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Mother-father-child play: Investigations of preschoolers’ home play behavior, parental involvement and home environment

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Iowa State University, 1991
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ABSTRACT

Relatively few studies have documented the nature of mother-father-child play interactions at home, especially during the preschool years. Based on the ecological approach regarding the relationship of play behavior as a function of the playing child and the play environment (Darvill, 1982), this study investigated the play of 48 3- and 5-year-old boys and girls with their parents in their home. The mother-father-child play was videotaped for 10 minutes and later coded for child’s social-cognitive play behaviors and the parental involvement of mother and father. Quality of home environment was measured using the HOME Inventory scale (preschool version).

Differences in types of preschoolers’ play with their parents at home were found. Three-year-olds were more likely than 5-year-olds to engage in the cognitive play categorized as functional, constructive and dramatic play whereas 5-year-olds were more likely than 3-year-olds to engage in the cognitive play categorized as games with rules. These findings reflect the developmental progression of play during the preschool period. Parental involvement of mothers and fathers shows different likelihood of preschoolers’ home play. When mothers and fathers participated as play partners in their preschoolers’ play, there was a tendency for more complex
play (i.e., games with rules and interactive play) to occur more frequently and less complex play (i.e., functional, constructive, dramatic, solitary and parallel play) to decrease. However, the more facilitation mothers and fathers displayed, the more frequently low complex play occurred. It is interesting to note that the status of play partners and nature of play (individual rule-governed activity) and games (formal rule-determined activity) may contribute to parent-child home play.

Results also indicated the relationships between quality of home environment and the play of preschoolers at home with their parents. High quality of home environments was associated with games with rules while low quality of home environment was related to functional, constructive and solitary play.
GENERAL INTRODUCTION

A growing body of research is recognizing the ecological influences on children's play while play literature has documented massive studies on the play of young children phenomenally and developmentally. Play as a behavioral phenomenon has posed intriguing questions to researchers of what play is, why it occurs or what causes it (see reviews in Chance, 1979; Ellis, 1973; Fromberg, 1987; Gilmore, 1971; Rubin, 1982; Rubin, Fein & Vandenberg, 1983; Sutton-Smith, 1979; Sutton-Smith & Kelly-Byrne, 1984; Vandenberg, 1982). Developmentally, play has been observed, characterized, and investigated for its progressions across time for the individual as well as explored for its relationships to children's development (see reviews in Athey, 1984; Bergen, 1988; Curry & Arnaud, 1984; Isenberg & Quisenberry, 1988; Johnson, Christie & Yawkey, 1987; Rubin et al., 1983).

The importance and values of play to children's learning and well being are theoretically (El’Konin, 1966; Piaget, 1962; Sutton-Smith, 1979; Vygotsky, 1967) and empirically (Hetherington, Cox & Cox, 1979; McCune-Nicolich, 1981; Pepler, 1982; Singer, 1973) recognized; however, ecological contributions to the play of children are inconclusive (Darvill, 1982; Johnson, 1986; Wach, 1986).
Recent interest in play research is increasingly focused on ecological variables, especially concerning social interactions and physical environment of the home, that may contribute to children's play (Barnett & Kleiber, 1984; Bloch & Pellegrini, 1989; Cornelius, 1989; Garbarino, 1989; Giddings & Halverson, 1981; Johnson, 1986; Monighan, 1986). The root of play and learning skills are believed to begin in the earliest relationships between the child and her parents in the home (Clarke-Stewart, 1978; Power & Parke, 1982; Sutton-Smith, 1979). Evidence supports familial factors influencing the play of young children has been reported by earlier play studies, these include parental involvement in children's play and the quality of home environment (Bishop & Chace, 1971; Dunn & Wooding, 1977; El'Konin, 1966; Feitelson & Ross, 1973; Johnson, 1978; Smilansky, 1968; Singer, 1973).

Theoretical frameworks of Bronfenbrenner (1979), Lewin (1931), Whiting (1980), and Whiting and Whiting (1975) have been recently utilized in ecological approaches for studying children's play. Lewin (1931) proposed a "General Law" to explain the relationships among a person, the environment and the behavior of the person. That is, all behavior (B) is a function of the relationship between the person (P) and the environment (E), or B = f (PE). Darvill (1982) modified Lewin's model by emphasizing play behavior.
(Bp) as a function of the playing child (Pc) and the play environment (Ep), or \( Bp = f(PcEp) \).

Darvill’s model is adopted in this study due to its systematic orientation toward a broad ecological context of children’s play. The study investigates the play behaviors of preschoolers as a function of their ages (3-year-olds and 5-year-olds) and sex, as well as the play environment including parental involvement of mothers and fathers and the quality of their home environment. The specific objectives of the study are:

1. To explore the nature and characteristics of preschoolers’ home play, parental involvement of mothers and fathers, and home environment.

2. To study the relationships among preschooler’s home play, parental involvement of mothers and fathers, and home environment, as well as parental involvement between mothers and fathers.

3. To examine the relationships of and differences in preschoolers’ home play, parental involvement of mothers and fathers, and home environment as well as the interaction effects as a function of preschoolers’ age and sex.

4. To investigate the differences in preschoolers’ home play as a function of their age and sex by controlling for parental involvement of mothers and fathers and home environment as covariates.

5. To explore the contributions of parental involvement of mothers and fathers and home environment to preschoolers’ home play.
Explanation of Dissertation Format

This dissertation follows an alternate dissertation format by dividing the work into two sections. The first section, namely "Individual and Ecological Contributions to Children's Play," contains a review of literature and references cited. Section two, titled "Investigations of Mother-Father-Child Play of Preschoolers at Home," is a manuscript suitable for publication. It includes an introduction, a method section, results of the study, a discussion about the findings and limitations, conclusions with implications, and references cited.

Appendices are attached at the end of the dissertation. These include tables for results of the study, correspondence, Home Inventory scale, coding definitions and recording sheets, manual for Mother-Father-Child Play Observation and coding map for data.
SECTION I.

INDIVIDUAL AND ECOLOGICAL CONTRIBUTIONS
TO CHILDREN’S PLAY
INTRODUCTION

The great value and contributions of children's play to the lives and development of young children has been documented across the years (Athey, 1984; Bergen, 1988; Curry & Arnaud, 1984; Fromberg, 1987; Isenberg & Quisenberry, 1988; Johnson, Christie & Yawkey, 1987; Rubin, Fein & Vandenberg, 1983; Spodek, Saracho & Davis, 1987). The extensive interest has been generated from the diverse academic backgrounds and disciplines of play researchers including ethologists, psychologists, linguists, anthropologists, educators, ecologists, and child developmentalists.

Play studies can be grouped into 4 categories: (a) definitional studies, (b) correlational studies, (c) individual studies, and (d) ecological studies (Sutton-Smith, 1983). First, definitional studies attempt to characterize and distinguish play from other behaviors (e.g., Hutt, 1976; Johnson, 1983; Krasnor & Pepler, 1980; Lieberman, 1977; Rubin et al., 1983; Schwartzman, 1978; Smith & Vollstedt, 1985). Second, correlational studies investigate the effects of play on children's development (e.g., Burns & Brainerd, 1979; Dansky & Silverman, 1973; Fink, 1976; Johnson, 1976; Lieberman, 1965; Saltz & Johnson, 1974; Vandenberg, 1980). Third, individual studies examine the contributions of individual differences
such as age, sex, or cultural background on play
development and behavior (e.g., Clarke-Stewart, 1978;
Connolly, 1980; Fagot & Leinbach, 1983; McLoyd, 1980;
Pellegrini, 1985; Rubin & Krasnor, 1980; Rubin, Maioni &
Hornung, 1976; Rubin et al., 1978; Saracho, 1987;
Smilansky, 1968). Finally, ecological studies explore the
influences of environmental factors including people,
settings or materials on play behavior (e.g., Barnett &
Kleiber, 1984; Bishop & Chace, 1971; Fein & Apfel, 1979;
Field, 1980; Giddings & Halverson, 1981; McLoyd, 1983;

Contemporary play research appears to be increasingly
directed toward the ecological aspects of children's play
(Bloch & Pellegrini, 1989; Johnson, 1986; Pellegrini &
Perlmutter, 1989; Wach, 1986). Like other behaviors, play
occurs in a setting equipped with objects or others or
both; therefore, investigation of these relationships is
valuable. While the psychological approaches provide
information about the forms and functions of play (e.g.,
Piaget, 1962), the ecological framework offers a broader
perspective for considering the the potentially important
contributions of play environment to play behaviors
(Darvill, 1982).

The ecological approach emanates from Lewin's "General
Law" (1931, 1936) which suggests the relationships among a
person, the environment, and the behavior of the person. Lewin (1931) asserted that all behavior (B) is a function of the relationship between the person (P) and the environment (E), or in the quasi-mathematical equation, \( B = f(PE) \). In addition, he contended that this "General Law" would be valid for any particular dynamic situation. In other words, it would be applicable to the study of any behavior. Darvill (1982) modified Lewin's model to a specific model of play behavior by transforming B to Bp (play behavior), P to Pc (the playing child), and E to Ep (the play environment). This new model considers a child's play behavior as a function of the relation between the playing child and the play environment or \( Bp = f(PcEp) \).

Darvill's (1982) modification of Lewin's (1931) model appears to provide a systematic orientation toward the ecological context of children's play. The proposed study adopts Darvill's (1982) model to explore the relationships among play behaviors (i.e., social-cognitive play categories), child characteristics (i.e., age and sex differences), and play environment (i.e., parental involvement and home environment) of preschoolers.

Based on Darvill's proposed model, the following literature review highlights the components in the model by dividing into three sections. First, play behavior of young children is reviewed related to definition of play,
play development and classification, and roles of play materials. The individual differences in play activity is discussed concerning age effects and sex differences in the second section. Finally, environmental influences on play behavior including ecological model, parental involvement and home environment are presented in the third section.
Play Behavior of Young Children

Play is a wonderful human activity (Hovey, 1989). A term that is easy to recognize but very difficult to define, explain, understand and observe accurately because play manifests itself in so many different forms of activities (Athey, 1986). Thus, there are numerous definitions of play with a variety of ways to characterize it. In Webster's New Collegiate Dictionary (1988), about 80 explanations of play are listed both as a noun and a verb. For example, play (noun) is defined varying from a particular act of a game or sport to a recreational and spontaneous activity of children. Play (verb) is characterized as an action to engage in a game, sport, or recreation, to perform music, or to act in a dramatic production. Because play functions both as noun and verb, it is considered as a relative activity with respect to diverse perspectives and disciplines (Fromberg, 1987). A different viewpoint reflects play as an adjective, according to Millar (1968), nothing is play but anything can be playful.

Attempt to study play behavior systematically requires scholars and researchers to define play from the unique perspectives of their own specialties, value and purposes. As a result, the definition of play remains a notoriously
controversial issue and it is unsolved (Rubin et al., 1983; Smith, Takhvar, Gore & Villstedt, 1985). It is worthwhile, however, to recognize a broad variety of definitions. They stem from differential approaches and conceptual backgrounds reflecting the scientific judgement about play with respect to the theoretical differences and biases of such investigators (Vandenberg, 1982).

Definition of play

Efforts to define play have ranged from structural definitions (play regarded as typical gestures or movements) to functional or causal definitions (play viewed as enjoyable activities without goal directed) (Smith & Vollstedt, 1985). One of the widely acknowledged approaches of defining play has been to contrast play to nonplay or work (Fernie, 1985; Takhvar, 1988). Work is perceived as a serious, beneficial, productive, and holy activity and play is viewed as a nonserious, ludic behavior. For instance, Huizinga (1955) viewed play as enjoyment, and not a serious task. Similarly, Caillois (1961) considered play as being pleasurable and a self-contained form of activity.

Although the categorical distinction between work and play has been questioned by Csikszentmihalyi (1975) on the similarities between enjoyable work and play, recent research has considered play on a continuum in the opposite
direction from work by exploring children's interpretation of play (Chaille, 1977; King, 1979) and adults' perception of play (Bloch & Wichidit, 1986; Johnson, 1986; Rothlein & Brett, 1987). It is reported that children perceive tasks or activities assigned by teachers as work and those that they enjoyed most as play (Chaille, 1977; King, 1979). Adult distinctions between work and play are evident as parents tend to show less favorable attitudes toward play-related activities than school-work activities during preschool (Bloch & Wichaidit, 1986; Johnson, 1986; Rothlein & Brett, 1987). The work-play distinction has been argued by Neumann (1971) who suggested that there are no clearcut lines to separate work from play, except on a continuum characterized by control, reality and motivation. Similarly, Schwartzman (1978) asserts that any activities may be defined as being either work or play simultaneously depending on one's attitude toward it.

Another approach to distinguish play from other activity is to compare play with exploration (Berlyne, 1960; Hutt, 1976; Nunnally & Lemond, 1973). Exploration is viewed as a stimulus-dominated or stimulus-referent behavior that is concerned with active investigation for acquiring information about an object or event. It is controlled by external characteristics of the object being explored. Play, conversely, is organism-dominated or
response-referent behavior, which occurs according to the needs and wishes of the child to manipulate the object or event as he/she desires. In play the emphasis changes from the question of 'what does this object do?' to 'what can I do with this object?' (Hutt, 1976, p. 211). This approach has been empirically examined in several studies that investigated exploratory behavior in children (Adams & Bradbard, 1985; Daldry & Russell, 1982; McLoyd & Ratner, 1983; Rabinowitz, Moely, Finkel & McClinton, 1975; Wohlwill, 1984).

Lieberman (1965) suggested a set of criteria for what she considered the term "playfulness" as a part of all activities. A quality of playfulness includes five criteria as physical, social and cognitive spontaneity, manifest joy and sense of humor. These factors have been identified by Lieberman as related to divergent thinking and creativity. However, it is critiqued as lacking the ability to discriminate play from nonplay (Spodek, 1985).

Although varied attempts have been made in early times to differentiate play, there has been no universal consensus on a viable definition of play. Until recently, researchers have suggested a number of interrelated dispositional factors or a combination of many behavioral characteristics that may better serve to distinguish and characterize play instead of using a single attribute
(Bronfenbrenner, 1979; Krasnor & Pepler, 1980; Smith & Vollstedt, 1985; Rubin et al., 1983). Such criteria have been synthesized and introduced by Rubin et al. (1983) as they consist of the following factors: (a) play is intrinsically motivated, (b) play focuses on means rather than ends, (c) play is dominated by the players, (d) play is nonliteral behavior, (e) play is relatively free from public rules, and (f) play requires the active involvement of the players.

These criteria have been cited in several play studies and reviews for a judgement of play characteristics (Johnson et al., 1987; Roger & Sawyers, 1988; Smith et al., 1985; Spodek, 1985; Spodek et al., 1987; Takhvar, 1988). Similar definitions are presented by other researchers, such as Bronfenbrenner (1979), Christie and Johnsen (1987a), Fromberg (1987), Krasnor and Pepler (1980), Smith and Vollstedt (1985). For example, play is described as an intrinsic activity for one's self and it is essentially spontaneous, voluntary, free and enjoyable (Bronfenbrenner, 1979). Fromberg (1987) broadly identified play to be symbolic, meaningful, active, pleasurable, voluntary and intrinsically motivated, rule-governed and episodic. Somewhat similarly, Christie and Johnsen (1987) viewed play as pretense, self-generated and pleasurable behaviors, flexibility, and some freedom from pressure and anxiety.
Play activity has been characterized by four criteria, namely flexibility, intrinsic motivation, nonliterality, and positive affect (Krasnor & Pepler, 1980). These criteria have been questioned by Sutton-Smith and Kelly-Byrne (1984) who argue that some forms of play are not voluntary or flexible and they may be characterized by negative affect. An attempt to test the Krasnor and Pepler model was made by Smith and Vollstedt (1985) who considered five criteria as intrinsic motivation, positive affect, nonliterality, means/ends, and flexibility. All factors, except intrinsic motivation, were confirmed to exist in the judgement of play behavior.

Although there is no one specific definition of play, it is supported that play should be determined by several simultaneous characteristics of an activity or a class of behaviors rather than merely a single attribute and it is necessary to include observed behaviors and the contexts in which the behaviors are elicited.

Play development and classification

In an absence of agreement regarding the universal definition of play, many researchers have continuously pursued their investigations in the nature of children’s play by focusing on its development and classification (Bergen, 1988; Johnson et al., 1987). Through a variety of observational methods and analytical
models, researchers and theorists have asserted play as a developmental phenomenon and provided its taxonomies (Buhler, 1935; Groos, 1901; Hall, 1920; Parten, 1932; Piaget, 1962; Rubin et al., 1976; Schiller, 1875; Smilansky, 1968; Spencer, 1873). Early theorists defined the qualitative categorizations of types of play and described the hierarchical levels of play, ranging from sensorimotor activities to fantasy endeavors and games with rules (Buhler, 1935; Groos, 1901; Hall, 1920; Schiller, 1875; Spencer, 1873). These ideas have been the basis for later theorists in play development, specifically, that play develops in orderly stages (Rubin, 1982).

Piaget (1962) was very influential in advancing the present interest in sequential stages of play development which serves as a framework for other research on play development (e.g., Smilansky, 1968; Yawkey, 1978). He outlined three stages of play in early cognitive development as practice play, symbolic play, and games with rules, corresponding to the sensorimotor, preoperational, and concrete operational stages of cognitive development, respectively. First, sensorimotor/practice play is characterized by a form of repetitive muscle actions (e.g., shaking a rattle). This begins during the second quarter of the first year of life and continues as a major play mode in infancy and early toddler years. The child enjoys
repeated exercise on any newly mastered motor ability for the mere pleasure of functioning. Second, symbolic play involves make-believe transformation of objects, people, or events (e.g., using a block as if it was a car). It occurs most frequently in the preschool through kindergarten years and declines at the beginning of concrete operations about age 6 or 7. Games with rules are identified by a structure and organization of activities with preestablished rules by the players. This type of play reaches a peak in the middle childhood. Subsequent research has confirmed that practice play decreases in the preschool years and symbolic play increases (Fein, 1981; Rubin et al., 1978) although the later decrease in symbolic play for middle childhood has not been well-documented (Eifermann, 1971; Smilansky, 1968).

Piaget considered play to be pure assimilation, an operative function deriving from the child’s own actions for the purpose of representing the child’s conception of reality through the use of symbols. This mental transformation reflects the child’s representational abilities or symbolic processes to his/her needs rather than to the objective phenomena in the social world. Playing a baby doll, thus, is not an accommodation to the real world of mothering. The child’s representational thought, according to Piaget (1962), is observed to

Although Piaget’s theory provides a coherent description of successive play development to cognitive abilities, other researchers have argued about the limitation of the child’s thinking process, notably Sutton-Smith (1971) and Vygotsky (1967). Like Piaget (1962), Vygotsky (1967) viewed play as a developmental activity which progresses from one stage to another; however, he did not consider play to be a natural by-product of adaptive intelligence. Instead, he viewed that play acts as an adaptive mechanism promoting cognitive growth for later abstraction processes. Play, therefore, is defined as children’s creation of imaginary situations and is derived from real-life tensions. The emergence of play serves as a function of desires and needs which can neither be satisfied nor forgotten. Likewise, Sutton-Smith (1971) rejected Piaget’s concept that play and imitation become less important as the disequilibrium of assimilation and accommodation diminish following the child’s development. He argued that play indeed remains important at various
stages of development because it becomes transformed and differentiated into more sophisticated mental constructions.

The occurrence of play stages suggested by Piaget (1962) also have been commented by researchers, namely Smilansky (1968) and Eifermann (1971). From her research with culturally deprived preschoolers in Israel, Smilansky (1968) found that her subjects failed to engage in symbolic play. Therefore, she questioned Piaget’s invariant play stages, that is, whether they represent a universal phenomenon. It appeared that environmental factors (e.g., socioeconomic status, child-rearing practice) also contribute to the quality of developmental stages of play in addition to cognitive abilities. In a similar study, fantasy play was found to occur most frequently during the early elementary years and thereafter declined (Eifermann, 1971).

Smilansky (1968) adapted Piaget’s (1962) play stages for studying the play of preschoolers as functional play, constructive play, dramatic play, and games with rules. She defined functional play as the routine and stereotypic use of play materials or simple motoric activity. Constructive play was characterized as the sequential and purposeful behavior resulting in a finished product. Dramatic play was defined as the thematic role play.
entailing the transformation of situations or objects. Games with rules was described as the acceptance of and adjustment to prearranged rules. She suggested that these categories are an age-related hierarchy. According to Smilansky, constructive play most commonly occurred in the preschool classroom. She also viewed sociodramatic play (i.e., pretend play in a group) as the highest play attainment of preschoolers.

There appear to be considerable problems with some aspects of Smilansky's categories. For example, it is not clear that constructive play has the characteristic of play, rather than work, because the activity involves an end-product rather than an end in itself (Smith et al., 1985). The hypothesis that constructive play is an intermediate stage between functional play and dramatic play also receives little support. Evidence shows little or no change in constructive play while functional play tends to decrease and dramatic play tends to increase during the preschool period (Rubin & Krasnor, 1980; Rubin et al., 1978; Pellegrini, 1982). In a different perspective, Christie and Johnsen (1987b) wonder that constructive play may have both a functional (motoric) and a dramatic (representational) play component which allows objects to be explored, motor activities to be exercised, and aspects of reality to be expressed symbolically.
Consequently, previous studies have inconsistent findings perhaps due to different criteria that are judged as motoric activity in some studies and as representational activity in others.

Based on Piaget's developmental progression of play, another play category, the Play Observation Scale (POS), was developed by Yawkey (1978). This systematic rating of children's free play behavior contains three hierarchical categories of simple play, make-believe or imaginative and reality play. First, simple play involves simple physical and language gestures and movements with objects, actions, or situations. For instance, a child picks up a rattle and reproduces sounds and repeats such actions. Second, imaginative play focuses on make-believe and pretend actions with self or object substitution. An example of this play is when a child uses a can as if it were a cup. Finally, reality play includes acceptance and imitation of reality through objects, situations, or imaginary play companions. A child uses a toy telephone calling a doctor whom he/she knows well or imagines talking to the doctor.

A different view on play development is suggested by Parten's (1932) taxonomy of social play levels from her examination of social development in preschool children in a nursery-school setting. The categories include the six sequential social participations of unoccupied behavior,
solitary play, onlooker behavior, parallel play, associative play, and cooperative play. She described unoccupied behavior as a child watching anything of momentary interest or playing with his/her own body, solitary play as a child playing alone, onlooker behavior as a child observing the other children playing, parallel play as a child playing independently but beside other children, associative play as a child playing with other children but each child acting his/her own wishes, and cooperative play as a child playing with other children with mutual regards or acting in complementary roles.

Three-year-olds were reported by Parten to engage in primarily unoccupied or onlooker activity or solitary play while 4-year-olds were primarily involved in parallel play, and 5-year-olds were primarily in associative and cooperative play. These categories are critiqued in two ways. First, solitary play is found in both younger and older preschoolers and; therefore, it is not a sign of immaturity as Parten stated (Moore, Evertson & Brophy, 1974; Rubin et al., 1976; Rubin et al., 1978). Second, researchers have reported nonsignificant age effects on parallel play as it is an intermediate play stage as Parten suggested (Johnson & Ershler, 1981; Rubin & Krasnor, 1980; Smith, 1977). For example, Smith (1977) found that 2- and
3-year-olds went directly from solitary play to group play without showing a tendency for parallel play.

Although stages of play development in both cognitive and social aspects have been questioned, a number of researchers and practitioners alike have used the play categories of Smilansky (1968), and Parten (1932) either independently or in combination (Johnson & Ershler, 1982). Rubin and his colleagues introduced the idea of combining Parten’s (1932) social participation scale with Smilansky’s (1968) adaptation of Piaget’s (1962) cognitive play categories (Rubin, 1976; Rubin et al., 1976). They nested four types of social participation (i.e., solitary play, parallel play, associative play, and cooperative play) with four types of cognitive play (i.e., functional play, constructive play, dramatic play, and games with rules) to create 16 social-cognitive components of play. Onlooker and unoccupied behaviors are classified as nonplay categories.

More recently, the Parten-Smilansky play scale has been modified in different ways and has been used to examine various aspects of children’s spontaneous social and play behaviors, especially in a preschool setting (Dunn, 1983; Enslein & Fein, 1981; Howes, 1980; Johnson & Ershler, 1981; Johnson & Roopnarine, 1983; Roper & Hinde, 1978; Rubin & Krasnor, 1980; Rubin et al., 1978; Smith,
For example, Rubin et al. (1978) modified the original nested play scale by combining Parten's social play categories of associative play and cooperative play into a category of group play so the adapted Parten-Smilansky matrix consisted of 12 play categories.

In the same manner, Smith (1978) combined associative play and cooperative play into a single category of interactive play because of the conceptual similarity of the two social play categories. A cognitive category of games with rules is also excluded from the Parten-Smilansky scale because of its infrequent occurrence during the preschool years (Johnson & Ershler, 1981); thus, the revised matrix has nine categories of social-cognitive play. This model has been used extensively in recent play studies conducted in the preschool setting (Johnson & Ershler, 1985; Johnson & Roopnarine, 1983; Pellegrini & Perlmutter, 1987; Pellegrini & Perlmutter, 1989).

Other classifications of play vary from study to study depending on research interest and purposes. Howes (1980) developed an observational scale that examines children's social play behavior during free play, in greater details than the Parten-Smilansky matrix. This scale focuses on two dimensions of peer play; they are (a) the complexity of social interaction among children and (b) the degree to which their activities are organized and integrated. The
so-called "Peer Play Scale" consists of 5 levels identified as: (a) simple parallel play, children engaging in similar activities but no social contact, (b) parallel play with mutual regard, children engaging in the same or similar activity and having social contact, (c) simple social play, children directing social behavior to one another, (d) complementary play with mutual awareness, children engaging in complementary action and mutual gaze or awareness of the other, (e) complementary social play, children engaging in complementary actions and reciprocal social roles. Researchers have used the Peer Play Scale (Howes, 1980) to assess the developmental sequence of children's play from non-interactive parallel play to interactive, reciprocal play (Cornelius, 1989; Dunn & Kontos, 1989; Farver & Howes, 1988; Howes & Stewart, 1987).

Another classified play behavior is identified by Saracho (1984) in the "Play Rating Scale" (PRS) which contains four different types of educational play observed within a preschool setting. Each of the four categories is rated on the scales relating to the frequency of play (ranging from never to always), the quality of play (ranging from poor to excellent), the child's social participation (i.e., solitary, onlooker, parallel, associative, and cooperative), and the ability to initiate activity (ranging from always initiates to always depends
on others). The play categories include physical play, block play, manipulative play, and dramatic play. Physical play requires a child using their body to perform large-motor actions, such as running, jumping or riding a tricycle. Block play requires a child using small unit blocks or large floor blocks. Manipulative play involves a child maneuvering relatively small pieces of equipment including puzzles, rods or peg sets. Dramatic play require a child assuming and acting out a role relating to situations in his/her life experiences. The Play Rating Scale was found to be valid and reliable for children ages three to five (Saracho, 1984).

In addition to play categories classified for children's play behavior, current play researchers have extended classifications of play to explore the patterns of adult-child play. For instance, Roopnarine and Mount (1985) categorized parent-child play behavior into three types as (a) fantasy play including domestic and adventure themes, (b) rough play, and (c) joint positive or interactive play. In another parent-child play study, Stevenson, Leavitt, Thompson and Roach (1988) divided play behaviors into six categories. They consists of functional play, construction, physical play, instructive play, pretense play, and games. First, functional play requires spontaneous manipulation or examination of objects'
properties. Second, construction involves building, stacking or arranging of objects. Third, physical play requires playful contact between partners in physical activities. Fourth, instructive play involves requesting and answering in naming objects, colors, or numbers. Fifth, pretense play requires role playing and object transformations. Finally, games require physical or verbal activities structured by rules.

Four types of adult-child play in an observational study with British preschoolers were reported as parallel playing, co-playing, play tutoring, and spokesman for reality (Wood, McMahon & Cranstoun, 1980). Parallel playing involves a child and an adult engaging in the same or similar activity but they do not interact to each other. Co-playing occurs when an adult joins an ongoing activity which is controlled by a child. Play tutoring requires an adult to take a leading role in the play and to partially control the activity. Finally, spokesman for reality refers to play that an adult uses as a medium for academic instruction for the child to make connections between his/her play and the real world.

It is evident that numerous play classifications have emerged as a result of research investigation on the play development. The social-cognitive categories of play derived from the combination of Parten’s (1932) social
participation scheme and Smilansky's (1968) cognitive levels offer an alternative model to consider cognitive and social aspects of children's play simultaneously. Although the model has been used extensively by a number of research studies, those appear to explore children's play, only in the nursery-school settings. Future research is needed to validate the social-cognitive categories of children's play whether they will tap those play categories in different settings.

Roles of play materials

Play materials are seen as an integral part of children's play activities and since young children spend a considerable amount of time playing with toys and materials, much attention has been directed toward the role of play materials upon children's play behaviors (Bradley, 1985; Johnson et al., 1987; Johnson & Ershler, 1985; Mann, 1984; McGhee, Ethridge & Benz, 1984; Pulasky, 1970; Robinson & Jackson, 1987; Sutton-Smith, 1986). A variety of terms have been used commonly to identify the play materials (Bergen, 1988; Bradley, 1985; Johnson et al., 1987; Robinson & Jackson, 1987). These include props (Mann, 1984), playthings (Mergen, 1982), replicas (Smilansky, 1968), play objects (McLoyd, 1983), and toys (Miller, 1987; Tracy, 1987). Sometimes, however, toys and play materials are viewed as separate categories with toys
representing replicas of real (e.g., baby doll) and fantasy (e.g., Superhero) objects while play materials include toys and other materials related to play and educational activities (Yawkey & Trostle, 1983).

Many classification systems of play materials have been developed from diverse criteria established by toy manufacturers and researchers (Yawkey & ToroLopez, 1987). For instance, the child’s chronological age is a criterion used mainly by commercial manufacturers to classify toys for children’s use and for marketing purposes. Examples are stacking toys for 2-year-olds, table blocks for 3-year-olds, or construction sets for 4-year-olds. A major problem with this system is that it ignores individual differences in the rate of development (Johnson et al., 1987) and this age-criterion categorization may vary from one manufacturing company to another (Mann, 1984).

Another more comprehensive system developed by commercial manufacturers for describing play materials focuses on the general purpose or function of the materials (Yawkey & Trostle, 1983). This system suggests 4 main categories as instructional materials, constructional materials, toys, and real objects. Instructional materials are designed to teach specific skills and concepts, therefore, they are didactic, structured, and outcome-oriented. Examples include puzzles, stacking toys, nesting
objects, and pegboards. Second, constructional materials offer numerous uses and many possible outcomes. Examples are blocks and building sets such as Tinkertoys, Lincoln Logs, dominoes, Lego, and design cubes. Third, toys refer to miniature replicas of real (e.g., soldier) and fantasy (e.g., He-Man, Barbie) objects. Examples include housekeeping toys (e.g. dolls and doll accessory, kitchen utensils) transportation toys (e.g. cars, trains, ships), and animate toys (e.g. miniature animals, people, or things). Finally, real objects are natural materials such as sand, water, wood and woodworking tools, clay and playdoh, and kitchen items.

In addition to age-related criteria for grouping play materials, empirically-based classifications have been noted by a number of researchers (Elder & Pederson, 1978; Fein, 1981; Golomb, 1977; Nicolich, 1977; Piaget, 1962; Smilansky, 1968). These classifications consider developmental changes on the use of play materials, influences of structure/realism of play materials, social/cognitive play levels, and sex-typed play materials. Theoretical influences on investigation of the role of play materials on children’s play behavior emanate from a developmental progression of object transformation/representation suggested by Piaget (1962) and Vygotsky (1967). Object transformation refers to the child’s
ability to identify one object with another, reflecting representational thought through self-other relations (Piaget, 1962). According to Piaget (1962), the child's ability to create mental symbols by transforming images of the real world of substances, objects, and actions into a make-believe situation emerges in a simple form and develops into a more complex one. The child's first symbols are derived from his/her own sensorimotor schemas and they are inseparable from the schemas. Increasingly, the child becomes capable of extending his/her action schemes and symbolically adopts them to other objects or persons (e.g., block is used as a telephone). Later, the child is able to incorporate purely imaginative objects and social roles during the preschool years.

Like Piaget, Vygotsky (1967) focused on the development of representational ability as a process of liberating thought and meaning from concrete objects. He argued that symbolic play moves from action in response to objects in the child's perceptual field to action generated by ideas. The child's ability to operate the use of objects independently according to his/her desires results from acting on actual objects until representational skills dominates his/her perception and meaning of the objects.

The work of Piaget (1962) and Vygotsky (1967) in demonstrating a gradual increase in ability to use objects
symbolically has been supported by others (Cole & LaVoie, 1985; Elder & Pederson, 1978; Field, DeStafano & Koewler, 1982; Fein, 1981; Golomb, 1977; Jackowitz & Watson, 1980; Nicolich, 1977; Smilansky, 1968; Ungerer, Zelazo, Kearsley & O’Leary, 1981; Watson & Fischer, 1977). For instance, Smilansky (1968) identified a five-level developmental progression describing the way her subjects used play objects. The first level involves the mere examination and simple manipulation of play materials as physical objects. The second level is the use of miniature replicas of objects exactly the same way as adults use them. For the third level, miniature replicas are used as aids in sustaining a certain role. At the fourth level, unrealistic materials are used as aids in sustaining a role. The fifth level involves a progressively larger use of verbal descriptions and assertions to define and support the pretense.

Similarly, Nicolich (1977) noted five levels of symbolic transformations in make-believe. First, presymbolic schemes involve simple awareness of an object’s appropriate functions. Second, autosymbolic schemes involve pretense at self-related activities, such as drinking from an empty cup. Third, decentered symbolic games involve reliance on more abstract symbolism, such as pretending to be another person or an object. Fourth,
combinatorial symbolic games involve a combination of schemes into sequential act, such as bathing a doll and then dress up. Finally, internally directed symbolic games involve mental generation of games prior to external actions. Nicolich believed that the fifth level indicates a clear advance in symbolic maturity. In another study, she found that her subjects progressed through the symbolic levels at various paces but in a set order (McCune-Nicolich, 1981).

Interest also has focused on the influence of play materials' structure on children's play behaviors, especially in symbolic play. A variety of terms have often been used synonymously in referring to object properties such as structure, realism, realness, and detail (El'Konin, 1966; McLoyd, 1983; Olszewsky & Fuson, 1982; Phillips, 1945; Piaget, 1962; Pulaski, 1973). Structure and realism are defined differently but they are closely related (Johnson et al., 1987). Structure refers to the extent to which objects have specific uses (e.g., instructional materials) and realism refers to the degree to which objects resemble real-life counterparts (e.g., dolls). In addition to these terms, the structure of play materials has been generally divided into two main categories as high-structure/realism and low-structure/realism materials (McLoyd, 1983). Play materials with realistic details,
unique identities, and specific functions are defined in the highly structured/prototypical category (e.g., dolls, trucks). Conversely, the low structured/prototypical category includes play materials with fewer realistic details, identities, and specific functions (e.g., boxes, blocks).

There have been arguments underlying the influences of varying structures of play materials (high structure vs. low structure) on children's play behaviors. Because low-structure objects are relatively pliant and free of rigid purposes, they are easier for the young child to incorporate into his/her imaginative play plan and therefore may hold the child's interest in play over longer periods of time as new ideas are explored (Jackowitz & Watson, 1980; Mann, 1984; Pulaski, 1973). In contrast, the detail and realism of high-structure objects can hamper free creative play imagination because they can only be used for what it was specifically intended (Caplan & Caplan, 1973; McLoyd, 1983; Pulaski, 1973; Smilansky, 1968).

Empirical studies have been inconclusive on the influences of different structures of play materials on children's play. Fein and Robertson (1975) found that their 20- and 26-month-old subjects, especially for girls, showed higher level of pretense with highly prototypical...
objects (e.g., domestic items, cups, spoons, dolls, cribs and telephones) than with less prototypical objects while for boys the reverse was found. Similarly, Jeffrey and McConkey (1976) found that high-structure materials (e.g., rag dolls, small replica chairs and beds) produced more pretend play and greater elaboration of imaginative actions than low-structure materials (e.g., boxes, pieces of wood, and balls of cloth) for 1 1/2- to 3-year-olds in solitary play. Conversely, studies of older children (3- to 7-year-olds) reported more changes in pretend themes when children playing with low-structure objects than with high-structure objects (Phillips, 1945; Pulaski, 1973).

Phillips (1945) compared children's doll play of materials with high realism (e.g., miniature, life-like furniture and ready-dressed doll) and with low realism (e.g., crude, block-like furniture and rag doll) and showed also that her subjects spent significantly more time exploring the high realism materials than the low realism ones in the laboratory setting. Moreover, Pulaski (1973) found no difference between high-structure objects (e.g., doll houses and furniture, cars and garage) and low-structure objects (e.g., clay, blocks, and pipe cleaner) on the level of creativity expressed in pretend play. In a recent research, McGhee et al. (1984) compared three different structure levels of highly structured (e.g., toy
airplane, toy truck, and cowboy), moderately structured (e.g., silhouette wooden form of airplane, truck, and cowboy), and unstructured (e.g., a rectangular wooden form of the same 1-inch thickness) play materials. They found similar results with Phillips' (1945) for 2 1/2- to 5-year-old boys eliciting more frequent pretend behaviors with unstructured materials but engaging in pretense for longer time periods with highly structured materials within 5-minute observations.

In addition, McLoyd (1983) found that for 3- and 5-year-olds tested in groups of three, high-structure objects (e.g., trucks, tool kits, tea sets, toy stoves, and telephones) produced more pretend play than did low-structure objects (e.g., pipe cleaners, metal cans, blocks, and construction paper). In another similar study, McLoyd, Thomas and Warren (1984) found that there were more interactive behavior in 5-year-olds than in 3-year-olds and more with less structured objects than with highly structured ones. Olszewski and Fuson (1982) indicated that 3- and 4-year-olds in their study engaged in more verbal fantasy themes with high-feature dolls while 5-year-olds elicited greater verbal fantasy themes with low-feature dolls and with the absence of objects. In contrast, Lue (1984) found no difference for 3- to 5-year-old preschoolers in solitary pretend play with neither highly
prototypical nor less prototypical materials. These mixed and contradictory findings have been commented on the methodological variations among studies due to the settings, materials selections, procedures, participants, and measures involved (McCune-Nicolich & Fenson, 1984). Arguments remain questioning about possible biases with respect to the specific selection of materials to be used in particular pretend situation which promotes certain play behaviors (Copple, Cocking & Matthews, 1984; Matthews, 1978). Future research is needed to replicate those studies.

Another interest about the effects of different kinds of play materials on children's play has been on the functional dimensions in relationship to social and cognitive levels of play. Several studies have examined the impact of play materials on children's social play. It was found that certain materials appear to elicit group play whereas others tend to encourage solitary or parallel play (Parten, 1933, Van Alstyne, 1932; Updegraff & Hebst, 1933). For example, Van Alstyne (1932) investigated preschool children's use of play materials and noted that play objects such as dishes, dolls, wagons, and telephones encouraged conversation between children, whereas materials such as clay, scissors, puzzles, and books fostered a more passive type of cooperation. Moreover, Parten (1933)
found, in her study on the use and choice of play materials and play activities in a group of preschool children, that children most frequently played in groups engaging in playing house, whereas sand play and constructive work with clay, paper, beads, and paints, involved the children in parallel and non-social play activities. However, Updegraff and Herbst (1933) suggested that play with clay produced more sociable and cooperative behavior than play with blocks. These early findings have been replicated by recent researchers (Hendrickson, Strain, Tremblay & Shore, 1981, Johnson & Ershler, 1985; Rubin, 1977). The results of this research indicate that housekeeping props, dress-up clothes, dolls, cars, and other vehicles are associated with high levels of group play. Art materials (e.g., paints, crayons), construction materials (e.g., scissors, construction paper), instructional materials (e.g., beads, puzzles), and clay tend to be used in solitary and parallel play. However, block play appears to display both social and nonsocial behaviors.

Researchers have also found that certain kinds of play materials tend to promote different cognitive levels of play (Johnson & Ershler, 1985; Rubin, 1977). Housekeeping props, dress-up clothes, dolls, and vehicles appear to be associated with dramatic play. Paints, crayons, and scissors are usually used in constructive play whereas
play-doh, clay, sand and water tend to be used in functional play.

In examining play areas in the preschool center, the incidence of social and non-social behavior is also reported to be different in the various play areas (Parten, 1933; Pellegrini & Perlmutter, 1989; Quay, Weaver & Neel, 1986; Shapiro, 1975; Shure, 1963; Rubin, 1977). For instance, Parten (1933) observed that cooperative play occurred in her combinations of the doll and housekeeping centers. Shapiro (1975) and Shure (1963) also found the same result occurred in the doll center when they separated the doll and housekeeping centers.

Rubin (1977) indicated the highest frequency of social interaction during houseplay and the lowest during painting and art activities. Quay et al. (1986) reported that more social than nonsocial behavior occurred in the doll/dollhouse, housekeeping, game, sand, and manipulatives centers while language, paint, and art centers tended to display solitary and parallel play.

In a different classification of play areas, Pellegrini and Perlmutter (1989) observed preschool children in three areas in the classroom: art (e.g., drawing, painting), replica (e.g., playing dress-up clothes, playing store), and blocks (e.g., playing with large wooden and cardboard blocks). They found that
children engaged in constructive and solitary play in the blocks and art areas and dramatic and interactive play in the replica area.

Children also differ in their toy selections and preferences as a result of sex-typing influences. Researchers have divided sex-typed play materials into 3 categories: (a) masculine toys (e.g., trucks, hammers, blocks, balls), (b) feminine toys (e.g., dolls and accessories, kitchen items), and (c) neutral toys (e.g., puzzles, board games, play doh, books) (Connor & Serbin, 1977; Eisenberg, Wolchik, Hernandez & Pasternack, 1985; Fagot, 1978; O'Brien & Huston, 1985; Smith & Danglish, 1977; Tauber, 1979).

It is evidence that boys and girls prefer to play with different types of toys (Cameron, Eisenberg & Tryon, 1985; DiPietro, 1981; Etaugh, Collins & Gerson, 1975; Fagot, 1974, 1978; Fagot & Petterson, 1969; Fein, Johnson, Kosson, Stork & Wasserman, 1975; O'Brien & Huston, 1985; Peretti & Sydney, 1985). For example, Cameron et al. (1985) found that boys played more with masculine toys and less with feminine toys than did girls. O'Brien and Huston (1985) also reported a preference for same sex typed toys in boys and girls. In general, boys prefer transportation toys, hammers, blocks, and manipulative objects while girls
prefer dolls, doll furniture, domestic toys, and art equipment.

In summary, play researchers have generated considerable information regarding the nature of play behavior in young children by attempting to define play as a psychological construct, to examine how play develops and differentiates, and explore the role of play materials as related to play behavior. Although the definition of play varies from one perspective to another, play researchers have continued to explore children's play according to their unique expertises. Most play studies have conducted in preschool settings, future research needs to explore the nature of children's play in different settings, such as home.

Individual Differences in Play Activity

Individual differences in children's play has been another area of play research (Christie & Johnsen, 1987a; Fromberg, 1987; Rubin et al., 1983). The major interest in this research involves the study of similarities and differences in play styles and patterns as related to age changes and sex differences of the child. This review focuses on preschool play as the age group for study because the preschool and kindergarten period is where major changes in play occur and the development of different kinds of play can be readily observed.
Age effects

An age-related progression in children’s play behavior is suggested by Piaget (1962) and modified by Smilansky (1968). Smilansky (1968) developed observational scales that are considered cognitive aspects of play extensively which include four stages of play development. They are (a) functional play, involving repetitive muscle movements with or without objects, (b) constructive play, using objects or materials to make something, (c) dramatic play, engaging in role playing and/or make-believe transformations, and (d) games with rules, recognizing and conforming with pre-established rules. These stages complement the social play categories developed by Parten (1932). The system of classifying the social aspects of play that she developed suggests preschool play patterns progress developmentally from solitary to parallel to various forms of group play.

The changing patterns of play across the preschool and early kindergarten years are documented. Functional play is observed declining over the preschool period both in longitudinal (Hetherington, Cox & Cox, 1979; Rubin & Krasnor, 1980; Sponseller & Jaworski, 1979) and cross-sectional studies (Rubin et al., 1978; Tizard, Philps & Plewis, 1976). Between 3 and 4 years of age, functional play accounts for between 36% and 44% of all play (Johnson,
Ershler & Bell, 1980; Sponseller & Jaworski, 1979) whereas it constitutes 53% at 14 to 30 months (Sponseller & Jaworski, 1979). This figure drops to between 17% and 33% from 4 to 5 years (Hetherington et al., 1979; Rubin et al., 1978). It is reported also that 6- to 7-year-olds exhibited 14% of functional play in all play activities observed (Hetherington et al., 1979). However, functional play consistently has been shown to occur within solitary or parallel social aspects of play (Hetherington et al., 1979; Rubin et al., 1976; Rubin et al., 1978).

Constructive play is the most common form of play activity found in preschool and kindergarten classrooms, occupying more than 50% of free play period (Rubin et al., 1983). The frequency of constructive play ranges from approximately 40% of all play at 3 1/2 years (Rubin et al., 1976) to about 51% at 4 to 6 years as the modal form of activity (Hetherington et al., 1979; Rubin et al., 1976; Rubin et al., 1978), although Rubin and Krasnor (1980) did not find age changes in the frequency of constructive play for 3- and 4-year-olds. With respect to social aspects of constructive play, the evidence concerning age changes is mixed. Some studies have not detected significant changes in the amount of solitary or parallel-constructive play during the preschool years (Pellegrini, 1985; Johnson & Ershler, 1981; Rubin & Krasnor, 1980). There are mixed
findings on the occurrence of parallel-constructive play for 4- to 6-year-olds (Hetherington et al., 1979; Rubin et al., 1978).

Pretend or dramatic play has received the most attention in preschool play investigations because children become capable of incorporating purely imaginative objects and social roles in their pretense during the preschool years (Fein, 1981). Piaget (1962) primarily viewed early pretend play as being exclusively solitary during the first two years of life. Pretend play becomes more and more social during the preschool years, and then it declines during middle childhood.

Empirical studies with American children support the occurrence of pretend play at various ages (Fenson & Ramsey, 1980, 1981; Kagan, 1981; Nicolich, 1977; McCune-Nicolich, 1981; Rubin & Krasnor, 1980; Watson & Fischer, 1980). Further, pretend play is reported to increase relative to other forms of cognitive play during the preschool period (Hetherington, et al., 1979; Iwagana, 1973; Johnson & Ershler, 1981; Rubin & Krasnor, 1980; Rubin et al., 1978; Sanders and Harper, 1976). For example, Hetherington et al. (1979) found that pretend play increased from 12% of all play at age four to about 25% at age six. This generalization, however, is limited to
middle-class children with intact families (Rubin et al., 1983).

Regarding social contexts of play, it has been reported that solitary pretend play remains relatively consistent, i.e., it occupies a small percentage of total pretense play during the preschool years (Hertherington et al., 1979; Johnson & Ershler, 1981; Rubin & Krasnor, 1980; Rubin et al., 1978). Parallel dramatic play increases to about 20% of pretend activity by age five (Hetherington et al., 1979; Rubin et al., 1978) and drops to 16% at age six (Hetherington et al., 1979). Group pretend play or social pretend play constitutes 70% of all pretense at age three, peaks to 80% by age four, and declines slightly at ages five and six between 65% and 70% (Hetherington et al., 1979; Johnson & Ershler, 1981; Rubin et al., 1976; Rubin et al., 1978).

Other developmental changes in preschool play involve the use of play materials in pretend play and the influences of play materials' features on children's play behavior. Piaget (1962) and Vygotsky (1967) demonstrated a gradual increase in the child's ability to use objects symbolically as an age-related phenomenon of the child's representational skills, i.e., object substitution or transformation. Several studies have supported such incidence (Cole & LaVoie, 1985; Elder & Pederson, 1978;

Between the ages of three and five, children are able to use play materials independent from its form and function according to their wishes (Copple et al., 1984; Crum, Thornburg, Benninga & Bridge, 1983; Matthews, 1977; McLoyd, 1980; Olszewski & Fuson, 1982). Later during the early school years, children are capable of pretending in the absence of objects (Overton & Jackson, 1973).

The structure of play materials has been explored in relation to the realism and function of the play materials and their impact on play behavior. Early studies revealed that two-year-olds require realistic props to sustain their pretense whereas this is not true for older children. Pretending with less realistic materials becomes increasingly feasible between 3 and 5 years (Elder & Pederson, 1978; Fein, 1975; Philips, 1945).

Pulaski (1973) suggests that realistic objects may actually interfere with kindergarten children’s imagination, but recent research appears mixed findings. Olszewski and Fuson (1982) found that 3- and 4-year-olds engaged in more verbal fantasy themes with realistic props whereas 5-year-olds did the same with low-realistic props. Johnson (1983), on the other hand, reported that 3- and 4-
year-old, middle-class preschoolers exhibited more representational activity with low-realistic objects.

McGhee et al. (1984) reported that 3- to 5-year-old low-SES black boys displayed higher levels of pretend play with low-realistic toys while middle-class peers elicited a greater variety of pretense with the same toys. In a different study, McLoyd (1983) discovered that high-realistic objects prompted more solitary pretend play in 3 1/2-year-old low-SES preschoolers but not in 5-year-olds. However, in their interactive pretend play both younger and older preschoolers exhibited more representational activity with low-realistic objects.

Interpretations of the discrepant findings suggest that the play objects chosen to represent high and low structure/realism confound the test effects (Pulaski, 1973; Olszewski & Fuson, 1982).

Sex differences

Evidence supporting sex differences in various aspects of children's play is well documented (Johnson et al., 1987; Johnson & Roopnarine, 1983; Liss, 1983; Rubin et al., 1983). In general, studies have shown that boys and girls engage in different play patterns (DiPietro, 1981; Fagot, 1981; Fagot & Leinbach, 1983; Maccoby & Jacklin, 1980; Rubin et al., 1976; Smith & Connolly, 1972). Further, boys and girls prefer to play with different types of play.

Support for sex-differentiated play behavior mostly reflect stereotyped differences between the activity level of males and females. Boys are observed to be more vigorous and physically active, and they exhibit more playful aggression than girls in both indoor and outdoor settings (DiPietro, 1980; Goldburg & Lewis, 1969; Pulaski, 1973; Smith & Daglish, 1977; Tauber, 1979).

Through free-play observation in preschool settings, many studies have found that boys are more likely than girls to engage in gross-motor or rough-and-tumble play and elicit more real fighting during play whereas girls engage in more sedentary and nurturant activity (Bloch, 1987; Harper & Sander, 1975; Rubin & Krasnor, 1980; Rubin et al., 1976; Rubin et al., 1978). In addition, boys display a greater tendency for functional play, i.e., active movement and exploration, and perhaps dramatic play than girls, while girls show more likelihood of constructive play, i.e., goal-directed activity (Johnson & Ershler, 1981; Johnson & Roopnarine, 1983; Rubin et al., 1976). Studies by Pellegrini and Perlmutter (1989) and Krenzke (1981) report that preschool boys exhibited higher level of
constructive and dramatic block play than girls who elicited higher levels of constructive art play.

Researchers report sex-stereotyped pretend themes. Girls prefer feminine roles and are more likely to involve role playing associated with domestic activities, mothering, marriage, and holidays (Johnson & Roopnarine, 1983; McLoyd, 1980; Pulaski, 1973; Sanders & Harper, 1976; Smith, 1977) whereas boys tend to adopt male roles, male occupations, and active aggressive characters such as superheros.

Sex-typed play is also associated with children's selections and preferences of play materials. Researchers have observed sex-typed behavior in children's choices of play materials and classified 3 types of sex-typed toys as masculine, feminine, and neutral toys (Conner & Serbin, 1977; Eisenberg, 1983; Eisenberg et al., 1985; Fagot, 1978; Schau, Kahn, Diepold & Cherry, 1980). It is reported that boys played more with masculine toys and less with feminine toys than did girls (Cameron et al., 1985; O'Brien & Huston, 1985). Moreover, boys are observed to play longer with masculine toys and equally long with feminine and neutral toys while girls played longer with neutral and equally with feminine and masculine toys (Eisenberg et al., 1985; Schau et al., 1980).
Studies have shown consistently that boys prefer transportation toys, blocks, and manipulative objects whereas girls prefer dolls and doll accessories, domestic items, and art equipment (Conner & Serbin, 1977; DiPietro, 1981; Fagot, 1977; Harper & Sanders, 1975; Liss, 1981; McLoyd, 1980; Tizard et al., 1976). Giddings and Halverson (1981) found similar results within home environments. Boys spent significantly more time playing with vehicles than girls while girls spent significantly more time with dolls, domestic toys, and dress-up than boys.

In summary, the evidence is clear that preschool boys and girls elicit different play patterns and prefer sex-typed toys. Age effects on preschool play are not conclusive since most research covers the preschool-age group from 3 to 5 years as one age group. Future research needs to investigate, besides sex differences, age differences in preschool play behavior between younger (3-year-olds) and older preschoolers (5-year-olds).

Environmental Influences on Play Behavior

The influences of environment on children's behavior and development has long been evident (Bronfenbrenner, 1979; Gottfried, 1986; Piaget, 1962; Wachs & Gruen, 1982; Watts & Barnett, 1973; Whiting, 1980; Whiting & Whiting, 1975; Wohlwill, 1983). It appears that both social and physical environments interact and, in turn, influence the
developing child and his/her experiences. Parental involvement and the provision of play materials are reported to be the most potent and pervasive influences on children's cognitive development (Gottfried, 1986). Recently, a number of play researchers have aimed to explore the context of play by considering the potentially ecological factors that may contribute to children's play (Bloch & Pellegrini, 1989; Christie & Johnsen, 1987a; Darvill, 1982; Johnson, 1986; Rubin et al., 1983; Wach, 1986).

An ecological model of play based on Lewin's (1935) theory has been used by Darvill (1982) to study the relationships among the playing child, the play environment, and the child's play behavior. Home environment, the primary and immediate setting of the child, and parental involvement in children's activity are recognized as the crucial environmental factors affecting children's play behavior (Bloch, 1989; Caldwell, 1986; Chance, 1979; Sutton-Smith, 1986; Wach, 1986).

**Ecological model**

An ecological framework focuses beyond the behavior of the individual to encompass the environment, with which the individual interacts, in the natural context of everyday life and activities (Bronfenbrenner, 1979; Lewin, 1935; Whiting, 1980). In studying the ecology of child
development, a child is viewed as a developing person who plays an active role in his/her environment and, in turn, is affected by the environment. Therefore, the child and the environment interact mutually and negotiate their relationship over time in response to changes in one another (Garbarino, 1989).

The term "environment" is conceptually defined differently by researchers according to their theoretical perspectives. For example, Watts and Barnett (1973) viewed environment with respect to their study of children’s competence as a set of human and nonhuman elements in the external world that are directly and observably connected with the child’s experience and affect his/ her development of competence. Environment and experience are considered inseparable concept as the child always experiences some part of his/her external environment and environment impacts upon the children’s experience simultaneously.

Whiting (1980) used "setting" to describe characteristics of the cultural-ecological environment which include physical climate and environment, sociocultural patterns of residence, family organization and size, and political, religious, and economic systems and requirements. Wachs and Gruen (1982) simply consider environment as both physical and social environments. The physical environment refers to the stage or setting upon
which the interplay of those relationships take place, while social environment involves interpersonal transactions between children and other persons in their social context. In other words, physical and social environments can be differentiated by the animate versus inanimate features of the environment (Wohlwill, 1983). The physical environment is postulated by inanimate objects, encompassing physical or sensory attributes whereas the social environment is represented by people, encompassing interactional and emotional stimuli.

Another classification of environment is introduced by Bronfenbrenner (1979) who suggested that the ecological environment is a set of nested structures containing a variety of specific levels. He classified four general types of environmental systems with respect to the immediacy of its impact on children’s development. First, the most immediate settings to the developing child are microsystems. According to Bronfenbrenner (1979), a setting is a place where people can readily engage in face-to-face interaction, such as home, day care and playground. Home is the primary setting that the child experiences and it is created in day-to-day reality. Second, mesosystems are the relationships between settings or microsystems such as home and school, or home and neighborhood. The home-school mesosystem is seen as a significance for children’s
development and adjustment to different environments. Third, exosystems are those settings that have power over the child's life including parents' work-place, school boards, or planning commissions. These systems indirectly impact to enhance or undermine the child's and parent's behavior. Finally, macrosystems include norms and cultural influences on ideological and behavioral patterns.

Bronfenbrenner (1979) argues that environmental influences on the child's development originate from these four systems (micro-, meso-, exo- and macrosystems) in the human ecology of the child. In addition, each system is unique in its characteristics that are relevant to the child's development with either positive or negative consequences. The environment, therefore, is not a single or unitary element but rather it is highly differentiated, consisting of a complex network of multilevels.

Theoretically, the ecological approach is influenced by Lewin's (1935) "General Law" which posits relationships among a person, the environment, and the behavior of the person. According to Lewin (1936), environment is divided into two broad perspectives of molecular and molar dimensions. The molecular dimensions include those aspects of the environment that are closely perceived by the child such as objects or people surrounding. On the other hand, molar dimensions concern the influences of the environment
that result from culture, social or economic systems. His theory asserts that all behavior (B) is a function of the relations between the person (P) and the environment (E), or expressed symbolically in his classic equation: 

\[ B = f(PE) \] (Lewin, 1935, p. 73). Lewin (1935), in addition, contended that this "General Law" would be valid for any particular dynamic situation. In other words, it would be applicable to the study of any behavior.

Darvill (1982) modified Lewin's (1935) model to a specific model for studying play behavior, i.e., he transformed the variables in the original model of B to Bp (play behavior), P to Pc (playing child), and E to Ep (play environment). The modified model considers the child's play behavior (Bp) as a function of the relationships between the playing child (Pc) and the play environment (Ep) or in the modified equation 

\[ Bp = f(PcEp) \]

Darvill's (1982) modification of Lewin's (1935) model appears to provide a systematic orientation toward the ecological context of children's play in a broader perspective of play. The strength of the ecology of play is that it allows researchers to consider the potentially significant effects of environmental factors (both physical and social environments) on play behavior that other approaches ignore. While the psychological approaches provide information about the forms and functions of play,
the ecological framework offers a model to evaluate the quality of children's play by simultaneously recognizing the important role of other influential factors in children's play environments.

There are a number of play studies investigating the ecological influences on children's play, especially during the preschool years. Most of them have been focused on play behavior in a preschool setting as related to one or more of the following ecological variables: (a) settings including spatial density and arrangement (Field, 1980; Smith & Connolly, 1980) and play area (Pellegrini & Perlmutter, 1989; Vandenberg, 1981), (b) people including teacher's role (Serbin, Conner & Citron, 1981; Wood et al., 1980) and peer interaction (Doyle, Connolly & Rivest, 1980; Fagot & Leinbach, 1983; Howes & Unger, 1989), (c) curriculum context and program's structure (Carpenter & Huston-Stein, 1980; Griffing, 1980; Johnson & Ershler, 1982), (d) toys and play materials (McGhee et al., 1981; Mcloyd, 1983; Pulaski, 1970), and (e) cultural differences (Smilansky, 1968; Udwin & Shmukler, 1981). Evidence shows that these variables affect play behaviors of preschoolers (Christie & Johnsen, 1987a; Ramsey & Reid, 1988; Rubin et al., 1983).

There are, however, little research studies examining the relationships between the ecological environment and
children's play in a home setting (Bloch, 1987, 1989; Giddings & Halverson, 1981; Monighan, 1986; Singer, Singer & Rapaczynski, 1984). Some studies have correlated aspects of home environment and different perspectives of play, such as playfulness (Barnett & Kleiber, 1984), creativity (Bishop & Chace, 1971) and cognitive development (Wolfgang & Stakenas, 1985). Others have explored children's imaginative play in a preschool setting in relation to home environment (Cornelius, 1989; Udwin & Shmukler, 1981).

Due to limited research on the effects of home environment on play behavior of preschoolers in the home, systematic research is needed on the home setting where the child interacts both physically and socially and its influences to his/her play behavior.

**Parental involvement**

Evidence to support the importance of parental role in the play of young children is worthwhile (Caldwell, 1986; Chance, 1979; El'Konin, 1966; Hetherington et al., 1979; Johnson, 1978, 1986; Levine, 1988; Miller & Garvey, 1984; Singer, 1973; Singer et al., 1984; Smilansky, 1968; Sutton-Smith, 1979). Parental contribution to their children's play is influenced by their play attitudes and childrearing practices (Bishop & Chace, 1971; Barnett & Kleiber, 1984; Johnson, 1986; Monighan, 1986; Rothlein & Brett, 1987;
Singer, 1973; Singer et al., 1984). It appears that parents who promote play are more willing to participate in their children’s play activities and provide a variety of play materials and equipment.

Moreover, parental modeling of imaginative play, especially by mothers, is seen as crucial to the development of pretend play in young children (El’Konin, 1966; Singer, 1973; Smilansky, 1968; Sutton-Smith, 1979); however, there is no clear evidence that children who are brought up in families where parents frequently participate in pretend play develop different fantasy patterns than children whose parents seldom participate in pretend play (Dunn, 1986; Dunn & Wooding, 1977). Perhaps, other factors such as social class or experiences, may contribute to the child’s level of pretend play. Middle-class children are more likely than their less disadvantaged counterparts to exhibit higher level of pretend play (Barnett & Kleiber, 1984; Fein & Stork, 1981; Smilansky, 1968; Udwin & Shmukler, 1981). Tizard and Hughes (1984) found that middle-class mothers expressed more positive attitudes toward pretend play than lower-class mothers, although both classes engaged in pretend play with their daughters.

While previous studies have attempted to examine the contributions of parental roles and attitudes in children’s play, recent research has increasingly focused on the
nature of parental involvement or participation in the play of their children, especially during the preschool years. Early play investigations of parent-infant play have reported research findings in the differential pattern of parental play styles with their children’s play. That is, fathers are more likely to engage in physically stimulating and robust types of play whereas mothers are more likely to involve verbal stimulation and toy play (Clarke-Stewart, 1978; Lamb, 1977; Power & Parke, 1982). It appears that fathers still engage in more enjoyable play than mothers until later in toddlerhood (Clarke-Stewart, 1978; Lamb, 1977) and toddlers prefer to play more with their fathers than mothers when they have a choice (Clark-Stewart, 1978; Lynn & Cross, 1974).

Parent-child play during preschool and school-age years, however, is limited and inconclusive (Levine, 1988). An observation by MacDonald and Parke (1984), with 3 to 4-year-olds and their parents playing at home, reported similar results with parent-infant play. Fathers were found to engage in significantly more physical play with their children than mothers while mothers engaged in more object mediated play with their children than fathers.

Moreover, Roopnarine and Mount (1985) found differential play patterns of mothers, fathers, and their 46- to 60-month-olds in a triad interaction. Fathers were
observed to initiate more rough play whereas mothers initiated more pretend and joint positive play.

Besides studies of parent-play patterns, a growing number of empirical studies are attempting to investigate differences in interactive behaviors of mothers and fathers in their children's play. Bright and Stockdale (1984) observed mother-child and father-child play of 43- to 73-month-olds. They found that fathers were more controlling and directive than mothers and mothers were quieter than fathers during the parent-child play. Children controlled and directed their fathers more than their mothers and they engaged in more lead-taking with their fathers than mothers. Sex differences were found; boys controlled, directed, actively followed and showed more lead-taking behavior during play with their fathers than mothers. Boys also praised their fathers more than girls. Other sex differences in parent-child play is reported by Langlois and Downs (1980) who examined the reactions of mothers and fathers to their 3- to 5-year-olds' play in a laboratory room. They found that fathers exhibited more positive behavior and attitude reactions toward daughters and more negative reactions toward sons. Mothers, on the other hand, were equally rewarding toward daughters and sons during play.
Research studies on how mothers and fathers involve themselves with their preschool children's play at home need more extensive and qualitative investigations. Parents are children's primary caretakers and play major roles in all areas of children's development including play skills. It is important to consider both mother's and father's roles and their involvements in the play of their children at home, especially during the preschool years. As play is easily observed in children 3 to 5 years of age, it is interesting to observe types of play these preschoolers prefer to do with their families at home.

**Home environment**

Although the importance of play activities on the developmental process has been emphasized by many researchers, including Piaget (1962), Vygotsky (1967) and El'Konin (1966), few studies have explored the context of play ecologically (Bronfenbrenner, 1979). Bronfenbrenner's perspective on ecological environment focuses the central role on families for the child's learning opportunities and socialization processes. Home is valued as the significant setting that a child experiences and develops his/her reality of everyday life.

A number of studies have used the Home Observation for Measurement of the Environment (HOME) Inventory (Caldwell & Bradley, 1979) to investigate the influences of home
environment on children's development (Bradley & Caldwell, 1984; Gottfried & Gottfried, 1984; Barnard, Bee & Hammond, 1984; Johnson, Breckenridge & McGowan, 1984; Siegel, 1984). Longitudinal studies document the contribution of the provision of play materials and parental involvement to cognitive development in infants and preschoolers (Bradley & Caldwell, 1984; Gottfried & Gottfried, 1984; Siegel, 1984).

As play also assumes an important role in children's cognitive development, it is worthwhile to explore such influences on children's play behavior. Johnson (1986) developed a model to illustrate the relations among cultural and environmental factors and play behavior and development in young children. His model suggests that the system relates to the child's characteristics and behaviors which serve, in turn, as stimulus factors influencing childrearing and play attitudes and parent-child interaction. These adult ideations shape the proximal-environmental factors affecting children's play either directly or indirectly.

There is little research investigating the relationships between home environment and children's play, and it is primarily involves self-response questionnaires. For example, Giddings and Halverson (1981) used questionnaires and daily logs for mother's to record hour-
by-hour for seven days the names of toys the children played with, the duration of the play activities, their location, and the names of the children's play partners in the home setting. They found that children (age range of 22 to 94 months) spent about 4 hours a day engaged in play activities, 20% of their waking time playing with manufactured play materials (e.g., dolls, vehicles, games), and about 65% of their play occurred indoors. In addition, boys were found to engage in more vehicular play whereas girls played more with dolls, domestic items, and dress-up clothes. Much of the children's home play reported no parental participation in their children's play; however parents were aware of their children's activities. These findings provided descriptive information on children's play activities and the availability and preference of children's play materials at home. Nevertheless, there was no indication of the impact of home environment on such play behavior.

Bishop and Chace (1971) examined parents' attitudes and conditions of their 3- and 4-year-olds' home play environment with parental questionnaires. Two questionnaires were administered, one asking about each parent's attitudes regarding various play situations, type of toys, rights of children in play, and parent child relations in play while the other questionnaire asking only
mother for factual descriptions of the child's home play. The results showed significant differences among mothers' attitudes toward play related to increases of children's potential creativity. Mothers who were more flexible and had more positive attitudes toward play enhanced playfulness by providing more play opportunities in the home and this was associated with higher creativity in children than the rigid, concrete mothers.

The home play environment questionnaire developed by Bishop and Chace (1971) has been used in other studies and called Home/Play Environment Inventory (Barnett & Kleiber, 1984; Cornelius, 1989). For instance, Barnett and Kleiber (1984) modified the influence of home environment with family structure, and parental characteristics on levels of playfulness in 3 1/2 to 6-year-olds. Home environment was assessed to include parent's responses in child rearing attitudes/practices by a measure of permissiveness and their attitudes about children's play by the Home/Play Environment Inventory. They found that the structure of the family regarding birth order, family size, and sex of siblings and several parent child home play interaction had different effects on the playfulness levels of boys and girls. Playfulness in boys was largely associated with their play interaction with both the mothers and fathers as well as sharing the experiences of games and playthings.
On the other hand, playfulness in girls was somewhat more related to parental characteristics of father's occupation and the mothers' age, i.e., high levels of girls' playfulness was associated with father's high-paid occupation and younger mothers.

Cornelius (1989) also used the Home/Play Environment Inventory but she studied preschoolers' imaginative and social play in the preschool setting. Results showed a significant negative correlation between parent's valuing participation in play and the simple play category in the Play Observation Scale (Yawkey, 1978). Parental participation appeared to decrease the likelihood of simple play where the child is exploring or repeating physical movement and language.

These home-play studies have considered only the association of various home environment variables and some kinds of children's play behavior but they have not indicated how these variables impact on actual play behaviors in a more comprehensive cause-effect analysis.

In summary, Bronfenbrenner's (1979) framework on the ecology of human development posits the importance of the home as the major source of environmental impacts on children's development and experiences. The ecological model of children's play allows researchers to study play behaviors in a broader perspective by taking into account
the ecological influences of play environment on children’s play activities. Most ecological studies in play have been conducted in the preschool setting; however, there is a need to recognize and to explore the impact of the home environment and parental involvement of mothers and fathers in their children’s play in the natural setting of home as well.

Since play behaviors can be easily observed and involved with various kinds developmentally during the preschool years, it is noteworthy to observe how preschoolers typically play in their own home. This information will enhance more understanding and knowledge about how young children learn, develop and change or adjust themselves when they are in a different setting, besides the home.
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SECTION II.

INVESTIGATIONS OF MOTHER-FATHER-CHILD
PLAY OF PRESCHOOLERS IN THE HOME
INTRODUCTION

Decades of research studies have documented the crucial role of play in children's learning and development (Athey, 1984; Bergen, 1988; Curry & Arnuad, 1984; Fromberg, 1987; Isenberg & Quisenberg, 1988; Rubin, Fein & Vandenberg, 1983). In addition, play researchers have continued to generate knowledge concerning definitions of play, play development and play classification as well as individual differences in children's play (Bergen, 1988; Johnson, Christie & Yawkey, 1987). Recent interest in children's play represents a recognition of the ecological contributions of the environment to the play behaviors of young children (Bloch & Pellegrini, 1989; Garbarino, 1989; Johnson, 1986; Monighan, 1986).

The influences of environment on children's behavior and development been theoretically proposed (Bronfenbrenner, 1979; Lewin, 1931; Piaget, 1962) and empirically documented (Bradley & Caldwell, 1984; Gottfried, 1986; Siegel, 1984; Watts & Barnett, 1973; Whiting, 1980; Whiting & Whiting, 1975; Wohlwill, 1983). Environment is characterized variously by researchers (Bronfenbrenner, 1979; Lewin, 1936; Wach & Gruen, 1982; Wohlwill, 1983). For example, Lewin (1936) viewed environment from two broad perspectives of molecular and molar dimensions. The molecular dimensions include those
aspects of the environment that are closely perceived by
the child such as objects or people. On the other hand,
molar dimensions concern the influences of the environment
that result from culture, social or economic systems.
Lewin asserted all behavior (B) is a function of the
relationship between the person (P) and the environment (E)
as shown in his classical equation, \( B = f(PE) \). His model
provides a systematic way of investigating the
contributions of both the personal and the environmental
attributes as well as the potential interaction between
them to that person's behavior.

Another classification of environment is advanced by
Bronfenbrenner (1979) who indicated that the environment is
not unitary but rather it is highly differentiated,
containing very specific subunits or levels. He
categorized four types of nested environmental levels as
micro-, meso-, exo- and macrosystems. First, microsystems
are the most immediate settings to the child's life such as
home, day care, and playground. Second, mesosystems are
the relationship between settings such as home and school,
or home and neighborhood. Third, exosystems are settings
that have power over the child's life such as parents' work,
place and boards of education. Finally, macrosystems
are norms and cultural influences on pattern of behaviors
such as religious beliefs and childrearing attitude.
Bronfenbrenner’s microsystems appear to be equivalent to what Lewin (1936) called molecular dimensions of the environment.

Wachs and Gruen (1982) and Wohlwill (1983) considered environment to include simply physical and social environments. The physical environment consists of inanimate features of the environment (e.g., settings and materials) whereas the social environment contains interpersonal transactions of people (e.g., parents and children).

Preschool play has been a major focus of play researchers because many changes occur in the development of different kinds of play and some aspects of play peak during the preschool years such as dramatic play (Bergen, 1988; Christie & Johnsen, 1987). Previous play studies have attempted to investigate the influences of environment on children’s play, especially microsystems. Most of them have explored children’s free play behaviors mainly in preschool settings or day care centers (Fagot & Leinbach, 1983; Field, 1980; Howes & Unger, 1989; Howes & Stewart, 1987; Johnson & Ershler, 1981; Pellegrini & Perlmutter, 1989; Robinson & Jackson, 1987; Serbin, Conner & Citron, 1981; Smith & Connolly, 1980; Vandenberg, 1981). Although these investigations have shown the impact of the ecological factors on preschoolers’ play, there has been a
relative neglect of the other major component of the microsystem, i.e., the home setting, which is the most immediate and primary environment for young children.

Few studies have explored the relationship between the play of preschoolers and the impact of home environment (Barnett & Kleiber, 1984; Bishop & Chace, 1971; Cornelius, 1989; Giddings & Halverson, 1981; Monighan, 1986). These studies, however, have correlated the relationship between home environment variables and some kinds of children's play observed in the preschool settings. For example, Barnett and Kleiber (1984) found significant interrelationships between the child's playfulness and home environment characteristics. Cornelius (1989) in a different study reported that home environment related to parent's attitudes toward play participation decreased the likelihood of simple play where the child is exploring. Others did not find the linkages between children's home environment and their play at preschool.

In addition, home environment data were collected from the somewhat subjective methods of self-report questionnaires and daily logs. The present study used a more systematic method of data collection (interview and direct observation) to explore the nature of home environment and the contributions of physical environment (i.e., home environment) and social environment (i.e.,
parental involvement) on preschool play. It is hypothesized that the quality of home environment will make differences in preschoolers' play, especially dramatic play which most frequently occurs during the preschool years.

Likewise, little research has investigated the nature of children's play in naturalistic home settings (Fromberg, 1987; Levine, 1988). Studies conducted at home appear, though, to focus on parent-child play reflecting children's play in the social context of parent-child interaction, rather than showing the play characteristics of children at home. It is interesting that several researchers have noted the important role of mothers in modeling and arranging play situations and thereby indirectly facilitating their children's symbolic play (El'Konin, 1966; Johnson, 1978; Miller & Garvey, 1984; Shmukler, 1981; Singer, 1973; Smilansky, 1968; Sutton-Smith, 1979). Other studies have indicated differences in play and interactive styles of mothers and fathers with children under 2 years of age (Crawley & Sharrod, 1984; Eisenberg, Wolchik, Hernandez & Pasternack, 1985; Power & Parke, 1982) as well as preschool children (Bright & Stockdale, 1984; Langlois & Downs, 1980; MacDonald & Parke, 1984; Monighan, 1986; Roopnarine & Mounts, 1985; Stevenson, Leavitt, Thompson & Roach, 1988).
Only two studies of parent-preschooler play (MacDonald & Parke, 1984; Monighan, 1986) have been conducted in a home setting. They reported that fathers were more likely than mothers to actively engage in their children's play, especially in physical play. Mothers, on the other hand, were more likely than fathers to model and instruct their children's play, especially dramatic play (Monighan, 1986).

Parent-child play investigations appear to provide ways to explore both the natural play of children at home and parental interaction and involvement in their children's play. Due to limited research on preschool children's play at home and on parental involvement in children's play affecting certain types of play, it is relevant for this study to explore not only the nature of children's play at home but also the characteristics of parental involvement of mothers and fathers in their children's play.

Therefore, an observation of mother-father-child triad was designed to study mother-father-child play interactions and to test the second-order effects (Bronfenbrenner & Crouter, 1983) in which the parent-child dyad is influenced by a third member. That is, mother-child or father-child dyad may interact differently when another parent presents. It is hypothesized that characteristics of parental
involvement will make differences in their preschoolers' play. Moreover, mothers and fathers are expected to show different parental involvement behaviors in their preschool children's play. That is, it is hypothesized that fathers will display greater active participation or engagement in their children's play, especially in physical play, whereas mothers will show facilitation in play, particularly in dramatic play.

The social-cognitive categories of play are the combination of Parten's (1932) social participation categories (i.e., solitary play, parallel play and group play) and Smilansky's (1968) adaptation of Piaget's (1962) cognitive play categories (i.e., functional play, constructive play, dramatic play and games with rules) modified by Rubin, Watson and Jambor (1978), are used. They provide the alternative play categories to simultaneously observe and measure preschooler's play along both cognitive and social dimensions. The cognitive play categories offer measures of play characteristics of child with respect to his/her cognitive abilities whereas the social play categories evaluate types of social interaction between the child and his/her play partner(s).

Although these nested categories of play have been used only in play studies conducted in the preschool settings, they have reflected the typical play behaviors of
preschoolers (Johnson & Ershler, 1981, 1985; Johnson & Roopnarine, 1983; Pellegrini & Perlmutter, 1987, 1989; Smith, 1978). It is worthwhile to validate these nested categories of play in the home, i.e., will they tap the same types of preschooler’s play in the home.

Evidence has shown a developmental progression, increasing prior to the preschool years, in children’s ability to use objects symbolically and to engage in social role play (Johnson & Ershler, 1982; Johnson, Ershler & Bell, 1980; Rubin & Krasnor, 1980; Smilansky, 1968; Watson & Fischer, 1980). It is unclear, however, whether there are age differences in children’s play during the preschool years. Most preschool play research has included collectively children ages 3 to 5 or 6 as one preschool age group for their investigations, only a few studies have separated preschool children in various age groups such as in 2 age groups of younger (age 3 or 3 1/2 years) and older (age 5 or 5 1/2 years) preschoolers (Langlois & Downs, 1980; McGhee, Ethridge & Benz, 1984; McLoyd, 1980, 1983; McLoyd, Thomas & Warren, 1984; Smith, 1978) or in specific age groups as 3-, 4-, and 5-year-olds (Olszewsky & Fuson, 1982; Schau, Kahn, Diepold & Cherry, 1980).

There is no conclusive evidence about the relationships of age differences and children’s play during the preschool years; thus, it is important for this study
to examine age differences of preschoolers' play at home, especially between younger preschoolers (3-year-olds) and older preschoolers (5-year-olds). Evidence shows that dramatic play is increasingly social during the preschool years (Nicolich, 1977; Piaget, 1962; Smilansky, 1968); therefore, it is believed that 3-year-olds will exhibit more solitary dramatic play whereas 5-year-olds will display more social or interactive dramatic play.

Moreover, little research has investigated parental play interaction with their preschoolers as a result of age differences. One previous study (Stevenson et al., 1988) has examined parent-child dyads of infants and preschoolers. They found differences in parent's play with infants and parent's play with preschoolers. Parents exhibited more functional play and physical play with their infants, and more dramatic play with their preschoolers. Another study found differences in parental reactions toward their 3-year-olds' and 5-year-olds' sex-typed toy play (Langlois & Downs, 1980). Mothers and fathers were more rewarding to 3-year-olds than their 5-year-olds and father were more punishing to 5-year-olds than 3-year-olds in their children's sex-typed play. Due to limited studies, it is worthwhile for this study to explore parent-child play of 3-year-olds and 5-year-olds. It is hypothesized that there will be differences in parental
involvement of mothers and fathers with their 3-year-olds and 5-year-olds.

There are sex differences in children's play (Johnson et al., 1987; Johnson & Roopnarine, 1983; Liss, 1983; Rubin et al., 1983). Studies in preschool settings have shown that boys are observed to be more vigorous, physically active, and aggressive in their play activities whereas girls are shown to engage in more sedentary and nurturant activities (Bloch, 1987; Rubin & Krasnor, 1980; Rubin, Maioni & Hornung, 1976; Rubin et al., 1978). Moreover, boys display a greater tendency for functional play (i.e., active movement and exploration) and perhaps dramatic play whereas girls show more likelihood of constructive play (i.e., goal-directed activity) (Johnson & Ershler, 1981; Johnson & Roopnarine, 1983; Rubin et al., 1976). Due to limited research on sex differences in parent-child play of preschoolers in the home, this study attempted to explore this limitation. It is hypothesized that there will be sex differences in preschoolers' play at home. That is, boys will show more functional play whereas girls will display more constructive play.

In parent-child play studies of preschoolers, only two studies conducted in experimental settings report sex of parent and sex of child interaction effects on their play interaction (Bright & Stockdale, 1984; Langlois & Downs,
99

1980). For instance, Bright and Stockdale (1984) indicated that preschool boys were found to control, direct, actively follow, and show more lead-taking behavior during play with their fathers than mothers. Boys also showed more physical warmth to their mothers than girls and boys praised their fathers more than girls. Langlois and Downs (1980) found that fathers exhibited more positive behavior and attitude reactions toward their daughters and more negative reactions toward their sons when their children were involved in sex-typed toy play.

No research was found concerning interaction effects among mothers, fathers, sons, and daughters on children’s play at home and parental involvement in their children’s home play. This study, therefore, was planned to explore the interaction effects between sex of parent and sex of child in their parent-child play interaction. It is hypothesized that there will be differences in those interaction effects.

In summary, there is limited research reflecting the nature and characteristics of parent-child play interactions of preschoolers in a naturalistic setting of home and little is known about the contributions of the most immediate setting of home environment to children’s development which may potentially affect the quality and quantity of children’s play. The present study will
provide an information and direction for parent-child home play research by investigating the following specific objectives:

1. To explore the nature and characteristics of preschoolers' home play, parental involvement of mothers and fathers, and home environment.

2. To study the relationships among preschoolers' home play, parental involvement of mothers and fathers, and home environment, as well as parental involvement between mothers and fathers.

3. To examine the relationships of and differences in preschoolers' home play, parental involvement of mothers and fathers, and home environment as well as the interaction effects as a function of preschoolers' age and sex.

4. To investigate the differences in preschoolers' home play as a function of their age and sex by controlling for parental involvement of mothers and fathers and home environment as covariates.

5. To explore the contributions of parental involvement of mothers and fathers and home environment to preschoolers' home play.
METHOD

Subjects

Forty-eight mother-father-child triads (N = 48) participated in the study. All families were Caucasian, intact and lived in a midwestern university community. About 80% of the families were middle-class and well-educated (Hollingshead, 1975).

There were 24 3-year-olds and 24 5-year-olds with equal numbers of boys and girls (n = 12) in each age group. The 3-year-olds ranged in age from 36 to 48 months (M = 42 months, SD = 3 months) and the 5-year-olds ranged in age from 60 to 72 months (M = 65 months, SD = 4 months). These children were predominately first-born (42%), mostly from families with two children (56%) and enrolled in some type of child care programs (58%).

The parents were from 22- to 56-year-old. The average ages of mothers and fathers were 33-year-old (SD = 5 years) and 35-years-old (SD = 6 years), respectively. The mothers were predominately homemakers (42%) or professional (29%) while the fathers were mainly full-time professionals (75%). About 48% of the mothers and 44% of the fathers had completed bachelor’s degrees. In addition, 27% of the mothers and 42% of the fathers had completed graduate or professional degrees.
The families were recruited from area child care programs, church groups and by nomination of families participating in the study. Parent letters describing the study and parent consent forms were sent to eligible families (see Appendix B). About 400 letters were distributed to potential families, only 16% of the families (N = 64) returned the consent forms and of these 44% (N = 28) agreed to participate in the study. It is thought that the requirement for the participation of mother, father and child, and the need for videotaping in the home limited parental consent for their participation in the study.

Procedure

Each family was visited by the researcher and a research assistant during the family evening time (i.e., after dinner and before child’s bedtime) for a 1-hour home visit. A phone call was made before the visit to review the family’s involvement with the study (i.e., presence of the mother, father and child), the procedure of the study (i.e., videotaping and informal interview), the anticipated length of the visit, and the offer of child care for the other children during the home visit. Families were urged to make no special preparations for the visit.

During the home visit, the researcher and research assistant greeted the family, exchanged introductions, and casually conversed about the study for 5-10 minutes. Then,
the family was asked which indoor area and what playthings they preferred using during the videotaping. They also were urged to naturally interact with one another. The researcher requested to have the television off during the session. Each mother-father-child triad was videotaped for 10 minutes. While the researcher videotaped the mother-father-child interaction, the research assistant interacted with the other children. After the play session, the researcher thanked the parents and child for their participation and the mother was asked questions related to the home environment. During this post- videotaping time period and throughout the visit, the researcher and research assistant independently observed the physical environment and sought information verifying the presence of HOME Inventory items. The visit was completed following the 30-45 minute interview.

Data collection was done in the summer and lasted approximately 6 months due to families' convenience.

Measures

Child measure

Child's play behaviors were categorized using a two-dimensional play model of the Parten-Smilansky Play Scale (Rubin et al., 1978). This scale combines social play categories (i.e., solitary play, parallel play and
interactive play) with cognitive play categories (i.e., functional play, constructive play, dramatic play and games with rules). Therefore, the nested social-cognitive play scale consists of 12 play categories, i.e., (a) solitary-functional play, (b) solitary-constructive play, (c) solitary-dramatic play, (d) solitary-games with rules, (e) parallel-functional play, (f) parallel-constructive play, (g) parallel-dramatic play, (h) parallel-games with rules, (i) interactive-functional play, (j) interactive-constructive play, (k) interactive-dramatic play, and (l) interactive-games with rules. A nonplay category is included for other behaviors lacking the characteristics of social-cognitive play.

The child measure of play behavior was the total summed score for each play behavior calculated for the relative frequency of its occurrence within 40 15-second time intervals converted to percentage of occurrence.

Operational definitions for child play behaviors are:

(a) Solitary-functional play is determined when the player engages in repetitive or active physical movement alone. For example, the player jumps up and down or rolls over by him/herself.

(b) Solitary-constructive play is determined when the player creates or constructs something alone. For example, the player stacks blocks to make a tower.
(c) Solitary-dramatic play is determined when the player performs fantasy actions/vocalizations alone. For example, the player pretends to drive her imaginative block as if it were a car.

(d) Solitary-games with rules are determined when the player engages in game-type activities following the preestablished rules. For example, the player plays a computer or video game.

(e) Parallel-functional play is determined when two or more players engage in the same, similar or different repetitive physical movement but there is no complementary action or vocalization. For example, one player does a somersault and another player throws and catches a ball.

(f) Parallel-constructive play is determined when two or more players create or construct the same, similar or different products but there is no complementary action or vocalization. For example, one player draws a picture while another player folds paper to make an airplane.

(g) Parallel-dramatic play is determined when two or more players engage in the same, similar or different fantasy activities but there is no complementary action or vocalization. For example, one player pretends to be a firefighter while another player pushes a block and makes sounds as if it were an airplane.
(h) Parallel-games with rules are determined when two or more players engage in the same, similar or different game-type activities following the preestablished rules but there is no complementary action or vocalization. For example, one player plays a computer game while another player plays bean bag toss.

(i) Interactive-functional play is determined when two or more players engage in complementary repetitive or active physical movements. For example, two or more players engage in rough-and-tumble play with one another.

(j) Interactive-constructive play is determined when two or more players create or construct something together. For example, two or more players stack blocks and talk about building a castle.

(k) Interactive-dramatic play is determined when two or more players engage in complementary fantasy actions or vocalizations or role playing. For example, one player pretends to be a shopkeeper while another player assumes a shopper's role.

(l) Interactive-games with rules are determined when two or more players engage in complementary or turn-taking activities following pre-established rules. For example, two or more players engage in a Candyland board game requiring turn-taking.
(m) Nonplay category includes behaviors or activities that lack characteristics of the 12 social-cognitive play categories identified above. For example, the participant watches or listens to others while they are making a lego structure.

Parent measure

Parental involvement was modified from categories of the adult's role in children's activity used by Watts and Barnett (1973). Interactive behaviors of mothers and fathers were coded independently for the mothers parental involvement and fathers parental involvement. The categories of parental involvement are (a) participation, (b) facilitation, (c) neutral or observation, and (d) restriction. A noninvolvement category is included for other behaviors lacking the above-identified categories of parental involvement, e.g., reading book or doing housework.

The measure of parental involvement for mothers was the total summed score for each involvement category calculated for the relative frequency of its occurrence within 40 15-second time intervals converted to percentage of occurrence. The same procedure is used for measuring parental involvement for fathers.
Operational definitions for parental involvement are:

(a) Participation is determined when the participant actively engages in the play activities as the player and develops integrative actions or vocalizations relevant to such activities. For example, the participant adopts a monster’s character and scares another player who assumes a princess’ role.

(b) Facilitation is determined when the participant indirectly encourages ongoing play through suggesting ideas, providing play materials or asking pertinent questions. For example, the participant offers the player pieces of legos to build a tower.

(c) Neutral is determined when the participant shows interest in the play activities through observing the ongoing play but is not actively involved. For example, the participant watches the player using wheeled toys without comments or interaction.

(d) Restriction is determined when the participant displays negative actions or vocalizations toward the play activities by distracting the ongoing play. For example, the participant discontinues the player’s truck driving fantasy play by commenting that she is not really a truck driver.

(e) Noninvolvement includes behaviors that lack the characteristics of parental involvement identified above.
For example, the participant may be involved with activities that are irrelevant to the ongoing play such as reading a book.

Home environment measure

The Home Observation for Measurement of the Environment (HOME) Inventory scale for families of children ages 3 to 6 (Caldwell & Bradley, 1984) was used to collect data through an informal interview and a direct observation in the home. This inventory consists of 55 items assessing 8 factors including (a) learning stimulation, (b) language stimulation, (c) physical environment, (d) warmth and affection, (e) academic stimulation, (f) modeling, (g) variety of experience, and (h) acceptance (see Appendix C). The reliability of the scale is .93. The response in each item in the study was scored a 1 for an observed or present characteristic and a 0 for an absent characteristic.

The home environment measure was the total summed score of the 55-item observed characteristics calculated for its relative frequency and then it was converted to a percentage.

Pilot Study

Six mother-father-child triads were selected for participating in the pilot study to determine the
appropriateness of the procedures, accuracy of the measures and the overall plausibility of the study.

During the home visits, the researcher and research assistant practiced videotaping mother-father-child interactions, asking mothers' questions about their home environment and observing the physical environment of the home. Thus, interobserver agreement was established prior to judging the HOME items for the actual study. The pilot videotapes were used for the training of coders and establishing interobserver agreement prior to coding the child play behaviors and the parental involvement measures.

Coding and Reliability

Coding videotapes

In preparation for behavior coding, a number code and time was superimposed on all videotapes using a date and time generator. An audiotape was used to provide time signals to record behavior categories every 15 second for the 10-minute observation period.

Mother-father-child videotapes of play interactions were evaluated using a time-sampling procedure (i.e., recording behavior at predetermined time intervals) for behaviors occurring within the 15-second time interval (Eisenberg et al., 1985; Stevenson et al., 1988). The interactions for each triad were coded and scored
separately for the measure of child play behaviors, and measures for mothers and fathers of parental involvement (see Appendix D).

For every 15 seconds of the 10-minute observational period (40 15-second time intervals), a code was determined for a behavior category that occupied the majority of the time and scored a one (1). When two or more behavior categories occupied approximately equal amounts of time, the more complex or positive category was coded. For the child measures of play behaviors, interactive-games with rules category was considered the most complex play category, then in descending order of complexity was interactive-dramatic play, interactive-constructive play, interactive-functional play, parallel-games with rules, parallel-dramatic play, parallel-constructive play, parallel-functional play, solitary-games with rules, solitary-dramatic play, solitary-constructive play, solitary-functional play and nonplay categories. For measures of mothers and fathers parental involvement, participation was considered the highest degree involvement category, then in descending order of involvement was facilitation, neutral (observation), restriction and noninvolvement categories.

Due to the nature of the games with rules category, player(s) who were waiting for a turn were considered
participating in the game. Therefore, games with rules and interactive play were coded for the child measure and mother and father measures until the game was over or until that player(s) left the game.

**Interobserver reliability**

Kappa statistic (k) was computed to measure the interobserver reliability of categorical data and to indicate the proportion of agreements corrected for chance agreements (Cohen, 1960; Hartmann, 1977). Cohen (1960) developed a formula for calculating kappa (k) as follows:

\[ k = \frac{Po - Pe}{1 - Pe} \]

where Po is the proportion of observed agreements and Pe is the proportion of chance or expected agreements.

For this study, observed agreement was determined when both coders had identical agreement on the same item of the HOME measure or the same behavior category for a 15-second time interval on the child and parent measures. A disagreement was determined when there was disagreement on an item or a behavior category. In addition, the ratio of the number of agreements to the number of agreements plus disagreements was calculated to establish interobserver agreements on the pilot study.

The researcher and an undergraduate student, who was naive to the purpose of the study, judged the HOME items during the home visits. Prior to the home visits, the
scoring method and administrative manual of the HOME Inventory (Caldwell & Bradley, 1984) were explained and practiced. After establishing interobserver agreements of .98 for the pilot subjects, the researcher and research assistant began judging the subjects' HOME measure. Interrater reliability was established for 73% (N = 35) of the subjects' home environment with a kappa value of .98.

The researcher and a Child Development doctoral candidate judged mother-father-child videotapes. Prior to judging the videotapes for this study, the coding method and the manual of Mother-Father-Child Play Observation (see Appendix E) were reviewed and coding training proceeded with operational definitions and examples of observed behaviors. Actual coding began when interobserver agreements for the child measure was .89, and .95 and .90 for the mother and father measures, respectively. All mother-father-child videotapes (N = 48) were coded by two observers for the mid-interval, i.e., the twenty-first time interval or the time block of 5:01-5:15) of the child measure and the parent measures. The kappa statistics for the child measure, the mother measure and the father measure were .94, .92 and .95, respectively.

Statistical Analyses

The videotapes for all mother-father-child triads (N = 48) were coded and scored separately for their total
frequency of occurrence on the child’s measure of play behaviors (i.e., 12 social-cognitive play categories and a nonplay category), mother’s and father’s measures of parental involvement (i.e., 4 parental involvement categories and a noninvolvement category). In addition, the measure of home environment (i.e., 55-item HOME scale) was evaluated for the total frequency of observed characteristic of the home environment. The frequencies then were converted to percentages of occurrence for data analyses. The dependent variables, therefore, included 13 child’s play, 5 mother’s parental involvement, 5 father’s parental involvement, and the HOME variables. The independent variables were age (3-year-olds vs. 5-year-olds) and sex of preschoolers.

Preliminary data analyses were performed by examining the frequency distributions of all dependent and independent variables. Simple descriptive statistics including the measures of central tendency (i.e., mean, median and mode) and the measures of variability (i.e., range and standard deviation) were employed to obtain characteristics of the data. The means for the child’s play variables revealed low percentages of occurrence and two of them (i.e., solitary-games with rules and parallel-games with rules categories) were not observed to occur; therefore, the 12 social-cognitive play categories were
collapsed into a cognitive-play dimension (Smilansky, 1968) and a social-play dimension (Smith, 1978). The cognitive play categories consisted of functional play variable (i.e., a combination of solitary-functional play, parallel-functional play and interactive-functional play categories). Additionally, the constructive play, dramatic play and games with rules variables were combined in a similar way. The social play categories contained solitary play variable (i.e., a combination of solitary-functional play, solitary-constructive play, solitary-dramatic play and solitary-games with rules categories). The parallel play and interactive play variables, in addition, were combined in a similar way. The nonplay variable was included for other behaviors not identify the cognitive play or social play behaviors.

Before beginning to analyze the data, the univariate analyses were employed on dependent variables including the child variables of cognitive play and social play, the mother and father variables of parental involvement and the home environment variable. The distinct feature of the univariate procedure is that it provides detail on the normal distribution and its plot of a variable. All dependent variables, except the cognitive play category of games with rules and the social category of interactive play displayed a positively skewed distribution (i.e.,
relatively few scores fell at the higher end of the distribution). The cognitive category of games with rules distributed a U-shaped curve where relatively extreme scores fell at both ends of the distribution. The social category of interactive play skewed negatively (i.e., relatively few scores fell at the lower end of the distribution). To adjust the skewed distribution of the data and to avoid the extreme scores at one end of the distribution, a dichotomous technique was used on all dependent variables based on their medians (i.e., if the variable scores greater than its median, score 1 is assigned and score 0 is assigned for the scores less than its median). Consequently, all initial continuous dependent variables were treated as discrete or dichotomous dependent variables with the values of 1 (high behavior occurrence) and 0 (low behavior occurrence).

The Pearson product-moment correlations were performed to examine the relationships between dichotomous dependent variables and categorical independent variables. Moreover, the relationships among the child play, the mother and father parental involvement, and the home environment variables were evaluated.
RESULTS

Descriptive statistics were performed to obtain aspects and distributions of dependent variables including the child cognitive play and social play, the mother and father parental involvement, and the home environment variables. The independent variables were age and sex of preschoolers. To examine the relationships between the dependent variables and the independent variables, Pearson product-moment correlations were employed. In addition, the relationships among child play variables of cognitive play and social play, mother and father variables of parental involvement, and home environment variable were evaluated.

Descriptive Information

Descriptive information for preschoolers’ home play, parental involvement of mothers and fathers, and home environment was characterized in mean, median, standard deviation and range. Due to extreme scores involved in the distributions, the median is suggested a most appropriate and serviceable measure (Drew & Hardman, 1985; Hays, 1981).

Preschoolers’ home play

Three- and 5-year-olds were observed to engage in all types of cognitive play and social play variably during their mother-father-child play at home (see Table 1). The
distributions of their cognitive play including functional, constructive, and dramatic play categories and the social play including solitary and parallel play categories appeared positively skewed (i.e., their medians were smaller than means) as preschoolers tended to display low percentages of occurrence on those types of play. The different distributions, on the other hand, were found between 3- and 5-year-old cognitive play category of games with rules and social category of interactive play categories. Three-year-olds showed positively skewed distributions whereas 5-year-olds exhibited negatively skewed distributions (i.e., their medians were larger than means). While half of the 5-year-olds engaged extensively in games with rules (Median = 97.50, M = 64.48) and interactive play (Median = 97.50, M = 74.69), half of the 3-year-olds displayed limited frequency of games with rules (Median = 2.50, M = 31.87) and interactive play (Median = 55, M = 60.52).

It is interesting to note that games with rules and interactive play exhibited greatest frequencies of occurrence preschoolers engaged in playing with their parents at home. Mother-father-child triads (n = 16) were observed to engage exclusively in games with rules (i.e., 100 percentage of occurrence) whereas two triads engaged in dramatic play. Consequently, interactive play was observed
in mother-father-child triads (n = 18) as it involved complementary interactions by preschoolers, mothers and fathers. The nonplay behaviors of preschoolers with their parents at home were observed fairly small.

Preschool boys and girls showed somewhat similar cognitive play and social play behaviors with their parents at home (see Table 2). The distributions of their cognitive play categories of functional, constructive and dramatic play and the social play categories of solitary and parallel play appeared positively skewed. Only a few boys and girls engaged in those types of play. Games with rules and interactive play, on the other hand, displayed both positive and negative skewness. About half of the boys appeared to exhibit high occurrences of games with rules (Median = 57.50, M = 50) and interactive play (Median = 76.25, M = 67.71) while half of the girls displayed limited occurrence of games with rules (Median = 22.50, M = 46.35) and similar occurrence of interactive play (Median = 83.75, M = 67.50). It is interesting to note that both boys and girls exhibited greatest frequency of games with rules and interactive play. Boys (n = 6) and girls (n = 10) were observed to engage exclusively in games
with rules (i.e., 100 percentage of occurrence) whereas two girls were in dramatic play with their parents. Consequently, boys (n = 6) and girls (n = 12) exhibited interactive play with their parents at home. Only one boy was observed to play alone during the 10-minute mother-father-child play. The nonplay behaviors were observed fairly small.

The total mean percentages of occurrence for preschoolers' home play by their age and sex are presented in Table 3. Five-year-old boys and girls showed the greatest frequency for cognitive play of games with rules (M = 66.88 for boys and M = 62.08 for girls) than other cognitive play categories and this was twice the frequency of occurrence of 3-year-old boys and girls (M = 33.13 for boys and M = 30.63 for girls). In cognitive play, 3-year-old girls engaged primarily in constructive play (M = 33.12). They also exhibited greater frequency of dramatic play than other groups of preschoolers although it ranked third in their frequency of cognitive play (M = 22.29). For social play, interactive play ranked highest category for all preschoolers' groups. Solitary play was most commonly engaged in by 3-year-old girls (M = 22.17) while
5-year-old girls participated more than other groups in parallel play (M = 12.50). The nonplay behaviors were observed least frequently in 5-year-old girls (M = 4.17).

In summary, games with rules tended to be the most frequent cognitive play behaviors of preschoolers at home whereas the highest frequency of social play was interactive play with their mothers and/or fathers. Other types of cognitive play and social play were also observed present within the limited frequency.

**Parental involvement**

Mothers and fathers showed various involvement styles with their 3- and 5-year-old preschoolers during triad play in their home (see Table 4). The distributions of mothers’ and fathers’ participatory involvement were negatively skewed as half of the mothers and fathers displayed high incidences of active involvement in play with their preschoolers. In contrast, other types of parental involvement categories, i.e., facilitation, neutral (observation) and restriction exhibited positively skewed distributions. There appeared that half of the mothers and fathers engaged little or none in those types of parental involvement. It is interesting to note that mothers of 5-
year-olds tended to display limited facilitation (Medians = 0, M = 12.70), neutral (Median = 0, M = 17.08) and restriction (Median = 0, M = 0.31) in their children’s play while mothers of 3-year-olds did (Median = 11.25, M = 16.56 for facilitation, Median = 8.75, M = 20.31 for neutral, and Median = 0, M = 0.21 for restriction). Fathers of 3- and 5-year-olds exhibited similar involvement in their preschoolers’ play. The noninvolvement behaviors barely observed in mother-father-child play.

Insert Table 4 about here

Mothers and fathers tended to actively participate as play partners (i.e., participation) in their 3- and 5-year-olds’ play. Mothers and fathers of 5-year-olds produced relatively the same frequency of participation (Median = 72.50, M = 62.81 for mothers; Median = 76.25, M = 67.29 for fathers) as 3-year-old mothers (Median = 96.25, M = 70.10) and fathers (Median = 78.75, M = 68.33). Fathers did not restrict their children’s play and it was rarely used by mothers. The parents were typically observed to be involved in the play of their preschoolers’ play at home, i.e., there was very little noninvolvement behaviors. It is interesting to note that mothers and fathers of 3- and 5-year-olds (n = 10 and 11 for mothers; n = 7 and 8 for
fathers respectively) participated exclusively (i.e., 100 percentage of occurrence) in their preschoolers' home play.

Various types of parental involvement between mothers and fathers with their preschool boys and girls were shown (see Table 5). The distributions of mothers' and fathers' participation showed negative skewness as half of the mothers and fathers tended to engage actively in their children's play. Both mothers and fathers exhibited relatively the same frequency of participation in their play with boys and girls (Median = 71.25, M = 63.33 and Median = 98.75, M = 69.58 for mothers; Median = 83.75, M = 67.71 and Median = 71.25, M = 67.92 for fathers respectively). Other types of parental involvement including facilitation, neutral and restriction showed positively skewed distributions as half of the mothers and fathers engaged little or none in them. Mothers and fathers tended to facilitate the play of boys and girls somewhat different as mothers displayed relatively more facilitation in boys (Median = 7.5, M = 16.46) than girls (Median = 0, M = 12.19) and more than fathers' facilitation in boys (Median = 3.75, M = 11.46) or girls (Median = 3.75, M = 11.67). In contrast, fathers displayed relatively more neutral or observation in boys (Median = 8.75, M = 18.96) and girls (Median = 7.50, M = 19.89) than mothers' in boys (Median = 3.75, M = 19.58) and girls (Median = 0, M =
17.81). Parental restriction in play rarely occurred, especially in fathers. The noninvolvement behaviors of mothers and fathers were very rare.

The total mean percentage of occurrence for parental involvement of mothers and fathers by age and sex of their preschoolers was indicated in Table 6. Parental participation was the predominate involvement for both mothers and fathers of all preschooler groups. In addition, mothers and fathers exhibited relatively the same frequency of participation in the play with their children. In contrast, their facilitation was somewhat different as mothers and fathers of 5-year-old girls tended to facilitate their girls' play least frequently (M = 6.67 and M = 5.63 respectively). Moreover, fathers of 3-year-old girls and 5-year-old boys displayed the lowest frequency of involvement in the neutral category (M = 13.96 and M = 13.54 respectively). Fathers displayed higher frequency of noninvolvement behavior than mothers, especially in 5-year-old boys (M = 3.54).
Overall, participation was the most common type of parental involvement displayed by mothers and fathers. Although mothers and fathers were highly involved in the participation of their preschoolers' home play, they varied in their facilitation and neutral involvement with their preschoolers.

Home environment

The quality of the home environment as assessed by the HOME Inventory scale for families of 3- and 5-year-olds is shown in Table 7. The distributions of the HOME total scores for both age-group families were somewhat symmetrical as the medians and means were almost the same value. In addition, the percentages of observed characteristics for the quality of home environment were observed closely distributed and very high. Approximately eight families received a perfect rating (100%) for the quality of their home environment. For the HOME factors (i.e., learning stimulation, language stimulation, physical environment, warmth and affection, academic stimulation, modeling, variety of experience and acceptance), their distributions presented an interesting picture for each factor. There appeared to be no dispersion (SD = 0) for 3-year-old language stimulation and physical environment and for 5-year-old language stimulation and academic stimulation. In other words, all families received a
perfect rating (100%) for the quality of their language stimulation and they were not varied in their scores of language stimulation. A modeling factor in 3-year-old families was widely distributed (SD = 19.26) with a range of 40% to 100% whereas two factors of warmth and acceptance and modeling in 5-year-old families were equally and widely distributed (SD = 16.67).

Table 8 presents the quality of home environment by age of preschoolers. The distributions of the HOME total scores for both families of boys and girls were somewhat symmetrical and their scores were closely distributed. All of the HOME factors, except language stimulation, showed a slightly negative skewed distribution. Families of boys and girls received a perfect score (100%) for the quality of their language stimulation. It is interesting to note that families of boys scored greatest variability for the modeling factor (SD = 20.69) and then the warmth and acceptance factor (SD = 16.30) whereas families of girls appeared to vary mostly for the warmth and acceptance factor (SD = 14.27) and then the modeling factor (SD = 12.94).
In general, the quality of home environment for families of preschoolers was very high due to their social class status of being predominately middle-class professionals and the high education of the parents.

Correlational Findings

Correlational findings resulted from Pearson product-moment correlation analyses on the relationships among preschoolers' home play, parental involvement of mothers and fathers and home environment as well as age and sex of preschoolers.

Preschoolers' home play and their age and sex

Correlations between cognitive play categories and age of preschoolers yielded significant findings (see Table 9). Age of preschoolers was found to be negatively related to functional play ($r = -0.31, p < 0.05$), constructive play ($r = -0.34, p < 0.05$) and dramatic play ($r = -0.40, p < 0.01$). Three-year-old preschoolers were more likely than 5-year-old preschoolers to engage in functional, constructive and dramatic play with their parents at home. Moreover, age of preschoolers was positively related to games with rules.
Five-year-old preschoolers were more likely than 3-year-old preschoolers to engage in games with rules with their parents at home. Further, there were no significant associations between preschoolers' social play and their age or relationships among preschoolers' cognitive play, social play and their sex.

Parental involvement and preschoolers' age and sex

Table 10 presents the correlations among parental involvement of mothers and fathers and preschoolers' age and sex. Only one significant relationship was found between mother's facilitation and sex of preschoolers as they were negatively correlated ($r = -.29, p < .05$). Mothers were more likely to facilitate their preschool boys than girls during their play at home. There were no significant correlations between parental involvement of mothers and age of preschoolers or relationships among parental involvement of fathers and preschoolers' age and sex.
Home environment and preschooler's age and sex

There were no statistically significant relationships (p < .05) indicated between the quality of home environment and preschoolers' age and sex. Most of the preschoolers were observed to have a similarly high quality of home environment.

Preschoolers' home play and parental involvement

Relationships among the cognitive play and social play categories of preschoolers and parental involvement of mothers and fathers are presented in Table 11. Results showed that mother's and father's participation, facilitation and neutral were significantly correlated with preschoolers' cognitive play, social play and nonplay behavior. Participation of mothers and fathers was found related negatively to preschoolers' cognitive play categories as functional, constructive and dramatic play and social play categories as solitary and parallel play as well as nonplay behaviors. The more mothers and fathers participated in their preschoolers' home play, the less frequently their preschoolers engaged in functional play ($r = -.49$ for both mothers and fathers, $p < .001$), constructive play ($r = -.52$ for both mothers and fathers, $p < .001$), dramatic play ($r = -.31$ for mothers, $p < .05$ and $r = -.40$ for fathers, $p < .01$), solitary play ($r = -.76$ for mothers and $r = -.68$ for fathers, $p < .001$), parallel play
(r = -.29 for both mothers and fathers, p < .05) and
nonplay behaviors (r = -.58 for mothers and -.50 for
fathers, p < .001). In addition, participation of both
mothers and fathers significantly and positively correlated
with games with rules and interactive play. That is, the
more mothers and fathers participated in their
preschoolers' home play, the greater frequently
preschoolers engaged in games with rules (r = .58 for
mothers and r = .67 for fathers, p < .001) and interactive
play (r = .67 for mothers and r = .58 for fathers, p <
.001).

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Insert Table 11 about here
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Table 11 also presents the significantly positive
relationships between the facilitation of mothers and
fathers and preschoolers' cognitive play including
functional, constructive and dramatic play and social play
including solitary and parallel as well as nonplay
behaviors. The more mothers and fathers facilitated their
preschoolers' play, the greater frequently the preschoolers
engaged in functional play (r = .43 for mothers, p < .01
and r = .49 for fathers, p < .001), constructive play (r =
.55 for mothers and .60 for fathers, p < .001), dramatic
play (r = .31 for fathers, p < .05), solitary play (r = .63
for mothers and $r = .59$ for fathers, $p < .001$), parallel play ($r = .38$ for fathers, $p < .01$) and nonplay behaviors ($r = .54$ for mothers and $r = .58$ for fathers, $p < .001$). In addition, negatively significant relationships was found between facilitation of mothers and fathers and preschoolers' games with rules. That is, the more mothers and fathers facilitated their preschoolers' play, the less frequently preschoolers engaged in games with rules ($r = -.46$ for mothers, $p < .01$ and $r = -.58$ for fathers, $p < .001$).

Moreover, neutral involvement (observation) of mothers and fathers was shown significantly and positively associated with the cognitive play of preschoolers including functional play, constructive play and dramatic play and the social play of solitary and parallel play as well as nonplay behaviors (see Table 11). The more mothers and fathers observed their children's play, the more often the preschoolers engaged in functional play ($r = .61$ for mothers and $r = .49$ for fathers, $p < .001$), constructive play ($r = .63$ for mothers and $r = .60$ for fathers, $p < .001$), dramatic play ($r = .34$ for mothers and $r = .31$ for fathers, $p < .05$), solitary play ($r = .80$ for mothers and $r = .59$ for fathers, $p < .001$), parallel play ($r = .41$ for mothers, $p < .01$ and $r = .29$ for fathers, $p < .05$) and nonplay behaviors ($r = .54$ for mothers, $p < .54$ and $r = .42$
for fathers, \( p < .01 \). Furthermore, negative correlation was found to be significant between neutral of mothers and fathers and games with rules and interactive play. The more mothers and fathers observed their children's play, the less likely preschoolers engaged in games with rules (\( r = -.71 \) for mothers and \( r = -.58 \) for fathers, \( p < .001 \)) or interactive play (\( r = -.71 \) for mothers and \( r = -.50 \) for fathers, \( p < .001 \)).

There were no statistically significant correlations (\( p < .05 \)) found between restriction and noninvolvement behaviors of mothers and fathers and any categories of cognitive play and social play in preschoolers.

**Preschoolers' home play and home environment**

Significant relationships between cognitive play and social play categories of preschoolers and the quality of home environment (HOME) are presented in Table 12. Preschoolers' functional play, constructive play and solitary play were negatively correlated with the quality of home environment. The higher the quality of the home environment, the less often preschoolers engaged in functional play (\( r = -.37, p < .01 \)), constructive play (\( r = -.32, p < .05 \)) and solitary play (\( r = -.32, p < .05 \)). In contrast, games with rules showed a significant and positive association with the quality of home environment.
The higher the quality of home environment, the more likely preschoolers engaged in games with rules at home \( (r = .33, p < .05) \).

Parental involvement of mothers and fathers

Correlations between different types of parental involvement for mothers and fathers resulted in significant relationships between participation, facilitation and neutral involvement (observation) of mothers and fathers are indicated in Table 13. The participation of mothers and fathers was found positively associated as mothers and fathers displayed the same direction of participation in their preschoolers' play \( (r = .58, p < .001) \). However, the participation of mothers was negatively related to the facilitation and neutral involvement (observation) of fathers. That is, the more mothers participated in their preschoolers' home play, the less frequently fathers facilitated \( (r = - .58, p < .001) \) or observed \( (r = - .50, p < .001) \) the play. Similarly, the more fathers participated in their preschoolers' home play, the less often the mothers facilitated \( (r = - .46, p < .01) \) or observed \( (r = - .71, p < .001) \) their preschoolers' play. Moreover, the facilitation of mothers and fathers was
significantly and positively related; mothers and fathers were more likely to facilitate preschoolers' home play in the same direction ($r = .62, p < .01$). They also more likely to observe their preschoolers' play in the same direction ($r = .62, p < .001$). Further, both mothers and fathers displayed significantly positive associations between their facilitation and neutral involvement. The more frequently mothers facilitated their preschoolers' home play, the more fathers observed the play of their preschoolers ($r = .37, p < .01$). Similarly, the more often the fathers facilitated their preschoolers' home play, the greater frequently the mothers observed the play of their preschoolers in the home ($r = .54, p < .001$).

Insert Table 13 about here

Parental involvement and home environment

Significant relationships between parental involvement of mothers and fathers and the quality of home environment were found marginally ($p < .05$) as indicates in Table 14. Participation of mothers, was positively correlated with the quality of home environment. The higher the quality of home environment, the more frequently mothers actively participated as play partners (participation) in their
preschoolers’ play (r = .33, p < .05). In contrast, facilitation and neutral involvement (observation) of mothers were negatively related to the quality of home environment. The higher the quality of home environment, the less often the mothers facilitated or observed their children’s play (r = -.29 for both facilitation and neutral, p < .05). Parental involvement of fathers was also found negatively related to the quality of home environment. The higher the quality of home environment, the less often the fathers displayed noninvolvement behaviors.

Insert Table 14 about here

In summary, the present findings indicated that 3-year-old preschoolers were more likely to engage in the less-complex cognitive play behaviors of functional play, constructive play and dramatic play than 5-year-old preschoolers who were more likely to be involved in the more-complex cognitive play of games with rules. Most mothers and fathers in the present study were more likely to play together with their preschool children, especially in games with rules, than one parent or the other or in other play behaviors.
The quality of the home environment for these preschoolers and parents was very high, resulting from their demographic background of professionals and middle-class, well-educated families. The higher the quality of home environment, the more often the preschoolers engaged in games with rules and the less often they engaged in functional play, constructive play and solitary play at home. Moreover, the higher the quality of the home environment, the more frequently mothers participated as the play partners in their preschoolers' home play and the less likely mothers facilitated or observed the play of their preschoolers. There were no significant relationships among age and sex of preschoolers, parental involvement of fathers and the quality of home environment.

Due to the limitations of the present study, it is not possible to examine cause-effect relationships among preschoolers' home play, parental involvement of mothers and fathers and the quality of home environment as a function of age and sex of preschoolers or to conclude that there are no interrelationships (Darvill, 1982) among preschoolers' home play behaviors, age and sex of preschoolers, impacts of parental involvement and the quality of home environment. It was not feasible to also evaluate the contributions of parental involvement and home environment as covariates to preschoolers' home play.
DISCUSSION

This study investigated the nature of and differences in the play of 3- and 5-year-old boys and girls with their mothers and fathers at home. In addition, relationships among preschoolers' home play, parental involvement of mothers and fathers, and quality of the home environment were explored.

Darvill (1982) has offered an ecological model for the study of children's play behaviors in relation to the individual child's interactions with the play environment. Based on this model, the present study investigated various types of cognitive play and social play behaviors that occur during the preschool years (Johnson & Ershler, 1981; Parten, 1932; Piaget, 1962; Rubin & Krasnor, 1980; Rubin et al., 1976, 1978; Smith, 1978). Age and sex of preschoolers were explored as individual variables affecting their play (Christie & Johnsen, 1987; Fromberg, 1987; Rubin et al., 1983). Sex differences have been empirically reported for preschoolers' play (Bloch, 1987; Johnson & Ershler, 1981; Johnson & Roopnarine, 1983; Rubin & Krasnor, 1980; Rubin et al., 1976, 1978) and yet age effects on the play of younger (3-year-olds) and older preschoolers (5-year-olds) are inconclusive. It is documented, though, that the play of preschoolers becomes increasingly complex with age (Piaget, 1962; Smilansky, 1968; Vygotsky, 1968). The influences of
environment on children’s behaviors and development are theoretically (Bronfenbrenner, 1979; Lewin, 1931; Piaget, 1962) and empirically stated (Bradley & Caldwell, 1984; Watts & Barnett, 1973; Whiting, 1980; Wohlwill, 1983). Thus, parental involvement of mothers and fathers as social environment to children’s play and the physical environment of home setting were examined in this study.

Descriptive statistics provide interesting information about the nature and characteristics of preschoolers’ home play, parental involvement of mothers and fathers and home environment. The play of preschoolers in the home was observed in various types of cognitive play (i.e., functional play, constructive play, dramatic play and games with rules) and social play behaviors (i.e., solitary play, parallel play and interactive play) and varied in their occurrence. Games with rules and interactive play appeared to be the most frequent cognitive play and social play behaviors of preschoolers with their parents at home, respectively. For instance, games with rules were observed when the preschooler engaged in board or card games, such as Candyland, Memory or Go Fish. Interactive play was observed when the preschooler and his/her parents played together by taking turns in their Alphabet Lotto game or exchanging roles in their doctor-patient pretending. Other types of cognitive play and social play were also present.
within the limited occurrence. For example, functional play was observed when the preschooler engaged in physical movements, such as jumping, rolling over, wrestling or rough-and-tumble play. Constructive play was observed when the preschooler put puzzles together, drew pictures, or made playdough. Dramatic play was observed when the preschooler adopted roles as a mother, a cook, a driver, a princess, or a monster. Solitary play was observed when the preschooler played alone, such as building blocks, legos or Tinkertoys. Parallel play was observed when the preschooler engaged in making playdough to be a pizza while mother molded hers to be a seashell and there was no complementary interaction between them. Nonplay behaviors were observed when the preschooler listened to or looked at a book.

The use of nested social-cognitive play categories or the Parten-Smilansky Play Scale (Rubin et al., 1978) to categorize preschoolers' play in the home was very useful, yet it was so detailed in reflecting high frequency of occurrence for each of the nested play categories in the study. Low variability and occurrence for most of the play categories were found. Due to environment differences between the preschool and the home settings, including structure of play (free play), types of play materials, status of play partners, and play space and environment,
preschoolers may exhibit different engagements in their play (Christie & Johnson, 1987; Rubin et al., 1983). Additionally, the study was designed to approximate the types of play areas and playthings commonly used in the home so there was no control for these variables that may have influenced how the preschoolers played with their parents. Instead of observing free play of preschoolers in the preschool classroom with their same-age peers and with a variety of play centers and play materials, the researcher asked the parents and child to choose the indoor area and playthings they preferred to use in their home during their videotaped interactions.

It is interesting to note that most families chose the living room (N = 29) as their play area. Others chose the family room, child’s bedroom or playroom or the kitchen. The most common playthings selected and used during the mother-father-child play were board games (N = 16) including Candyland, Yahtzee, Double-Trouble, Wizard of Oz, Checkers, Hi-Ho Cherry O, and Holiday Guessing. Moreover, preschoolers and their parents chose card games (N = 7) such as Memory, Go Fish, Junior Pictionary, Alphabet Lotto, Sesame Street UNO, and Animal Domino. These board and card games are different from the ones explored with 6- and 17-year-old and documented by Sutton-Smith & Rosenberg (1971); games selected in this study, except Checkers, are designed
for educational purposes rather than the competitive purposes. The nature of board and card games in preschool children has not been studied; thus, it merits future investigations because selected board and card games appear to be used by parents as educational tools with their preschoolers. In addition to the enjoyment of playing board or card games, parents seemed to use this type of play to teach their children concepts rather than being competitive with them. These interactions are worthy of additional studies.

The reason that games with rules were a common type of preschoolers' home play may have resulted from the family's heightened awareness of the triad interactions and videotaping procedures. Perhaps, the families chose board or card games where all members of the triad could be mutually involved and interact in contrast to other types of play that have less obvious roles and outcomes (e.g., playing with trucks and legos or playing office) and involve less self-disclosure. In addition, the families might be concerned about the length of the videotaping observation and thus, chose to play games which require a lengthy involvement.

Results also showed that the most common characteristic of parental involvement mothers and fathers exhibited in their preschoolers' home play was
participation. Mothers and fathers were observed to actively engage in their preschoolers' play as players or as the child's play partners through complementary actions or vocalizations relevant to the play, i.e., mother, father and child each took turns drawing cards during their Candyland game and the child was prompted to wait for her turn.

Moreover, mothers and fathers varied in their facilitation and neutral involvement with their preschoolers. For instance, mother provided legos pieces for her child to use in constructing his house while father watched and offered ideas. Restriction and noninvolvement of mothers and fathers rarely occurred, especially for fathers. Perhaps, the frequency of mothers' and fathers' participation in the play of preschoolers was not representative of typical family interactions. The presence of mother, father and child during the videotaping may have altered their performance due to their sensitivity of being observed directly (Drew & Hardman, 1985).

Further, it is unclear how or whether one parent influences another one during their mutual play interactions with their preschoolers. Systematic observations of both dyad (i.e., mother-child and father-child) and triad interactions (i.e., mother-father-child) are necessary to test the potential second-order effects
(Bronfenbrenner & Crouter, 1983) resulting from a presence of the third person and to obtain the typical play behaviors of mother, father and the child.

The quality of the home environment for these families as evaluated by the HOME Inventory scale (Caldwell & Bradley, 1984) was high. In addition, there were low distributions among the HOME factors as the scores were closely dispersed. It is expected that this is due to the impact of predominately middle-class, well-educated and professional families in this study. In addition, the families lived in a university community that values education and educational opportunities.

Correlational analyses yielded several significant relationships among preschoolers' home play, parental involvement of mothers and fathers, and home environment as well as these relationships as a function of age and sex of preschoolers. Differential patterns of play at home for 3- and 5-year-olds with their parents were found. Three-year-olds were more likely than 5-year-olds to engage in the cognitive play characterized as functional, constructive and dramatic play. Five-year-olds, on the other hand, were more likely to engage in games with rules. These findings reflect a developmental progression of cognitive play, that is, play becomes more sophisticated with age and with more advanced cognitive abilities (Piaget, 1962; Smilansky,
However, the high frequency of games with rules observed for 5-year-olds is not congruent with Piaget's (1962, p. 142) claims that games with rules rarely occur until children are seven to eleven years old.

The early use of games with rules in this study appears to differ in the structure and meaning of "games with rules" identified by Piaget (1962). He referred to games with rules as being truly competitive games which were categorized as sensory-motor combinations (e.g., races, marbles and ball games) or intellectual combinations (e.g., cards and chess), with rules and competition between individuals. Games with rules exhibited by 5-year-olds and their parents did not involve strict adherence to rules or competition, but rather contained flexible rules of reciprocity and turn taking between players. Five-year-olds primarily displayed a cooperative role in the turn taking with some intention of winning. The intent of winning by 5-year-olds, though, appeared to be less serious than the 3-year-olds who engaged in the same games. The 3-year-olds' perspective was rather egocentric as Piaget (1962) stated about the cognitive abilities of young preschoolers.

Parents appeared to use the games, especially board and card games as educational activities or teaching tools
for their children instead of as competition with the intent of winning. For example, the Candyland game facilitates color concepts, the Junior Pictionary facilitates word cues and the Hi-Ho Cherry O facilitates counting concepts. Research concerning preschoolers' games with rules is rare; nevertheless, studies that have investigated the way young children play social games in the preschools report similar findings (DeVries, 1970; Kamii & DeVries, 1980). Five- and 6-year-olds' game playing involves simple rules and cooperation rather than truly competition behaviors (DeVries, 1970). Future studies are needed to explore the nature of games with rules in early childhood and the ways young children play games, especially at home.

Moreover, there should be a focus on using qualitative observational techniques (e.g., narrative descriptions, case studies, recording patterns of interactions) to describe behaviors observed in games with rules. Although a time sampling method is most commonly used in play research observation and provides quantified data for frequency of occurrence, it does not reflect the appropriate measure for games with rules.

The nature and functions of games with rules are somewhat different from other cognitive play behaviors although both play (i.e., self-designed activities) and
games (i.e., rule-determined activities) appear to be rule-governed to some degree (Rubin et al., 1983). In play, an individual player sets her rules by negotiating and maintaining context of such activity and changing the rules as desired, for example, a player plans to play birthday party and assigns roles for herself and others, then later she changes her role from arranging the party to being a guest at the party. On the other hand, games with rules restrict the players in more formal, often externally-determined parameters to agree about the rules and how the game is played, for example, when players choose to play the Candyland game, they all agree about the rules for drawing cards for taking their turns and for determining the winner. Additionally, the players are determined to engage in the game until the player(s) leaves that game.

The time sampling procedure, thus, is sensitive in taping the player’s engagement in different kinds of play (i.e., self-designed activities) for their frequency of occurrence. However, it is insensitive in measuring the actual outcome of games with rules because the frequency of occurrence varies by the length of the game rather than how frequently the player engages in it. From these investigations, researchers and educators may learn more about different kinds of games with rules that contribute
to children’s learning skills and development as well as to discover the strategies children use to play those games.

There were no significant relationships between social play behaviors and age of preschoolers. The 3- and 5-year-olds similarly engaged in social play including solitary, parallel and interactive play with their parents at home. This is an unexpected finding since previous research has documented an increase in interactive social play behaviors with peers in group settings during the preschool and kindergarten years (Hetherington et al., 1979; Johnson & Ershler, 1981; Rubin & Krasnor, 1980; Rubin et al., 1978). Due to differences in the environment and the nature of players, this study is noteworthy because it provides evidence of similar mother-father-child home social play patterns for 3- and 5-year-olds.

Support for sex differences in various aspects of children’s play has been empirically documented (DiPietro, 1981; Fagot, 1981; Johnson & Ershler, 1981; Johnson & Roopnarine, 1983; Rubin et al., 1976, 1978; Smith & Connolly, 1972). It has been found that boys engage in more physical play whereas girls exhibit more constructive play during the free play activity time at preschool. In this study, there were no differences either cognitively or socially in the ways preschool boys and girls played with their parents.
Parental involvement of mothers and fathers showed significant relationships with preschoolers' home play. The more mothers and fathers were involved in the play as actively participating players or play partners, the less likely their preschoolers engaged in the cognitive play behaviors categorized as functional, constructive or dramatic play, and the social play behaviors of solitary and parallel play and nonplay. In contrast, when mothers and fathers were involved in facilitation or neutral behaviors (observation) with their children, preschoolers engaged in more of these types of play.

These findings indicated that there was a greater tendency for preschoolers to engage in less-complex cognitive and social play when their mothers and fathers were involved in children's play as facilitator or observers rather than as play partners. For example, a situation of mother's facilitation and father's neutral involvement is illustrated when mother offers cookies cutters for the child to make play dough patterns and father watches the child use her play dough.

It is important to note that this study provides new information about parental involvement of mothers and fathers with their preschoolers' home play while previous research has documented only mothers' facilitation promoting the greater occurrences of dramatic play in young
Mothers' and fathers' participation, on the other hand, was significantly and positively correlated with preschoolers' cognitive play of games with rules and social play of interactive play. The more mothers and fathers were involved through participation in their children's play, the more often the preschoolers engaged in games with rules and interactive play. The nature of games with rules requires more than one player and mutual agreement about the rules (Rubin et al., 1983), parents appear to have important roles in guiding the rules of the games and serving as referee during the game. Although cognitive skills of preschoolers become more advanced with age, preschoolers need adult guidance in reading, explaining and monitoring the rules of the games. By actually participating in their children's play as play partners, parents appear to promote the ongoing games with rules and interactive play. This is important because children learn social interactions through taking turns and cooperating.

In contrast to games with rules, parents appeared to promote more functional, constructive and dramatic play when they facilitated or observed their children's play. This may be due to the status of parents as unequal play
partners for the child (i.e., parents and age-mates are not equivalent play partners). Parents assume authority and their socialization experiences and cognitive abilities are more advanced than the child's abilities (Youniss, 1980). Since the less-complex cognitive play (i.e., functional, constructive and dramatic play) requires reciprocal roles of players in exchanging ideas, thoughts, needs and feelings, it may be difficult for a child to accept her parents as equivalent play partners with whom she can negotiate roles or maintain the context of play as she desires. No previous studies were found to report mother-father-child involvement in games with rules; the present study offers a new direction for future play research to explore this evidence.

Evidence supports differential play patterns for mothers and fathers with their preschoolers in the home; fathers engage in more physical play with their children than mothers who model and instruct their children's dramatic play more often than fathers (MacDonald & Parke, 1984; Monighan, 1986). This study was unable to examine direct differences between parental involvement of mothers and fathers due to the limitations of data (i.e., the characteristics of dichotomy and small sample size). However, significant relationships between parental involvement of mothers and fathers were found. Mothers'
participation was positively related to fathers'
participation and negatively associated with fathers'
facilitation and neutral involvement. Fathers'
participation displayed the same trend. Thus, in these
home play situations mothers and fathers were more likely
to simultaneously engage in their children's play.

When mothers or fathers facilitated or observed
(neutral) their children's play, the likelihood of the other
parent's facilitation and observation decreased. Perhaps,
the type of parental involvement (e.g., participation
within triads) was influenced by their individual and
collective sensitivity to the presence of the home visitors
and the expectation of triad interactions during the
videotaping. A comprehensive investigation to observe
mother-child, father-child and mother-father-child play
interactions in the home across several time periods in
order to compare the parental involvement of mothers and
fathers with their preschoolers merits more research.

Sex differences for the parental involvement of
mothers were significantly correlated and yielded an
interesting finding. Mothers were more likely to
facilitate boys than girls during their play interaction.
This was an unexpected finding since it has not been
previously reported. Evidence has shown these differences
only in laboratory settings (Bright & Stockdale, 1984;
Langlois & Downs, 1980) and mothers are more likely to treat boys and girls the same (Langlois & Downs, 1980). Bright and Stockdale (1984) found that boys controlled, directed, actively followed and showed less lead-taking behavior during play with mothers than fathers. Boys displayed more physical warmth to mothers than girls.

Finally, the quality of the home environment as measured by the HOME Inventory scale (Caldwell & Bradley, 1984) using a composite score was significantly related to preschoolers' home play and parental involvement of mothers and fathers. The higher the quality of home environment, the less often the preschoolers engaged in the cognitive play behaviors of functional and constructive play and social play behavior of solitary play at home as functional, constructive and solitary play were related negatively to the quality of home environment. In contrast, games with rules showed a significant and positive relationship with the quality of home environment, that is, the higher the quality of home environment, the more often preschoolers engaged in games with rules with their parents at home.

Moreover, the quality of home environment was found to be correlated positively with mothers' participation and negatively with mothers' facilitation and neutral behaviors. The higher the quality of home environment, the
more often the mothers displayed participation in their children's play but the less often mothers exhibited facilitation and neutral. Parental involvement of fathers was also found significantly related to the quality of home environment as the higher the quality of home environment, the less often the fathers displayed noninvolvement behaviors. These findings suggested that high quality of the home environment was associated with the more-complex cognitive play behavior of games with rules for the home play of preschoolers with their parents and a greater tendency for mothers' participation in children's play.

Previous evidence has supported a relationship between the quality of home environment and children's play behavior in preschool settings (Barnett & Kleiber, 1984; Bishop & Chace, 1971; Cornelius, 1989; Giddings & Halverson, 1981; Monighan, 1986). No research has been found to report the use of a systematic data collection in the home (e.g., HOME Inventory) to study children's play at home and the impact of home environment, therefore, the present findings provide new evidence about the relationships among the quality of home environment, preschoolers' home play and parental involvement of mothers and fathers.

Due to the limitation of using the total score for the HOME assessment in this study, it is not feasible to detect
which factor(s) in the scale (i.e., the learning stimulation, language stimulation, physical environment, warmth and affection, academic stimulation, modeling, and variety of experience and acceptance) actually influences preschoolers' home play behaviors. With a larger sample size and a diverse family backgrounds, continued examination of the home environment and preschoolers' play is desirable.

In summary, the present study posits a new direction for mother-father-child play research conducted in the home. It is important to study the home play of young children in order to understand its nature, structure and the quality of their play behaviors that indirectly serve as mediators for their developmental functioning. In addition, the roots of play and learning begin in the earliest relationships between the child, parents and their home environment. The roles of mothers and fathers in promoting and inhibiting their children's play, especially during the preschool years, merit empirical investigation since parents are primary figures in the lives of their children.

Empirically, the present study reports the influences of parents and the home environment in encouraging more-complex cognitive play in games with rules of preschoolers during mother-father-child play at home. Future
investigations are needed to explore how parents should be involved in preschoolers' home play, what factor(s) in the home environment as measured by the systematic method of the HOME Inventory actually affect preschoolers' home play and the interrelationships among mother-father-child home play behaviors, individual differences of preschoolers, parental involvement and the quality of home environment.
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SUMMARY

The present study investigated the nature and characteristics of 3- and 5-year-olds' home play, parental involvement and home environment as a function of age and sex of preschoolers. Based on Darvill's (1982) model, preschoolers' home play was explored in relation to individual differences (i.e., age and sex of preschoolers), parental involvement of mothers and fathers and quality of the home environment.

Forty-eight mother-father-child triads (N = 48) participated in the study. They were Caucasian, intact and predominately well-educated and middle-class families. Home visits were scheduled for a family evening time to videotape the triads' play interactions for 10 minutes and to ask mothers questions related to their home environment. The videotapes later were evaluated for child play behaviors and parental involvement of mother and father independently.

Child play behaviors were categorized using the Parten-Smilansky Play Scale (Rubin, Watson & Jambor, 1978) which combines social play categories (i.e., solitary play, parallel play and interactive play) and cognitive play categories (i.e., functional play, constructive play, dramatic play and games with rules). A nonplay category was included for other behaviors not identified in the
nested social-cognitive play categories. Parental involvement was coded separately for mothers and fathers using modified categories of Watts and Barnett (1973) which contain participation, facilitation, neutral (observation) and restriction. A noninvolvement category was included for other behaviors not identified in the parental involvement categories.

A time-sampling procedure was used to determine child play behaviors and parental involvement of mothers and fathers within every 15-second time interval (Eisenberg, Wolchik, Hernandez & Pasternack, 1985; Stevenson, Leavitt, Thompson & Roach, 1988), that is 40 time intervals for 10 minutes. The measures of child play behaviors and mother and father parental involvement were calculated for the relative frequency of total occurrence converted to percentage of occurrence. Quality of the home environment was assessed using the HOME Inventory scale, preschool version (Caldwell & Bradley, 1984). The HOME measure was a composite score calculated for the relative score of the 55-items converted to a total percentage.

Preliminary analyses were performed for all variables. For the measure of child play behaviors, percentages of the frequency of occurrence were generally low and two of the play categories were not observed to occur. Therefore, the social-cognitive play categories were collapsed into the
cognitive play categories (Smilansky, 1968) and social play categories (Smith, 1978). Due to the skewed distributions of all variables, a dichotomous method was used and Pearson product-moment correlations were performed to examine the relationships between independent variables (i.e., age and sex of preschoolers) and dependent variables (i.e., child play behaviors, parental involvement of mothers and fathers and home environment), as well as among dependent variables.

Differential home play patterns of preschoolers were found between 3- and 5-year-olds. Three-year-olds were more likely than 5-year-olds to engage in cognitive play categories of functional, constructive and dramatic play while 5-year-olds were more likely than 3-year-olds to engage in games with rules during mutual play with their parents at home. These age differences support Piaget’s (1962) developmental progression of play stages that preschoolers become increasingly involved in complicated or elaborated play with age and with their increasing cognitive abilities. The findings, though, provide evidence for the early use of games with rules commonly played by preschoolers in the home with their parents although Piaget stated that games with rules most commonly occurs among 7- and 11-year-olds. Games with rules found in the present study differ from Piaget’s conception of
games with rules as sensory-motor and intellectual competitions and rigid rules games. In this study, parents and their preschoolers were involved in educational-type games facilitating enjoyment and learning skills to the child. It is suggested that future studies need to investigate whether games with rules are commonly observed in the home of preschoolers, what types of games young children enjoy playing and how they are involved in those games with rules.

Parental involvement of mothers and fathers in their preschoolers' home play revealed that mothers' and fathers' participation, where they actively engaged in children's play, increased the likelihood of their children engaging in games with rules and interactive play but decreased the likelihood of functional play, constructive play, dramatic play, solitary play and parallel as well as nonplay behaviors. However, when mothers and fathers displayed facilitation and neutral involvement, the tendency for preschoolers to engage in these types of play increased. It is important to note that parents are unequal play partners for the child (Youniss, 1980). For less complicated play behaviors, children may need an equivalent play partner with about the same representational level to comparably exchange or negotiate play ideas and thoughts whereas they may need more direction and guidance from
cognitively more advanced play partners (e.g., mothers and fathers) to participate in games with rules. A systematic and qualitative observation of mother-child, father-child and mother-father-child play interactions in the home environment across a period of time is needed to verify how mother, father and the child typically are involved in their home play.

Quality of the home environment has significant relationships with types of play preschoolers engaged in and how mothers and fathers interacted with their children's play at home. High quality home environment was associated with more complex cognitive play; that is, preschoolers engaged in games with rules more frequently than other types of play. On the other hand, lower quality home environment was associated with more involvement in less complex play including functional, constructive and solitary play. Moreover, high quality home environment was related to a tendency for mothers to display greater participation and less facilitation and neutral involvement in their children's play at home. In addition, high quality home environment was related to a tendency for fathers to exhibit less noninvolvement behaviors. It appears that quality of the home environment is associated with differences of preschoolers' home play and parental involvement of mothers and fathers. Future research needs
to continue examining the impacts of home environment on preschoolers' play systematically by using a large sample and a diversity of subjects' backgrounds as well as to identify what factors in the HOME Inventory actually contribute to preschoolers' home play.

The present study pioneered research on mother-father-child home play of preschoolers and offers new directions for further investigations. The findings provide support and empirical evidence that mother-father-child play interactions and quality of the home environment influence the developmental well-being of young children.

Play reflects the nature of childhood and development as children learn to explore and discover themselves, their environment and the world around them through playing and interacting with adults and the environment. Therefore, parents are important figures for enhancing play skills and development in the early childhood years.
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Play is a Must of the first order for individuals.........and mankind......

Piers, 1972

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I am so grateful to Christine Sharp for her assistance with the home visits and videotaping, Camilla Ho for her help in coding and establishing interobserver reliability, Edith Gozali for her work on my data organization, Laurie Culp for her skillful computer work and Gloysis Mayers for her wonderful friendship and companionship during my data collection.

The knowledge and support of the faculty and staff in the Human Development and Family Studies Department and the College of Family and Consumer Sciences throughout my graduate program are acknowledged. Special thanks are delivered especially to Dr. Donna Cowan and Dr. Dianne Draper who have always supported me with college and department resources and professional development.

My research investigation and completion has been partially supported by the Family and Consumer Sciences Research Institute and the Hester Chadderdon Fund; I am thankful for this financial assistance.

A sincere appreciation is extended to the Royal Thai Government and Sukhothai Thammathirat Open University for sponsoring me with a scholarship and giving me an
opportunity to earn graduate degrees in my area of interest.

I am very fortunate to know many special people who have made my stay in the United States so home-like. Mrs. Mary French has been like my second mother with her wonderful cooking and thoughtfulness and so has Mary Sterling. Their kindness and love have encouraged me through my times of happiness and difficulties. The Herwigs, Steven, Karen, Todd and Paige, have always made me feel like a part of their family.

Finally, my greatest acknowledgement is forwarded to my entire family, especially my mother, Mrs. Chaeimchit Tejagupta, for her endless support and understanding as well as her patience and spiritual love. I am so grateful to be her daughter and able to ultimately return her greatest happiness with my educational success. Thanks also go to relatives and friends both in Thailand and in the United States for being a constant support and who believe in me, thereby contributing towards my final success.

I cannot end without thanking my terrific friend, Nitus Patrayotin, who has always shared my feelings and unselfishly helped me in several ways. He made me believe one’s saying, what is a friend for!!!
APPENDIX A

TABLES
Table 1. Medians, means, standard deviations (SD) and ranges for percentages of preschoolers' cognitive play and social play categories by age of preschoolers

<table>
<thead>
<tr>
<th>Play category</th>
<th>3-year-olds (n=24)</th>
<th>5-year-olds (n=24)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td><strong>Cognitive play:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td>0.0</td>
<td>13.75</td>
</tr>
<tr>
<td>Constructive</td>
<td>6.25</td>
<td>25.52</td>
</tr>
<tr>
<td>Dramatic</td>
<td>2.50</td>
<td>17.71</td>
</tr>
<tr>
<td>Games with rules</td>
<td>2.50</td>
<td>31.87</td>
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<tr>
<td><strong>Social play:</strong></td>
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<tr>
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<td>20.83</td>
</tr>
<tr>
<td>Parallel</td>
<td>0.0</td>
<td>7.5</td>
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<tr>
<td>Interactive</td>
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<td>60.52</td>
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<td>Nonplay</td>
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<td>11.14</td>
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</table>
Table 2. Medians, means, Standard deviations (SD) and ranges for percentages of preschoolers' cognitive play and social play categories by sex of preschoolers

<table>
<thead>
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<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
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<td></td>
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<td>6.87</td>
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<tr>
<td>Games with rules</td>
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<td>Social play:</td>
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<td>Interactive</td>
<td>76.25</td>
<td>67.71</td>
</tr>
<tr>
<td>Nonplay</td>
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<td>11.46</td>
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</table>
Table 3. Mean percentages of occurrence for preschoolers' cognitive play and social play categories by age and sex of preschoolers

<table>
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<th>Play Category</th>
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<td>Boys</td>
<td>Girls</td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Cognitive play</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td>22.71 (24.41)</td>
<td>4.79 (12.22)</td>
<td>4.58 (15.88)</td>
<td>10.21 (27.64)</td>
</tr>
<tr>
<td>Constructive</td>
<td>17.92 (27.96)</td>
<td>33.12 (36.84)</td>
<td>18.12 (34.43)</td>
<td>11.46 (28.25)</td>
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<tr>
<td>Dramatic</td>
<td>13.12 (23.96)</td>
<td>22.29 (37.32)</td>
<td>0.63 (2.16)</td>
<td>12.08 (30.17)</td>
</tr>
<tr>
<td>Games with rules</td>
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<td>30.63 (44.33)</td>
<td>66.88 (43.49)</td>
<td>62.08 (47.74)</td>
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<td>9.17 (14.15)</td>
<td>9.79 (17.10)</td>
<td>4.17 (6.42)</td>
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<td>Total</td>
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<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Social play</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solitary</td>
<td>18.96 (23.07)</td>
<td>22.17 (34.53)</td>
<td>13.13 (29.52)</td>
<td>10.21 (17.33)</td>
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<tr>
<td>Parallel</td>
<td>8.75 (16.94)</td>
<td>6.25 (14.94)</td>
<td>0.83 (2.21)</td>
<td>12.50 (19.28)</td>
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<tr>
<td>Interactive</td>
<td>59.17 (30.14)</td>
<td>61.87 (37.31)</td>
<td>76.25 (36.56)</td>
<td>73.12 (36.31)</td>
</tr>
<tr>
<td>Nonplay</td>
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<td>9.17 (14.15)</td>
<td>9.79 (17.10)</td>
<td>4.17 (6.42)</td>
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<tr>
<td>Total</td>
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<td>100.00</td>
<td>100.00</td>
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</table>

* Standard deviation is in parenthesis.
Table 4. Medians, means, standard deviations (SD) and ranges for percentages of parental involvement of mothers and fathers by age of preschoolers

<table>
<thead>
<tr>
<th>Play category</th>
<th>3-year-olds (n=24)</th>
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<td></td>
<td>Median</td>
<td>Mean</td>
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<tr>
<td><strong>Mother involvement:</strong></td>
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<td></td>
</tr>
<tr>
<td>Participation</td>
<td>72.5</td>
<td>62.81</td>
</tr>
<tr>
<td>Facilitation</td>
<td>11.25</td>
<td>16.56</td>
</tr>
<tr>
<td>Neutral</td>
<td>8.75</td>
<td>20.31</td>
</tr>
<tr>
<td>Restriction</td>
<td>0.0</td>
<td>0.21</td>
</tr>
<tr>
<td>Noninvolvement</td>
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<td>0.10</td>
</tr>
<tr>
<td><strong>Father involvement:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>76.25</td>
<td>67.29</td>
</tr>
<tr>
<td>Facilitation</td>
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<td>12.92</td>
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<tr>
<td>Neutral</td>
<td>7.5</td>
<td>19.17</td>
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<tr>
<td>Restriction</td>
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<td>0.0</td>
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<tr>
<td>Noninvolvement</td>
<td>0.0</td>
<td>0.62</td>
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</table>
Table 5. Medians, means, standard deviations (SD) and ranges for percentages of parental involvement of mothers and fathers by sex of preschoolers

<table>
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<th>Play category</th>
<th>Boys (n=24)</th>
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<th></th>
<th>Girls (n=24)</th>
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<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>Mother involvement:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>71.25</td>
<td>63.33</td>
<td>37.85</td>
<td>0-100</td>
<td>98.75</td>
<td>69.58</td>
</tr>
<tr>
<td>Facilitation</td>
<td>7.50</td>
<td>16.46</td>
<td>22.30</td>
<td>0-87.5</td>
<td>0.0</td>
<td>12.19</td>
</tr>
<tr>
<td>Neutral</td>
<td>3.75</td>
<td>19.58</td>
<td>22.88</td>
<td>0-62.5</td>
<td>0.0</td>
<td>17.81</td>
</tr>
<tr>
<td>Restriction</td>
<td>0.0</td>
<td>0.52</td>
<td>1.80</td>
<td>0-7.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Noninvolvement</td>
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<td>0.1</td>
<td>0.51</td>
<td>0-2.5</td>
<td>0.0</td>
<td>0.42</td>
</tr>
<tr>
<td>Father involvement:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>83.75</td>
<td>67.71</td>
<td>35.19</td>
<td>0-100</td>
<td>71.25</td>
<td>67.92</td>
</tr>
<tr>
<td>Facilitation</td>
<td>3.75</td>
<td>11.46</td>
<td>16.45</td>
<td>0-55</td>
<td>3.75</td>
<td>11.67</td>
</tr>
<tr>
<td>Neutral</td>
<td>8.75</td>
<td>18.96</td>
<td>25.14</td>
<td>0-95</td>
<td>7.5</td>
<td>19.89</td>
</tr>
<tr>
<td>Restriction</td>
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<td>0.0</td>
<td>0.0</td>
<td>0-0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Noninvolvement</td>
<td>0.0</td>
<td>1.87</td>
<td>7.23</td>
<td>0-35</td>
<td>0.0</td>
<td>0.52</td>
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</tbody>
</table>
Table 6. Mean percentages of occurrence for parental involvement of mothers and fathers categories by age and sex of preschoolers

<table>
<thead>
<tr>
<th>Play Category</th>
<th>3-year-olds</th>
<th>5-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td><strong>Mother involvement:</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Participation | 61.04 (34.30)
   a       | 64.58 (46.21) | 64.63 (42.51) | 74.58 (38.81) |
| Facilitation  | 15.42 (16.05) | 17.71 (23.89) | 17.50 (27.92) | 6.67 (11.89) |
| Neutral       | 22.92 (22.93) | 17.71 (23.53) | 16.25 (23.34) | 17.92 (26.54) |
| Restriction   | 0.41 (1.44) \[0\] | 0.00 (0) \[0\] | 0.62 (2.16) \[0\] | 0.00 (0) \[0\] |
| Noninvolvement| 0.21 (0.72) \[0\] | 0.00 (0) \[0\] | 0.00 (0) \[0\] | 0.83 (2.89) \[0\] |
| **Total**     | 100.00 \[0\] | 100.00 \[0\] | 100.00 \[0\] | 100.00 \[0\] |

**Father involvement:**

<table>
<thead>
<tr>
<th></th>
<th>3-year-olds</th>
<th>5-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>67.29 (33.82)</td>
<td>67.29 (36.66)</td>
</tr>
<tr>
<td>Facilitation</td>
<td>8.13 (10.77)</td>
<td>17.71 (27.54)</td>
</tr>
<tr>
<td>Neutral</td>
<td>24.37 (29.11)</td>
<td>13.96 (26.01)</td>
</tr>
<tr>
<td>Restriction</td>
<td>0.00 (0) [0]</td>
<td>0.00 (0) [0]</td>
</tr>
<tr>
<td>Noninvolvement</td>
<td>0.21 (0.72) [0]</td>
<td>1.04 (3.61) [0]</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100.00 [0]</td>
<td>100.00 [0]</td>
</tr>
</tbody>
</table>

\(a\) Standard deviation is in parenthesis.
Table 7. Medians, means, standard deviations (SD) and ranges for percentages of home environment (HOME) by age of preschoolers

<table>
<thead>
<tr>
<th>HOME variable</th>
<th>3-year-olds (n=24)</th>
<th>5-year-olds (n=24)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>HOME factors:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LES</td>
<td>95.45</td>
<td>93.56</td>
</tr>
<tr>
<td>LAS</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>PHE</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>WAA</td>
<td>100.00</td>
<td>89.28</td>
</tr>
<tr>
<td>ACS</td>
<td>100.00</td>
<td>96.67</td>
</tr>
<tr>
<td>MDL</td>
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<td>86.67</td>
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<tr>
<td>VIE</td>
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<td>93.05</td>
</tr>
<tr>
<td>ACT</td>
<td>100.00</td>
<td>90.62</td>
</tr>
<tr>
<td>HOME total</td>
<td>94.54</td>
<td>94.01</td>
</tr>
</tbody>
</table>

Note. LES = Learning stimulation
      LAS = Language stimulation
      PHE = Physical environment
      WAA = Warmth and affection
      ACS = Academic stimulation
      MDL = Modeling
      VIE = Variety of experience
      ACT = Acceptance
Table 8. Means, standard deviations and ranges for percentages of home environment (HOME) by sex of preschoolers

<table>
<thead>
<tr>
<th>HOME variable</th>
<th>Boys (n=24)</th>
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<th></th>
<th></th>
<th>Girls (n=24)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HOME factors:</td>
<td></td>
<td>Median</td>
<td>Mean</td>
<td>SD</td>
<td>Range</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>LES</td>
<td></td>
<td>95.45</td>
<td>93.56</td>
<td>7.33</td>
<td>81.82-100</td>
<td>100.00</td>
<td>96.97</td>
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<tr>
<td>LAS</td>
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<td>100.00</td>
<td>100.00</td>
<td>0.00</td>
<td>100.00-100</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>PHE</td>
<td></td>
<td>100.00</td>
<td>97.62</td>
<td>11.66</td>
<td>42.86-100</td>
<td>100.00</td>
<td>99.40</td>
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<td>WAA</td>
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<td>82.74</td>
<td>16.30</td>
<td>42.86-100</td>
<td>100.00</td>
<td>89.88</td>
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<td>5.65</td>
<td>80.00-100</td>
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<td>75.00-100</td>
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<td>5.96</td>
<td>76.36-100</td>
<td>96.36</td>
<td>96.14</td>
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</table>

Note: LES = Learning stimulation  ACS = Academic stimulation
      LAS = Language stimulation  MDL = Modeling
      PHE = Physical environment  VIE = Variety of experience
      WAA = Warmth and affection  ACT = Acceptance
Table 9. Pearson product-moment correlations between preschoolers' cognitive play and social play categories and age and sex of preschoolers

<table>
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<tr>
<th>Play Category</th>
<th>Age of Preschooler</th>
<th>Sex of Preschooler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive play:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional</td>
<td>-.31*</td>
<td>-.04</td>
</tr>
<tr>
<td>Constructive</td>
<td>-.34*</td>
<td>-.09</td>
</tr>
<tr>
<td>Dramatic</td>
<td>-.40**</td>
<td>.13</td>
</tr>
<tr>
<td>Games with rules</td>
<td>.33*</td>
<td>-.08</td>
</tr>
<tr>
<td>Social play:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solitary</td>
<td>-.25</td>
<td>.00</td>
</tr>
<tr>
<td>Parallel</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Interactive</td>
<td>.25</td>
<td>.00</td>
</tr>
<tr>
<td>Nonplay</td>
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<td>.00</td>
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Note:  * p<.05  
** p<.01
Table 10. Pearson product-moment correlations between mothers’ and fathers’ parental involvement categories of mothers and fathers and age and sex of preschoolers

<table>
<thead>
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<th>Involvement Category</th>
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<th>Sex of Preschooler</th>
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<td><strong>Mother involvement:</strong></td>
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<tr>
<td>Participation</td>
<td>.08</td>
<td>.17</td>
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<tr>
<td>Neutral</td>
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<td>-.04</td>
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<td>Restriction</td>
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<td>Noninvolvement</td>
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<td>.00</td>
</tr>
<tr>
<td><strong>Father involvement:</strong></td>
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Note: --- No occurrence of behavior
* p<.05
Table 11. Pearson product-moment correlations between preschoolers' cognitive play and social play categories and parental involvement categories of mothers and fathers

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Note: PT = Participation
      FT = Facilitation
      NT = Neutral (Observation)
      RT = Restriction
      NI = Noninvolvement
      --- No occurrence of behavior
      * p < .05
      ** p < .01
      ***p < .001
Table 12. Pearson product-moment correlation between preschoolers' cognitive play and social play categories and the quality of home environment

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Note:  * p < .05
       ** p < .01
Table 13. Pearson product-moment correlations between mothers' and fathers' parental involvement categories of mothers and fathers

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Note: PT = Participation  
FT = Facilitation  
NT = Neutral (Observation)  
RT = Restriction  
NI = Noninvolvement  

** p < .01  
*** p < .001
Table 14. Pearson product-moment correlations between parental involvement of mothers and fathers and home environment (HOME)

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Note. ---No occurrence of behavior
* p < .05
APPENDIX B

CORRESPONDENCE
April 9, 1990

Dear Parents:

As a Child Development doctoral candidate at Iowa State University, I am interested in learning about parent-child play interactions in the home. Studying parents and their children in the home is important in understanding how children learn and develop. Relatively few studies have been done in the child's home.

My study involves videotaping 3- and 5-year-old boys and girls with their parents in the families' home. It will take about 1 hour to finish a 15-minute segment of videotaping both parents and child playing in the home and a 45-minute informal interview/visit about the child and his/her play areas and playthings. My visit with the family will be arranged according to your convenience. Generally, this will occur in an evening after dinner and before the child's bedtime. No special preparation by the family is expected for the visit.

Videotaping is being used in the study for later analyses and accurate recording. I am seeking permission for both of you and your preschool child to participate in my study. Please note that all information from the videotape and the interview will be kept confidential and videotapes will be erased by January 31, 1991. Neither child nor parent will be identified by name in the final research reports. Only group information will be reported. A copy of the research summary will be sent to all interested families after the study has been completed.

Please indicate your interest in participating by completing the attached form. We are asking for other details on the same form so we can begin to personalize our visit. Return the form to your child's teacher as soon as possible.

We value your time and cooperation with this request. If you have any questions about the study, please contact me (294-3040 or 294-3506) or my major professor, Dr. Joan Herwig (294-6230). We will be happy to answer any questions.

Sincerely,

Chittinun Tejagupta
Doctoral Candidate

Joan E. Herwig, Ph.D.
Major Professor in charge of research
September 4, 1990

Dear Parents:

Through my research work at Iowa State University, I am interested in learning about parent-child play in the home. Studying parents and children in their home is important in understanding how children learn and develop; however, relatively few studies have been done in the child's home. Your involvement with this study will help us understand the role of parent-child interaction in promoting children's learning.

This study involves exploring how 3- and 5-year-old children play with their parents in their own home. It will take about an hour to visit your family for the 10-minute videotaping the mother, father, and child playing/interacting in the home and about 30-minute interview with the mother about the child and his/her play areas and playthings. Videotaping is being used in the study for accurate recording of behaviors. The scheduled visit with the family will be arranged at your convenience and assistance will be provided to care for your children during this time if you desire. Generally, our visit will occur in an evening after dinner and before the child's bedtime; however, we consider the flexibility of family's need. This can be arranged anytime within the next two weeks. No special preparation by the family is expected for the visit.

I am seeking permission for both parents and your preschool child (either ages 3-4 or 5-6) to participate in my study. Please note that all information from the videotape and the interview will be kept confidential and videotapes will be erased by January 31, 1991. Neither child nor parents will be identified by name in the final research reports. Only group information will be reported. A copy of the research summary will be sent to all interested families after the study has been completed.

Please indicate your interest in participating by completing the attached permission form and also fill out other details so we can begin to personalize our visit. A phone call will be made later to schedule the visit. Please return the form within the next week in the envelope provided outside your child's classroom. As you have questions, you may contact me (294-3506) or my major professor, Dr. Joan Herwig (294-6230). We will be happy to answer any questions.

In advance, thank you for your serious consideration of this special request. We really appreciate your time and cooperation.

Sincerely,

Chittinun Tejagupta
Doctoral Candidate

Dr. Joan E. Herwig
Major Professor in charge of research
PERMISSION FORM
FOR PARENT-CHILD HOME PLAY STUDY

The general purpose of the study and the research procedure have been explained to me. I understand that all information will be kept confidential and neither my child, my spouse nor me will be identified by name. I understand that I am free to withdraw from the study at any time.

Please check the preferred option and mail this form in the attached self-returned envelope as soon as possible. Your consideration with this study is greatly appreciated.

____ My family, including my child, my spouse and I, is willing to participate in the study as described in the attached letter.

____ My family is not willing to participate in the study as described in the attached letter.

In addition:

____ We are interested in receiving a copy of the results of this study.

----------------------------------------------------------------------------------------------------------------------
Parent’s Signature                          Date
----------------------------------------------------------------------------------------------------------------------

BACKGROUND INFORMATION
Please Print

Mother’s name: ____________________________
Father’s name: ____________________________
Child’s name: _____________________________
Child’s birthdate: ____________________ Sex: M F

Home address: ______________________________
Home phone: _______________________________

Tejagupta/Herwig Research
APPENDIX C

HOME INVENTORY SCALE
PLEASE NOTE

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

199-200, Appendix C

University Microfilms International
APPENDIX D
CODING DEFINITIONS AND RECORDING SHEETS
12 Social-Cognitive Categories of Play:

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<thead>
<tr>
<th>Cognitive play</th>
<th>Social play</th>
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<td>SF</td>
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<td>Constructive (C)</td>
<td>SC</td>
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<tr>
<td>Dramatic (D)</td>
<td>SD</td>
</tr>
<tr>
<td>Games (G)</td>
<td>SG</td>
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</table>

Operational Definitions:

Social categories of play

Solitary play (S)———-Playing alone
Parallel play (P)———-Playing while other(s) surrounding also playing with similar or different materials and/or activities but no sign of cooperative engagement
Interactive play (I)——-Playing with other(s) in a cooperative manner

Cognitive categories of play

Functional play (F)——-Repetitive muscle movements (e.g., rolling, banging or shaking toys/objects), including active physical movements (e.g., jumping, wrestling, rolling over, tossing partner in the air)
Constructive play (C)——-Using objects or materials to make something (e.g., building blocks, stacking and arranging objects, cutting and pasting, drawing, painting, putting puzzles together)
Dramatic play (D)———-Role-playing (e.g., pretending to be a doctor or a superhero) and/or make-believe transformations (e.g., using a block as a car, pretending to drive a car by using arm movements)
Games with rules (G)———-Acceptance and conformity with preestablished rules (e.g., rolling ball to knock over blocks, playing hide-and-seek, playing commercial games including card/board games and computer games)

Nonplay category

Behaviors or activities that lack the characteristics of social-cognitive play. Examples include talking, watching, listening, reading books, doing school-related work.

Tejagupta, 1990
**Frequency of Social-Cognitive Play**

**ID Number:** Date:  
**Subject Code:** TB TG FB FG  
**Coder:**  
**Location:**  
**Material:**  
**Coding Behavior:** 12 categories of play and 1 category of nonplay  
SF SC SD SG = Solitary (Functional, Constructive, Dramatic, Games) Play  
PF PC PD PG = Parallel (Functional, Constructive, Dramatic, Games) Play  
IF IC ID IG = Interactive (Functional, Constructive, Dramatic, Games) Play  
NP = Nonplay  
**Interval Length:** 15 seconds  
**Total Time:** 10 minutes (40 15-second intervals)

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**Score**

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**Tejagupta 1990**
There are 4 types of parental involvement adapted from categories of adult's role in children's activities by Watts and Barnett (1973) as (1) participation, (2) facilitation, (3) neutral, and (4) restriction. A noninvolvement category is included for other behaviors lacking the parental involvement identified above.

Operational Definitions:

Participation (PT)---Actively joining/engaging in an activity through coordinated actions, turn taking, exchanging vocalizations (i.e., producing sound relevant to the play context) or play materials or other forms indicating complementary involvement relevant to such play activity or situation (e.g., acting as a play partner, showing equally shared interest and mainly make physical contributions in the activity)

Facilitation (FT)---Encouraging an activity through supplementing comments or materials (e.g., offering or suggesting play ideas/themes, teaching, directing or modeling certain play skills, praising, assisting, helping or providing play objects)

Neutral (NT)------Observing an activity without negative comments or actions (e.g., watching the ongoing play activity, conversing with or talking to the player about something else irrelevant to the ongoing play situation, paying attention to the play activity but doing something else)

Restriction (RT)----Disapproving, prohibiting or preventing an activity through distracting interest or expressing negative feelings/comments toward such play situation according to family's value (e.g., not allowing the child to play with imaginative companions, discontinuing the ongoing play, refusing to help in play, showing physical/verbal restraint to the player)

Noninvolvement (NI)---Engaging in different activities without paying attention to the ongoing play (e.g., reading a book, caring for other children, or doing housework)

Tejagupta 1990
**Parent Recording Sheet**

**Frequency of Parental Involvement**

**ID Number:**

**Target Subject:**  
Mother Father

**Coding Behavior:**  
PT = Participation  
FT = Facilitation  
NT = Neutral  
RT = Restriction  
NI = Noninvolvement

**Interval Length:** 15 seconds  
**Total Time:** 10 minutes

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Total Observation: 40 15-second intervals

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<th>Percentage</th>
<th>Number of Agreement</th>
<th>Number of Disagreement</th>
<th>Reliability</th>
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Tejagupta 1990
APPENDIX E

MANUAL OF MOTHER–FATHER–CHILD
PLAY OBSERVATION
Naturalistic observation of parent-child play is conducted by videotape recording of mother-father-child interactions in the family's home. Mother-father-child play interactions are evaluated by dividing their behaviors into two different measures as (1) child measure of play behaviors and (2) parent measure of parental involvement. Thus, each mother-father-child videotape was coded as follows:

1. Child play behaviors are categorized by using a two-dimensional play model of Parten-Smilansky Play Scale modified by Rubin, Watson and Jambor (1978). This scale combines the social play categories (i.e., solitary play, parallel play and interactive play) with the cognitive play categories (i.e., functional play, constructive play, dramatic play and games with rules). The nested social-cognitive play or the Parten-Smilansky Play Scale, therefore, consists of 12 categories of play as (a) solitary-functional play, (b) solitary-constructive play, (c) solitary-dramatic play, (d) solitary-games with rules, (e) parallel-functional play, (f) parallel-constructive play, (g) parallel-dramatic play, (h) parallel-games with rules, (i) interactive-functional play, (j) interactive-constructive play, (k) interactive-dramatic play, (l) interactive-games with rules. A nonplay category is
included for other behaviors or activities lacking the characteristics of the social-cognitive play, i.e., onlooker.

Operational definitions and examples for child play behaviors are:

(a) Solitary-functional play is determined when the player engages in repetitive or active physical movements alone.

Examples: - Player moves a toy car back and forth for a period of time.
- Player cuts and rolls play-dough repeatedly without making a final product.
- Player jumps up and down or rolls over on the carpet.

(b) Solitary-constructive play is determined when the player creates or constructs something alone.

Examples: - Player stacks up blocks or legos to make a tower.
- Player cuts out play-dough to make cookies or pizza.
- Player draws pictures or puts puzzle pieces together.

(c) Solitary-dramatic play is determined when the player performs a fantasy action or vocalization through role playing or object substitution alone.

Examples: - Player assigns different functions to a toy car as if it were an airplane flying in the air.
- Player adopts an imaginary role such as a mother or a doctor.
- Player pretends to drink milk from an empty cup.
(d) Solitary-games with rules are determined when the player engages in a competitive activity which follows the preestablished rules and limits alone.

Examples:- Player plays a computer game by herself.
- Player sets up rules and plays according to those self-designed limits such as sorting shapes and colors.

(e) Parallel-functional play is determined when two or more players engage in similar or different repetitive or active physical movements but there is no indication of complementary actions or vocalizations.

Examples:- One player moves toy cars back and forth while other player(s) may roll toy cars and bang them.
- One player cuts play-dough into pieces while other player(s) may toss play-dough into the air.
- One player jumps up and down while other player(s) may bounce a ball.

(f) Parallel-constructive play is determined when two or more players create or construct similar or different products but there is no indication of complementary actions or vocalizations.

Examples:- One player stacks up blocks to make a tower while other player(s) may build a bridge or a castle using legos.
- One player cuts out play-dough to make cookies while other player(s) may mold the play-dough to be an animal.
- One player draws pictures while other player(s) may fold a paper airplane.

(g) Parallel-dramatic play is determined when two or more players engage in similar or different pretend
activities but there is no indication of complementary actions or vocalizations.

Examples:- One player uses a block as a car while other player(s) may use his hand as a telephone.
- One player pretends to be a doctor while other player(s) may dress up to be someone but their roles are not reciprocal.
- One player pretends to cook imaginary food while other player(s) may play princess-dragon roles.

(h) Parallel-games with rules are determined when two or more players engage in similar or different game-type activities following the preestablished rules but there is no indication of complementary actions or vocalizations.

Examples:- One player plays a computer game while other player(s) may engage in playing memory matching cards.
- One player plays sorting objects by shapes while other player(s) may group objects by sizes or shapes.

(i) Interactive-functional play is determined when two or more players engage in complementary repetitive or active physical movements.

Examples:- Two or more players push toy cars back and forth by taking turns.
- Two or more players cut and roll play-dough together but have no intention to make anything.
- Two or more players engage in rough-and-tumble play.

(j) Interactive-constructive play is determined when two or more players create or construct something together with shared ideas and interest.

Examples:- Two or more players build a castle using legos together.
- Two or more players help one another to mold
different kinds of animals from play-dough.
- Two or more players draw picture together as one project.

(k) Interactive-dramatic play is determined when two or more players engage in complementary fantasy actions or vocalizations through reciprocal behaviors or role playing.

Examples:
- Two or more players agree to use blocks as their telephones communicating to one another.
- Two or more players take reciprocal roles in their driver-passenger play.
- Two or more players pretend to have a tea party and exchange their roles to be a host and guest.

(l) Interactive-games with rules are determined when two or more players engage in complementary competitive activities following the preestablished rules and limits.

Examples:
- Two or more players engage in the board game by taking turns.
- Two or more players take turns to compete in shooting the balls by recording the scores.

(m) Nonplay category is determined when the player engages in other behaviors or activities that lack the characteristics of the 12 social-cognitive play categories identified above.

Examples:
- Participant reads a book.
- Participant watches or listens to what others doing.
- Participant talks or laughs.

Child play behaviors are coded for the 12 nested social-cognitive play categories and the nonplay category. A time sampling procedure (i.e., a recording of behavior at specific time intervals) is used to evaluate the occurrence of child play behaviors. Each of the behavior categories
is scored one (1) for its occurrence every 15 seconds during the 10-minute observation period which contains 40 15-second time intervals (see Appendix D).

The precise code is determined by the coder at the end of each 15-second time interval. If two or more behavior categories occur in the same time interval, the one which occupies the majority of the time within that time interval will be coded (e.g., two behavior categories occur in the same time interval, the one which holds about 8 seconds will be recorded). When two or more behavior categories occur in the same time interval for approximately equal amount of time (i.e., the borderline), the more complex category of social-cognitive play will be coded (i.e., interactive-games with rules is the most complex category then in descending order of complexity is interactive-dramatic play, interactive-constructive play, interactive-functional play, parallel-games with rules, parallel-dramatic play, parallel-constructive play, parallel-functional play, solitary-games with rules, solitary-dramatic play, solitary-constructive play, solitary-functional play and finally nonplay category).

2. Parental involvement is categorized using modified characteristics of adult's role in children's activity by Watts and Barnett (1973). Involvement behaviors of mother and father are evaluated separately using the same
categories of parental involvement. The characteristics of parental involvement include (a) participation, (b) facilitation, (c) restriction and neutral or observation. A noninvolvement category is included for other behaviors lacking the characteristics of parental involvement categories (see Appendix D).

Operational definitions and examples for parent involvement behaviors are:

(a) Participation is determined when the participant contributes by actively joining or engaging in an activity and develops reciprocal behaviors through coordinated actions such as turn taking, exchanging ideas, vocalizations or play materials, or taking integrative and complementary roles relevant to such activity.

Examples: - Participant engages in a pretend tea party as a guest and drinks from an imaginary cup.
- Participant adopts a firefighter role to rescue people from a fire.
- Participant takes turn to play a game.
- Participant build a castle from legos with other players.

(b) Facilitation is determined when the participant displays positively indirect involvements in a play activity by encouraging such ongoing play activity physically or verbally through supplementing comments or materials relevant to the play events.

Examples: - Participant suggests to use a can as a cup in a tea party play.
- Participant praises the player that his construction looks creative.
- Participant offers lego pieces for the player.
- Participant teaches or models how to be a furious monster to the player.

(c) Neutral is determined when the participant shows interest or attention to a play activity through observing the ongoing play activity without making any comments or actions relevant to that activity.

Examples:
- Participant watches the player building blocks
- Participant puts away toys.
- Participant asks the player about something else irrelevant to what the player is doing.
- Participant listens to the player’s play ideas.

(d) Restriction is determined when the participant displays negative feeling, attitude or actions toward a play activity by distracting the ongoing play events physically or verbally.

Examples:
- Participant disapproves the player to adopt a different role to be a dog.
- Participant comments that imagination is not real and stops the player’s playing.
- Participant refuses to help set up toys.

(e) Noninvolvement category is determined when the participant is involved in a different activity besides the play activity or displays other behaviors that lack the characteristics of the four parental involvement categories identified above.

Examples:
- Participant reads a book.
- Participant listens to the music.
- Participant takes care of a baby.
- Participant talks on the phone.

Both mother and father characteristics of parental involvement are evaluated using a time sampling procedure.
Each of the behavior categories is scored one (1) for its occurrence every 15 seconds during the 10-minute observation period which contains 40 15-second time intervals (see Appendix D).

The precise code is determined by the coder at the end of each 15-second time interval. If two or more behavior categories occur in the same time interval, the one which occupies the majority of the time within that time interval will be coded (e.g., two behavior categories occur in the same interval, the one which holds about 8 seconds will be recorded). When two or more behavior categories occur in the same time interval for approximately equal amount of time (i.e., borderline), the more positive category of parental involvement will be coded (i.e., participation category is the most positive category then in descending order of less involvement is facilitation, neutral, restriction and noninvolvement category).
APPENDIX F

CODING MAP FOR DATA
## CODING MAP

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Note. Social play dimension:
S=Solitary play
P=Parallel play
I=Interactive play
Cognitive play dimension:
F=Functional play
C=Constructive play
D=Dramatic play
G=Games with rules