and greater distances with lesser degrees of acquaintance than will 3-year-olds.

Hypothesis VIII: Three- and 4-year-olds will differ on the free placement projective task (PT II), such that 4-year-olds will more frequently display an inverse relationship between degree of acquaintance and distance placed.

The author was also interested in exploring questions which could not be framed into hypotheses because of the paucity of research pertaining to these questions, or the unresolved contradictions in the literature. These questions are:

1. Will sex differences exist for the categories of friend, acquaintance, and stranger in distance placed (PT II) and for consistency of ranking (PT I)?

2. Will there be a high correlation between the actual distance observations of pairs and the projected distance of these pairs?

CHAPTER IV

METHOD

Subjects

The 72 subjects were 3- and 4-year-old white middle-class children enrolled in two nursery schools in the East Lansing area. These subjects were paired into 36 same-sex dyads consisting of eight dyads of 3-year-old females, eight dyads of 4-year-old females, eight dyads of 3-year-old males, and 12 dyads of 4-year-old males, in order that the direct measure of proxemic behavior could be taken. The subjects were previously paired by the teacher who was instructed to form neutral dyads, that is, children who were not the best of friends or continually at odds with one another.

Due to absences following the direct measure, 68 of these 72 subjects were administered the projective measures. Each child was administered the projective techniques individually.

Direct Measures

A direct measure of proxemic behavior involving personal observation of distance and axis was one of two principal measures. The scales used to measure proxemic

behavior were adapted from those described by Hall (1963) and Jones and Aiello (1973) and the same as those used by Aiello and Cooper (1972). According to this procedure, interpersonal distance is defined as the closest distance between the torsos of the children at the time of recording, and is measured in terms of arm length rather than inches or feet. Each unit has a representative score which is presented in Table 1.

Hall describes axis according to an 8-point scale which is circular, with a score of "zero" representing a head-on, face-to-face position, a "four" being a side-by-side interaction position with both persons facing in the same direction, and an "eight" being a back-to-back position. Aiello and Jones (1971) found this system inappropriate when dealing with children since there was a cluster of results between zero and two. Because of this, a 25-point scale was proposed and used in Jones and Aiello (1973). This scale is analogous to a clock, where, for example, a "zero" is a direct, face-to-face interaction, or 12 o'clock. When one employs the 25-point scale, discriminations can be much finer since half positions can be used. In other words, we have a clock with 25 positions rather than 12, each position forming a 15-degree angle with the one before. According to this notation, a side-by-side position then becomes a 12, and a back-to-back a 24.

Six judges were trained during ten 2-hour-long training sessions. The judges began making practice

TABLE 1

DISTANCE NOTATION CODE

Description	Score
Bodies touch (torsos)	10
Just outside torso touching distance	20
Plus a little (short of complete forearm)	30
Forearm touching body	40
One arm's length = just outside forearm touch	50
Two forearms = just outside one arm's length	60
Two forearms plus a little	70
One arm's length and a forearm = one reach to body	80
One arm's length, a forearm plus a little = one reach plus a little	90
Two arm's lengths touch = one reach, a forearm plus a little	100
Two arm's lengths plus a little = one reach and an arm's length touch	110
One reach, an arm's length plus a little	120
Two reaches touch	130
Two reaches plus a little	140

judgments during the second session. Each session which followed consisted of the judges taking distance and axis scores. Judgments were first made at 20-second intervals; as judges became more skilled in handling the code, the intervals were decreased to 10 seconds. In the beginning, the judges were asked to record the distance and axis scores of a dyad which was standing still; later they were asked to make judgments on a dyad which continued to interact and which did not become immobile.

Anticipating the difference in heights that would occur in the field, the judges practiced making judgments of dyads of different heights. In cases of height difference, the judges considered the average height of the dyad in order to reach a conclusion. Concerning these measures, the judges at no time were aware of the hypotheses of the study.

Before beginning data collection, two boys were observed while interacting, judgments were recorded, and reliability checked. During additional training sessions, the judges were paired off to act as same-sex dyads as one judge observed and made judgments. The field environment and procedure were simulated at this time.

The reliability of the judges was calculated after each session to see how consistent the judgments were between judges. Upon completion of the last training session, inter-judge reliability had reached .95. At this time the judges were ready to collect the data.

Indirect Measures

An indirect measure of personal space was provided through the development of two projective techniques. These were adapted by the author from Kuethe (1962a), Guardo (1969), and Guardo and Meisels (1970). The specific projective device used to assess the use of personal space in children was a light blue felt board measuring 35" x 24". The board contained two black structures on each side representing buildings, and a strip of black felt across the bottom, which camouflaged a tape measure, representing the ground. Three pairs of black silhouette figures, representing girls or boys, depending on the subject's sex, were used to represent interactants.

The first projective task (PT I) consisted of one same-sex face-to-face dyad placed 1 inch apart, one 3 inches apart, and one 5 inches apart, placed on the above-described felt board. The space between the dyads remained constant, each inch represented a foot. These measures were scaled to fall into the middle of each of Hall's three Personal Space Boundaries (Table 2).

TABLE 2

HALL'S PERSONAL SPACE BOUNDARIES

	Intimate	Casual personal	Social consultative
		(inches)	
Close phase	0 - 6	18 - 30	48 - 84
Far phase	6 - 18	30 - 48	84 - 144

The dyad placed 1 inch apart, therefore, was to represent the affect state friend, and was coded as a number 1; the dyad with 3 inches between, in turn, represented that of acquaintance and was coded as 2; and the final dyad, placed 5 inches apart, represented stranger and was recorded as 3. The dependent variable in PT I was that dyad, represented by the given numbers, chosen as a friend, the one chosen as an acquaintance, and that chosen as a stranger. The space between dyads remained constant.

Projective Task II (PT II) was a free-place task where a same-sex silhouette figure was placed on the board, containing the buildings and the ground. Every child was asked to free place each of three self-referent figures, representing a friend, acquaintance, or stranger, according to a prearranged random schedule. The dependent variable in this case was distance placed between the figures. Distance was measured to the nearest eighth of an inch.

Projective Task III was also a free-place task. In this case, the board contained one figure which represented the child who served as the dyad partner in the direct measure. The child was asked to place a self-referent figure as he would stand to speak with the child represented. Again the dependent variable was distance measured to the nearest eighth of an inch.

The independent variables in all three tasks were age and sex of the subject.

Procedure

Direct measures. Each dyad was escorted into a 12' x 12' room. The subjects were introduced to the judge by the author who then left. The judge, who was seated at a table, then said to the pair: "I would like you to talk to each other about your favorite (the one you like best) television programs and decide which one you like the best. I will be busy here [the judge was seated at a table] for a few minutes, so if you go over there [pointing to an area a few feet from the table], I will call you when I am done." At this time the judge recorded distance and axis, every 10 seconds, recording at least six interactions. The children were then called over and asked their decision. If they did not interact long enough for six judgments to be taken, they were told to return and decide upon their favorite commercial. The dyad was then taken into another room where all children remained until the entire class was observed; they then returned to the nursery school area.

Indirect measures. Each subject was brought by the author into a room which contained a table with the previously described felt board propped upon it, the child was seated, and PT I was administered. Each subject was then told, "Now we are going to play a game. These are six girls [or boys]. This one [pointing to the first] is talking to this one [the second], this one is talking to this one [the third to the fourth], and this one is talking to this one [the fifth to the sixth]." Each subject was then

asked "which two do you think are friends (someone you know well, someone you play with), which two do you think are acquaintances (girls or boys that know each other a little bit but not very well), and which do you think are strangers (someone you never met)?" The order of these questions was changed for each subject to assure that subjects were not merely choosing straight across the board. Care was taken not to give any clues, verbal or nonverbal. The child was told that there was no right or wrong answer, and at the end of each choice no reinforcement was given to the child for his or her decision. Each answer was recorded by placing the number representing the dyad chosen (1 for 1 inch, 2 for 3 inches, and 3 for 5 inches) under the relationship title.

All the figures were removed from the board, and PT II began. One figure was placed on the board the the experimenter said, "This is your friend; where would you stand to talk to him?" The child then free-placed the self-referent figure on the board next to the one already there. Then another figure was placed on the board with the first two figures remaining, and the experimenter then asked the subject where he or she would stand to speak to an acquaintance. The subject again placed a self-referent figure. Finally, another figure was placed on the board with the four remaining and the subject was asked to place the self-referent figure where he or she would stand to speak to a stranger. The order in which the questions were asked was

random, and each term was again defined as before. The subject was told that he or she would be called back "to play the rest of my game later." The child then returned to the classroom. The felt strip which represented the ground was removed, and the distances were measured, using the tape measure attached to the board, to the nearest eighth of an inch.

After all subjects had completed these tasks, each child was called back into the room and given PT II. When they entered the room, the board contained one figure to the extreme left of the board. The child sat down in the same chair and was given a felt figure (representing the sex of the child) and was told that we would pretend the figure on the board was the other member of his dyad in the direct measure, stating the child's name. The subject was then asked to pretend the felt figure was himself and the experimenter asked, for example, "Where would you stand to talk to Tommy?" The subject was then told that he or she could return to the classroom. The distance was again measured to the nearest eighth of an inch.

CHAPTER V

RESULTS

The Direct Measure

Distance. A two-way analysis of variance, which was performed with the variables being sex and age, gave some support to Hypothesis I, which stated that there would be a difference between males and females in distance. This was significant at $p < .07$. A nearly significant interaction effect was found between sex and age ($p < .09$). Because this effect was not significant at the recognized .05 level, a Simple Effects test (Winer, 1966) was not performed; however, it appears from an inspection of the means that 3-year-old males interacted at further distances than 4-year-old males and 3- and 4-year-old females (see Table 4).

As can be seen in Table 3, a significant main effect was found for age ($p < .01$). This supports Hypothesis III, which stated that there would be a difference between 3- and 4-year-olds in distance. It can be seen from Table 4 that 3-year-olds stand further apart than do 4-year-olds.

Axis. Using the adapted 25-point scale for measuring axis orientation, no significant sex difference or

TABLE 3

ANALYSIS OF VARIANCE FOR DISTANCE

Source	SS	DF	MS	F
Age	996.102	1	996.10	6.85**
Sex	528.641	1	528.64	3.63*
A*B interaction	434.011	1	434.01	2.98
Error	4655.630	32	145.49	
Total	6614.384	35		

*p < .07.

**p < .01.

TABLE 4

CELL MEANS OF DISTANCE SCORES

Age of interactants	Sex of interactants		
	Male	Female	Sex combined
Three years old	49.2411 n = 8	34.4062 n = 8	41.8237 n = 16
Four years old	31.5057 n = 12	30.7747 n = 8	31.2133 n = 20
Age combined	38.5998 n = 20	32.5905 n = 16	

interaction effect was found. Thus, Hypothesis II, which stated that there would be a difference between males and females in axis orientation, was not supported (Table 5).

TABLE 5

ANALYSIS OF VARIANCE FOR AXIS SCORES

Source	SS	DF	MS	F
Age	12.981	1	12.98	3.52*
Sex	.833	1	.83	.23
A*B interaction	1.454	1	1.45	.39
Error	118.044	32	3.69	
Total	133.312	35		

*$p < .07$.

There was, however, a marginally significant main effect for age ($p < .07$), which lends support to Hypothesis IV, which stated that 3- and 4-year-olds would differ in axis orientation (Table 6). It was found that 3-year-olds maintained a more direct orientation than 4-year-olds.

To ascertain whether a relationship exists between the proxemic variables of distance and axis, a correlational analysis was performed between these data. No significant relationship was found between these variables ($r = -.04$).

Indirect Measure of Personal Space

The results of PT I were analyzed using three one-way chi-squares with the variable being degree of

TABLE 6

CELL MEANS OF AXIS SCORES

Age of interactants	Sex of interactants		Sex combined
	Male	Female	
Three years old	2.5446 n = 8	1.9275 n = 8	2.1861 n = 16
Four years old	3.3561 n = 12	3.4552 n = 8	3.3957 n = 20
Age combined	3.0315 n = 20	2.6414 n = 16	

TABLE 7

ONE-WAY CHI-SQUARES OF DEGREE OF ACQUAINTANCE SCORES

	1	2	3	
Friend	40	13	15	n = 68 E = 22.667
	χ^2 = 19.966 df = 2 α = .001			
Acquaintance	15	43	10	n = 68 E = 22.667
	χ^2 = 27.911 df = 2 α = .001			
Stranger	13	12	43	n = 63 E = 22.667
	χ^2 = 27.472 df = 2 α = .001			

acquaintance. The first of these pertained to the category friend, with the null hypothesis stating that an equal number of children will choose one, two, and three as friend. This analysis was repeated, substituting acquaintance and stranger category frequencies for degree of acquaintance. As can be seen in Table 7, in all three cases the null hypothesis was rejected with a chance probability of ($p < .001$). Upon inspection of the frequencies, it was found that friend was chosen most often as position 1 (1 inch), acquaintance as position 2 (3 inches), and stranger as position 3 (5 inches). This finding supports Hypothesis V, which stated that subjects would equate closer distance with greater degree of acquaintance.

When a two by three chi-square was performed on the PT I data (Tables 8-10) with age and position chosen as friend, acquaintance, and stranger as the variables, no significant age differences were found. No support was given to Hypothesis VII, which stated that there would be a difference between 3- and 4-year-olds in the placed task (PT I), such that 4-year-olds would more consistently equate smaller distances with greater degrees of acquaintance and greater distances with lesser degrees of acquaintance.

Hypothesis VI stated that in a free-place projective task (PT II) there would be a difference in the distance placed between figures identified as friend, acquaintance, or stranger for subjects, such that an

TABLE 8

TWO-WAY CHI-SQUARE OF AGE BY FRIEND

Age	Frequency of position chosen as friend			Total N
	1	2	3	
Three years old	15.00	8.00	9.00	32
Four years old	25.00	5.00	6.00	36
Total				68

α = .01
df = 2
C = 9.210
χ^2 = 3.569

TABLE 9

TWO-WAY CHI-SQUARE OF AGE BY ACQUAINTANCE

Age	Frequency of position chosen as acquaintance			Total N
	1	2	3	
Three years old	9.00	18.00	5.00	32
Four years old	6.00	25.00	5.00	36
Total	15.00	43.00	10.00	68

α = .01
df = 2
C = 9.210
χ^2 = 1.509

TABLE 10

TWO-WAY CHI-SQUARE OF AGE BY STRANGER

Age	Frequency of position chosen as stranger			Total N
	1	2	3	
Three years old	8.00	6.00	18.00	32
Four years old	5.00	6.00	25.00	36
Total	13.00	12.00	43.00	68

α = .01
df = 2
C = 9.210
χ^2 = 1.602

TABLE 11

MEANS FOR AGE BY REPEATED MEASURES OF FRIEND, ACQUAINTANCE, AND STRANGER (PT II) (n = 68)

Age	1 Friend	2 Acquaintance	3 Stranger
Three years old	6.85	5.55	6.28
Four years old	3.29	4.42	7.36
All subjects	4.96	4.95	6.85

inverse relationship between distance and degree of acquaintance would exist. This was tested by using a multivariate analysis of variance with repeated measures, with the null hypothesis stating that there will be equal distances placed between the figures identified as friend, acquaintance, and stranger. The null hypothesis was rejected with a chance probability of $p < .02$, thus supporting the first part of Hypothesis VI which predicted a difference. Upon inspection of the cell means, however, it was found that there was no significant difference in distance placed between friend and acquaintance. Stranger, however, was placed significantly more distant (see Table 11).

Because of the finding obtained from the analysis relating to Hypothesis VII, that 3-year-olds free placed self-referent figures indiscriminately while 4-year-olds showed a distinct pattern, a 2 x 3 multivariate analysis of variance using repeated measures (friend, acquaintance, stranger) was performed. It can be seen in Table 11 that a significant interaction of age by the repeated measures of friend, acquaintance, and stranger ($p < .01$) exists. Four-year-olds showed a distinct trend of friend being placed closer than acquaintance, and acquaintance being placed closer than stranger; 3-year-olds, however, appeared to be relatively indiscriminate in their placements. The absence of a trend in the 3-year-olds would account for not finding an inverse relationship between distance placed and degree

of acquaintance.

PT II data were further analyzed by using a multivariate analysis of variance with an age and sex design (Table 12). There was a significant ($p < .007$) main effect for age (Table 11). Upon inspection of the means, a trend is found with 3-year-old males and females being indiscriminate in their placements but 4-year-olds displaying a definite pattern with friend placed closer than acquaintance, and acquaintance placed closer than stranger. Hypothesis VIII was thus supported. No interaction was found ($p < .59$) between age and sex, thus allowing the examination of age and sex effects separately.

No significant sex differences on the variables of friend, acquaintance, and stranger ($p < .32$) were found in the analysis of either PT I or PT II (Tables 12-15). Males and females therefore performed equivalently on both tasks.

An analysis was run to get an estimate of the relationship between the direct and indirect measures. There was a relationship, with the correlation coefficient, $r = .268$, which is significant at the $p < .05$ level. A significant correlation between the direct and indirect measures was thus found (Table 16).

TABLE 12

MEAN PROJECTED (PLACED DISTANCE) SCORES (IN INCHES) OF MALE AND FEMALE 3- AND 4-YEAR-OLDS FOR THE RELATIONSHIPS OF FRIEND, ACQUAINTANCE, AND STRANGER (n = 68)

Sex	Age (years)	Friend	Acquaintance	Stranger
Male	3	6.78	5.47	6.57
Female	3	6.94	5.65	5.90
Male	4	3.53	5.42	9.48
Female	4	2.95	3.01	4.38
All subjects				

TABLE 13

TWO-WAY CHI-SQUARE OF SEX BY FRIEND (PT I)

Sex	Frequency of position chosen as friend			Total N
	1	2	3	
Males	21.00	7.00	11.00	39
Females	19.00	6.00	4.00	29
Total	40.00	13.00	15.00	68

$\chi^2 = 2.017$
$\alpha = .01$
$C = 9.210$
$df = 2$

TABLE 14

TWO-WAY CHI-SQUARE OF SEX BY ACQUAINTANCE

Sex	Frequency of position chosen as acquaintance			Total N
	1	2	3	
Males	9.00	24.00	6.00	39
Females	6.00	19.00	4.00	29
Total	15.00	43.00	10.00	68

α = .001
df = 2
C = 9.210
χ^2 = .113

TABLE 15

TWO-WAY CHI-SQUARE OF SEX BY STRANGER

Sex	Frequency of position chosen as stranger			Total N
	1	2	3	
Males	9.00	8.00	22.00	39
Females	4.00	4.00	21.00	29
Total	13.00	12.00	43.00	68

α = .01
df = 2
C = 9.210
χ^2 = 1.849

TABLE 16

SAMPLE CORRELATION MATRIX (PT III)

	Indirect	Direct
Indirect	1.000	
Direct	.268	1.000

r = .268

p < .05

CHAPTER VI

DISCUSSION

The relationship between the actual and projected distances was found to be significant ($p < .05$), but because the magnitude of the correlation was relatively low ($r = .27$), these two measures can be assumed to measure somewhat different behaviors. The findings obtained from these measures will, therefore, be treated separately.

While the data of children's observed proxemic behavior support the hypothesized differences between 3- and 4-year-olds, generally they did not uphold the predicted sex differences. Regarding Hypothesis I, which predicted a male-female difference in interaction distance, though it appears that differences do exist, these differences can be accounted for by the deviant behavior of 3-year-old males; these subjects interacted at the furthest distances. When axis is considered, no significant sex differences were found, thus refuting Hypothesis II. These findings are similar to those found by Aiello and Jones (1971) and Jones and Aiello (1973), who studied the proxemic behavior of children 6 years of age and older.

Age, rather than sex, seems to be the differentiating factor in the proxemic behavior of young children.

The support given to Hypotheses III and IV, which predicted age differences in these proxemic behaviors, and the lack of support given to Hypotheses I and II, indicate that age rather than sex is the crucial variable when proxemic behavior is considered. Three-year-olds stood further apart and more directly than did 4-year-olds.

Four-year-olds may have been less direct because they were less fearful and therefore more natural in their interactions. Three-year-olds, on the other hand, might have been more fearful and therefore stood more directly. This explanation, however, is not consistent with the finding that 3-year-olds stood further apart rather than huddling together.

The age differences also appear to indicate a developmental process, with 4-year-olds patterning more closely the adult norms while 3-year-olds do not display such a pattern. It is interesting to note that between the ages of 3 and 4 a crucial change in nonverbal behavior occurs. This trend in observed proxemic behavior is similar to a trend in the development of aggressive behavior found by Sears (1951).

The Sears (1951) study is also relevant to the present study's lack of sex differences, since before the age of 5 males and females performed similarly but by age 5 differences were evident. Perhaps by age 5 the child has achieved same-sex identification (Duhamel & Biller, 1959), but before that time identification may not be complete in

the nonverbal area. If, indeed, younger children have not progressed to the stage where same-sex nonverbal identification has taken place, the behavior of children will not yet have been sex-typed, and male-female differences should not be evident.

Younger children, it would seem, would not be so harshly punished for their indiscretions in the use of personal space (i.e., Fry & Willis, 1970). This interpretation may be more plausible when the difference between 3-year-old males and the remainder of the subjects is considered. As Rothbart and Maccoby (1966) found, mothers are more permissive with their preschool sons; this permissiveness may affect the 3-year-old males' nonverbal behavior so that it consequently would be less conforming. This is assuming, of course, that the mother is the primary reinforcing agent involved.

The development of the child's personal space schemata appears to be present in an overall cognitive framework by age 3, but the behavioral manifestation of the schemata is apparent only by age 4. While Hypothesis V, which predicted the equating of closer distances with greater degrees of acquaintance, was supported for all subjects (that is, including 3-year-olds), it is not until age 4 that children displayed the inverse relationship between the degree of acquaintance between projected interactants and the distance with which these projected interactants are placed relative to each other, thus confirming

Hypothesis VIII.

Because of the fact that no sex or age differences were found in the performance of PT I (Hypothesis VII), but that age differences were found in PT II (Hypothesis VIII), along with the fact that a general inverse relationship was found between degree of acquaintance and the distance preplaced (Hypothesis V), it would seem that 3-year-olds may conceptualize a schema, but when they must free place a self-referent figure perhaps they do not have the motor coordination to do so. This is further supported by their expected performance on PT I.

Another alternative explanation for the inconsistency of the age differences is that 3-year-olds may have had more difficulty understanding the language and concepts used. Since the language and concepts used in PT I were the same as that used in PT II, the differences should have been consistent in both; they were not, however.

There was an overall difference between distance placed between friend, acquaintance, and stranger on PT II but the relationship was not an inverse one. This was due to the placements of the 3-year-olds (Hypothesis VI). The means seem to indicate that these children show no understanding of the concepts when they must free place figures. This would lead one to believe that the results of PT I should have been affected, which they were. Also, it cannot be assumed that the problem lies with PT II, since PT I may indeed have been a better discriminatory instrument,

since the child had control over his placements, and a variety of possibilities for the placement could have existed.

The results of PT I and PT II, unlike the findings of Estes and Rush (1971), appear to be consistent with Guardo (1969). This study's findings, therefore, extended the age boundaries for the understanding of personal space norms to preschool children, with some understanding by age 3 and a schematized understanding by age 4. On PT II, which was similar to a free-place task used by Guardo, no sex differences were found. Guardo (1969) found striking age differences, however, but no sex differences on her pre-placed task. It is interesting to note this inconsistency between the two projective tasks which may parallel the age inconsistency in this study. Perhaps, in the case of 3- and 4-year-olds, age is the important factor, while in older children where the schemata is already learned sex differences appear. The important thing for preschool children may be learning the task; once it is learned, they may therefore differentiate further into a separate male or female schema.

Also, as development takes place, the child becomes progressively more sex-typed, as mentioned above, so sex differences should become more manifest. Also, as Duhamel and Biller (1959) found, 5-year-old males made more non-imitative sex role choices than did females. Perhaps at the preschool level the non-imitative preferences of males

make them similar in behavior to females but, as they grow older, males begin to make fewer non-imitative behaviors; thus, sex differences will occur at a later but not at an early age. This also is consistent with the non-schematized behavior of 3-year-old males on PT II.

It is interesting to note the Baxter and Phelps (1970) finding when an indirect measure was used that black female preschool children show a precocity in the area of personal space. This was not found in white females when the indirect measures were used. Perhaps this is because of the reason mentioned above, or perhaps because middle-class white children are not sex role typed by age 5 and thus show no difference, or merely because black children are more aware of personal space norms or more atuned to nonverbal behavior. However, when the direct measure of proxemic behavior is considered, male-female differences were found, thus leading one to believe that white females may be behaviorally more imitative than they illustrate in a projective task situation, but that cognitive schemata have not yet been organized. In any case, this shows some indirect subcultural differences as was proposed by Hall (1966), and found by Aiello and Jones (1971) and Jones and Aiello (1973) when they utilized a direct measure of proxemic behavior.

Summary

In the use of a free-place technique, Guardo (1969) made the assumption that "an isomorphism maintains between actual behavior (actual use of interaction distance) and the representational figure-placement distance [p. 150]." Though there was indirect support (Little, 1965) for this, no direct comparison had been made. Though in this study there was some correlation between the direct and indirect measure (.27), it was not large enough to assume that one should be equated with the other; thus, how a child performs indirectly seems to have only minor bearing on how he performs directly. Not only does the 1 inch equal to 1 foot scaling not apply to children, but their actual observed interactions do not demonstrate the same age and sex differences. It thus seems that the study of personal space in preschool children can be divided into two categories: the directly observed use of space and the underlying cognitive schemata.

The understanding of schemata for the three relationships used in this study appears to be present by the age of 3 but the actual manifestation and performance based on this cognitive schema, as illustrated by the free-placement projective task and the actual observed proxemic behavior, does not seem to be developed until age 4, thus indicating a developmental trend in the use of personal space.

As Maccoby and Jacklin (1971) maintained, there are

no inherent sex differences in males and females but, rather, these sex differences develop later in life as greater socialization takes place. This was supported by the author's study, which found either only marginal sex differences or no sex differences at all in the direct measure of personal space.

Implications for Further Research

The finding of this study gives a variety of possibilities for further research. Since the correlation between the direct and indirect measure was rather low for preschool children, a developmental study using older children of various ages should be executed to determine whether a definite relationship exists between these two types of measures, and, if it does eventually exist, at what age is it established.

Also, it would be interesting to devise a study, using the direct and indirect measures with black preschool children, to see if age, sex, and correlational findings are different for black preschool children than they are for white preschool children. Since the Baxter and Phelps (1970) study, when compared with the present study, indicates differences in the female performance of the two subcultures, perhaps the Baxter and Phelps study should be replicated using black and white females to obtain a direct comparison of the development of personal space in females. Also, a black and white developmental study using the

measures employed in this study would broaden the understanding of personal space development.

Additional studies similar to that of Little (1968) are needed to ascertain the generalizability of the present results to other cultures and subcultures.

In all of these studies refinement of the instrument may be necessary for it must be determined whether 3-year-old children understand the words which describe the affect states of friend, acquaintance, and stranger.

The dual procedure utilized by this study could also be employed beneficially by those investigators who wish to further understand the use of personal space in emotionally disturbed children. It may well be that these techniques would allow for sufficient discrimination between disturbed and normal children.

Methodologically, it would be useful to determine the relationship between the use of a front-facing figure projective task and a profile silhouette projective task. This comparison would probably clarify any of the discrepant results obtained in the present study from those of Estes and Rush (1971).

Because of the effect that a manipulation of an environment has on personal space behavior (Baxter, 1970; Castell, 1970; Guardo, 1969), direct and indirect data should be obtained on young children to determine any possible interaction between age, sex, and environment. This should also be investigated developmentally.

Finally, since a nursery school population was used and the socialization process may be different for nursery school children, as far as sex role identification and personal space relationships are concerned, a preschool group of children who do not attend nursery school or have not attended should be used. A comparison of the effects of nursery school on these areas of socialization can thus be made.

In summary, personal space research is in its infancy and a wealth of studies are needed before a thorough understanding of these behaviors can be accomplished.

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