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Toddler peer preferences: The role of gender awareness,
sex-typed toy preferences and compatible play styles

Lora C. Moller

A Thesis
in
The Department
of
Psychology

Presented in Partial Fulfilment of the Requirements
for the Degree of Doctor of Philosophy at
Concordia University
Montreal, Quebec, Canada

December 1991

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Abstract

Toddler peer preferences: The role of gender awareness,
sex-typed toy preferences and compatible play styles

Lora C. Moller, Ph.D.

Concordia University, 1991

The present study examined possible antecedents of toddler playmate preferences and gender segregation (i.e., preference for same-sex peers). Playmate preferences were expected to occur between children with compatible play styles. Three different factors (gender awareness, sex-typed toy preferences and compatible play styles) were hypothesized to influence gender segregation. Children with knowledge of gender labels and roles or sex-role appropriate toy preferences or sex differentiated, compatible play styles were expected to exhibit a preference for same-sex peers. Fifty-seven toddlers (28 males, 29 females) with the mean age of 35 months were observed in free play to determine their play partners, play styles and toy preferences. Teacher ratings of typical child behaviours were also collected. Gender awareness was determined from two individually administered cognitive measures: Leinbach and Fagot's gender labelling measure and Edelbrock and Sugawara's SERLI measure of gender role awareness. There was some support for the compatible play style hypothesis of

playmate preference such that children with similar and complementary play styles played together frequently. For example, toddlers who were popular chose other popular peers as playmates, and socially sensitive children selected peers who exhibited play styles which were social in nature. While children were not segregating in their preferred playmate choices, gender segregation did emerge in the children's overall contact with peers with more girls segregating than boys. There were 19 gender segregating girls and 13 gender segregating boys. In terms of the etiology of gender segregation, gender segregating girls were perceived by teachers to be more socially sensitive than their peers. There were no differences between the gender segregating and non-segregating children on gender awareness and sex-typed toy preferences. Taken together, these findings indicate some support for the compatible play styles explanation of gender segregation. The gender awareness and sex-typed toy hypotheses were not supported.

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Dedication

This thesis is dedicated to the memory of my grandparents.

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Introduction

One major developmental achievement of childhood is the establishment and maintenance of friendships. Friendships play a key role in fostering healthy development in a number of areas. Peer relations provide a context within which children develop important skills (Hartup, 1983). For example, when with friends, children demonstrate more sharing (Berndt, 1981), more advanced problem solving, and more cooperative play (Hartup, 1983) than when with non-friends. Within these social contacts, young children also develop communicative behaviour (Garvey, 1987; Garvey & Hogan, 1973; Mueller, 1972; Mueller & Lucas, 1975; Shantz & Gelman, 1973; Spilton & Lee, 1977), moral reasoning (Damon, 1977; 1980; 1983), perspective taking, and prosocial interaction (Zahn-Waxler, Iannotti & Chapman, 1982).

Psychologists have increasingly recognized the importance of friendships in light of research regarding the negative effects of poor peer relations. Researchers have demonstrated that children with social difficulties were at greater risk for later mental health problems than were socially competent children (Cowen, Pederson, Babigian, Izzo and Trost, 1973; Hightower, 1990; Parker & Asher, 1987). Further support for the role of friendship as an important factor in fostering mental health can be found in the research by Miller and Ingham (1976; 1985; 1989) involving the physical and psychological health of adults undergoing a variety of life crises. They found that those individuals with a close friend

or acquaintance fared significantly better than those with impaired social relationships. The individuals without an intimate confidant had psychological symptoms (i.e., tiredness, anxiety, depression and irritability) of significantly greater severity than those reported by their more adequately supported counterparts. Those without casual, less intimate friends (acquaintances) reported higher levels of both physical (i.e., backache, headache, palpitations, dizziness, and breathlessness) and, psychological symptoms.

Such results regarding the importance of friendship for the development of several social, emotional, and cognitive skills, have provided researchers with the incentive to extensively examine the evolution and effects of early peer relationships on later development (see Hymel & Rubin, 1985 for a review). Researchers have begun to examine the development of peer relations in toddlers (Howes, 1983) as a means of assessing the ontogeny of social competence.

Toddler peer relations, especially those relationships between preferred playmates that develop in the period between 2 and 3 years, reflect the earliest origins of peer competence and, as a precursor to later amity, play an important role in the study of peer relations. While there is research indicating that young, preschool-aged (3-5 years) children do have friendships (Gershman & Hayes, 1983, Howes, 1983; Rotheram & Phinney, 1981) and that infants (0-2 years) are sociable (Becker, 1977; Escalona, 1973; Finkelstein, Dent, Gallacher, & Ramey, 1978; Hay, Nash & Pedersen, 1983; Mueller

& Lucas, 1975; Vincze, 1971), the research involving the existence of friendships in children in the transition period between infancy and early childhood is limited (Howes, 1983; Vandell & Mueller, 1980). One finding that has repeatedly emerged from studies of young children's friendship preferences is that children most often establish and maintain same-sex friendships.

Gender segregation

Gender segregation is a preference for same-sex play partners and has been exhibited in children as young as 3 years of age through adolescence (see Duck, 1975; Fagot & Patterson, 1969; Foot, Chapman & Smith, 1980; Hartup, 1983; Lockheed & Klein, 1985; Maccoby & Jacklin, 1987; Omark, Omark & Edelman, 1973; Singleton & Asher, 1979) with a tendency for girls to gender segregate earlier than boys (LaFreniere, Strayer & Gauthier, 1984). Given that same-sex groupings are so robust, the implications of these affiliation preferences must be considered. Sex-segregated social groupings are important because they create a milieu in which sex differences in children's social interactions are extended and amplified (Maccoby & Jacklin, 1987). Within these segregated groups, children experience a somewhat different world from their other-sex peers and they are provided with an opportunity to learn the sex-typed characteristics, skills, and roles deemed gender-appropriate by society (Maccoby, 1988).

Research involving children's play and modes of social influence highlight these sex differences within same-sex conclaves (see Maccoby and Jacklin, 1987 for a review). For example, boys engage in more rough, aggressive, and active play (DiPietro, 1981; Goldberg & Lewis, 1969) and play in larger groups with less proximity to adults than do girls (Carpenter, 1983; Carpenter & Huston-Stein, 1980; Huston & Carpenter, 1985). Girls tend to be less concerned about dominance issues, play in dyads and trios, and use more turn-taking than boys (Maccoby, 1985). The implications of sex differences in children's social experiences are amply demonstrated in Serbin, Sprafkin, Elman and Doyle's (1984) observational study of sex differences in preschool children's influence techniques during social interactions. They observed that girls used polite suggestions and boys used direct demands, while across the ages of 3 to 5, the boys decreasingly responded to the girls' mode of social influence. A number of researchers (Charlesworth and Dzur, 1987; Charlesworth and LaFreniere, 1983; Fagot, 1985; Jacklin and Maccoby, 1978) also reported asymmetrical responsiveness in their observations of young children such that, once again, the girls could not influence the behaviors of their male peers.

Taken together, it appears that sex-segregation is important because it leads to differential patterns of social interaction and play experiences. When girls attempt cross-

sex peer interactions using their "feminine" style, they are not successful. Sex-linked social influence styles appear to be most effective with same-sex peers, fostering a preference for same-sex groups. As a result, cross-sex interactions are unlikely to occur frequently as children are more prone to seek out primarily same-sex peers. Within these same-sex groupings, children would not be exposed to other-sex interaction styles and instead continue to develop their sex-linked interaction styles. This experience would amplify and maintain the distinctive cultures of boys' and girls' groups. Such differences in play experiences could lead to differences in their intellectual, social, and emotional development (Block, 1973; Lever, 1976).

Gender segregated relationships have obvious implications for children's development and play an important role in children's peer relations. The importance of maintaining these segregated groups is aptly demonstrated by the social consequences of not adhering to sex-linked behavioral repertoires: children who behave consistently in a gender-inappropriate manner are not well received by their peer group (Bates & Bentler, 1973; Bates, Skilbeck, Smith & Bentler, 1974; Fagot, 1977; 1978; Green, 1977; Moller, Rubin and Hymel, 1990; Saghir & Robins, 1973; Steriker & Kurdek, 1982; Thompson, Schwartz, McCandless and Edwards, 1973).

In summary, there appears to be support for the existence of emerging friendships (that is preferences for specific

peers) between 2 and 3 years of age. Gender segregation also begins to appear at this time. This co-occurrence would suggest a connection between these two phenomenon. That is, the same processes that lead children to prefer specific playmates may also lead children to prefer playmates of a specific sex. On the other hand, there may be antecedents which are specific to one aspect but not to the other. For example, gender segregation may require gender awareness that is not crucial to general peer selection. As with the development of early peer relations, the factors influencing the development of gender segregation need further study. These antecedents have not been studied.

Howes (1988; 1990) has recently begun to examine the relationship between friendship patterns and sex cleavages in toddler peer groups, but she did not explore the factors that contributed to the development of both components. She found that children initiated and responded to peers if they were friends, regardless of their sex. Gender segregation only appeared in their general contacts with peers and not with their friends. She suggested that "friendship is a more salient category for toddlers than is sex" (Howes, 1988; p. 31). These toddlers were choosing their friends on some basis other than gender, suggesting that there may be some disparities in the antecedents of both components. There may be one process by which preferred peer relations develop and another by which gender segregation occurs. However, she did

not examine this issue. Thus, there is a need for research on the development of peer preferences in toddlers, as well as the development of same-sex preferences. The role of play as an antecedent to these toddler relations is the focus of the present study.

Literature review

What follows is a review of the literature relevant to this paper. First the proposed origins of toddler preferences for preferred playmates will be explored. Then, theoretical explanations of gender segregation will be presented. Finally, a series of hypotheses and predictions regarding the relationship between these two types of relationships in 2 1/2 to 3 year olds will be outlined. Before surveying current views of the development of toddler friendships and gender segregation, a definition of what is considered "friendship", and how this concept has been studied, will be presented.

Definitions of Friendship

The majority of the extant literature on children's friendships deals with peer relations in childhood and adolescence. Based upon studies with this age range, it has been found that children's conceptions of friendship progress from a very concrete, egocentric basis to more abstract, sociocentric expectations involving psychological concerns (Bigelow & LaGaipa, 1975; Gurucharri & Selman, 1982; Selman, 1980). Youngsters from preschool to grades 2 or 3, perceive friends as those peers with whom one engages in common

activities (Bigelow & LaGaipa, 1975; Hayes, Gershman & Bolin, 1980; Youniss, 1980), shares toys (Youniss, 1980) and stays proximal (Bigelow & LaGaipa, 1975; Hayes, et al., 1980). Older children focus on characteristics and behaviours such as sharing deep psychological concerns (Buchharri & Selman, 1982), loyalty (Bigelow & LaGaipa, 1975) and providing aid when necessary (Bigelow & LaGaipa, 1975; Youniss, 1980) in their conceptions of friendship.

There are a few studies that have attempted to examine toddlers' friendships (e.g., Howes, 1983; Vandell & Mueller, 1980); however, friendships in children younger than three years old have for the most part been neglected. Studies of infants and toddlers have focused not upon friendship per se, but on social skills and interactions in children under two years of age (Jacobson, 1981; Mueller & Brenner, 1977; Mueller & Lucas, 1975; Rubenstein & Howes, 1976; Vandell, Wilson & Buchanan, 1980). Few researchers have carried this work one step further, by investigating whether the social interaction observed enables young children to form distinctive social relations with one another which will eventually become friendships.

The reasons usually given for this scarcity of research include the Piagetian notion that young children are too egocentric to have meaningful social relations (Lewis & Rosenblum, 1975) and the psychoanalytic view of the importance of the mother-infant relationship as the primary social

relationship (see Mueller & Vandell, 1979). Hence, it was generally thought that infants and toddlers were not ready for social relations with peers and such relations would depend on prior satisfactory relationships between the child and his/her parents. Thus, young children's exposure to other peers was not considered of primary importance to their development, so they usually stayed at home with their parents.

Research conducted in the 1930's appeared to corroborate these views. More specifically, Bridges (1933) and Maudry and Nekula (1939) placed unacquainted toddlers together and observed their interactions. They reported that the dominant activities among these children were fighting or engaging in disputes over toys. From these studies, researchers deduced that children under 3 years are not very pleasant or compatible social partners to their peers. A closer reading of the actual data reported indicates that, in fact, the negative acts of these children were no more frequent than their positive ones. Yet, this research was popularly accepted as supporting the notion that young children were not sociable or ready to participate in social activities with other children--much less to form friendships (e.g., Lewis, Young, Brooks & Michalson, 1975).

More recently, researchers have suggested that friendships in young children are unstable and very transitory (Selman, 1980). Selman designed a stage theory of friendship

in which he describes the "first level" friendships (encompassing ages 3 to 5) as "momentary" in nature, suggesting that young children's peer relations are very unstable and quantitatively impoverished compared to those of older children and adults. However, his theory is based on interviews, a procedure that relies heavily on the subjects' verbal abilities. Since young children are not as verbally sophisticated as their older counterparts, these data may underestimate the incidence of their friendships.

The low frequency of toddler friendships derived from these procedures may merely reflect the young children's less refined ability to verbally reflect on this social process, not a dearth of friendship. Furthermore, the descriptions of older children's friendships mentioned above involve other data collection methods (i.e., problem situations, story completion, written essays, sociometry) which are also inappropriate for toddlers (Gottman, 1983). Sociometric measures are commonly used to assess young children's peer choices because they rely less on verbal responses. However, sociometrics are only moderately reliable for children under the age of 4 (Asher, Singleton, Tinsley & Hymel, 1979; Cohen, Darvill, Bream, LeMare, Rubin & Krasnor, 1983; Foot, Chapman & Smith, 1980; Hartup, Glazer & Charlesworth, 1967; Hymel, 1983; McCandless & Marshall, 1957; Moore & Updegraff, 1964). Such methodological limitations have curtailed the amount of research involving peer relations of toddler-aged children.

Researchers have attempted to circumvent these limitations and a primary factor which has been instrumental in these studies is the increased use of group child care arrangements. As more and more children are being placed in child care situations (i.e., nursery school or day care), ideal environments for studying the emergence and development of peer interactions have been created. In addition, researchers have managed to overcome procedural restrictions with alternative methods of ascertaining close peer relations (e.g., observational studies--Marshall & McCandless, 1957; Vandell, & Mueller, 1980; maternal reports--Lewis et al., 1975; Rubenstein & Howes, 1976; teacher reports--Marshall & McCandless, 1957; Olson, Johnson, Belleau, Parks, and Barrett, 1983) which are more sensitive to young children's expressive limitations than past methods requiring verbal responses (i.e., Bigelow, 1977; Bigelow & LaGaipa, 1975; Foot, Chapman & Smith, 1980; Gottman, Gonso & Rasmussen, 1975; Selman & Jacquette, 1977). Some of the criteria these researchers have used in their endeavors to specify toddler peer preferences involve enduring interactions between children characterized by: a) mutual enjoyment as seen by the ability to engage in positive affective exchanges (Howes, 1983; Howes & Mueller, 1980; Vandell & Mueller, 1980), b) mutual preference, seen as a "high probability that a dyadic interaction would follow a social initiation by either partner" (Howes, 1983, p. 1042), and c) skillful interactions (Howes, 1983; Howes & Mueller,

1980; Krawczyk, 1985; Rotheram & Phinney, 1981), seen as social exchanges in which the behaviour of one partner is contingent on the action of the other partner. In the latter definition, interactions are thought to demonstrate children's understanding of their partner's role (Howes, 1980; Howes & Mueller, 1980). For example, there is give-and-take behaviour in a run-chase game, in which one child runs and the other chases (Damon, 1983).

More recently, Howes (1988) modified her definition to produce an observational index of "behavioral friends". This definition included mutual preference (maintaining proximity) and mutual enjoyment (shared positive affect). Children would be considered friends if they were together frequently and their play was positive. Other researchers have also found that children spent the majority of their time in interactions involving their friends as compared to the time spent with associates (Cohen, Darvill, Lemare, Rubin & Krasnor, 1983; Hinde, Titmus, Easton, & Tamplin, 1985; McCandless and Marshall, 1957). This suggests that the proximity criteria may be useful in determining the peer preferences of toddlers.

Although proximity and types of interactions are useful criteria by which toddlers' social preferences might be assessed, there is another aspect of toddler activities that is very prominent. Shared activity exists as an important basis for peer preferences in preschool children (Hayes, et al., 1980) and continues to be an aspect of friendship through

to adolescence (Reisman & Shorr, 1978; Sharbany, Gershoini & Hofman, 1981; Wright, 1969). Thus, common activity might be another important factor influencing the development of peer relations in toddlers. Toddler's common activities fall under the auspice of play, and in the case of infants, play with toys must be given special consideration.

Development of Social Interchanges Via toys

The majority of toddler peer encounters revolve around toys (Goldman & Ross, 1978; Maudry & Nekula, 1939; Mueller & Brenner, 1977). Young children under a year of age focus primarily on toys in their play and do not concentrate on their peers. At the beginning of the second year, social exchanges begin to occur and toys play an important role in fostering these emerging peer interaction patterns (Jacobson, 1981). For young toddlers, objects provide a framework for initial peer contact. Initially, it is toys that attract young children to each other. The toddlers attend primarily to the toy and ignore the presence of their peers. This situation quickly changes when a child wishes to play with a toy being used by a peer. The child is forced to notice the peer and interact with him/her (Mueller and DeStefano, 1973). An opportunity for turn-taking is presented and this rudimentary system of social exchange provides a child with a means of regulating peer relations. "Thus, the somewhat accidental peer interaction established by the object contact generates a social experience that helps the child develop

more advanced ways of interacting with peers" (Damon, 1983; p. 60). Toys provide infants with an opportunity to get to know one another and lead the way to more reciprocal and interactive peer encounters.

Once the child discovers that s/he has some influence over a peer's behaviour, interactions are less object-oriented, and become more peer-oriented. They "come together for the purpose of initiating exchanges with each other and not simply with toys" (Mueller & Rich, 1976, p. 321). The toddlers exhibit mutual interest in one another's activities and actively respond to one another's initiations. In this manner, extended interaction sequences develop and such reciprocal activities are pursued for their own sake, rather than simply as a means to a desirable object.

During the second year, children have developed more sophisticated cognitive and motor abilities and are able to begin to coordinate playing with both peers and toys (Vandell, Wilson & Buchanan, 1980). Indeed, Jacobson (1981) stated that the "ability to focus attention simultaneously on both the peer and a toy is probably required before social interaction can occur in an object-centered context" (Jacobson, 1981, p. 625). Now toys can be used to develop higher levels of play (Rubenstein & Howes, 1976) such as engaging in longer interactions (Jacobson, 1981; Mueller & Brenner, 1977). Mueller and Brenner (1977) found that 84% of 16.5 month old children's interactions were object-focused,

involving parallel-play with a common toy. This play differs from the object-oriented play of younger children in that younger children focus solely on the toys. In contrast, older children come together and orchestrate their play around the toys and themselves and are able to focus on both the peer and the toy (Mueller & Brenner, 1977). Therefore, toys become a focal point for interaction during the second year and this object-centered play may well enhance social interaction.

In summary, toys appear to play an important role in the development of emerging social relations. When children are young, toys provide a means for noticing peers and learning that it is possible to have some influence over these other individuals. Once this awareness of peers as potential playmates has surfaced, the children begin to interact with each other. Finally, toys become important for extending and enhancing the children's interactions.

From Interactions To Friendships

Toddlers direct a variety of behaviours to each other and by the end of the second year they exhibit considerable social awareness and understanding, and engage in a number of interactions with peers. Yet, the process by which spurious interactions between children blossom into steadfast interactions with a preferred playmate is not clear. The role of play may be quite important in this progression. Once children are capable of coordinating peers, toys, and activities in their play behaviors, they learn more complex

ways of interacting. Not only do the children have to know how to manipulate objects, they also have to learn how to simultaneously interact with their play partners. Because toddlers' language and general communication skills often limit their ability for peer interaction, they have to acquire another means of communicating their needs, desires, and feelings to each other. One effective way of deriving the understanding necessary for successful and rewarding interactions is by developing an interactional style which is easily discerned by one's playmates and, as a result, will lead to coordinated social behaviours (Mueller & Brenner, 1977). Once a child is identified with a characteristic way of playing, other children will know what type of play to expect when with this peer. Then children will be able to choose playmates who have play styles they enjoy.

In order to develop the ability to make these systematic distinctions among peers, children require considerable exposure to others (Bronson, 1974). Through this exposure to each other, toddlers learn to differentiate the play styles of their peers and appear to select the peer whose play style is most preferable. A peer who uses a compatible play behaviour to signal an initiation to play would be easier to understand and interactions would be more successful and mutually enjoyable. One would expect that children would prefer those peers whose routines are analogous to their own behaviors, because young children positively evaluate

behaviours "like self" and are attracted to those individuals they perceive as similar (Berescheid & Walster, 1978; Foot, et al., 1980; Hayes, Gershman & Bolin, 1980; Hinde, Titmus, Easton & Tamplin, 1985; Lewis & Brooks, 1974; Lewis, Young, Brooks & Michalson, 1975).

Research examining the life-cycle of close friendships in adults have consistently verified this "similarity-attraction principle" using a variety of methods (Myers, 1990). Researchers have found that one's liking for another was greatly aided by similarity of beliefs, attitudes and activities (Griffitt and Veitch, 1974; Lydon, Jamieson & Zanna, 1988; Newcomb, 1961). This relationship was also present in adolescent friendships. Studies of adolescent friendships have revealed that adolescent best friends were highly similar in their behaviours and that this compatibility was an important characteristic of their relationships (Urberg, Halliday-Scher & Tolson, 1991). In the case of adults and older youths, compatibility in behaviour is an important aspect of friendship. It is hypothesized that compatibility will be important in toddler peer relations as well.

Could compatibility also include attraction to people who are not similar to oneself, but are different in ways that complement one's own characteristics? Complementarity is the tendency for each member of a relationship to supply what is missing in the other. This phenomenon is often expressed as

"opposites attract". For example, the needs of someone who is domineering and outgoing would naturally complement those of someone submissive and shy (Winch, 1958). This "complementarity hypothesis" (Myers, 1990) proposes that people seek out others who are different in ways that complement themselves. Yet, there is little support for this hypothesis in the adult literature (Buss, 1985). Given this lack of empirical support in the adult literature, complementarity is not expected to influence toddler peer relations. Thus, compatible play styles, is herein used to refer to behaviors which are similar (i.e., active children playing with other active children).

Empirical support for the influential role of such play styles can be found in the studies of games and conflicts (Brenner & Mueller, 1982; Goldman & Ross, 1978; Ross, 1982; Ross & Goldman, 1977; Ross & Hay, 1977). In playing games with peers, a toddler learns that he/she shares particular routines with someone else and must repeat these routines in subsequent encounters with the peer in order to reenact the game (Ross, 1982). Ross and her colleagues (Goldman & Ross, 1978; Ross, 1982; Ross & Goldman, 1977; Ross & Hay, 1977) studied female toddlers' games and conflicts and found that the children developed idiosyncratic play styles when playing games or when in conflict with peers. Furthermore, these girls were beginning to differentiate between their peers' play styles, showing distinct preferences for certain peers.

It appears that individual differences in peer interaction styles emerge during the second year (Bronson, 1981; Howes, 1988), and that young children are responsive to one another's interaction styles (Brown & Brownell, 1990; Ross & Lollis, 1989).

If a certain dyadic combination is mutually pleasing for the children involved, these children would continue to select each other as preferred playmates. Over time, children would maintain their play partner preferences. These combinations would satisfy the criteria of proximity and positive affect. Thus, they could be described as rudimentary friendships. Hence, it is possible that toddlers whose play styles are compatible would develop a preference for each other as play partners.

In summary, interpersonal exchanges become structured in an understandable way and can therefore be repeated by the participants. Children soon learn that they can share specific routines with certain other peers and by repeating these compatible behaviors in subsequent encounters with these peers, interactions can be successfully re-established. Successful interactions would also be more mutually rewarding and thus, would be re-enacted. As a result, it would be expected that familiar play styles would facilitate interactions leading children to prefer playmates with similar play styles.

These patterns of interaction have a variety of different

labels (Bronson (1974) calls them "social schemas"; Brenner and Mueller (1982) call them, "shared meanings"; Ross and Goldman (1977) call them, "routines"), but for the purpose of the present paper, these behaviors will be designated "play styles".

In describing children's play styles, it may be worthwhile to describe what type of play styles have been identified in the past. Some of the different play behaviours described in previous studies of young children's play styles appear to involve three aspects of play: social orientation, task content, and adult-orientation. Regarding the social dimension, Smetana and Letourneau (1984) scored preschoolers' play along 4 interaction styles: alone, parallel, onlooker, and social interaction. A "sociability" interaction style was also used as a play style by Brown and Brownell (1990) in their study of toddlers' play. Fagot (1981; 1983) in her observations of young children's free play, derived 6 different play styles based on the content of what the children were doing as well as the social dimension of their play (social cooperation). The content dimensions she obtained were: involvement with cognitive complex tasks; active motor play; male preferred behaviours; passive, non-task behaviour; and female-preferred behaviours. A final category of interest is the tendency of some children to play in highly structured activities proximal to a teacher (Carpenter, 1983; Carpenter & Huston-Stein, 1980; Huston &

Carpenter, 1985). Taken together, these studies suggest that there may be a variety of play styles falling under the general categories of social dimension, play content dimension, and adult-orientation dimension.

Synopsis of Antecedents of Toddler Peer Relations

It appears that toddlers are capable of close peer relationships and that these peer preferences may be influenced by toys and by play styles. More specifically, children's involvement with toys would provide them with situations in which they can meet and interact with peers. Once they have progressed from object-oriented to peer-oriented exchanges, they are able to learn about their peers' play styles. Again, play is the medium through which this learning can occur. These play styles serve to bring children together and facilitate their social interactions. Compatible play styles are expected to attract children to each other. Since they share a common mode of play, interactions would be successful and children would be able to engage in mutually-pleasing play. It seems probable, then, that the children would preferentially select play partners who display behaviors that are compatible to their own. Gender segregation begins to emerge slightly after these initial friendships. Given that these two social phenomenon occur at a similar point in time, the factors which influence toddlers' preferred playmate choices may also influence their same-sex peer choices. Since play appears to be a factor which

contributes greatly to peer preferences, it would seem logical that it may also influence this specific type of gender segregated peer preference. However, before the role of gender segregation in preferred peer selection can be explored, the antecedents of gender segregation per se must be delineated. What follows is a description of possible antecedents of gender segregation.

Etiology of Gender Segregation

Preferences for playmates with compatible play styles may not only lead children to form specific peer relations, but it may also eventually lead to preference for same-sex friends. Once children observe how other children play, they can begin to recognize the play styles they prefer and select playmates who demonstrate this preferred play style (Maccoby, 1988). As these peers are repeatedly selected as play partners, friendships would ensue. This initial playmate attraction only requires a recognition of preferred play style for the formation of close peer relations and these first peer preferences could be same-sex or other-sex. With time, these play styles would become more sex differentiated through processes such as reinforcement from teachers (Fagot, 1977, 1978), peers (Fagot & Patterson, 1969; Lamb & Roopnarine, 1979; Langlois & Downs, 1980), and parents (Langlois & Downs, 1980; Lewis, Young, Brooks & Michalson, 1975), which provide opportunities for children to learn what behaviors are expected of their gender. As children's play styles become

more sex-differentiated, their playmate selections based on these play styles would also reflect a same-sex bias.

Others have hypothesized an alternative explanation for segregation which involves the role of toys and activities in gender segregation (LaFreniere, Strayer & Gauthier, 1984; Maccoby & Jacklin, 1987; Rubin, Fein & Vandenberg, 1983). This view is based on a theory proposed by Goodenough (1934) involving "behavioral compatibility". Goodenough hypothesized that children segregate according to their toy and activity preferences, and that activities chosen will bring children into contact with other peers who also prefer that activity. She further hypothesized that since young children prefer sex-typed toys and activities, their choice of gender-role stereotyped activities will bring them into contact with same-sex peers and thus, they will segregate on the basis of gender. For example, during free-play, a girl would gravitate towards the toys she already prefers (i.e., dolls) where she would meet other girls who are there for the same reason and develop playmates because of these similar toy preferences. Similarly, boys would be attracted to one another on the basis of their mutual interest in male-preferred toys (i.e., trucks and cars).

There is a great deal of evidence for this sex-typed toy preference theory in the research involving sex-role stereotyped activity and toy preferences in toddlers and preschoolers (Blakemore, LaRue, & Olejnik, 1979; Conner &

Serbin, 1977; Eisenberg, Tryon & Cameron, 1984; Fein, Johnson, Kosson, Stork & Wasserman, 1975; Liss, 1981; O'Brien, Huston, Risley, 1983; Schau, Kohn, Diepold & Cherry, 1980). These gender-typed toy preferences appear shortly after children's second birthdays (Intons-Peterson, 1988) before gender segregation occurs. Since these toy preferences are robust at such an early age, and given the important role that toys play in the socialization of young children, it would seem likely that these sex-typed toy preferences would play a role in gender segregation.

Another explanation for the emergence of gender segregation is the cognitive consonance theory. The cognitive consonance theory involves the role of cognitive awareness of gender in the development of gender segregation. Kohlberg (1966), an early proponent of this view, suggested that children first acquire the ability to identify their own sex. This self-categorization determines value, such that the children highly regard anything associated with their own sex and would actively seek out sex-appropriate activities, toys, et cetera. Gender segregation would occur because children also prefer play partners who are "like me", that is, of the same sex. Studies examining the emergence of young children's gender identity have demonstrated that toddlers become aware of their gender around 2 to 3 years of age (Fagot, 1985; Fagot & Leinbach, 1986; Intons-Peterson, 1988; Thompson, 1975). Fagot and her colleagues (1985; Fagot, Leinbach & Hagan, 1986)

suggested that preschool children have well-established gender identity prior to gender segregation. She further proposed that children who were able to label gender at an early age (under 27 months) were precocious in their adoption of sex-typed behaviour and spent more time playing with peers of the same sex than those children who failed. Taken together, these findings are consistent with the cognitive consonance approach to gender segregation.

Amalgamation of Theories of Development of Peer Preferences and Gender Segregation

It appears that toddlers use toys as a vehicle to early peer contact. Once they have initiated peer interaction, children decide with which peers they would prefer to play. This decision marks the progression from chance exchanges to purposeful interactions and stable relationships. The process by which very young children come to form specific peer preferences is not generally well understood. One possible mechanism by which children decide who their playmates will be is a preference for children who exhibit compatible play styles. However, this compatible play styles hypothesis of play partner selection has not yet been examined and is one focus of the present study.

Why early peer relations come to be primarily between children of the same-sex is less well understood. There are a variety of theories describing which characteristics children focus on when selecting same-sex preferred playmates.

One view is that children use gender, per se, as the criterion by which they choose preferred peers. Another view is that children form same-sex peer preferences through sex-typed toy and activity preferences.

The final view is an extended version of the play style compatibility theory described earlier. According to this approach, play style compatibility influences initial playmate choices, and then is superseded by other socialization influences. For example, children first concentrate on other peers' idiosyncratic way of playing as a means of selecting preferred play partners, and choose others who have play styles that are compatible with their own. With time, however, these relationships become more sex segregated as emerging forces such as social pressures inform the children of the "appropriateness" of their behaviour. This hypothesized evolution of gender segregation has yet to be empirically examined. These competing views of the etiology of gender segregation were examined in the present study.

The Present Study

The current study was designed to investigate potential antecedents to toddlers' emerging relationships, especially same-sex relationships. Children's gender awareness, toy choices, and play behaviors appear to be possible contributing factors, but have not been studied intensively. To that end, a sample of five groups of toddlers, aged 2.5 - 3 years (the age at which gender segregation begins to emerge), was

studied. Their toy preferences, characteristic play styles, and cognitive understanding of gender were determined and assessed regarding their contribution to peer preferences.

Hypotheses and Predictions:

To investigate the process by which toddlers choose their preferred playmates and how these peer selections develop into same-sex preferences, the following hypotheses were examined:

1) Hypothesis₁: The first hypothesis addressed by the present study focused on the origin of toddler preferred playmate preferences. According to "play style compatibility" theory, children will select as their preferred play partners peers who engage in play behaviours that are compatible with their own style of play.

Predictions:

(i) If Hypothesis₁ is supported, there will be a high degree of concordance between the play styles of target children and their most frequent play partner. That is, the frequency with which each target child engaged in various play styles will be similar to that of his/her preferred playmate. These play styles will be derived from teacher ratings of children's play, and observed play behaviours.

The next hypothesis deals with an examination of how much gender segregation will occur.

2) Hypothesis₂: Based on Howes' research, gender segregation should not occur in the preferred playmate dyads. However, there should be gender segregation present in the children's overall peer contacts, beyond the preferred playmate dyads, with girls segregating earlier than boys (Howes, 1983; 1988; LaFreniere, Strayer & Gauthier, 1984; Maccoby & Jacklin, 1987). Thus, the number of female and male play partners will be examined.

Predictions:

- (i) Regarding the preferred playmate dyads (most frequent playpartner), the number of same-sex preferred playmates will not be significantly different from the number of same-sex preferred playmates expected by chance.
- (ii) Regarding the children's overall peer contacts, the number of same-sex peers the children interact with will be significantly greater than would be expected by chance alone (i.e., gender segregation will be present).
- (iii) More girls than boys are expected to prefer same-sex peers.

The final three hypotheses all relate to the potential antecedent of gender segregation and are based on comparisons between children who are gender segregating and those who are not.

(3) Hypothesis₃: According to the "cognitive consonance"

hypothesis, the children who are aware of gender roles will make gender-appropriate choices and as a result, will choose same-sex peers. Therefore, gender segregating children will demonstrate more gender awareness than the non-segregating children.

Predictions:

1) Segregating children will have higher scores on the gender awareness measures than the non-segregating children.

(4) Hypothesis₄: Using the "sex-typed toy preference" hypothesis, children with sex-typed toy preferences will come into contact primarily with same-sex playmates who share their sex-typed toy preference and thus exhibit gender segregation. Children with same-sex peer preferences would therefore demonstrate sex-typed toy or activity preference to a greater extent than the children with other-sex peer preferences.

Predictions:

(i) Gender segregating boys will play with masculine toys more than the girls and the non-segregating boys. Gender segregating girls will use feminine toys more than the boys and the non-segregating girls.

(5) Hypothesis₅: Gender segregation may also emerge from the previously described "compatible play styles" hypothesis. Children would choose peers who share a compatible play style. However, as sex differences begin to emerge in some of the

children's play styles, the children who base their playmate selections on these sex-typed play styles would, as a result, choose same-sex peers. The gender segregating children would exhibit a greater preference for sex-typed play styles than the non-segregating children.

Predictions:

- (i) The gender segregating boys will engage in male-preferred play styles more than the girls and the non-segregating boys. Gender segregating girls will engage in female-preferred play styles more than the boys and the non-segregating girls.

Method

Subjects

Fifty-seven children (28 males, 29 females) were the main participants in this study. They ranged in age from 26 to 40 months at the beginning of data collection ($M = 34.84$ months; boys' $M = 34.32$, $SD = 3.56$; girls' $M = 35.35$, $SD = 2.62$). The children were recruited from two upper middle class preschools in Montreal (RB and STA) and this was their initial nursery school experience. These youngsters came from a total of five classes (2 from RB and 3 from STA) which had male and female teachers. Two of the classes participated in the academic year of 1986-87 (1 from RB and 1 from STA) and the other three (1 from RB and 2 from STA) in 1987-88 (see Table 1 for breakdown of subjects by year x school x class x sex).

Since this study focused on the transitional period from 2.5 to 3 years, subject selection (target children) was based on age and varied slightly between the two schools. Children who were under 36 months at the beginning of the school year were chosen. During the first year at STA, the children were divided into separate classrooms on the basis of age. The youngest class was composed of children under 3 years of age who satisfied the age criterion. Thus, the 10 children in this class were all target (focal) children.

The classroom composition differed at RB, and at STA only in the second year of data collection. The children at both centres were placed in mixed-age groups so that at any one

Table 1

Classroom breakdowns by year, school, class & sex

	<u>Target Children</u>		<u>Non-target Children</u>	
	<u>Males</u>	<u>Females</u>	<u>Males</u>	<u>Females</u>
<u>1986-1987</u>				
R	10	8	17	6
STA	6	4	-	-
<u>Subtotals</u>	<u>16</u>	<u>12</u>	<u>17</u>	<u>6</u>
<u>1987-1988</u>				
R	6	5	17	11
STA ¹	4	6	11	9
STA ²	2	6	15	8
<u>Subtotals</u>	<u>12</u>	<u>17</u>	<u>43</u>	<u>28</u>
<u>Totals</u>	<u>28</u>	<u>29</u>	<u>60</u>	<u>34</u>

¹ These are the children in the morning group

² These are the children in the afternoon group

time, the classrooms would contain children ranging in age from 2 to 5 years. Since this study involved children from 2.5 to 3 years of age, the target children were only those who satisfied this age criterion. As can be seen in Table 1, 47 children in these 3 classes were age-appropriate and there were an additional 94 children (60 males, 34 females) from the same classes who were too old to be focal children, but served as potential play partners for the focal subjects.

Since the observations were not intrusive and were done during the regular play time in the classroom, permission for observation was obtained from the schools themselves. Parents were notified that the observations would be occurring. Information regarding the children's gender awareness was also collected using two cognitive measures administered in an individual testing session to a subset of children. This testing situation occurred in the fourth month of observations during the second year of testing. Parental consent was obtained prior to this individual testing. See Appendix A for copies of consent forms.

Procedures

Videotaping Procedures.

During data collection, the children were videotaped approximately twice a week. Taping took place during free play in their classrooms, and was accomplished using a handheld Sony Betamax videocamera which imprinted the time in minutes and seconds on the tape. The data collectors were all

female (the author, a fellow graduate student and 4 undergraduate students: 2 in 1986-87 and 2 others in 1987-88) and were divided into two teams (one graduate student and one undergraduate student). One team taped at RB and the other at STA.

Prior to data collection there was a two week familiarization period during which the teams attended the schools but did not collect data. This procedure provided the children, teachers, and researchers with an opportunity to become accustomed to each other. During the first week, the teams sat in the classroom and learned the children's names. During the second week, the teams practiced using the videocamera. These tapes were used as pilot videotapes for refining the behavioral code, for training coders and for establishing interrater agreement. After an initial training period in which both team members attended the videotaping, they took turns visiting the schools individually.

The videotaping occurred during free play employing a time-sampling procedure in which each target child was randomly selected and videotaped for approximately 10 seconds. Each target child was videotaped from three to seven times each taping session in a randomly predetermined order. These tapings yielded on average seventy-five 10-second intervals, producing an average of 12.5 minutes per child.

Coding Procedures

Videotaped sessions were then coded using the checklist

described in greater detail below (variables names are indicated in parentheses). The coder observed each 10-second segment and then recorded the information contained in the observational code. The specific coding categories are described in more detail below and in Appendix B.

Interrater Agreement. To establish interrater agreement, each coder independently coded the same intervals from the pilot videotapes. Once the observers had been trained to criterion agreement levels of .80 (using percentage agreement - $\frac{\# \text{ agreements}}{\# \text{ agreements} + \# \text{ disagreements}}$) or higher on each category, they began to code the actual data. Interrater reliability was computed using percentage agreement and ranged from .80 to .88 with a mean percentage agreement of .85 (see Table 2 for breakdown by category).

Because the category of "type of play" is mutually exclusive and exhaustive, using percentage agreement to assess reliability for this category could be misleading. Some agreement could occur by chance, and percentage agreement does not take this chance level into account. An agreement statistic which does correct for chance is Cohen's kappa (Cohen, 1960; Hollenbeck, 1978). Therefore, reliability of the type of play category was computed using kappa. The kappa coefficient, calculated on approximately 20% of the type of play data, was .78 which is considered adequate reliability (Bakeman & Gottman, 1986).

To minimize inter-observer drift, weekly reliability

Table 2

Interrater agreement for each category in the coding scheme

<u>Coding Category</u>	<u>% Agreement*</u>	
toys	88	
group composition	88	
teacher presence	84	
type of play	82	(Kappa = .78)
area	88	
vigour	87	
intensity	80	

Note. Range: 80 - 88%; Overall Mean % = 85%

* % Agreement = # Agreements / (# Agreements + # Disagreements)

checks were subsequently made for 24% of the tapes, randomly selected; and reliability was maintained at or above initially established levels. Disagreements were resolved by discussion.

Testing Procedures. Testing was conducted by the videotapers such that one member of the team tested half of the children in the class and the other woman tested the remaining children. During free play, each focal child was approached by the tester and asked if he/she would "like to play a game". Then the child was taken individually to a quiet area of the class and initially the Leinbach & Fagot (1986) gender labelling measure was administered and then the Edelbrock & Sugawara (1978) Sex Role Learning Index (SERLI) of sex-role awareness, described below. The total testing time for each child was approximately 10 minutes.

Measures

Observational code. The present study was part of a larger project at Concordia University in which a variety of hypotheses relevant to the development of gender segregation and sex-typed play were examined. Consequently, an observational code was developed which would allow for the collection of data relevant to these hypotheses. The categories of data collected included: the toy with which the focal child was playing (toys), the identity and sex of the child(ren) with whom the target child was playing (group composition), the presence/absence of the teacher (teacher

presence), the type of play activity or social interaction exhibited by the child (type of play), the area in the classroom where the child was observed (area), the amount of energy with which the child played (vigour) and the amount of concentration demonstrated by the child (intensity). A brief description of these categories as well as definitions of the various behaviors can be found in Appendix B. Only the categories relevant to the present study will be described in detail below (categories of group composition, toys, social interaction, intensity and vigour).

Toys. The role of toys in the interactions of young children has been well documented (Mueller & DeStefano, 1973; Vandell & Mueller, 1980). Based on the sex-typed toy preference theory, sex-typing in toy use was expected to wield an influence on same-sex playmate choices. Hence, the toys with which the focal child played were recorded. In total, play with 53 different toys was recorded and are listed in Appendix B.

To determine if a child's involvement with sex-role appropriate toys influenced their playmate selection, an index of degree of stereotyping for each toy was required. To create a series of male-preferred, female-preferred and neutral toy scales from these frequencies, the procedures outlined in Connor and Serbin (1977) were adopted. Connor and Serbin (1977) developed behaviorally-based scales of masculine and feminine toys derived from undergraduate ratings

and observed play behaviour in the classroom. This in vivo approach to scale construction was advantageous because the measures were derived from the child's everyday environment. Thus, this approach does not depend upon the assumption that scales derived from previous research will generalize to this setting. Following Connor and Serbin (1977), the toys were classified as "male-preferred/masculine", "female-preferred/feminine" or "neutral" by statistically determining which gender played with the item the most. If boys played with a toy significantly more frequently than girls, it was considered "male-preferred". If girls used a toy significantly more than their male counterparts, it was considered "female-preferred". Finally, if there was no sex difference in the degree of play with a toy, it was classified as "neutral".

Group Composition.

The hypotheses of the present study required 2 measures of each target child's peer involvement. The identity and gender of each child's preferred playmate ("best friend") was needed as well as the identity and gender of the peers other than the "best friend" with whom the target child was involved. Thus, each target's "best friend" as well as overall peer preferences would be available for the gender segregation analyses.

The first step was to determine each target child's frequency of playing with every other peer. This information

was compiled by determining which peers were members of the target child's immediate peer group during the 10 second observation interval. Children were considered a group member when within a 5 feet radius of the target child or when at the target's activity table or when verbally or physically interacting with the target. Any child who met any of these criteria was considered a member of the focal child's group.

The number of boys and the number of girls present in the group were recorded. This information provided data regarding the gender composition of a target child's general playmate group (overall peer preferences), but it did not elucidate which of these peers was the child's preferred playmate. According to Howes' definition, a child's friend was the peer who was the child's most frequent playmate. Thus, an index was needed to reflect with which peer each target child was playing most frequently. Pilot data revealed that the children rarely played with more than 3 peers at a time, so the identity of no more than 3 play partners was recorded per observation.

On the rare occasions when the target was in a group with more than 3 other children, 2 criteria were used for identifying which peers in the group were play partners (see Appendix B for further details). First, children with whom the target had physical or verbal contact during the 10 second interval were recorded first, in order of decreasing amount of contact time. Second, if there was not physical or verbal

contact, proximity to the focal child was used. Members of the play group were recorded in order of decreasing proximity to the target child, until a maximum of three play partners was identified. If two children were equidistant from the target, the child on the left of the peer was arbitrarily chosen as the closest.

As described previously, the ID and sex of the children with whom the target played during each observation interval were recorded, based on two criteria: interactions and proximity. The target child's frequency of playing with each of these peers was tabulated and the peer with whom the target played the most often was designated as the most frequent playmate.

Type of play. The behavioral observations were also used to determine a child's typical play style. Specifically, measures were required which would reflect a child's characteristic play activity and social interaction style. The 36 play behaviors selected for study were derived from other studies examining the play of young children (Eckerman, Whately, & Kutz, 1975; Lewis et al., 1975; Parten, 1932; Rubin, 1977; Rubin, Fein & Vandenberg, 1983; Rubin, Maioni & Hornung, 1976; Rubin & Mills, 1988; Rubin, Watson & Jambor, 1978; Smilansky, 1968; Strayer, 1980; Strayer & Pilon, 1985) as well as from pilot observations of children this age (see Table 3 for a list of behaviors and Appendix B for more detailed descriptions). Included within these behaviors are

Table 3

Means and standard deviations and ranges for aggregated social engagement categories

<u>Variable</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Teacher-oriented	9.79	6.33	0-30
Aggression	4.05	4.04	0-16
Initiation	2.73	2.23	0- 9
Peer Conversation	4.80	3.99	0-16
Isolated	0.40	0.80	0- 4
Prosocial	1.32	1.32	0- 4
Watching	14.14	9.14	0-37
Parallel Play	31.73	11.54	7-52
Cooperative Play	7.84	4.90	0-24
Solitary Play	12.51	8.70	0-43
Functional Play	5.03	4.56	0-17
Constructive Play	55.55	13.13	25-87
Exploratory Play	9.10	7.26	0-25
Dramatic Play	23.67	12.65	3-55
Gross Motor Play	6.00	6.54	0-25

the social-cognitive behaviors commonly examined by Rubin and his colleagues (i.e., parallel play, dramatic play; Rubin, 1985; Rubin, Maioni, & Hornung, 1976), object-oriented behaviours (i.e., show toy; Brownell, 1990; Eckerman et al., 1975; Lewis, et al., 1975), behaviors related to adult interaction (i.e., teacher conversation; Carpenter, 1983; Carpenter & Huston-Stein, 1980; Huston & Carpenter, 1985) as well as other non-play behaviors commonly demonstrated by children this age (i.e., watching others; Rubin, 1985). A wide variety of play behaviours was included because this research was exploratory in its attempt to statistically derive play styles and an "exhaustive" coding scheme was attempted to tap all potentially relevant behaviours (see Appendix B for list of behaviours).

Previous research has indicated that there are sex differences in activity level (Eaton and Enns, 1986; Goldberg & Lewis, 1969; Maccoby, 1985), suggesting that the vigour with which children play could be another potential style of play. In the present study, activity level was measured by "vigour". This measure reflected a subjective view of the amount of energy exerted by the child while playing and ranged from 1 (no movement) to 5 (fast movement). The coder rated the child's degree of active manipulation of a toy or amount of noise and/or vocalizations while playing using the five point scale.

During pilot observations, it was noticed that not only

were there differences in the amount of physical energy exerted by children, but there also appeared to be differences in the intensity of their play. Intensity is an index of on-task concentration. For example, two children may be both painting at an easel with one child haphazardly splattering paint on the canvas while looking around the room, and the other very carefully dabbing the paint in a very precise fashion. The first child would be demonstrating low amounts of intensity because he/she was not really paying much attention to the task at hand; whereas the other child would receive a higher intensity rating due to the focused attention or concentration employed while painting. The measure of intensity ranged from 1 (low intensity) to 3 (high intensity).

These categories are outlined in greater detail in the coding manual in Appendix B.

Teacher Rating Questionnaire. Because short-term observations may miss infrequent yet important behaviours, teacher ratings of children were collected. These ratings would also provide information about each child's general play characteristics from an independent source. The items, design and format of this teacher rating questionnaire were based on pre-existing questionnaires used with older children (Behar, 1977; Behar and Stringfield, 1974; Connors, 1969; Moller & Rubin, 1988; Rutter, 1967). This instrument tapped children's behaviour on a number of dimensions such as aggression (i.e., pushes), activity level (i.e., active), verbal skill (i.e.,

expresses ideas), social skills (i.e., shares) and peer acceptance (i.e., liked by peers). Teachers were instructed to rate each child (as compared to his/her classmates) on each item using a five point Likert scale where 1 indicates "does not happen often", 3 denotes "happens an average amount" and 5 signifies "happens a lot". See Appendix C for a copy of the questionnaire. Some of the targets were in classrooms with non-target children and as a result, non-targets were also rated by the teachers. In total, 117 children were rated.

Measures of Knowledge of Gender and Stereotypes. To test the hypothesis pertaining to the children's awareness of gender and sex-role stereotypes, two cognitive measures were employed to measure each child's level of sex-role development: the Gender Labelling Task (Leinbach and Fagot, 1986) and the Sex Role Learning Index (SERLI, Edelbrock & Sugawara, 1978). The first measure used was a modified version of the Gender Labelling Task in which children were shown a series of sixteen colour photos of adult (4 male, 4 female) and child (4 male, 4 female) figures taken from magazines and mail-order catalogues (see Appendix D for copies of some of the photos). The objective of this index was to assess the child's ability to label by gender by measuring how accurately the child could identify male and female photos of children and adults. This task produced a child labelling score and an adult labelling score. The child's scores were composed of the number of adult photos which the child

correctly identified and the number of child photos correctly identified. The higher the score, the greater the child's ability to recognize and identify male and female photos. Scores on the measure could range from 0 to 8. A score of 6 or greater was used as the criterion for success, because a score this high was unlikely to occur by guessing alone (binomial distribution, one-tailed test, $p < .05$). See Table 4 for means, standard deviations and ranges of these two scores.

This task was slightly modified on the basis of preliminary testing. Leinbach and Fagot (1986) used a matching paradigm in which children were shown 8 pairs of photos and asked to select either the male or the female based on a predetermined randomized order. Pilot testing revealed that the length of time this approach involved was prohibitive and the children became bored and restless. In an attempt to shorten the task, the examiners showed the child a series of individual photos of unknown subjects and had the child identify the sex. The photos were randomly presented to the child with the adult photos first and then the child photos second. For each adult picture, the child was asked, "Is this a man or a lady?" If the child did not respond to these labels, "daddy" or "mommy" were substituted. Similarly, as each child photo was presented, the inquiry was, "Is this a girl or a boy?" The order of presentation of these labels was counterbalanced.

Table 4

Descriptive statistics of the 3 cognitive awareness measures
(n=28)

<u>Measure</u>	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
SERLI	12.07	3.21	6 - 18
L&F--CHILD	7.29	2.11	4 - 8
L&F--ADULT	7.64	0.78	5 - 8

The second measure utilized was the Sex-role Discrimination (SRD) subtest (see Appendix E) of the SERLI (Edelbrock & Sugawara, 1978). This picture-choice instrument is used to measure young children's awareness of sex-role stereotypes. The children were presented with a series of 20 black and white line drawings of common objects of which half were stereotyped as masculine and half as feminine and asked to classify the objects as either masculine or feminine. When presented with the SERLI pictures, the child was asked, "What is this?" and then "Who would use this object to activity?" (see Appendix E for list of objects and accompanying activities). A girl or a boy?"

One of the SERLI measures was a picture of a gun and due to the preschools' anti-weapon stance, this "masculine" item was not included. One of the "feminine" stereotyped measures ("iron") was randomly chosen and omitted to maintain an equal number of masculine and feminine items. Eighteen items (9 masculine, 9 feminine) were used in the present study.

The child's score on this measure was the number of times the child correctly classified each object according to its sex-role stereotype. The higher the child's score, the greater the child's knowledge of sex role stereotypes. Scores on the SERLI ranged from 0 to 18 with a score of 13 or higher as the criterion for "passing". As with the Leinbach and Fagot measure, this "passing" score was significantly greater than would be expected by chance (i.e., 9) alone. See Table

3 for mean, standard deviation and range of this score.

Before addressing the predictions of the present study, some initial analyses were necessary to reduce the data and compile the required composite scores. These aggregate scores were then used to investigate the key hypotheses and predictions.

Procedures for Data Reduction

I. Play styles

Observational data and teacher ratings were collected to produce indices of children's play styles. Below is a synopsis of how these data were refined to create measures of "play styles".

a. Observed Play Behaviours. As described previously, the data collected in this study needed to be comprehensive in order to address a wide variety of hypotheses, and as a result, 33 behaviors were recorded and coded in the present study. A child's score on each behaviour was obtained by summing the number of times s/he was observed exhibiting that behaviour. The targets differed in the number of times they were observed ($M = 74.86$, $sd = 28.90$; range = 14-111) and to ameliorate any differences due to this variation, the scores were proportionalized. The child's total frequency of exhibiting a type of play was divided by his/her total number of observations and then multiplied by 100, producing 33 scores for each child. With a sample size of 57, it became necessary to reduce the number of behaviors utilized. The

different categories of behaviour were combined on the basis of theoretical and numerical considerations; behaviours which occurred with a low frequency and could not stand alone were grouped with other behaviours which were theoretically similar, to produce different play categories.

The non-play behaviours of "transitional behaviour", "wandering" and "unoccupied behaviour" were combined to produce a "non-play" category. Since these behaviours did not reflect a true type of play, they were not considered in the present study. "Aggression", "rough and tumble play" and "hitting" were combined with the behaviours involving object disputes ("object struggle", "try to take toy", "take toy away") to produce a grouping of "aggressive" type of play. Behaviours of "initiation", "approaching" and "imitation" were combined to produce a category representing the group process of "initiation". The two behaviours: "talk to peers" and "ask peers for help" were combined into a "peer conversation" classification. An "isolated" play style was derived from the two behaviours of "crying" and "withdrawal". A final combination of "give help", "show affection", "show toy", "offer toy" and "receive toy" were combined to produce a "prosocial" category of play. "Watching others" and "teacher interactions" were quite frequent and were retained as separate play types. As well, "solitary play", "parallel play", "cooperative play", "functional play", "constructive play", "exploratory play", "dramatic play", and "gross motor"

were left as individual categories of play. The means, standard deviations and ranges of these aggregated social engagement categories can be seen in Table 3.

These aggregated play behaviours were used as another index of children's play styles. Results of previous research have indicated that children exhibit play styles which reflect adult-orientation, social involvement and task-oriented play behaviours (Brown and Brownell, 1990; Carpenter, 1983; Carpenter & Huston-Stein, 1980; Fagot, 1981; 1983; Huston & Carpenter, 1985; Smetana and Letourneau, 1984). Other behaviours such as watching others, and aggression appear to be important behaviours which may further discriminate between children. Based on these theoretical considerations as well as statistical measures of association (i.e., alpha coefficients), selected play behaviours were combined to produce a social play style ("parallel", "cooperative", "dramatic"), a task-oriented play style ("exploratory", "constructive"), a adult-oriented play style ("teacher interactions"), an aggressive play style ("aggression", "rough and tumble play", "hitting", "object struggle", "try to take toy", "take toy away") and an watching play ("watching others") style. The alpha coefficients for these play styles (except for the watching and adult-oriented styles which were based on individual behaviours) were .67 for social play, .63 for task-oriented play, and .52 for aggression. The alpha score for aggression was problematic because this resultant

internal consistency was poor. Approximately half of the measure was error, suggesting that this index of play behaviour was not reliable. Thus, the validity of this index of play style was questionable and was eliminated from further analyses.

Analyses of variance (ANOVA's) comparing the summary scores by school revealed that there were differences between the schools in the children's levels of social play and watching others (see Table 5). To eliminate any between school error variance, these composite scores were standardized within class using the Z score transformation.

b. Intensity and Vigour. Previous research has suggested that there are sex differences in children's activity level during play (Eaton & Enns, 1986; Goldberg & Lewis, 1969; Maccoby, 1985) and this style of playing was thought to have an influence on play partner selection. Similarly, a child's level of concentration on a toy/activity was hypothesized to influence playmate preferences. These two dimensions formed two additional indices of play style: an activity level/vigour play style and a degree of intensity play style. Children were expected to select play partners who exhibited levels of intensity and vigour similar to their own. The children's vigour score was calculated by summing each child's vigour ratings (which ranged from 1-5) and then dividing by the total number of ratings to produce an average vigour score. An average intensity score (which

Table 5

Analyses of Variance Comparing Observed Play Behaviour
Composite Scores by School

Task-oriented play

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	-52.40	20.31	4,52	1.04
STA ₁	-40.17	10.36		
R ₂	-41.83	21.18		
STA _{2a}	-45.66	16.87		
STA _{2b}	-48.31	12.96		

Social play

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	56.64	12.35	4,52	10.64***
STA ₁	20.68	18.36		
R ₂	51.69	15.31		
STA _{2a}	51.71	21.68		
STA _{2b}	74.03	18.94		

Watching behaviour

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	10.98	7.71	4,52	5.99***
STA ₁	9.48	7.48		
R ₂	13.22	6.69		
STA _{2a}	24.42	10.30		
STA _{2b}	15.52	6.42		

Table 5 Continued...

Table 5 Continued...

Adult-oriented

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	9.41	7.07	4,52	1.67
STA ₁	7.98	3.84		
R ₂	13.20	7.98		
STA _{2a}	7.15	3.36		
STA _{2b}	11.49	6.19		

* $p < .05$, ** $p < .01$, *** $p < .001$

ranged from 1-3) was derived in a similar manner. Analyses of variance (ANOVA's) comparing the summary scores by school revealed that there were differences between the schools in the children's levels of intensity and vigour (see Table 6). This between school difference necessitated the creation of scores which were standardized within class using the Z score transformation.

c. Teacher Ratings. One of the limitations of the observational methodology is that the procedure for the creation of preferred playmates and play styles may be confounded. These two measures are interdependent because the observations used to determine preferred playmates are the same observations used to determine children's play styles. Children who are observed together a great deal are designated as preferred playmates. These preferred play partners may have similar play styles, but it is not clear if their similar play styles are due to the fact that they are often together and playing with the same toy or because they are both displaying a compatible, idiosyncratic way of playing with toys. Hence, it was important to obtain an independent rating of each child's general play characteristics. Observational procedures are also limited in that observers may miss salient but infrequent behaviors (i.e., aggression).

To circumvent these limitations and validate the observational measures, a teacher rating questionnaire was

Table 6

Analyses of Variance Comparing Intensity and Vigour by SchoolIntensity

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	2.48	.13	4,52	10.73***
STA ₁	2.49	.17		
R ₂	2.28	.10		
STA _{2a}	2.33	.13		
STA _{2b}	2.19	.10		

Vigour

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	2.88	.15	4,52	3.40*
STA.	2.86	.12		
R ₂	2.81	.16		
STA _{2a}	2.65	.20		
STA _{2b}	2.83	.20		

* $p < .05$, ** $p < .01$, *** $p < .001$

developed to provide another index of the children's play styles. These teacher ratings of each child's behaviour would provide a measure of each child's play styles and alleviate the confound of interdependency because the teachers rated each child individually, not as part of a dyad. In addition, teachers are privy to a wider sample of a child's behaviour than observers who are present for a small period of time. The teachers would have a greater opportunity to observe uncommon behaviours, thereby, overcoming the second limitation inherent to free play observations.

The teacher ratings were analyzed using a principle components analysis with oblique rotation. Items with loadings of .30 or greater were included in the interpretation of a factor and are listed under the factor to which they significantly contributed. These factors as well as eigenvalues and percentages of variance explained are shown in Table 7. Four factors accounting for 63% of the variance were retained and labelled: "disruptive/active" (i.e., pushes, disrupts), "popular" (i.e., popular with same and opposite sex peers), "adult dependent/poor adaptation" (i.e., seeks proximity to Teacher, constantly seeks Teacher's attention) and "socially sensitive" (i.e., verbal skills, not shy, meets new situations well). These factors are similar to those reported by other researchers using peer nominations (Masten & Morison, & Pellegrini, 1985; Newcomb & Bukowski, 1983; Pekarik, Prinz, Lieber, Weintraub & Neale, 1976) and

Table 7

Principal Component Solution for Teacher Rating Questionnaire
using all the children's scores (n=141)

Factor I: Disruptive

1) Shares	-.65	
2) Restless	.85	
3) Grabs Toys	.86	
4) Active	.49	
5) Empathy	-.46	Eigenvalue = 5.64
6) Excitable	.70	% Variance = 28.2
7) Pushes	.81	
8) Shy	-.37	
9) Cooperates	-.68	
10) Disrupts	.85	
11) Seeks Attention	.35	

Factor II: Socially Sensitive

1) Meets New Situations Well	.31	
2) Gives up	-.45	
3) Daydreams	-.70	Eigenvalue = 1.60
4) Accepts bossiness	-.76	% Variance = 8.0
5) Verbal skills	.42	
6) Shy	-.56	

Table 7 Continued...

Table 7 Continued...

Factor III: Popular

1) Meets New	.52	
Situations Well		
2) Active	.52	
3) Empathy	.36	
4) Excitable	.48	Eigenvalue = 3.48
5) Happy	.64	% Variance = 17.4
6) OS Acceptance	.83	
7) SS Acceptance	.85	
8) Verbal Skills	.30	

Factor IV: Adult Dependent

1) Empathy	.34	Eigenvalue = 1.86
2) Attention	.80	% Variance = 9.3
3) Proximity to	.87	
Teacher		

teacher ratings (Conners, 1969; Spivack & Spotts, 1966) of children's play behaviours.

Alpha coefficients of the internal consistency of each factor were calculated and they were .84 for the "active/disruptive" factor, .71 for the "socially sensitive" factor, .78 for the "popular" factor and .37 for the "adult dependent" factor. Given the poor alpha coefficient for the "adult dependent" factor, this score was eliminated.

In order to use these data as an index of a child's play styles, aggregate scores on each factor were calculated. The children's scores on the items which significantly contributed ($\geq .30$) to each factor were summed. These items are listed in Table 7. If an item had a negative loading on the factor, the child's score on that item was subtracted. Hence, each child was given four composite scores. Analyses of variance (ANOVA's) comparing these summary scores by school revealed that there were differences between the schools in how the teachers rated the children (see Table 8). This finding of teacher bias necessitated the creation of scores which were standardized within class using the Z score transformation.

II. Toys

To determine if a child's involvement with sex-role appropriate toys influenced their playmate selection, an index of degree of stereotyping for each toy was required. Using the observational data, each child's frequency of playing with each toy was tabulated and proportionalized as was done with

Table 8

Analyses of Variance Comparing Teacher Rating Composite Scores
by School

Score 1: Disruptive

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	10.28	6.29	4,47	6.03***
STA ₁	11.90	7.52		
R ₂	8.91	7.19		
STA _{2a}	0.01	7.24		
STA _{2b}	-0.67	1.16		

Score 2: Socially Sensitive

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	-6.28	2.05	4,47	13.27***
STA ₁	-2.00	3.86		
R ₂	-4.45	3.21		
STA _{2a}	1.70	4.11		
STA _{2b}	2.00	1.00		

Score 3: Popular

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	20.22	2.51	4,47	19.41***
STA ₁	27.70	3.80		
R ₂	24.82	3.40		
STA _{2a}	28.20	3.77		
STA _{2b}	33.33	0.58		

* $p < .05$, ** $p < .01$, *** $p < .001$

the play behaviours. As described previously, the procedure for creating the male-preferred (masculine), female-preferred (feminine) and neutral toy scales from these frequencies was adopted from Connor and Serbin (1977). They also used undergraduate ratings of cultural norms of sex-typing, however, given that the scale based on these ratings was less stable than the observed sex-typing scale, this procedure was not used in the present study.

A series of t-tests was conducted for each toy, in which frequency of play with the toy was compared for the male targets and for the female targets. Five of the toys were male-preferred (train, big trucks, ball, small cars/trucks, plane) and three were female-preferred (arts & crafts, doctor's kit, dolls) at above chance levels.

Considering the small sample size and the exploratory nature of this research, it seemed desirable to use as many sex-typed behaviours as possible to construct these scales. The 0.20 criterion level (one-tailed) of significance which was used by Connor & Serbin (1977) was also used in the present study. If the toy tended to be used more often by boys, it was considered "male-preferred" (masculine). If the toy was observed to be in use more often with female targets, it was considered "female-preferred" (feminine). Finally, those toys in which there was not a sex difference on the t-tests were considered "neutral". These t-tests were conducted for all the children and then separately by school to

determine any school differences in how toys were sex-typed. Only two behaviours were inconsistently sex-typed across schools (Fisher Price restaurant and big blocks) and were eliminated. There were 8 toys in the male-preferred toy scale, 5 in the female-preferred toy scale and 10 in the neutral toy scale. Each child's frequency on the "male-preferred" toys was summed and then divided by number of masculine toys in his/her class to produce an average frequency of "male-preferred toy play", frequency of "female-preferred toy play" was the average amount of play with "female-preferred" toys and each child's "neutral toy play" was derived from his/her average amount of play with "neutral" toys. Thus, each child received 3 scores: preference for masculine toys, preference for feminine toys and preference for neutral toys. The types of toys which comprised each of these scores can be located in Table 9 and the means, standard deviations and two-tailed t-test results for these three toy scores can be found in Table 10. As can be seen in Table 11, there were differences by school so these scores were standardized by class employing the Z score transformation procedure.

Table 9

Masculine, Feminine and Neutral Toy Scales: The Toys
contained in each scale

<u>Masculine Toys:</u>	<u>Feminine Toys:</u>	<u>Neutral Toys:</u>
*small blocks	*art materials	*furniture
*vehicles	*dolls	*large
*Fisher Price toys	*small manipulative	motor toys
*play store materials	toys	*instruments
*tools	*pretend play	*record player
*ball	accessories	*books
*riding toy	*telephone	*playhouse
*waterplay	*Fisher Price	*sandbox
	restaurant ¹	*dress-up clothes
		*paint
		*animals
		*big blocks ¹

¹ These toys were removed because they were not consistently categorized as masculine, feminine or neutral across all schools

Table 10

Means, standard deviations and t-test results of sex differences on toy scores

<u>Toy</u>	Males		Females		t	p
	X	SD	X	SD		
Masculine	4.88	2.62	1.76	0.99	-5.92	.000
Feminine	4.55	2.15	9.27	2.30	8.01	.000
Neutral	3.30	1.64	3.16	1.62	-0.34	.733

Table 11

Analyses of Variance Comparing Frequency of Use of Masculine,
Feminine & Neutral Toys by School

Masculine toys

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	3.15	2.47	4,52	7.91***
STA ₁	5.55	2.83		
R ₂	4.54	1.82		
STA _{2a}	1.23	0.62		
STA _{2b}	1.64	1.02		

Feminine toys

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	6.17	3.21	4,52	1.93
STA ₁	5.54	2.88		
R ₂	7.08	3.57		
STA _{2a}	7.98	2.96		
STA _{2b}	9.03	2.89		

Neutral toys

<u>School</u>	<u>Mean</u>	<u>SD</u>	<u>df</u>	<u>F</u>
R ₁	4.08	1.40	4,52	6.97***
STA ₁	4.37	2.06		
R ₂	2.47	0.79		
STA _{2a}	2.16	1.23		
STA _{2b}	2.26	0.70		

* $p < .05$, ** $p < .01$, *** $p < .001$

Results

Plan of analyses

The purpose of the present study was two-fold in nature: first, to examine antecedents of toddler peer preferences and second, to explore possible antecedents of same-sex peer preferences.

Analyses examining potential age differences in the cognitive awareness measures

The SERLI and Leinbach & Fagot tasks could both be viewed as cognitive measures, in that they assess developmental differences in the conceptualization of gender. Therefore, these measures would probably be sensitive to variations in age, and potential age effects were examined by correlating the two cognitive awareness measures with target's age. As seen in Table 12, there were significant Pearson correlations for these cognitive measures (Edlebrock & Sugawara's (1978) SERLI and Leinbach & Fagot's (1986) gender labelling of kids) suggesting that age may be a confound and was covaried in the analyses using these measures.

Analyses examining potential sex differences in the various measures

To determine if there were any significant differences between the male and female subjects' scores on the assorted measures used in the present study, a series of two-tailed t-tests were conducted by sex on the teacher ratings,

Table 12

Pearson correlations of age with target children's scores on various measures

<u>Cognitive measures</u> (n=28)	<u>Coefficient</u>
Serli	.51 ^b
L & F -- children	.49 ^b
L & F -- adults	.31
<u>Teacher ratings</u> (n=52)	
Disruptive	-.14
Socially sensitive	.16
Popular	.15
<u>Observed play behaviours</u> (n=57)	
Task-oriented	-.16
Social-oriented	-.03
Watching	.10
Teacher-oriented	.08
Intensity	.09
Vigour	.00
<u>Toy preferences</u> (n=57)	
Masculine	-.24
Feminine	.13
Neutral	.22

^ap ≤ .05 ^bp ≤ .01 ^cp ≤ .001

observed play behaviours, and the sex-typed toy measures. As can be seen in Table 13, there was a significant difference between the boys and the girls in terms of their use of sex-role stereotyped toys. This sex difference between the two genders in terms of their toy preferences was not surprising because this measure was designed to discriminate between the sexes. To determine if there was a sex difference on the cognitive measures that significantly varied with age, an ANCOVA, with age as the covariate, was conducted on the gender awareness measures by sex. There was no significant sex difference on these measures (see Table 13).

Analyses examining intercorrelations among dependent variables

The correlations between the various dependent variables may be found in Table 14. Since there were correlations among the various dependent variables (i.e., "socially skilled" with "popular"; masculine toys with feminine toys; "social" play with "watching"), a multivariate approach to analysis was used.

Significance level

Although many correlations were carried out raising the possibility of an inflated probability of a type 1 error (incorrectly accepting the null hypothesis when it is false), it was decided not to use the Bonferroni correction as a per-test significance criterion. Cohen (1990)

Table 13

T-test results of sex differences on all standardized play variables, cognitive measures & toy preferences

Variables	Males		Females		t
	X	SD	X	SD	
<u>Cognitive Measures (df=25)*</u>					
Serli	10.55	3.30	13.06	2.82	1.15
L&F--child	7.00	1.55	7.47	1.33	0.11
L&F--adult	7.45	1.04	7.76	0.56	0.01
<u>Teacher Ratings (df=50)</u>					
Disruptive	0.34	0.85	-0.10	1.00	1.73
Socially Sensitive	-0.29	0.99	0.12	0.98	-1.49
Popular	-0.18	0.94	-0.03	1.22	-0.49
<u>Play Behaviours (df=55)</u>					
Task-oriented	0.20	0.85	-0.19	0.87	1.74
Social Play	0.01	1.00	-0.01	0.95	0.11
Watching	0.13	1.00	-0.12	0.91	0.99
Adult-oriented	-0.19	0.90	0.19	1.00	-1.53
Intensity	0.09	0.97	-0.10	0.96	0.74
Vigour	0.11	0.09	-0.09	0.95	0.79
<u>Toys (df=55)</u>					
Masculine	0.66	0.79	-0.63	0.64	6.78 ^c
Feminine	-0.68	0.65	0.65	0.74	-7.20 ^c
Neutral	-0.05	1.00	0.06	0.95	-0.41

* F values from ANOVA covarying age

^ap ≤ .05; ^bp ≤ .01; ^cp ≤ .001

Table 14

Inter-correlations between all dependent variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
<u>Teacher Rations:</u>													
1. Disruptive		.21	-.13	.09	-.10	-.15	-.26	-.07	.14	-.24	.17	.30 ^a	.21
2. Socially Sensitive			.56 ^c	-.14	.10	.08	.24	.06	.26	-.25	.04	.28 ^a	.29 ^a
3. Popular				-.23	.09	.07	.43 ^a	.10	-.12	.04	-.23	.04	.12
<u>Toys:</u>													
4. Masculine					-.71 ^c	-.26	-.21	.25	-.01	.02	-.25	.10	.26
5. Feminine						-.22	.29	-.50 ^c	-.04	.01	.32 ^a	-.31 ^a	-.16
6. Neutral							-.58 ^c	.44 ^c	.21	-.29 ^a	-.20	.20	.19
<u>Cognitive Measure:</u> *													
7. SERLI								-.28	-.03	.15	.18	-.13	-.16
<u>Play Behaviours:</u>													
8. Task-Oriented									.07	-.24	-.16	.20	.18
9. Social Play										-.57 ^c	-.55 ^c	.03	.54 ^c
10. Watching											.29 ^a	-.13	-.66 ^c
11. Adult-Oriented												-.28 ^a	-.42 ^c
12. Intensity													.11
13. Vigour													

^ap<.05

^bp<.01

^cp<.001

* these inter-correlations have age partialled out

suggested that the Bonferroni maneuver was problematic, leading to an unacceptable risk for type 2 errors (incorrectly rejecting the null hypothesis when it is true). Others have described the choice of an alpha level as arbitrary (Rosnow and Rosenthal, 1989; Rozeboom, 1960) and that it should be viewed as just a "convenient reference point" (Cohen, 1990; p.1311). Hence, in the present study, a conservative significance level (e.g., $<.01$) was selected to protect against the risk of Type 1 error (given the number of correlations) without overly increasing the risk of Type 2 error. However, in some instances, correlations that reached a significance level of $<.05$ were interpreted with caution, as providing potential confirmation of initial predictions or of general patterns in the results.

Analyses examining similarity in preferred playmates' play styles

A primary focus of this study was to examine possible antecedents of toddlers' peer preferences. Based on the "play style compatibility" theory (Hypothesis₁), the targets' frequency of engaging in each play style was predicted to be similar to the frequency of that of their preferred playmate. To test this hypothesis, target children and their most preferred play partner's play styles, as derived first from observed play behaviours and then from the teacher ratings, were compared using Pearson-product-moment correlations. The dyad was the unit of

analysis and all pairs were independent (n=52 dyads).

a. Observed play behaviours. Each child's observed play aggregate scores were correlated with his/her most frequent playmate's scores. As can be seen in Table 15, significant correlations between playmates were found for the "watching" and the "adult-oriented" scores. Hence, children who tended to observe others had preferred playmates who also were similarly "watchers". The targets who interacted with teachers frequently had playmates who were also adult-oriented. This finding provided support for the hypothesis of behavioral compatibility between frequent playmates.

There were other significant correlations present. Target children who were observed to be "social" in their play had preferred playpartners who were not "watchers" or "adult-oriented". The focal children who tended to "watch" their peers had playmates who were not "social". There was a tendency for "adult-oriented" target children to play most frequently with peers who were not "task-oriented" or "social". These correlations did not support the "similarity" between peers definition of behavioural compatibility. Rather, these correlations indicated that target children played not only with peers who had a similar play style, but also with peers who had a play style which complemented their own. These findings are suggestive of a "complementarity" between peers definition of behavioural

Table 15

Pearson correlations of frequency of target children's
observed play behaviours with those of preferred playmate
(n=52)

<u>Target</u>	<u>Preferred Playmate</u>			
	<u>T-O</u>	<u>S</u>	<u>W</u>	<u>A-O</u>
Task-oriented	.03	-.02	.06	-.07
Social	.11	.21	-.32 ^c	-.24 ^a
Watching	-.06	-.35 ^c	.32 ^c	.16
Adult-oriented	-.26 ^a	-.24 ^a	.20	.30 ^b

^ap ≤ .05 ^bp ≤ .025 ^cp ≤ .01

compatibility.

Intensity and vigour were two other indices of play style considered in the present study. Pearson-product-moment correlations were conducted between the target's intensity and vigour scores and his/her most preferred playmate's scores and were not significant except for the negative correlation between the target's vigour and the peer's intensity (see Table 16). This finding suggested that children who were highly active sought out playmates who were not highly focused and intense in their play. In terms of these play behaviours, the children appeared to be choosing children who possessed a play style which was not identical to their own, but which allowed for complementary play. A child who tended to engage in vigorous play might have difficulty interacting successfully with a child who preferred a more focused and less active activity. Again, in this case, The toddlers appeared to be attracted to playmates with similar and complementary play styles.

b. Teacher ratings. As described earlier, there is a potential confound inherent in these analyses. The confound of activity choice and playmate selection may have influenced these results such that this observed compatibility may be less related to characteristic play styles and more due to the possible lack of independence in this method of determining and comparing children's play styles. One approach to avoid the confound of activity

Table 16

Pearson correlations of target and preferred playmate's
intensity & vigour scores (n=52)

<u>Target</u>	<u>Preferred Playmate</u>	
	<u>Intensity</u>	<u>Vigour</u>
Intensity	-.14	.16
Vigour	-.30 ^b	.15

^ap ≤ .05; ^bp ≤ .025; ^cp ≤ .01

choice on playmate selection was the use of an independent measure of play styles (i.e., teacher ratings).

Each child's score on each composite score as derived from teacher ratings was correlated with his/her most frequent playmate's scores using Pearson-product-moment correlations. As can be seen in Table 17, there were significant correlations between playmates for the "socially sensitive" and "popular" scores. These findings suggested that children who were perceived by teachers to be "socially sensitive" sought out peers who were similarly socially aware and the "popular" target children tended to seek out playmates who were also popular. As evidenced by these results, children with social awareness or popularity appeared to play with peers who were similar in their social awareness or popularity. These findings suggested that peer play style preferences as measured by the teacher ratings were also influenced somewhat by compatibility.

There were other significant correlations. The toddlers perceived to be "disruptive" played with preferred playmates who were not highly "popular". The "socially sensitive" toddlers played with peers who were "popular". Once again, these correlations indicated that the focal toddlers sought out peers with complementary play styles.

Using either set of play styles measures, there appeared to be some support for the compatible play styles explanation of peer preferences. While the original

Table 17

Pearson correlations of target and preferred playmate
teacher ratings (n=45)

<u>Target</u>	<u>Preferred Playmate</u>		
	<u>Disrupt</u>	<u>Social</u>	<u>Popular</u>
Disruptive	.08	-.12	-.27 ^a
Socially Sensitive	-.19	.34 ^c	.32 ^b
Popular	-.17	.18	.31 ^b

^ap ≤ .05; ^bp ≤ .025; ^cp ≤ .01

hypothesis involved compatibility defined as similarity in the peers' play styles, the current results suggested that compatibility should be defined more broadly as incorporating similar and/or complementary play styles. Thus, in describing toddlers as being attracted to peers with compatible play styles using this extended definition, toddlers would choose play partners who possess idiosyncratic play styles that were complementary and/or similar (compatible) to their own.

Analyses Examining Degree of Gender Segregation

In addition to examining peer preferences, the present study also included an investigation of the etiology of a particular type of peer preference--same-sex peer preferences (gender segregation). Gender segregation was not expected to occur in the preferred playmate dyads, but was expected to occur in the target's overall contacts. Furthermore, this gender segregation was expected to occur more for girls than boys.

In terms of the present study, 13 boys had same-sex preferred playmates and 15 boys had other-sex preferred playmates, 19 girls had same-sex preferred playmates and 10 girls had other-sex preferred playmates. For each sex, this number of same-sex preferred playmates was not expected to significantly differ from the number of same-sex preferred playmates expected by chance.

There was a further complication which had to be

considered before testing this hypothesis, namely class attendance. Class attendance had an effect on the number of children who were available to play with. Ideally, one would hope for classes with an equal number of male and female students. However, the classes in the present study were not evenly divided by sex (see Table 1). This unequal distribution was problematic because it could artificially influence the degree of gender segregation exhibited. For example, if a class contained more girls than boys, a child would be apt to select a female play-partner more frequently than a male by chance alone. In this case, an apparent higher preference for female peers and male peer avoidance may be merely due to the greater availability of girls and not a preference style. If the girls in this case demonstrated more same-sex preferences than the boys, this gender segregation difference would not be meaningful.

To ameliorate this potential bias, the binomial distribution was used to correct for the proportion of same-sex preferences due to chance. This approach allowed for the comparison of children's proportion of same-sex playmates due to chance alone with their observed proportion of same-sex dyads. A significant binomial would suggest that children were demonstrating a same-sex bias in their preferred play partner selection.

The figure representing chance gender segregation was calculated separately by sex and class (see Appendix F for

formula). In the case of the target boys, (1) the proportion of male peers in a boy's class was multiplied by (2) the total number of male targets in his class to produce (3) the number of same-sex peers the targeted boys would be expected to select by chance alone. This number was summed across all 5 classes and divided by the total number of target males study-wide to create the chance probability of a boy having a same-sex preferred playmate. Then this number was compared to the observed frequency of having a same-sex peer using the binomial distribution. Similar calculations were performed using the female subjects.

For boys, the observed proportion of same-sex playmate preference of 0.46 (13/28) was tested against the "chance" proportion of 0.47 and was not significant (1 tailed $p < .20$). In the case of the girls, the observed proportion of 0.66 (19/29) was compared against the "chance" proportion of 0.49 and again was not significant (1 tailed $p < .15$). These binomial results suggest that the children were not selecting playmates as a function of their gender. As predicted, most frequent playmates were equally likely to be of same or other sex. This finding paralleled Howes' (1988) results that toddlers do not choose their play partners primarily on the basis of gender.

Thus, the dearth of same-sex affiliation present in the preferred playmate relations supported the first prediction regarding the amount of gender segregation among toddler

preferred playmates. The second prediction related to gender segregation involved each child's overall peer contacts. This prediction was that children's number of same-sex peers would be significantly greater than the number expected by chance when their overall peer contacts were considered. An index of the sex composition of each individual child's play group was created based on the number of boys and girls he/she played with during the free play observations.

Preference for same-sex and other-sex peers was analyzed according to a normal approximation to the binomial procedure devised by Goldman (1981) which also corrected for attendance. In this procedure, each child's observed preference for same-sex peers was compared to "availability quotients". The "availability quotients" reflected the child's proportion of same-sex playmates due to chance alone. Based on attendance records, this figure was composed of the exact number of potential playmates of each sex present during each observation. Using the Z-score transformation procedure, the "availability quotients" were compared to observed behaviour. These Z-scores were dichotomized into a same-sex preference or no sex preference using the non-arbitrary cutoff of 1.96 and indicated whether a child preferred same-sex peers significantly more (Z score greater than 1.96) than chance.

Overall, 42% (24/57) of the children tended to play in

same-sex play groups. Twenty-one percent (6/28) of the boys and 62% (18/29) of the girls demonstrated gender segregation in their play groups. Using a chi square analysis, there was a significant difference between these two groups ($\chi^2=9.65$, $p = .002$). These results indicated that the children were beginning to gender segregate in their overall peer contacts. Also as expected, more girls were gender segregating than boys. Hence, in the present paper any references to gender segregation will refer to these latter calculations.

Analyses examining antecedents of gender segregation

The remaining predictions involved 3 theories that provide explanations for the development of this gender segregation. Specifically, did the segregating children differ from children who did not gender segregate regarding their cognitive awareness of gender, toy preferences, and play styles? Given the poor subject-to-variable ratio and the correlations between dependent variables (as seen in Table 14), multivariate analyses of variance (MANOVAs) were used to control for Type 1 error.

Cognitive Variables.

According to Hypothesis₃, (the cognitive consonance hypothesis) a significant main effect was expected such that the gender segregating children would have significantly more gender awareness than the children who were not segregating. To test this prediction, the children were

given 2 cognitive tasks: the Leinbach and Fagot (1986) test of gender labelling (GL--CHILD; GL--ADULT) and Edelbrock and Sugawara's (1978) test of sex-role knowledge (SERLI).

An examination of the children's scores on the gender labelling measure revealed that there was a ceiling effect with the majority of children passing the adult task (97%) and the child task (82%). Hence, it appeared that the majority of children in this sample were able to differentiate between photos of males and females both as adults and as children. These children could be described as possessing a well-developed gender labelling (see Table 4 for descriptive statistics) with a slight advantage using the adult photos; results which are similar to those described by Leinbach and Fagot (1986). Given this ceiling effect, the gender labelling measures were eliminated from further analyses as they did not have enough variability to provide meaningful information.

In the case of the sex-role knowledge task (SERLI), 43% met criterion on this measure (i.e., scored above chance) and there was considerable variability. The children's awareness of common sex role stereotypes was less developed than their gender labelling (see Table 4 for descriptive statistics).

To address the aforementioned prediction, possible sex differences in the cognitive abilities tapped by the sex role awareness measure was examined as well as differences

in the scores of segregating and non-segregating children. These two queries were addressed using a 2 (target's sex) x 2 (peer preference--same-sex versus no sex preference) analysis of variance, covarying age, for this cognitive measure (see Table 18). The dependent variable was not significantly affected by sex ($F(1,23)=.68, p>.05$), peer preference ($F(1,23)=.77, p>.05$), or the interaction of these 2 effects ($F(1,23)=.42, p>.05$). These results suggest that the boys and girls did not differ in their knowledge about sex-roles. Also, children with same-sex play partners did not differ from children with opposite-sex playmates in their sex-role knowledge. It would seem that sex-role knowledge did not predict whether or not a child preferred same-sex peers. This finding did not support the cognitive consonance hypothesis.

Toys.

Hypothesis₄ suggested that gender segregation could be explained by the sex-typed toy theory in that a significant interaction between sex and preference was expected. It was predicted that gender segregating boys would show higher frequencies of playing with masculine toys than their non-segregating peers and gender segregating girls would play more with feminine toys than the non-segregating peers. This prediction was tested with a 2 (sex) x 2 (peer preference) multivariate analysis of variance (MANOVA) using frequency of masculine, feminine and neutral toy use as the

Table 18

Results of ANCOVA conducted with the cognitive measure by sex and peer preference with age covaried

<u>Variable</u>	<u>G.S.</u>	<u>Non-G.S.</u>	<u>Effects (F)</u>		
			<u>Sex</u>	<u>Pref</u>	<u>SxP</u>
<u>SERLI</u>					
Males	9.25	11.29	0.68		
	(3.30)	(3.30)		0.77	
Females	14.00	12.00			0.42
	(3.16)	(2.07)			

Note.--Standard Deviations appear in parentheses;
(all df = 1,23)

^a_p ≤ .05; ^b_p ≤ .01; ^c_p ≤ .001

dependent variables. Using Wilks' criterion, there was a significant effect of sex, $Wilks=.51$, $F(3,51)=16.31$, $p=.000$. The effect for preference, $Wilks=.98$, $F(3,51)=.39$, $p=.76$, and the interaction of sex x preference, $Wilks=.99$, $F(3,51)=.20$, $p=.90$, were not significant. To investigate the effects of the main effect for sex on the 3 dependent variables, univariate F tests were performed on each type of toy (see Table 19). There was a significant sex effect for masculine toys, $F(1,53)=34.86$, $p=.000$, and feminine toys, $F(1,53)=36.75$, $p=.000$. The univariate F test for neutral toys was not significant, $F(1,53)=.36$, $p=.55$. An examination of the means for masculine toys revealed that the sex effect was attributed to the boys' greater frequency of playing with masculine toys when compared to the girls. The reverse pattern was found for the feminine toys. These results were not surprising because the sex-typing classification of these toys was based on each sex's differential use of toys.

This finding suggested that while children did evidence a preference for sex-role appropriate toys, this preference did not seem to influence their play partner selection. Children with a same-sex peer preference were just as likely to play with sex-role stereotyped toys as their counterparts who preferred other-sex playmates. Once again, this is another aspect upon which these two groups did not differ. These results suggest that the sex-typed toy preference

Table 19

Results of ANOVA's conducted with measure of sex-typed toy preferences by sex and peer preference

<u>Variables</u>	<u>G.S.</u>	<u>Non-G.S.</u>	<u>Effects (F)</u>	
			<u>Sex</u>	<u>Pref SxP</u>
<u>Masculine Toys</u>				
Males	.65	.66	37.38 ^c	
	(.87)	(.79)	.01	
Females	-.61	-.66		.01
	(.49)	(.86)		
<u>Feminine Toys</u>				
Males	-.62	-.69	37.37 ^c	
	(.97)	(.57)	.48	
Females	.77	.47		.28
	(.64)	(.88)		
<u>Neutral Toys</u>				
Males	-.09	-.04	0.62	
	(.55)	(1.10)	1.02	
Females	-.12	.34		.51
	(.84)	(1.09)		

Note.--Standard Deviations appear in parentheses;
(all df = 1,53)

^ap ≤ .05; ^bp ≤ .01; ^cp ≤ .001

theory does not adequately explain gender segregation.

Compatible Play Styles:

Finally, Hypothesis₅ focused on the compatible play styles approach to gender segregation. A significant interaction was predicted such that boys who were gender segregating would exhibit play styles which were "masculine" sex-typed and girls would demonstrate "feminine" play styles. To that end, a series of 2 (Sex) x 2 (Peer Preference) multivariate analyses of variance (MANOVA's) were performed on the 10 dependent variables reflecting play styles: 4 composite scores from teacher ratings, 4 aggregate scores from observed play, average intensity, and average vigour. The first MANOVA involved the observed play behaviours, intensity, and vigour; the second MANOVA involved the teacher ratings.

With the use of Wilks' criterion, the combined observed play dependent variables were not significantly affected by sex, Wilks=.89, $F(6,48)=.99$, $p=.44$, preference, Wilks=.91, $F(6,48)=.81$, $p=.56$, or by their interaction, Wilks=.98, $F(6,48)=.18$, $p=.98$. Not only were there no sex differences in how the boys and girls played, there was no significant difference in how children with same-sex peer preferences and those with other-sex peer preferences played. The means and standard deviations of these variables can be found in Table 20.

The results of the MANOVA for the 4 teacher rating

Table 20

Results of ANOVA's conducted with the observed play behaviours by sex and peer preference

<u>Variables</u>	<u>G.S.</u>	<u>Non-G.S.</u>	<u>Effects (F)</u>		
			<u>Sex</u>	<u>Pref</u>	<u>SxP</u>
<u>Task-oriented</u>					
Males	0.05 (.64)	0.27 (1.08)	1.45	0.79	
Females	-0.38 (.83)	0.06 (.97)			0.15
<u>Social</u>					
Males	0.03 (1.07)	0.01 (1.00)	0.02	0.30	
Females	-0.12 (.83)	0.16 (1.14)			0.27
<u>Watching</u>					
Males	-0.06 (.91)	0.18 (1.05)	0.39	0.43	
Females	-0.18 (.91)	-0.03 (.96)			0.03

Table 20 Continued...

Table 20 Continued...

Adult-oriented

Males	-0.26	-0.18	1.69
	(1.07)	(.87)	0.03
Females	0.25	0.11	0.15
	(1.04)	(.98)	

Intensity

Males	0.19	0.06	1.15
	(1.22)	(.93)	0.96
Females	0.04	-0.34	0.18
	(.91)	(1.02)	

Vigour

Males	0.11	0.11	0.65
	(.71)	(1.06)	0.05
Females	-0.05	-0.16	0.04
	(.94)	(.99)	

Note.--Standard Deviations appear in parentheses;
(all df = 1,53)

^ap ≤ .05; ^bp ≤ .01; ^cp ≤ .001

scores revealed a significant effect of sex, Wilks=.81, $F(3,46)=3.51$, $p = .02$, and, trends for peer preference, Wilks=.86, $F(3,46)=2.52$, $p = .07$ and their interaction, Wilks=.86, $F(3,46)=2.51$, $p = .07$. To investigate the effects of this significant effect and the trends, univariate analyses of variance (ANOVAs) were performed individually on each of the 4 dependent variables (see Table 21). The significant main effect was explained by a significant sex effect for active/disruptive play behaviour such that teachers perceived the boys as more active and disruptive than the girls. This finding corroborated other research demonstrating boys' more active style of play (DiPietro, 1981; Goldberg & Lewis, 1969).

Although the multivariate F's for preference and the interaction were trends, cautious interpretation of univariate effects could provide direction for future research (Tabachnick and Fidell, 1983). In addition to the sex effect, there was a significant peer preference effect for the teacher rating score of "active/disruptive" (see Table 21). The means of this effect were examined and the children who the teachers' reported to be active/disruptive were gender segregating more than the non-active/disruptive children. The interaction of the sex and peer preference effects was not significant ($p=.43$). These results are displayed in Figure 1.

There was a significant univariate interaction of sex

Table 21

Results of ANOVA's conducted with teacher ratings by sex and peer preference

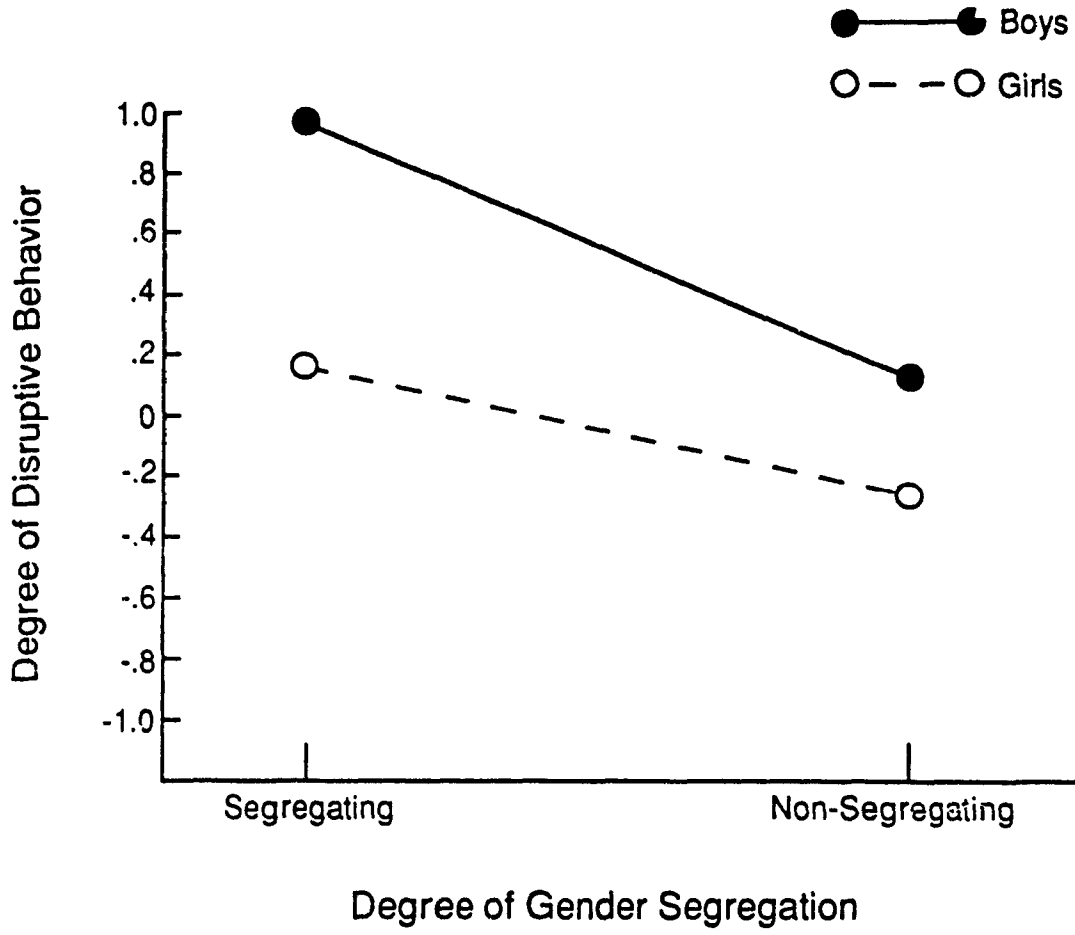
<u>Variables</u>	<u>G.S.</u>	<u>Non-G.S.</u>	<u>Effects (F)</u>	
			<u>Sex</u>	<u>Pref SxP</u>
<u>Disruptive</u>				
Males	0.98 (.32)	0.12 (.81)	4.74 ^a	5.54 ^b
Females	0.17 (.92)	-0.25 (1.14)		0.65
<u>Socially Sensitive</u>				
Males	-0.73 (.31)	-0.02 (1.06)	2.72	0.04
Females	0.38 (.82)	-0.21 (0.92)		5.33 ^b
<u>Popular</u>				
Males	-0.61 (.25)	-0.17 (1.08)	1.33	0.02
Females	0.24 (1.15)	-0.28 (1.05)		2.23

Note.--Standard Deviations appear in parentheses;
(all df = 1,48)

^a_p ≤ .05; ^b_p ≤ .025; ^c_p ≤ .01

Figure Caption

Figure 1. Degree of active/disruptive behaviour as a function of gender and segregation



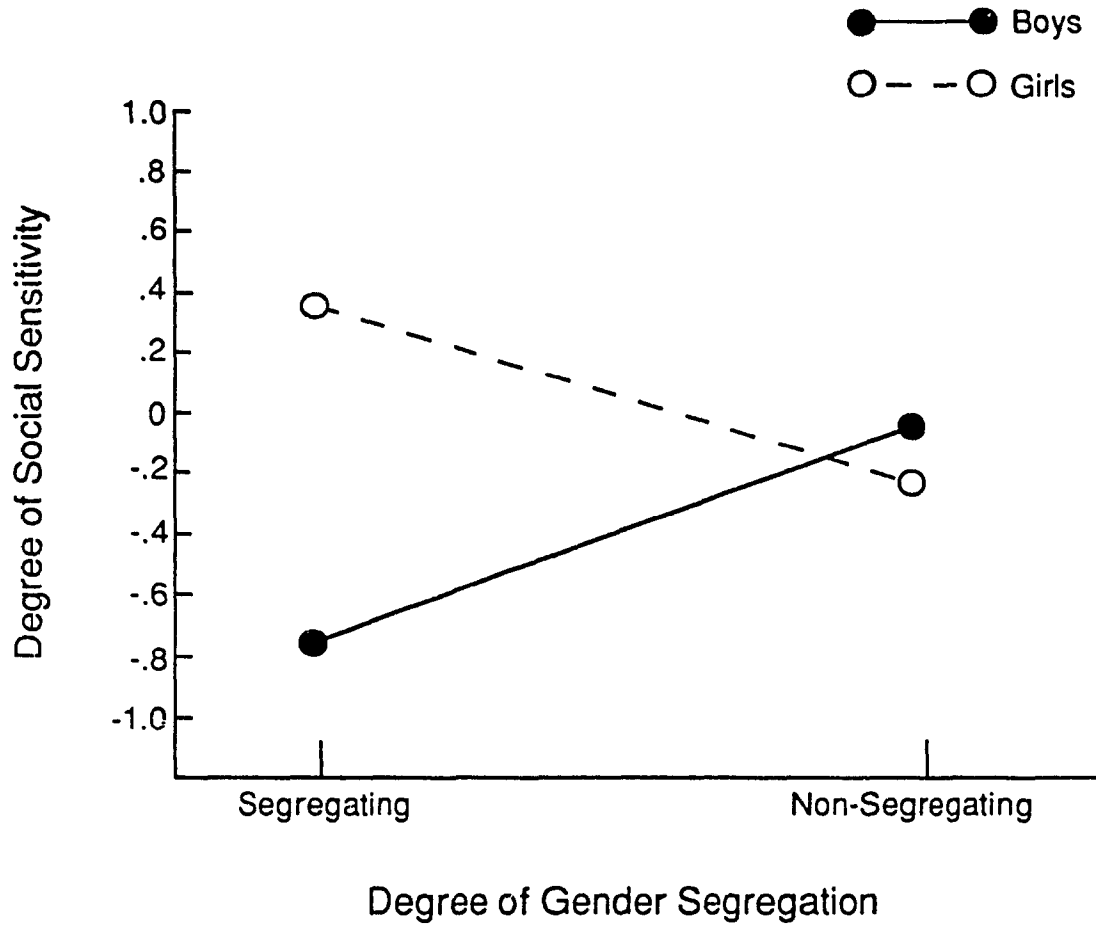
and peer preference for the teacher rating composite score representing "socially sensitive" children (see Table 21). Simple main effect post hoc analyses revealed that this interaction was primarily due to a sex effect among the gender segregating children (see Figure 2). Gender segregating girls were perceived by teachers as more "socially sensitive" than the segregating boys $F(1,48)=10.08, p<.01$. The difference between the teachers' views of the non-segregating boys and girls was not significant, $F(1,48)=.24, p>.10$. The differences within sex were also examined. The difference between boys who were gender segregating and those who were not was not significant, $F(1,48)=2.53, p >.10$. There was a tendency for gender segregating girls to be seen as more socially sensitive than the non-segregating girls, but this trend did not reach significance $F(1,48)=2.87, p=.10$.

This finding provided tentative support suggestive of a relationship between sex-differentiated styles of social behaviour and gender segregation. It seemed that as the toddlers' play behaviours became more sex differentiated, they tended to seek out playmates with compatible play styles, leading to the development of a preference for same-sex peers.

It is of interest to note that this "socially sensitive" play style had a high degree of concordance between preferred playmates. This might suggest that

Figure Caption

Figure 2. Degree of social sensitivity as a function of gender and segregation



children initially choose their most preferred playmates on the basis of compatible play behaviours and as these behaviours begin to show sex differences, gender segregation emerged. However, given the small sample size, this is only a tentative interpretation and further investigation with other larger samples would be needed before firm conclusions can be formulated.

Discussion

The present study examined toddler peer preferences and possible mechanisms which may account for these early peer relations. More specifically, the emergence of toddler peer relations and potential factors leading to a specific type of peer relations, gender segregation, were studied.

In examining factors contributing to toddlers' choice of certain peers as playmates, the "compatible play styles" hypothesis (Hypothesis₁) was tested. The prediction that preferred playmates would demonstrate similar frequencies of engaging in various play styles received some support as seen by the significant correlations between the children who watched others, were perceived as socially sensitive and were seen as popular. This concordance between the behaviours of play partners reported herein suggested that toddlers appeared to select playmates who had play styles which were similar to their own. This finding that preferred playmates are similar to each other replicated other research conducted with older children (Dewry & Clark, 1985; Erwin, 1985; Urberg, Halliday-Scher & Tolson, 1991) and adults (Griffitt and Veitch, 1974; Lydon, Jamieson & Zanna, 1988; Newcomb, 1961). However, there were also significant correlations between target children and their play partners which involved behaviours which were not "similar". These significant correlations occurred for behaviours which were complementary. For example, toddlers who engaged in "social" play had preferred

playmates who did not exhibit non-social behaviours such as "watching" or "adult-orientation". This tendency to choose peers who had a play style complementary to one's own implied that children may be attracted to peers who engaged in behaviours that may not be identical to one's own, but that are related.

Olweus (1977) in his discussion of the "whipping boy" described the complementary relationship between aggressive boys and their passive play partners. The more aggressive lads would tend to seek out peers who were submissive and accepting of their aggressive overtures. While these two styles are not similar, they are related to each other and allow the two individuals to interact in a connected fashion. This finding differed from expectations based on the adult literature. Perhaps this result suggests that the features that predispose one toddler to like another are not the same as those features adults prefer. In the case of young children, there is some support for the "complementarity hypothesis" (Myers, 1990).

A peer who demonstrated play behaviours that were drastically different from one's own (i.e., not similar or complementary), might be more difficult to follow and interact with successfully. As Schacter (1969) suggested, children select peers who are like themselves because it helps them to validate their social identity. There would be less conflict and more mutual liking of each other. Thus, peers who

demonstrated play behaviours that were not compatible with a child's behavioural style would not be sought out as frequent play partners.

These findings indicated that the original hypothesis of play style compatibility as defined as a preference for similar play behaviours was limited and did not capture the entire relationship. There appeared to be some suggestion that toddler peer preferences were also related to a preference for complementary play styles and therefore, the definition of compatible play styles should include complementarity. Hence, compatibility in toddler play styles might be best defined by a broader interpretation encompassing similarity and complementarity. Using this less restrictive description of compatibility, there appeared to be some support for the behavioral compatibility approach to peer selection.

Another area of interest was an examination of possible precursors of gender segregation. This investigation was conducted by comparing children who were gender segregating to those who were not, in terms of their gender awareness, sex-typed toy preferences, and play styles. In that way, it was possible to examine if there were certain factors which contributed both to general peer preference and gender segregation or if the two processes were separate.

First, the degree of gender segregation was investigated and hypothesized (Hypothesis₂) to be present in children's

overall peer contacts and not just in their contacts with their most preferred playmates. This prediction was supported in the present study, replicating Howes' (1988) findings. Howes postulated that in preferred peer relations, gender would not be an important influence. She suggested that there may be some other factor contributing to preferred playmate preferences. The results reported herein indicate that this other influence may be a preference based not on gender, but on compatible play styles. In choosing their preferred playmates, toddlers may be focusing on characteristics which play a salient role in their social interactions. For young children of this age, play encompasses a large proportion of their social repertoire, so it would seem logical that they would focus on this aspect in determining with whom they would like to spend their time.

There was gender segregation present in the children's overall contact with peers and more girls were segregating than were boys. These findings replicated other studies in this area (Howes, 1990; LaFreniere, Strayer & Gauthier, 1984; see also Maccoby and Jacklin, 1987 for a review). This difference between the toddlers' overall contacts with peers and their interactions with most preferred playmates may be indicative of separate processes accounting for these two types of peer preference (Howes, 1990).

In exploring the antecedents of gender segregation in toddlers' overall peer contacts, three hypothetical

explanations were presented. The first of these hypotheses (Hypothesis₃) focused on the role of cognitive awareness in peer preferences. The majority of the children demonstrated nearly perfect performance on the gender labelling measure. At this age, awareness of gender labels did not predict peer preferences. At first this may appear to contradict Fagot's (1985, 1983; Fagot, Leinbach & Hagan, 1986) research which was suggestive of gender labelling as an important step in the development of gender schemas and the adoption of sex-role behaviours. She found that early labellers demonstrated an earlier preference for sex-typed behaviours and same-sex peers than did the late gender labellers.

The difference between her findings and the results of the present study may be attributed to Fagot's use of a longitudinal design in which she followed children from the age of 18 months to 4 years. She divided her sample according to their performance on her gender labelling measure, into early (passed the test by 27 mos.) and late (failed at 28 mos. or later) labellers. She compared children who were early labellers (a younger age group than the children in the present study) to those who were late labellers in terms of the onset of sex-typed behaviours (i.e., sex-typed toy preferences) and peer preferences. The children in the current study were older and capable of labelling, so this distinction was not possible. Had these children been tested at an earlier age, Fagot's findings would suggest that the

children who were gender segregating were also the children who were able to label gender earlier.

Awareness of gender roles did not predict gender segregation; children with same-sex playmate preferences did not exhibit more gender knowledge than their other peers. This finding was surprising given that gender cognitions are actively developing during this developmental period (Serbin & Sprafkin, 1986) and one would expect that gender awareness would have some effect on toddlers' behaviour and the children who had some awareness of gender roles would be expected to be exhibiting more sex-typed behaviours than their peers without gender cognitions. However, the current data did not support this premise.

To understand why gender cognition did not impact on gender segregation, it may be fruitful to turn to Weinraub, Clemens, Sockloff, Ethridge, Gracely, & Myers' (1984) study. They did not examine peer preferences, but they did investigate the impact of gender awareness on sex-typed behaviour and found that there was no effect. They suggested that gender labelling may be an automatic response that is independent of sex-typed behaviour. Children may be aware of their gender and the gender of others, but they have not yet adopted or begun to use these roles. Weinraub et al. (1984) suggested that the children's gender schemas have not yet begun to affect their behaviour. These authors suggested that children would not act in accordance with their

perception of sex-related behaviours until the onset of gender constancy (Emmerich, Goldman, Kirsh, & Sharabany, 1977; Ruble, Balaban, & Cooper, 1981; Slaby & Frey, 1975). Gender constancy is the belief that gender is constant regardless of superficial transformations such as in dress and appearance and this stage of gender understanding generally occurs between the ages of 4 and 8 (DeVries, 1969; Eaton & VonBargen, 1981; Kohlberg, 1966; Slaby & Frey, 1975; Wehren & DeLisi, 1983). It may be that the gender segregating children differed from their non-segregating counterparts in terms of gender understanding beyond labelling photos and activities by sex. Sex-typed behaviours such as gender segregation may not be adopted until the children have acquired some understanding that gender is stable. As proponents of the cognitive-developmental approach to sex-typing would advance, gender awareness is the first step to categorizing one's world. Once a child understands that his/her gender is an invariant attribute, s/he would actively pursue sex-typed appropriate behaviours and peers with whom to practice and refine one's sex-typed repertoire. Hence, this awareness of one's gender would lend greater value to some individuals as playmates than others and gender segregation would become prevalent.

At this young age, toddlers' gender awareness and peer preferences may be developing as independent facets. It may be that during the later preschool years, they would be able

to integrate these two aspects into one schema more easily. Huston (1983) described the possibility that cognition and behaviour develop along separate "tracks" and become integrated when the child is older. It may be that the cognitive information does not become salient until there is some affective component to these cognitions. Once children learn that they are of a certain sex and this group membership becomes important to them, their sense of group membership will become powerful and drive their behaviours. As Maccoby (1988) suggested gender group identity may be powerful between the ages of 6 and 12.

Unfortunately, the children in the present study were too young to assess their gender constancy using any of the current measures available. Such measures were designed for older children and are fraught with methodological shortcomings. Bem (1989) recently addressed these faulty assessment procedures using a new measure of gender constancy and a new test of a child's genital knowledge. She found that 40% of her sample of children aged 36 to 65 months of age could conserve gender across perceptual transformations. Thus, it may well be that children are achieving the ability to conserve gender at approximately the same time they gender segregate. It may be that gender constancy would influence the tendency to choose same-sex playmates more than gender awareness. Future investigation of this possibility would seem warranted.

Sex-typed toy preferences were expected to differentiate between the children who gender segregated and those who did not (Hypothesis₄). This hypothesis was not supported by the present study. Given that sex-differentiated toy preferences begin at a very young age and were prevalent in the present study, it was surprising that this robust toy preference was not related to peer preferences (see Huston, 1983, p. 402-403 for a review).

One explanation for this finding was that this sex-typed toy preference approach to gender segregation seems to be rather simplistic. All that is required for gender segregation to occur is that children gravitate to sex-typed toys/activities and through this activity preference, same-sex preferences would emerge. Children are not seen as actively seeking out playmates, instead, gender segregation is thought to occur as a secondary effect of toy choice. Rather than perceiving the children as actively searching for others who are similar in some way, they are seen as simply finding themselves in the presence of others with similar toy interests. As indicated in the earlier description of potential antecedents to toddler peer relations, toys and activities were important for initial peer contact, but the more stable and enduring aspects of peer relations appeared to be facilitated by children's play styles. Children might actively pursue peers with compatible play styles regardless of the specific toys they are using (Maccoby, 1988).

Maccoby and Jacklin (1987) found that boys and girls tended to play with same-sex peers to the same degree whether engaged in sex-stereotypical activities or in sex-neutral activities. This finding suggested that there is little relationship between playmate preferences and degree of sex-typing of toys/activities. This differential preference for same-sex partners may have been based on something other than the children's previously developed activity preferences. They suggested that there may have been greater compatibility in the play styles of these children.

Researchers have found that sex-differentiated toy preferences occur early (even before gender identity) and do not appear to be related to cognitive or behavioural indices of sex-typing (Kuhn, Nash & Bruckner, 1978; Marcus & Overton, 1978; Smetana & Letourneau, 1984; Weinraub et al., 1984). Weinraub et al. (1984) suggested that these toy preferences arise from early reinforcement for appropriate toy preferences. It may well be that these sex-typed toy preferences are so well-ingrained that have become "automatic behaviours" (Langer, 1978) such that this behaviour has become so overlearned that the behaviour can be enacted without engaging rational thought processes. Through repeated exposure, children may have become so accustomed to sex-typed toys that they unconsciously select sex-typed toys without considering the sex-role appropriateness of the object. In studies in which researchers have examined children's toy

preferences and their motives for their selections, children's rationale for their toy choices were not based on the appropriateness of the activity for their sex, but instead focused on what the toy could do and what they could do with the toy (Blakemore, LaRue & Olejnik, 1979; Eisenberg, 1983; Eisenberg, Murray, & Hite, 1982).

Weinraub et al. (1984) suggested that at this young age, toy preferences and sex role awareness are separate processes, such that children exhibit these sex-typed toy preferences without accompanying sex-typed behaviour. She described her belief that children have these toy preferences primarily as a function of being reinforced or exposed to sex-typed toys and not as a conscious decision to be sex-typed. Adoption of sex-typed behaviour would not occur until the child had reached gender constancy at which point s/he would act in accordance with his/her perception of sex-appropriate behaviour (gender role awareness would then affect behaviour).

The final hypothesis (Hypothesis₅) concentrated on the role that compatible play styles may have on gender segregation. With the other two hypotheses it was possible to examine antecedents of gender segregation which were different from the antecedent of toddler peer relations explored herein. This final hypothesis provided a view that extended the toddler peer preferences explanation to include gender segregation. This position portrayed gender segregation as not a different process, but rather as a

process similar to that accounting for the development of preferred playmate preferences.

Given the small sample size, the findings, which provided some support to this hypothesis, were viewed with some caution. Further replication with a larger sample would be necessary; however, tentative interpretation is offered here. There appeared to be some differentiation between the two groups in terms of their play behaviour. The gender segregating girls were perceived to exhibit more social sensitivity than the other children, and the gender segregating boys were seen as demonstrating lower levels of "social sensitivity" than the other children. The gender segregating boys were seen as more active and disruptive in their play behaviour. This difference did not reach statistical significance, however, it provided interesting information for further exploration and provided a glimmer of insight regarding the play behaviours of gender segregating boys. These findings are suggestive that gender segregation may be related to sex-differentiated styles of play behaviour.

The earlier segregation for girls involving their social sensitivity was reminiscent of Maccoby and Jacklin's (1987) study of gender segregation. They found that gender segregating girls had developed more prosocial characteristics (as seen by adults) than the other children. The tendency for boys to be more active and disruptive may serve to increase this segregation further. As the segregating girls become

more prosocial, they may begin to avoid the incompatible active and disruptive children even more. As this play style increasingly becomes male-oriented, fewer girls would be expected to interact with these boys. Therefore, gender segregation would become apparent for socially sensitive girls and active/disruptive boys. Maccoby (1988) has suggested that gender segregation in part is attributable to girls' avoidance of some cross-sex contacts that they actively dislike and avoid. The findings herein, provide some clues as to what they are avoiding.

It is also noteworthy that toddlers had a preference for peers with a similar degree of social sensitivity. Taken together with the previously described effect of gender segregation regarding social sensitivity, it would appear that children seek out playmates with compatible play styles and that, as these play styles become more sex-differentiated, a preference for same-sex peers emerges. Thus, there seemed to be support for the compatible play styles explanation of gender segregation.

One may wish to argue that same-sex peer preferences appear first and then lead to more sex-typed play styles in same-sex groups. However, the finding of a strong preference for peers with compatible play styles before gender segregation occurs suggests that compatibility preferences may lead to segregation, rather than the reverse.

A conceptual formulation:

The results of the current study suggest that play style compatibility may influence playmate preferences: toddlers were motivated to seek out play partners who exhibited compatible play styles. Not only did this preference appear to be related to the children's choice of most preferred playmate, but it also seemed to be a factor in their same-sex peer preferences. It makes intuitive sense that young children would focus on a concrete dimension such as play styles given the large role play has in their lives. Given that their toy preferences are already sex-typed at a very young age, it would follow that it is what a child does with the toy and not the toy alone which would be salient. Hence, the lack of an effect for toy preferences is not surprising.

The lack of an effect of gender labelling was most likely due to the ceiling effect described previously. Knowledge of sex roles did not appear to predict any aspect of social behaviour either. While cognitive awareness may not play a large role in the actions of 2.5 to 3 year olds, as the children get older cognitive factors may become more important. Katz (1983) described the years from 3 to 6 as being very significant for sex-role socialization because this period is marked by rapid learning of the "culturally designated gender-appropriate categories in many areas" (p.57) and by the age of 5, there is a particularly strong tendency to attribute positive things to one's own sex and negative attributes to members of the opposite-sex. Tajfel and his

colleagues (Billig & Tajfel, 1973; Tajfel, 1969, 1973, 1979; Tajfel & Billig, 1974) have examined the consequences of group categorization and found that children tend to value others in their group more positively than those in the out-group.

It appears that initially, toddlers' cognitive awareness of gender and sex-typed behaviours develop as separate systems such that gender awareness did not effect the social or behavioural aspects of their sex role acquisition. Toddler peer relations would appear to be influenced by play style compatibility. Over the next few years, the social, behavioural, and cognitive aspects of sex role acquisition become more complex and differentiated. By preschool and early school years, one would expect that the children's developing cognitions and sex-typed behaviours would begin to become integrated. As their gender membership becomes important and salient (cognitively and emotionally), the children's cognitive awareness of gender and gender roles would effect their behaviour more directly. Therefore, it appears that gender does become a salient and affect-laden construct which eventually will govern the behaviours of young children. As children become increasingly mature in their cognitive abilities, and gender becomes an emotionally charged issue, they would be expected to demonstrate more sex-typed behaviours such as gender segregation.

Future Directions:

One of the limitations of the present study is the small

subject to variable ratio. This limitation does not invalidate the study, but does press the need for replication with some modifications.

A second study would need a larger sample size especially given the number of variables used to test the hypotheses. Streamlining the number of dependent variables examined would also make the study more effective. As Cohen (1990) suggested "less is more". There appeared to be some emerging effects for the teacher ratings of socially sensitivity and active/disruptive play, so these two behaviours would be valuable to investigate further in a future study.

As described previously, it might be interesting to include other cognitive measures to obtain the range of the children's cognitive abilities. A number of researchers in this area view gender constancy as an important construct, a measure such as Bem's (1989) test of gender constancy, and gender knowledge would provide this information. Then it would be possible to explore the role of gender constancy in gender segregation.

In order to pursue the influence of developing gender concepts on gender segregation, it would be useful to have a longitudinal design in which the children could be followed for a longer period of time. Data collection could occur early in September and continue at least until the end of the year to provide information about the formation of relationships (in September) and which relationships are most

enduring (at the end of the school year). Ideally, it would be beneficial to follow the children over the summer into the next fall when the majority of the children would be segregating, to monitor the process of gender segregation for more than a small group of the children. Not only would it be beneficial to follow the children for a longer period of time, it would also be interesting to start before any children are gender segregating (i.e., younger than the present sample). One would be able to monitor the children pre-segregation, during segregation and, post-segregation. Such a design would permit an examination of the concurrent changes in cognitive development. One would be able to chart the changes in gender understanding (from gender identity to gender constancy) and investigate any mutual influence these concepts might have on each other.

By incorporating these suggestions, it would be possible to extend further the interesting findings derived from the present study. As the study now stands, the avenue of play style compatibility appears to be a fruitful one to follow as it seems to contribute not only to toddler preferred playmate preferences, but also to the early emergence of gender segregation. Given the vast implications of participating in same-sex conclaves, a strong understanding of how this process arises would be invaluable to teachers, parents, and other professionals working with children. With this information, it may be possible to encourage children to explore mixed-

sex activities to provide them with experiences they would lose once they enter the same-sex in-group.

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APPENDIX A

Copies of consent forms

CONCORDIA UNIVERSITY



February, 1988

CENTRE FOR RESEARCH IN HUMAN DEVELOPMENT

Dear Parent;

As you may know, we are graduate students in psychology from Concordia University who have been visiting the youngest class at St. Andrews this year, during free play periods. We have been exploring the development of young children's play styles and their social relationships with peers. One aspect of this project examines how children begin to form friendships. To understand the basis of early friendships, we are asking a series of questions about young children's play. Specifically, to what extent do children tend to group themselves with others who have similar play styles (e.g. activity level, sharing play)?

Since these younger children sometimes play in groups with the children in your child's classroom during free play, it will be very helpful to us to have general descriptions of the play styles of all the children in the group. To obtain these descriptions from the teachers, we would ask them to fill out a brief questionnaire about a variety of typical preschool behaviors (such as talkativeness, and activity level), for the entire group of children. In order for your child's name to be included your child's name when filling out the questionnaire about play patterns, we will need your consent.

Our project has been funded by the Ministry of Education of Quebec, and has been approved by the Research Ethics Committee of Concordia University. It is being supervised by Dr. Lisa Beron, professor of Psychology and director of the Centre for Research in Human Development at Concordia.

Please call either of us at 3-8-7501 if you have any questions or comments about our project. Please return the form to your child's teacher as soon as possible. If you would like to receive a report on the results of this project when it is completed, please include your mailing address below.

Thank you for your help and cooperation.

Sincerely,

J. Gulko

Judith Gulko, M.A.

L. A. Moller

Lisa Moller, M.A.

1455 de Maisonneuve Blvd. West
Montreal, Quebec
H3G 1M8
514-848-2240

PARENT CONSENT FORM

I agree to have my child included in the descriptive questionnaire to be filled out by his/her classroom teacher.

I do not wish my child to be included.

Signature _____ Child's Name _____

Date _____

I would like a copy of a report on the results of the program.

Please print your mailing address below:

Name

Street

City

Post Office

CONCORDIA UNIVERSITY



CENTRE FOR RESEARCH IN HUMAN DEVELOPMENT

January 1988

Dear Parent:

As you are already aware, we are graduate students in Psychology from Concordia University who have been visiting your child's classroom this year, during the children's free play period. We have been observing the development of social relationships and play styles in young preschool children. To fully comprehend how children develop relationships, we are attempting to understand how young children perceive and organize their social world. One important dimension which young children use to organize their environment is gender. In this study, we are interested in charting the development of children's awareness of gender and gender roles using a short interview which is introduced as a game.

This game involves asking children to individually identify a series of photos of adults (taken from a Sears catalogue) as "Mommies" or "Daddies"; a series of photos of children as boys or girls, and a series of drawings of objects (e.g., a car) in which the child is asked to indicate who would be more likely to play with the object, a boy or a girl. This game will take 5-10 minutes and will be carried out in your child's classroom. It is a game which children enjoy. Of course, only children who wish to participate will be included.

The project has been funded by the Ministry of Education of Quebec, and has been approved by the Ethics Committee of Concordia University. It is being supervised by Dr. Lisa Serbin, professor in Concordia's Psychology Department, and director of the Centre for Research in Human Development.

Please call either of us at 848-7561 if you have any questions or comments. Please use the enclosed addressed and stamped envelope or return the form to your child's teacher as soon as possible. If you would like to receive a report on the results of this project when it is completed, please include your mailing address below.

Thank you for your help and cooperation.

Sincerely,

Judith Gulko, M.A.

Lora Moller, M.A.

1455 de Maisonneuve Blvd. West
Montreal, Quebec
H3G 1M8
514-848-2240

PARENT CONSENT FORM

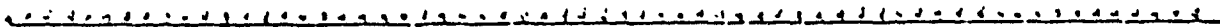
I will allow my child to participate

I will not allow my child to participate

Signature

Child's Name

Date



I would like a copy of a report on the study results

Please print your name and mailing address below:

Name

Street

City

Postal Code

APPENDIX B
Coding Manual

Introduction to the Code.

This behavioral code guides the coder in making judgements about the videotaped intervals he or she views. You may need to view a given interval more than once to get all the information necessary. The primary objectives of this coding scheme are to record (1) who is with the focal (target) child and (2) what the focal child is doing.

Keep in mind the following goals when coding:

- (1) VIEW THE SITUATION FROM THE PERSPECTIVE OF THE TARGET CHILD
- (2) ORIENT THE CODE AROUND THE SOCIAL ENGAGEMENT CATEGORY: ALL OTHER CATEGORIES REVOLVE AROUND THE SOCIAL ENGAGEMENT BEHAVIOR CHOSEN.
- (3) THE SOCIAL ENGAGEMENT BEHAVIOR WHICH IS CODED IS THE BEHAVIOUR WHICH OCCURS FOR THE LONGEST DURATION IN THE 10-SECOND INTERVAL.

Definitions of the Code Variables

NAME

This column is used to identify the focal (target) child.

TOY

This column is for the toy being used by the target child. See the list of codes for the various toys employed in the present study. Attempt to fit new toys, or those rarely seen, into existing categories. The child has to actually have, hold, or use the toy, not just give it a "passing by" touch.

GROUP COMPOSITION

This column contains the I.D. numbers of the male and female children in the proximity of the target child. A child is considered a group member if he/she is within 5 feet of the target, and/or is facing the target. If a peer is just "passing by" for a few seconds, s/he is not coded. There are several exceptions to these rules, as follows:

(a) When a target child is watching others, those other children can be coded even if they are not facing the target, because from the perspective of the target, they are part of his/her activity. However, they are not included if they are more than 5 feet away because it is difficult to determine which child is being observed at such a distance.

(b) These rules do not apply if the distance between children is externally structured: e.g. if people are lined up in a row, or at a table. In these situations, all the children in

line or at the same table are considered to be part of the same group.

(c) If two (or more) children are linked together due to their activity, they are all considered part of the group. For example, if two children are chasing each other, both the chaser and the chasee are considered as part of the same group. Generally stated, if two children are interacting (including shouting across the room to each other) they are coded as in the same group.

CODING SIMPLIFICATION:

If there are no children of a given sex present, mark a "0" in the appropriate subcolumn to minimize possible recording errors. For example, if a target child is with 1 girl, place the female peer's ID number in the "girl" subcolumn and mark a "0" in the "male" subcolumn.

TEACHER

In this column, one notes (with a checkmark or a 0) whether the teacher(s) is(are) present or absent. We are more "generous" when coding teacher presence than when coding peer presence: the teacher can be there for only a few seconds, and his/her back can be to the child. In general, the teacher is coded as present if s/he is there at all (except if s/he just walks quickly by).

DISTANCE

While group composition provides information about which children are part of a focal child's group, distance provides

more specific data regarding the identity of the peers with whom a focal child played. It contains the ID #'s of the 3 children who are interacting with or physically closest to the target child.

Distance is judged as it occurs at the 5th second of the interval. Freeze-frame this interval, and code the peers present. If the 5th second happens to be a closeup of the target, and thus no (or only some) other children are in view, judge distance from the nearest forward camera "pan" (as long as it remains within that 10-second interval) as well as by what you see at the 5th second.

If the social engagement is a brief "special status" behaviour (see social engagement), code distance at the time of the social engagement, which may NOT necessarily include the 5th second.

To determine which 3 children are interacting with or physically closest to the target, one must consider 2 criteria. First, when there is interaction, the child with whom the target is interacting is always marked first, no matter how far he/she is from the target. If there is more than 1 child interacting with the target, choose first the peer with whom the target interacted the most; if there is one and then list the other peers by decreasing degree of interaction.

Second, if there is not any interaction (or to rank the remaining children after the interactors have been accounted

for), rank the peers by their proximity to the focal child (i.e. the closest child is first, next closest is second, farthest child is third). Be aware that the camera plays tricks with distance! When there are children who are approximately an equal distance from the target (as is frequently the case), use the "left, right, across" rule. Code the peer to the target's immediate left as closest, on the target's immediate right as second closest, and across as farthest. If any of these positions is empty, but there are still peers in the group to be coded, repeat the "left, right, across" rule until 3 peers (or as many as appropriate) are coded. Use the following examples as guidelines:

Example:

A target is at a table with two children on his left, none on his right, and one across from him, not directly across, but to the right.

3

2 1 T

Distance is as follows: The peer to his immediate left is first. There is noone to the immediate right, and noone immediately across. So the next peer to his left is second, then there is noone to the right, noone across left, so the peer across to the right is third.

Example:

A target is at a table with an empty chair directly to his left, then a child to the left of the chair, two children

to his right, and a child directly across.

2

3 _ T 1

Distance is as follows: Noone to the immediate left, so peer to the immediate right is first. Child across is second, child to left of chair is third.

Remember, any child who interacts with the target is first regardless of how proximal he/she is. Never code peers who are "just passing by."

PLAY BEHAVIOURS

This column reflects the type of play behaviour being utilized by the target. The first step in selecting the play behaviour exhibited by the focal child is to determine which behaviour is exhibited for the longest duration during the 10 second interval. If 2 behaviours occur for the same period of time use the Coding Hierarchy to decide which behaviour to code. Then one must determine if the child is playing or involved in a non-play behaviour.

The non-play behaviours are:

Transition (14) occurs when a child is moving from one activity to another, or stops playing to get additional material (e.g. leaves block area, & walks over to art)

Wandering (15) occurs when a child aimlessly wanders about the room. This differs from transition in that here there does not seem to be a specific goal; the child does not seem focused on anything.

Unoccupied (16) is coded whenever a child is doing nothing, e.g. staring off into space, or is "spaced-out."

Crying (17) is coded whenever the target child is weeping.

CODING SIMPLIFICATION:

With these miscellaneous non-play categories, not all columns need be or should be filled in. The columns not used with each miscellaneous activity are as follows:

Transition and Wandering - Only activity (toy) should be filled in. The other categories do not apply.

Unoccupied - Fill in activity, group composition, distance, and area. The other categories do not apply.

Crying - Fill in activity, group composition, distance, and area. The other categories do not apply.

If the child is not engaged in any of these behaviours, s/he is considered to be involved in one of the following play activities:

Interaction with teacher (43) is coded when the child is hugging, helping, offering, showing, complying with, in short general being with or interacting with the teacher.

Watching others (26) occurs when the child is watching ongoing activities, but is not interacting (e.g. child stands by sandbox, and watches children digging). NOTE: When coding group composition (gc) for watch, one only indicates which child(ren) are being watched if the

peer(s) meet the criteria for gc. But if, for example, the target child watches other(s) who are more than five feet away, these peers are not indicated.

Peer Conversation (34) is coded whenever the child is concentrating on a conversation, and is not focused primarily on a toy or activity. A targeted child is coded as involved in conversation if he/she is talking or actively listening to a child talking to him/her.

Solitary play (99) occurs when the child is playing alone.

Parallel play (21) occurs when the child may be playing beside or near another child, using similar or different toys, but not necessarily with the same goal as the proximal peer.

Cooperative play (22) differs from parallel play in that the children are interacting with each other, and seem to have a common goal. Rarely, cooperative play may be agonistic.

CODING NOTE:

Each of Solitary, Parallel and Cooperative types of social play require an associated cognitive play code taken from the following list.

Functional (1) play is a repetitive motion which is engaged in simply for the sensation produced (e.g., repetitively hitting a block with hand).

Constructive (2) play is play in which the child creates

something, or prepares for an activity (e.g. painting, putting together train tracks, bringing a chair to the art table, putting things into things, waterplay, searching for a toy, puzzles, etc). If a child is engaged in an activity such as building a structure with Lego blocks and the child pauses momentarily and searches for a specific block, this behaviour is still considered constructive. When the child stops the activity and aimlessly looks through the blocks, this behaviour is transitional.

Exploratory (3) play occurs when a child examines a toy, but does not play with it (e.g. looking very closely at a car, turning over a toy to see another side of it). It also includes reading. NOTE: There is a specific type of cooperative engagement (22) which is coded with exploratory play: this is when two children are "wandering together," that is, both wandering around the classroom, but doing it together.

Dramatic (4) play is pretend play in which the child acts out everyday and imaginary roles in play (e.g. the child pretends to drive a train on its track).

Gross motor (5) play involves activities in which the child is doing some kind of physical motor activity such as running, jumping, going down a slide.

Prescribed use of toy (6) is a catch-all category for play activities which do not fit any of the above types of

play. In particular, it is coded if a child is spinning a top or pulling a pull toy (and not doing anything "extra")

"Special status" social behaviours:

These behaviours are given top priority when coding because they are interactions between children which do not occur frequently (about 5% of time), so they are automatically coded if observed regardless of length of duration.

Offer/give help (19) occurs when the child gives assistance to another child.

Initiate (20) occurs when the target child begins an activity or a play session with someone else.

Physical affection (23) is kissing, hugging, putting an arm around another child.

Seek help (25) is coded when the target child asks a peer for assistance.

Offer/give toy (40) is coded when a target child extends a toy to another child.

Have toy taken away (41) is coded when the target child's toy is taken by another child.

Receive toy (42) is recorded when a toy is given to the target child.

Attempt take (27) occurs when the focal child tries to grab something from another child, and is unsuccessful.

Take (28) is coded when the focal child successfully grabs

something from another child.

Object struggle (29) is coded when the target child tries to grab something from a child, and that child resists or defends his/her toy.

Show (30) is coded when the target child displays something to another child.

Aggression (31) is coded whenever a focal child engages with another peer with malicious intent.

Play hit (32) is coded whenever a target child playfully strikes another peer, but not when a child strikes an object.

Rough and tumble (33) is coded whenever a focal child engages in playful physical activity which could involve a peer, or a peer and a toy together.

Imitate (36) is recorded when a target child displays a low frequency behavior which has just been modelled by another child.

Approach (38) is coded when a focal child goes towards another child or group of children. NOTE: group composition coded is the group approached.

Withdraw (39) is recorded when a target child retreats from another child or group of children.

NUMBER OF INTERACTORS

This column indicates the number of children who are actually interacting with the target, up to a maximum of 3 (the maximum in the "Distance" column). The number of

interactors is automatically "0" when targets are alone (solitary play), or in parallel play, or watching, or unoccupied. It automatically does not apply when children are in transition, wandering, or crying.

The number of interactors is considered from the target's point of view. For example, if a target is engaged in cooperative play with child A, and child B seems to be trying to gain the attention of either the target or child A, but the target remains oblivious to him or her, child B would not be included as an interactor. If the target is primarily interacting with the teacher (and teacher interaction is coded), he or she may also briefly interact with peers present, in which case the number of peers with whom the target interacted would be recorded. Often, when interaction with the teacher is occurring, targets are not interacting with peers, in which case, the number of interactors would be "0."

NOTE:

If the number of interactors is, for example, 2, this would automatically refer to the two closest peers as measured by "Distance."

AREA

This column contains the code for the area in the school in which the play activity occurred. See the codes associated with the different areas for each school.

VIGOUR (1 - 5)

This column reflects a subjective impression of the amount of energy exerted or the amount of noise/vocalizations uttered by the target during the social engagement category selected. This measure ranges from 1 to 5. When using vigour, most activities will probably warrant a "3"; however, if during the social engagement coded a child runs (5) for part of the segment and then stops (1), do not average the vigour to a "3", but instead go with the more extreme and less common "5".

Examples:

1 = no movement

- child may be sitting, standing or lying down

2 = listless movement

- child may change body position (i.e., go from sitting to standing) or may move (i.e., move from chair to floor) or use upper body only or use whole body, but the speed at which these changes occur is slow

- reading a book and turning the pages slowly and gazing at a page for a long period of time

3 = average movement

- child may move or change position as in 2, but the speed at which he/she moves is a level at which things take place normally (no extremes--not really slow or really fast; i.e., like walking or arm movements with changes about every 3 seconds)

- walking at a normal pace with a pull toy

4 = quick movement

- child's movements are at a quick tempo somewhat between the average movement of 3 and fast movement of 5

- turning the pages of a book quickly, barely scanning the pages

5 = fast movement

- child moves very quickly as in running or jumping (whole body) or flailing arms about in an exaggerated manner (upper body only)

- a great deal of distance may be covered

- an extreme amount of activity; exaggerated motion

- dabbing paint at ease with the whole body, and flinging head around

Note:

There are some behaviours in which it is unlikely that a child may achieve a 5 due to the nature of the activity itself (i.e., reading) and because of this limitation, one needs to consider the context of the activity being coded. Hence, it is possible to get a "5" when at a "seated" activity versus a "moving" activity if the child is wildly moving his/her arms or bouncing in his/her seat. For example, running which is a whole body move would be given a vigour of 5; whereas, a child who is at the arts and crafts table would be given a 5 when he/she is painting wildly with a great deal

of arm motion. Thus, it is possible to get a 5 in an activity in which one, by the nature of the activity itself, is confined to upper body movements only.

INTENSITY (1-3)

This index is a measure of the target child's degree of focused attention/concentration (i.e., mental energy) regarding the task in which he/she is engaging. This measure ranges from 1 to 3. If the target child was carefully adding blocks to a structure being built and really attending to the task on hand (i.e., carefully places a block and then adds another without disturbing his/her train of behaviour) he/she would get a "3".

Note:

In coding intensity, a useful tactic is to start by assuming the child uses an intensity of "3" and coding down as the child's concentration wanders. For example, a child looks away briefly from his/her activity a couple of times, but returns to the task, code a "2". If the child is barely looking at the toy he/she is playing with and scanning around the room, code a "1". However, if a child's name is called by the teacher or a peer and the child looks to the caller and then immediately returns to his/her play with the same intensity as before, consider this an artificial distraction and ignore this break and code the intensity as was evidenced in the majority of the segment.

1 = low intensity

- child is engaging in an activity with little focused attention or demonstrates nervous apprehension

- child's attention wanders often

2 = medium intensity

- child is focused on 1 activity for the majority of the 10 second interval, but she/he may demonstrate some distraction

3 = high intensity

- child engages in 1 activity for the entire 10 second interval

- child exhibits great concentration and may be oblivious to his/her surroundings

Numbered lists of toys, soceng, area, and play

Toys

61. animals
62. arts & crafts & chalkboards
63. art masterpieces & specify
64. baby crib
65. ball
66. blocks - big
68. books
69. cars and small trucks
70. Climbing Apparatus incl. tunnel
71. cushions, blankets, pillows
72. doctor kit
73. dolls (stuffed animals, stuffed scarecrow, my little pony)
74. dress-up clothes (hats, purse, wallet, mask, hard-hat)
75. cash register (Fisher Price toy)
76. castle (Fisher Price toy)
77. farm (Fisher Price toy)
78. garage (Fisher Price toy)
79. men (Fisher Price toy)
80. plane/helicopter (Fisher Price toy)
81. record player, see-and-say, jack-in-box (Fisher Price toy)
82. restaurant & mall (Fisher Price toy)
83. airport (Fisher Price toy)
84. dollhouse (Fisher Price toy)
85. kitchen stuff (basket, dishes, plastic food)

86. Lego & Lego-sized blocks
87. mirror
88. sandbox toys: pails, shovels, rakes, and bottles
89. Paint/ Easels
90. plastic shopping basket
91. plastic feltboard
92. playdoh
93. playhouse
94. Puzzles/Board Games
95. stroller
96. telephones
97. tires
98. tools (hammer, etc.)
01. train
02. train tracks
03. big trucks
04. waterplay toys
05. rocking chair, chair, table
06. pen, pencil
07. stick
08. Fisher Price furniture
09. Makeup accessories, jewellery, & hair-dressing stuff
10. "idiosyncratic" toy from home (e.g. shopping bag)
11. pull toy
12. musical instrument
13. personal care/attention (tie shoe, wash hands, blow nose)

14. store stuff (toy money, containers)
15. riding toy
16. real food
00. NO TOY

TYPES OF PLAY BEHAVIOURS:

(A) Miscellaneous types of play

14. Transition
15. Wandering
16. Unoccupied
17. Crying

(B) Social types of play

43. interaction with teacher
26. watching others
34. peer conversation
20. solitary play *
21. parallel play *
22. cooperative play *

(*) Associated cognitive types of play

1. functional
2. constructive
3. exploratory
4. dramatic play
5. prescribed use of toy
6. gross motor

Special Status Behaviours:

19. offer/give help

20. initiate
23. physical affection
25. seek help
27. attempt take
28. take
29. object struggle
30. show
31. aggression
32. play hit
33. rough and tumble
36. imitate
38. approach
39. withdraw
40. offer/give toy
41. have toy taken away
42. receive toy

AREAS

44. dramatic play
45. sandbox
46. art centre
47. block area
48. tables
49. reading corner
50. climbing area
51. truck area
52. floor

53. carpet - StA
54. kitchen - StA (replaces last year's road map)
55. waterplay
56. lockers
57. window
58. sink
59. cozy corner - StA
60. playhouse - RB
61. store
62. kitchen

CODING HIERARCHIES

Whenever two social engagement behaviors occur for the same amount of time¹, a decision must be made regarding which behavior is to be coded. In that case, the decision can be made using this hierarchy. Find the positions of the two behaviors, and code the behavior which is higher on the list. See the example below.

COOPERATIVE PLAY
 CONVERSATION
 INITIATE
 SEEK HELP
 OFFER TOY/HELP
 SHOW
 OBJECT STRUGGLE
 (PHYSICAL CONTACT: AFFECTION, RT, AGG, PLAY HIT)
 IMITATE
 TAKE/ATTEMPT TAKE
 APPROACH/WITHDRAW
 HAVE TOY TAKEN
 PARALLEL PLAY
 TEACHER INTERACTION
 SOLITARY PLAY
 WATCHING
 CRYING/UNOCCUPIED/TRANSITIONAL/WANDERING

¹If a "special status" behaviour occurs even briefly, it would be coded over a noninteractive behaviour (but not necessarily over another interactive behaviour).

HIERARCHY FOR COGNITIVE TYPE OF PLAY

When debating between two types of cognitive play, use this hierarchy.

DRAMATIC
EXPLORATORY
CONSTRUCTIVE
PRESCRIBED USE OF TOY
GROSS MOTOR
FUNCTIONAL

Example:

For 5 seconds, a child engages in a conversation with another peer and then for 5 seconds, the child watches a group of children.

Conversation is higher in the hierarchy than watching; therefore, conversation is the behavior which is recorded.

APPENDIX C

Teacher Rating Questionnaire

TEACHER RATING QUESTIONNAIRE

 Below are a series of descriptions of behaviors shown by preschool children. Please rate each child on each item below by writing the appropriate number, from 1 (does not happen often); 2 (happens sometimes); 3 (happens an average amount); 4 (happens frequently); 5 (happens a lot). Please do not hesitate to use the entire range of possible ratings. Please complete item #1 for all children on the sheet before going on to item #2, etc.

	Child A	Child B	Child C
1. Shares toys			
2. Is restless, runs about, or jumps up and down			
3. Has temper outbursts			
4. Meets new people or situations easily			
5. Grabs or snatches toys from others			
6. Is physically active			
7. Expresses concern when others are upset			
8. Gives up easily			
9. Appears accepted by peers			
10. Is stubborn\defiant			
11. Constantly seeks attention			
12. Is excitable			
13. Gets along well with the opposite sex			
14. Gets along well with the same sex			
15. Tends to stay near the teacher			

	Child A	Child B	Child C
16. Is bossy or bullies the other children			
17. When in a group becomes more active or is noisier			
18. Appears happy and content			
19. Daydreams			
20. Expresses ideas			
21. Accepts bossing from other children			
22. Has good verbal skills			
23. Kicks, hits, or bites other children			
24. Is shy			
25. Is cooperative			
26. Disrupts other children's play			

APPENDIX D
Gender Labelling Photos

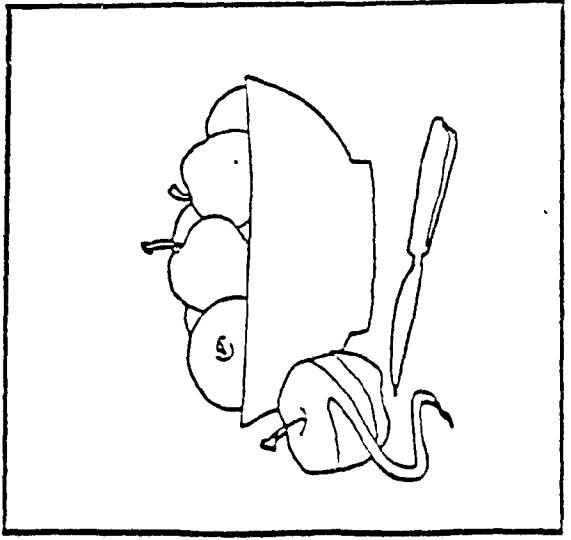
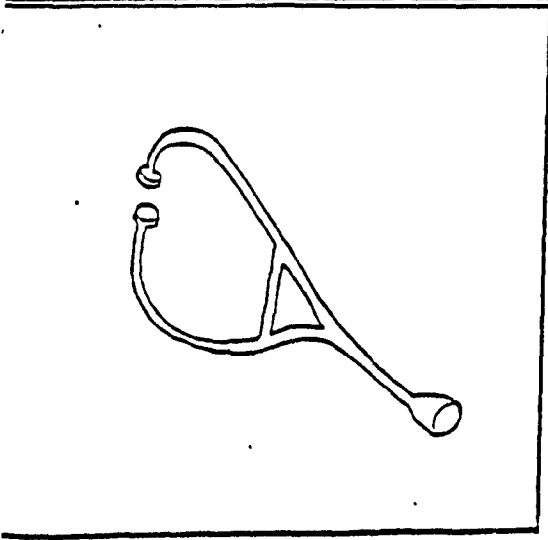
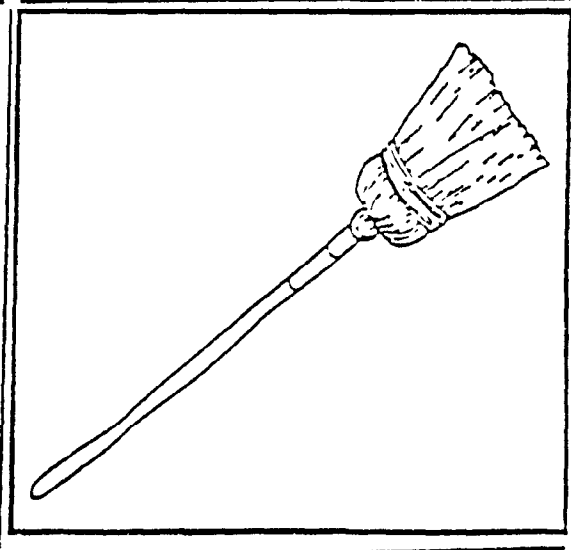
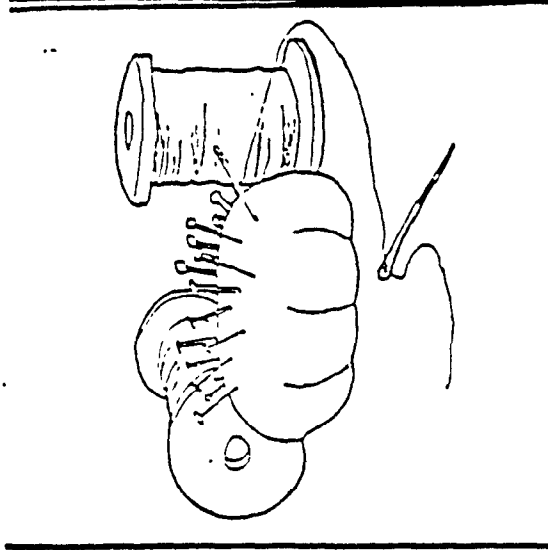
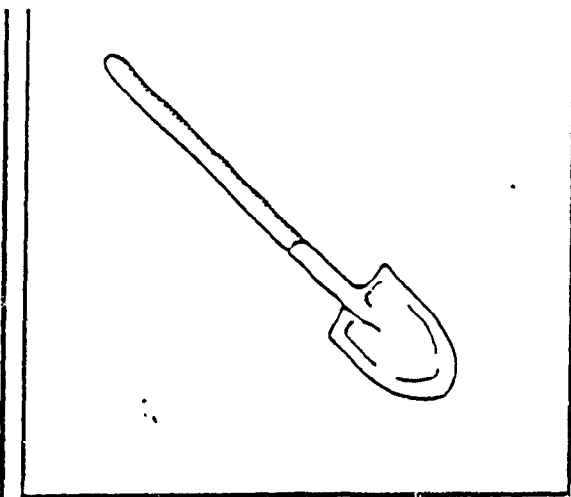
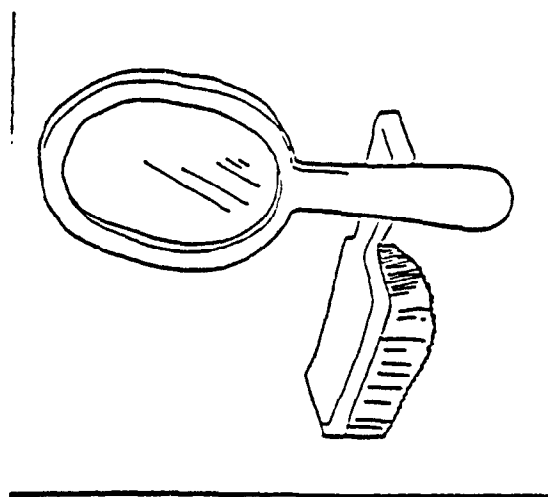


APPENDIX E

SERLI Items

SERLI Items

<u>Object Name</u>	<u>Activity Name</u>	<u>Sex-typing</u>
1. Hammer	Pound some nails	Masculine
2. Desk	Be a teacher	Feminine
3. Shovel	Dig a hole	Masculine
4. Pitcher	Pour some drinks	Feminine
5. Saw	Saw some wood	Masculine
6. Stove	Cook some food	Feminine
7. Broom	Sweep the floor	Feminine
8. Stethoscope	Be a doctor	Masculine
9. Boxing gloves	Fight	Masculine
10. Firehat	Be a firefighter	Masculine
11. Apples & knife	Make a pie	Feminine
12. Dishes	Wash the dishes	Feminine
13. Badge	Be a police officer	Masculine
14. Baby bottle	Feed a baby	Feminine
15. Hairbrush	Brush their hair	Feminine
16. Car	Play with car	Masculine
17. Bat & ball	Play baseball	Masculine
18. Needles & thread	Sew	Feminine



APPENDIX F

Gender Segregation Formula

Attendance Correction for Gender Segregation Analyses

Calculations for determining number of same-sex peer partners by chance

$$\sum_{\text{over all classes}} \left[\begin{array}{l} \# \text{ of SS} \\ \text{Peers in} \\ \text{class} \end{array} \left(\frac{\left(\begin{array}{l} \# \text{ of SS Peers} \\ \text{in class} \end{array} \right) - 1}{\# \text{ Peers in class} - 1} \right) \right] = \text{NEW P}$$

$$\text{Expected } P_{ss} = \frac{\text{New P}}{\# \text{ SS Peers across all classes}}$$

$$\text{Expected } P_{os} = 1 - \text{Expected } P_{ss}$$

Calculations for the Present Study

	<u>Males</u>		<u>Females</u>
STA ₁	6 $\frac{(6-1)}{(10-1)} = 3.33$		4 $\frac{(4-1)}{(10-1)} = 1.33$
R ₁	10 $\frac{(10-1)}{(18-1)} = 5.29$		8 $\frac{(8-1)}{(18-1)} = 3.29$
STA _{2ab}	4 $\frac{(4-1)}{(10-1)} = 1.33$		6 $\frac{(6-1)}{(10-1)} = 3.33$
STA _{2pb}	2 $\frac{(2-1)}{(8-1)} = 0.29$		6 $\frac{(6-1)}{(8-1)} = 4.29$
R ₂	6 $\frac{(6-1)}{(11-1)} = 3.00$		5 $\frac{(5-1)}{(11-1)} = 2.00$
	New P	<u>13.24</u>	New P
			<u>14.24</u>
	Expected P _{ss} = $\frac{13.24}{28} = 0.47$		Expected P _{ss} = $\frac{14.24}{29} = 0.49$
	Expected P _{os} = 1 - 0.47 = 0.53		Expected P _{os} = 1 - 0.49 = 0.51