A Comparison of the Play of Aggressive and Non-Aggressive Kindergartners

by

Barbara Ann Young

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

1995

This manuscript has been read and accepted for the Graduate Faculty in Developmental Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

4/20/95
Date

Chair of Examining Committee

4/24/95
Date

Executive Officer

Roger Hart, Ph.D.

David Bearison, Ph.D.

Karen Webb, Ph.D.

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

Acknowledgments

This study would not have been possible without the help of the following people to whom I owe sincerest thanks and appreciation.

Roger Hart, my advisor and dissertation chair, was a constant source of motivation throughout my graduate studies. Karen Webb, who has been my role model of "what I want to be when I grow up," provided insightful ideas and assistance, particularly during data analysis and interpretation. David Bearison provided valuable suggestions which challenged me to more clearly integrate and express my ideas. Katherine Nelson and Harry Beilin contributed comments which helped polish the final version of this report.

I would like to thank everyone at Mount Sinai and P.S. 121 for allowing me access to their population and for providing assistance throughout data collection. I am grateful to Henry Solomon for providing opportunities to improve my research and professional skills, while at the New York City Board of Education.

I am truly thankful to Roseanne (my long lost twin), Maria, Sharon, Julia, Ginny, and Suzanne for their never-ending support and encouragement. Their unique insights, humor, and willingness to listen has helped me through the most stressful moments.

I would also like to thank my family, especially my parents, for their continuous support, patience, and love throughout this process. To my nieces and nephew, Ryan, Leanne, and Holly, who have waited patiently for me to finish "that thing", I eagerly look forward to having much more time to spend with you.

Abstract

A COMPARISON OF THE PLAY OF
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Barbara Ann Young

Advisor: Professor Roger Hart

This study sought to examine the naturally occurring social and symbolic play of aggressive and non-aggressive children, particularly sociodramatic play. The subjects were 38 Hispanic and 8 African-American kindergarten children attending an inner-city elementary school in East Harlem. There were 20 children who scored one standard deviation above the mean on the parent version of the Achenbach Child Behavior Checklist aggression scale and 20 who scored below this cutoff. A sequential focal sampling procedure was used to observe the subjects during free-play sessions.

Both aggressive and non-aggressive children spent approximately 20% of their total play engaged in symbolic play. The prediction that there would be differences in the complexity of symbolic play between aggressive and non-

aggressive children was not supported. The hypothesis that there would be differences in the types of social participation during symbolic play was also not supported. For both groups, there was a non-significant tendency for their symbolic play to be cooperative. Methodological problems and the nature of the sample are discussed as possible reasons for the lack of results. Results are compared to Smilansky's (1968) study of the sociodramatic play of advantaged and disadvantaged Israeli children. Future research on the communication and negotiation during symbolic play is suggested as beneficial to the understanding of the play of both aggressive and disadvantaged children.

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Chapter 1

Introduction

One of the major tasks of the preschool years is the development of social and social-cognitive skills. Social skills (e.g., sharing, cooperation) and social-cognitive skills (e.g., perspective-taking, interpersonal problem solving, moral judgment) enable the child to successfully interact with others. Over the last decade, research addressing the relationship between social-cognitive skills and social behavior has found that aggressive children display social-cognitive biases and deficits that may lead to the use of inappropriately aggressive strategies to solve interpersonal conflicts (Dodge, 1980; Dodge & Newman, 1981; Dodge & Frame, 1982; Shure & Spivack, 1970; Rubin & Clark, 1983).

Intervention programs have been developed for children who display difficulties and delays with interpersonal relationships in order to increase their ability to interact competently with others. With preschoolers, behavior modification techniques are the most commonly implemented and most successful interventions (Strain & Timm, 1974; Bryant & Budd, 1984). However, one criticism of these programs has been that they teach specific social behaviors, rather than teaching children to think for themselves.

It has been argued that a more effective means of

improving social functioning is the training of interpersonal problem solving and perspective-taking (social-cognitive) abilities by means of such cognitive-behavioral techniques as role-playing and moral discussion groups. Although interpersonal problem solving training is a popular intervention with school-age aggressive children, few studies have been conducted with preschoolers (Spivack & Shure, 1974; Koenigs & Oppenheimer, 1985), possibly because most forms of interpersonal problem solving training are beyond the cognitive abilities of young children. In addition, studies which have demonstrated changes in social-cognitive abilities have failed to measure and/or show related changes in social behavior.

In contrast, sociodramatic play training is an age-appropriate intervention for preschool children which has been shown to foster the development of social and social-cognitive skills during naturally occurring interactions with peers (Connolly & Doyle, 1984; Rubin, 1982; Rubin & Clark, 1983). Conversely, researchers have shown that children who frequently engage in sociodramatic play are more socially competent than their peers (Rosen, 1974; Saltz, Dixon, & Johnson, 1977; Strain & Weigerink, 1976). Engagement in sociodramatic play, therefore, appears to contribute to the development of social and social-cognitive skills.

As an intervention technique, one benefit of

sociodramatic play training would be the decreasing need for adult involvement. Once adults have trained children in sociodramatic play, the children could continue to engage in this form of play spontaneously with their peers. In addition, as most preschool and kindergarten classes already have play periods during which sociodramatic play training could be implemented, teachers would not have to set aside a specific time for training. Engagement in sociodramatic play would allow children to learn social and social-cognitive skills in naturally occurring situations and interactions. In addition, the play environment may be designed to include toys that elicit and promote sociodramatic play, further reinforcing the intervention.

However, before sociodramatic training is used as an intervention to remediate social and social-cognitive deficits, it is important to obtain basic data on the nature of aggressive children's sociodramatic play. If aggressive children display significant differences or deficits in their sociodramatic play, it may be that the training used with non-aggressive children may not be as effective with them. Aggressive children may need specific training geared to their level of social and/or symbolic competence prior to sociodramatic training. Conversely, if aggressive children do not differ from non-aggressive children in either their engagement in sociodramatic play or in the quality of that play, modifications of sociodramatic play training would not

be necessary. The goal of the present study, therefore, was to examine the social and symbolic play of aggressive and non-aggressive children.

Chapter 2

Literature Review

AGGRESSION IN CHILDREN

Current conceptualizations of aggression propose various factors involved in the development of aggression, including: biological and genetic variations in temperamental and physical characteristics (Brennan, Mednick, & Kandel, 1991); learning and reinforcement by parents, peers and others (Patterson, Capaldi, & Bank, 1991); and certain social conditions, such as high levels of frustration (Dodge, 1980). It is likely that all of these factors interact to elicit, maintain, and reinforce aggressive behavior in children (Rubin, Bream, & Rose-Krasnor, 1991).

Over the last decade, research has addressed the connection between social-cognitive development and social behavior. Social-cognitive skills, such as perspective-taking and interpersonal problem solving, reflect the child's understanding of and ability to think about the social world (Rubin, 1980). A basic assumption of this research is that the way in which an individual thinks about others influences the way that they behave toward them (Shantz, 1983).

In this vein, Dodge and his colleagues (Dodge, 1980; Dodge & Newman, 1981; Dodge & Frame, 1982) examined the

relationship between children's ability to infer intentions of others and defensive aggression (i.e., aggression that is a response to a perceived threat or intentional frustration). According to Dodge (1980) when a peer is judged to have caused a negative outcome intentionally, an individual will react with retaliatory aggression against that peer. In contrast, defensive aggression is inhibited when an individual determines that the cause of a negative outcome was accidental rather than intentional.

The ability to correctly judge the intentions of others and to integrate that judgment into behavior improves throughout childhood (Flavell, 1977; Piaget, 1965). For instance, children in the first stage of moral development (moral realism), judge acts based on the consequences of those acts, without taking intentions into account (Piaget, 1965). Beginning at around age 9, in the second stage of moral development (moral autonomy), children infer the intent of a transgressor and use that information to judge an outcome (Piaget, 1965). Bearison and Isaacs (1975) found that children at the transitional stage between moral realism and moral autonomy (6.5-7.5 years of age) did not spontaneously infer another's intentions when making moral judgments. However, they were able to do so when prompted, and when they did infer the intentions, this information was used to make moral judgments; intention information mediated their behavior. These findings supported the production

deficiency hypothesis (i.e., children in the transitional stage fail to spontaneously infer intentions which could mediate their behavior) while the mediational deficiency hypothesis (i.e., children are able to make inferences, but do not use these inferences to mediate behavior) was unsupported.

Similarly, Dodge (1980) sought to determine whether persistent retaliatory aggression to non-intentional negative outcomes results from either an inability to integrate intention information into behavior (the cue-utilization deficiency hypothesis, similar to the mediational hypothesis) or misperceiving the intentions of others (the cue distortion hypothesis).

Dodge (1980) presented elementary school children (second to sixth grade) with a frustrating negative outcome in which a puzzle they were working on was disassembled. Although all the subjects were presented with a negative outcome, the outcome was manipulated to be the result of either a hostile, ambiguous, or benign intent on the part of an unseen peer. The subjects of the study were classified as either aggressive or non-aggressive on the basis of peer sociometric nominations and teacher assessment of their behavior.

Dodge (1980) found that aggressive and non-aggressive boys did not differ in either their attributions of hostile intent or their retaliatory aggression in hostile

situations. When peers were judged to have acted with a hostile intent, both non-aggressive and aggressive boys reacted with retaliatory aggression. Nor were differences found when the negative outcome was clearly the result of benign intentions. Here, both aggressive and non-aggressive boys inhibited their aggression. Therefore, aggressive children were using their judgments to mediate their behavior, contrary to what the cue-utilization deficiency hypothesis would predict.

However, differences between the aggressive and non-aggressive elementary school boys were found in the judgment of negative outcome situations in which the intentions were ambiguous. In ambiguous situations, aggressive boys displayed a bias of attributing hostile intentions to the peer and stated that they would retaliate aggressively. This bias appears to be similar to Berndt and Berndt's (1975) finding that preschoolers recognize intended acts as intended, but have difficulty determining intent in accidental situations. This difficulty has been attributed to their limited perspective-taking abilities (Shantz, 1983). Nevertheless, in a later study, Dodge and Frame (1982) found that whereas the aggressive boys overattributed hostility to peers when they were the recipient of an outcome, they did not demonstrate this bias when they were observers to an action directed at another peer. Therefore, the attributional bias does not represent a delay in role-

taking ability or a general cognitive lag since the attributions of aggressive boys were not biased toward hostility in both situations. As such, the bias displayed by aggressive children is different from that of younger children.

In addition, Dodge and Frame (1982) argued that these distortions are not the result of making judgments of intentionality based on outcomes (what one would predict if the children were responding at the stage of moral realism) because aggressive boys also attributed hostile intentions to peers when it was the outcome that was ambiguous. Dodge and Frame (1982) concluded that cue distortions (misperceiving the intentions of others), rather than cognitive immaturity (remaining at the stage of moral realism) or a cue-utilization deficiency (not using intention information to mediate behavior), contributes to the retaliatory aggression of aggressive boys.

Since preschool children, both aggressive and non-aggressive, have difficulty identifying ambiguous intentions (Berndt & Berndt, 1975; Dodge, Murphy & Buchsbaum, 1984), the cue distortion bias may only become apparent among aggressive children at older ages. However, other social-cognitive deficits that may influence behavior have been found among aggressive and non-aggressive children at the preschool level. For instance, Shure and Spivack (1970) found differences in social problem solving among 4-year-old

nursery school children. These researchers created The Preschool Interpersonal Problem Solving (PIPS) Test to tap preschoolers' ability to produce alternative solutions to "life-related" problems (e.g., how to obtain a toy from another child). Teachers evaluated the children's level of adjustment on the basis of their impatience, emotional control, and the amount of physical or verbal aggression in the classroom. Both children who were rated as poorly adjusted and children from lower socioeconomic levels provided fewer alternative solutions and more irrelevant solutions to the problems in comparison to well adjusted and middle income children. Shure and Spivack (1970) concluded that children behave differently because they differ in their ability to produce solutions to social problems which could help them avoid conflicts and frustration. In contrast, Rubin and Clark (1983) found that preschoolers, who were rated as aggressive by classroom supervisors using the Preschool Behavior Questionnaire, suggested an equivalent number of solutions to hypothetical problems as their non-aggressive peers. However, differences were found in the type of strategies offered by the children. The aggressive children were more likely to suggest agonistic (such as hitting the other child or taking the object) and bribe strategies, and less likely to offer prosocial strategies than non-aggressive children. Therefore, although aggressive preschoolers did not differ in their

ability to generate a variety of solutions, their responses indicate that they may use inappropriate strategies to solve interpersonal conflicts with other children.

SOCIAL AND SOCIAL-COGNITIVE INTERVENTIONS

Despite the fact that social and social-cognitive deficits alone cannot explain nor do they determine all acts of aggression (Rubin, Bream, & Rose-Krasnor, 1991), several intervention studies have been aimed at enhancing the social and social-cognitive skills of aggressive children. Based on evidence that poor peer relationships in childhood predict later social and emotional adjustment problems, such as juvenile delinquency and anti-social behavior (Cowen, Pederson, Babigian, Izzo, & Trost, 1973), these intervention programs have been guided by the assumption that children whose behavior interferes with successfully developing positive peer relationships will miss an important opportunity to develop social and social-cognitive skills (McEvoy & Odom, 1987). As a result, researchers have attempted to promote a wide variety of social and social-cognitive skills which they assume will increase effective social interactions of children who tend to be rejected by peers, including aggressive children.

Behavior Modification Interventions

Most intervention studies have been conducted with children between 7 and 12 years of age. However, some studies have targeted preschool children who exhibit mild

(e.g., withdrawal, tantruming, oppositional behavior) to severe (i.e., autism) behavior problems. Preschool intervention studies typically employ a behavior modification approach relying on teacher reinforcement (such as prompts and praise) to promote particular social skills. Researchers have found that initiation of social interactions (Strain & Timm, 1974) and sharing (Bryant & Budd, 1984) increased with positive reinforcement. Peer-mediated behavior modification interventions have also been used to increase positive peer interactions by reinforcing socially competent children for playing within the proximity of (Furman, Rahe, & Hartup, 1979) or initiating social interactions with children with behavior disorders (Strain & Timm, 1974). However, behavioral intervention programs rarely attempt to remediate the specific social-cognitive deficits identified by Dodge (1980), Shure and Spivack (1970), and Rubin and Clark (1983).

Cognitive-Behavioral Interventions

Shure and Spivack (1979) noted that, when using behavior modification techniques, the person who is using reward and punishment to alter behavior is actually doing the thinking for the child. As Kendall and Braswell (1985) observed "interventions are best focused not on teaching specific responses, but on training the cognitive processes involved in problem solving" (p. 117). In response, cognitive-behavioral techniques (e.g., modeling, role-

playing) have been designed to improve such social-cognitive skills as interpersonal problem-solving (Shure & Spivack, 1979; Rickel, Eshelman, & Loigman, 1983; Vaughn & Ridley, 1983; Vaughn, Ridley, & Bullock, 1984) and perspective-taking (Koenigs & Oppenheimer, 1985). The assumption guiding this work is that training at the level of cognitive processing will lead to more appropriate social responses in a variety of situations. For instance, problem-solving training typically focuses on teaching children to generate behavioral alternatives to problem situations. Social perspective-taking training, in contrast, aims to teach subjects to consider another's point of view. Unfortunately, only a few intervention studies have been conducted on the preschool level.

Spivack and Shure (1974), for instance, developed an interpersonal problem solving training program based on a series of studies which found that poorly adjusted children lacked specific social-cognitive skills, such as generating alternative solutions to hypothetical social problems. They set out to teach preschool children "how to think, not what to think" in interpersonal problem situations. The program that they created focused on the following problem solving skills: identifying the problem in a conflict (e.g., two children want to play with the same toy), identifying others' feelings, generating solutions to the problem, formulating means to implement each solution, and evaluating

the potential consequences of the solutions on others and themselves.

In one study (Shure & Spivack, 1979) children who were classified as adjusted, inhibited, or impulsive by their teachers participated in daily 20-minute group discussions for three months when they were in either preschool or kindergarten, or during both preschool and kindergarten (these children engaged in training twice). Matched controls did not receive treatment. Children's social interpersonal problem solving skills were assessed both before and after training using the Preschool Interpersonal Problem Solving Test (PIPS) and the What Happens Next Game. The children's ability to generate alternative solutions to interpersonal problems increased following treatment. In addition, the ability to generate solutions and consequences to interpersonal acts was negatively correlated with teacher ratings of impatience, emotionality, and dominance-aggression. Furthermore, significantly more of the impulsive and inhibited children (70-88%) who participated in the training were rated as behaviorally adjusted following treatment, whereas only 19% of the controls showed improvement. In addition, lasting effects of the intervention, as measured by teacher ratings of adjustment one year after training, were reported.

In another study conducted on the preschool level, role-taking training was provided to emotionally disturbed

(i.e., aggressive or socially withdrawn) children attending a medical day-care center (Koenigs & Oppenheimer, 1985). The investigators anticipated that because the behavior of emotionally disturbed children (e.g., aggression, social withdrawal) indicates an inability to initiate normal peer interactions, attending the medical day-care center would limit their opportunities for normal peer interaction. They expected that this would impede the social-cognitive development of the emotionally disturbed children. It was assumed that role-taking training would increase the subjects' awareness of others' perspectives, therefore, preventing a potential decrease in role-taking skills.

Twenty training sessions, spanning 20 weeks, were divided into three sections. During the first five sessions, subjects were asked to label emotions and to explain how to identify emotions in others and in pictures. During ten role-play training sessions, subjects enacted the roles of various characters in increasingly complex interpersonal situations. These situations increased in the number of emotions and individuals involved, and the number of alternative outcomes that were possible. In the final five sessions, the children were instructed to find solutions to the events depicted in the role-play sessions, and to re-enact various roles.

Pretesting revealed that the emotionally disturbed children were not delayed in affective role-taking abilities

(i.e., matching pictures of faces depicting various emotions to story events) or cognitive role-taking abilities (i.e., finding a hidden penny) as compared to same-aged non-disturbed peers. The authors took this to mean that, at this age (3.5-6.5 years), emotional problems had not negatively affected their social-cognitive skills. While hospitalized emotionally disturbed controls who had not participated in the training showed slight, non-significant decreases in role-taking abilities from pre- to post-testing, both normal children and hospitalized children who engaged in the training showed significant increases in their post-test scores.

Koenigs and Oppenheimer (1985) suggested that although emotional problems had not negatively affected the preschoolers' social-cognitive skills before entering the hospital, by limiting the quantity and quality of their social interactions, hospitalization reduced the opportunities for further development of social-cognitive skills. They concluded that role-play training was necessary for the continued development of role-taking abilities of emotionally disturbed children while hospitalized. However, other interpersonal problem solving skills, such as identifying emotions and generating solutions to problems, were also taught to the subjects, therefore, reported gains cannot be solely attributed to role-playing, if at all.

Limitations of Behavior Modification and Cognitive-Behavioral Interventions

Although studies using behavior modification and cognitive-behavioral techniques have generally found positive results, many intervention studies have made two assumptions: that children with behavior problems have deficits in the specific social and social-cognitive skills that the intervention is promoting, such as initiation of social interactions; and that providing training in these skills will lead to positive social behaviors and eventual peer acceptance (Zaragoza, Vaughn, & McIntosh, 1991). Researchers typically do not provide a rationale for choosing particular social skills for training and only a few have attempted to determine whether the subjects actually needed to be taught these skills. This is surprising because although interventions may be beneficial, they "should be based on reliable observations that these particular behaviors were previously lacking" (Strain & Kohler, 1982, p. 14). The social skills and deficits of children with behavior problems should be assessed and training should be provided based on their particular needs. As noted by Novak, Olley, and Kearney (1980) effective remediation depends on accurate identification of the deficit(s).

A second criticism has been that generalization to other behaviors and environments and maintenance of change

after the intervention was removed were negative or not measured (Ager & Cole, 1991; Schloss, Schloss, Wood, & Kiehl, 1986). In order for an intervention to be considered an adequate means of improving social competence, changes in social behavior must persist and must generalize to natural interactional settings (Schloss, et al., 1982). So far, cognitive-behavioral studies conducted specifically with aggressive (Vaughn, Ridley, & Bullock, 1984) and emotionally disturbed preschoolers (Koenigs & Oppenheimer, 1985) have found gains in social-cognitive skills, but few studies have measured and/or demonstrated changes in related behavior. When behavioral changes have been found, maintaining them has been problematic. For instance, when reinforcements were removed in Strain and Timm's (1974) study, the number of interactions initiated by both the target child and her peers decreased to baseline rates. Kendall and Braswell (1985) claim that the absence of behavior change is a common finding with aggressive children and that lengthier or qualitatively different treatments may be necessary with aggressive children.

In addition, only a few cognitive-behavioral intervention studies have been conducted on the preschool level. Campbell (1990) has pointed out that techniques to train children in problem solving strategies may be beyond the grasp of many preschoolers, given their limited ability to reflect upon their thought processes, decision-making

style, and the impact of their behavior on themselves or others. Kendall and Braswell (1985) propose that young children may require more structured and concrete training.

Another limitation of cognitive-behavioral training is that it is usually led by a teacher or other adult during formally structured sessions. As Strain and Kohler (1991) argued "if an ultimate goal is to teach social skills that persist in natural environmental conditions (free play, etc), then these settings should constitute the context for skill assessment and treatment" (p. 14). Furthermore, Smith (1986) has pointed out that although adults can implement social skills training programs in order to help children who have difficultly interacting with peers, most peer socialization needs to be worked out by the children themselves.

Although many forms of peer interaction may lead to the development of social and social-cognitive skills, play has been considered a critical means by which preschool children develop these skills. Smith (1986) argued that increasing children's ability to engage in sociodramatic play, through play training, may have the greatest impact on their social development. Therefore, a review of the components and benefits of sociodramatic play is important.

SOCIODRAMATIC PLAY TRAINING AS A MEANS OF DEVELOPING SOCIAL AND SOCIAL-COGNITIVE SKILLS

Sociodramatic play is believed to be one of the important contributors to social development. Studies of children's play (see Fein, 1981, for a review) indicate that the amount of time spent in symbolic play increases during the preschool years and that, at around the age of 3, children's play shifts from solitary dramatic to sociodramatic (dramatic play shared with others).

Sociodramatic play requires both symbolic and social skills. In order to engage in symbolic play, the child needs to have acquired certain representational abilities: the ability to transform reality and the ability to allow one object to stand for another (Westby, 1991). Decreased reliance on realistic props and increased use of abstract and invented props reflect movement toward decontextualization and object substitution. To engage in social play, on the other hand, children must possess a certain amount of socially desirable behaviors (e.g., sharing, cooperation) and social-cognitive abilities, such as perspective-taking (Connolly & Doyle, 1984; Athey, 1984). Children need to negotiate what theme or script is to be played, and how that theme is to be acted out. Furthermore, rules and plans need to be communicated and agreed upon by the players and there needs to be a willingness to abide by these rules and plans (Fein, 1981).

Sociodramatic play training is similar to role-play training, but there are notable differences. In role-play training, children are assigned various roles to enact in ready-made interpersonal scenarios. The teacher often narrates and lays out the plot of the story, while the children enact their roles. By changing roles, the children are given the opportunity to take the perspective of different characters in the situation. In contrast, in sociodramatic play training, it is the children who need to negotiate and decide on the roles, story, and plot. The teacher's role is limited to creating an environment conducive to sociodramatic play, for instance, by providing props, promoting the children's engagement in symbolic play with each other, and becoming involved when problems or questions arise. In sociodramatic play training, the teachers can focus on each child's specific areas of weakness and gear interventions so that they are not beyond the child's developmental abilities. For instance, if a child does not engage in or sustain play interactions, the teacher might suggest actions to initiate or maintain play with others. On the other hand, if the child rarely engages in symbolic play, the teacher can make recommendations, such as "use the stick as a thermometer" (encouraging object transformations) or "you pretend to be the doctor" (encouraging role transformations). Importantly, though, sociodramatic play gives children the opportunity to learn

skills from each other during naturally occurring interactions and adult involvement can be reduced over time as children become increasingly competent in and enjoy spontaneously engaging in and maintaining this form of play. Furthermore, play environments can be arranged to promote social interaction and symbolic play. For instance, Shure (1963) found that the doll corner prompted more social interactions between children.

If sociodramatic play training is appropriate for children who are developing normally, it may be especially beneficial for aggressive children. For instance, although elementary level aggressive children attributed hostile intentions to others when they were the recipient of a negative outcome (the intentions were designed to be ambiguous), they did not display this bias when they were observers to an action directed at a peer (Dodge, 1980; Dodge & Frame, 1982). Perhaps, the role-taking involved in sociodramatic play would allow them to make more accurate judgments of the intentions of others when they are the "pretend" recipients of negative outcomes. This, in turn, may prevent them from developing the bias that displayed when they are the "real" recipient. It has also been found that aggressive children produce fewer and more aggressive solutions to interpersonal problems (Shure & Spivack, 1970; Rubin & Clark, 1983). Play scripts developed with peers in sociodramatic play, may expose aggressive children to other,

possibly non-aggressive, solutions to interpersonal problems. By enacting these solutions, they can get immediate feedback on their potential consequences and appropriateness.

Therefore, sociodramatic play training may be a promising, self-reinforcing intervention to increase children's social and social-cognitive skills. For this reason, it is important to review the literature on the relation between sociodramatic play and the development of social and social-cognitive skills. As Rubin (1980) points out researchers have typically emphasized either the pretense or the peer interaction which occurs within sociodramatic play as the causal agent in furthering the development of these skills.

The Symbolic Component of Sociodramatic Play

According to Smilansky (1968), the role-taking involved in sociodramatic play lessens egocentric thought and allows the child to take the perspective of others which further contributes to the development of social skills. Similarly, Singer (1973) claims that symbolic play expands the child's behavioral repertoire which broadens their understanding of social roles and behaviors.

Forbes and Yablick (1984) state that researchers who stress the symbolic aspect assume that the content of play reflects children's practice of real world activities as if those activities were real. Within sociodramatic play,

children can comfortably experiment with emerging social skills, test out their theories about interactions and relationships, and receive support and feedback from playmates (Athey, 1984). Curry and Arnaud (1984) note that through the reaction of others, children modify their ideas about interactions, relationships, and their new social skills. Repetition of this process leads to accurate understanding of the social world. Once a child is confident in these skills, they can later use them in literal, non-play situations (Connolly, Doyle & Ceschin, 1983).

From this perspective, symbolic play, whether social or non-social, stimulates the acquisition of social and social-cognitive skills. For instance, symbolic play with dolls would provide an opportunity for perspective-taking, even if the child is playing alone.

According to Forbes and Yablick (1984), investigators holding this view are interested in what is being practiced within the play situation. Forbes and Yablick (1984) view symbolic play as a context in which children are "world building". They explain that the structure of these fantasy worlds are initially fluid and in order to be successful in sociodramatic play, the participants need to coordinate an understanding of the roles, scenes, and actions which they are inventing. They maintain that, although in symbolic play children create their pretend worlds, the structure of

these worlds are based on representations that reflect the child's understanding of the real world. These researchers suggest that the transformation of the real world in symbolic play can be thought of as a form of manipulative play in which children learn by accommodating to the outcomes of their symbolic transformations and by assimilating their new understanding of how situations are organized to their existing knowledge.

Support for the view that the symbolic component of sociodramatic play furthers social skill development comes from correlational studies similar to that of Connolly and Doyle (1984). They found that not all types of social interaction are equally important in the development of social competence. They investigated the relation between naturally occurring sociodramatic play and social competence in normal preschoolers taking into account age, IQ, and amount of non-symbolic social interaction. They found that the children who frequently engaged in sociodramatic play were rated by teachers as more socially competent and popular with peers. Regression analyses indicated that sociodramatic play was more significant than social non-symbolic activity in the prediction of social skills, and therefore, must make a unique contribution to social competence.

In addition, although sociodramatic play itself occurred less frequently than social non-symbolic

activities, when it did occur it was of longer duration, more often rated as positive, and more often involved groups of children (rather than dyads) than social non-symbolic activities. They concluded that peer interaction alone may not be sufficient for the acquisition of social skills and that sociodramatic play should be considered the mediator between peer experience and social competence.

Although correlations were found between sociodramatic play and competence in peer social activity, cooperation with adults was not related to sociodramatic play. Connolly and Doyle (1984) argued that engagement in sociodramatic play, therefore, "is most predictive of the skills and competencies apparent in the child's social interactions within the peer group" (p. 804).

In addition to measuring the frequency of sociodramatic play, Connolly and Doyle (1984) also noted the complexity of symbolic play. Complex symbolic play was defined as symbolic episodes that involved more than two symbolic transformations. A regression analysis revealed that frequency of sociodramatic play was a better predictor of teacher ratings of social competence than complexity of sociodramatic play. They argued that the most important factor, therefore, is the occurrence of sociodramatic play, regardless of its complexity.

However, the relation was reversed on the affective role-taking measure. Children whose sociodramatic play was

more complex (i.e., included multiple symbolic transformations) were found to be more mature in their affective role-taking skills. Connolly and Doyle (1984) pointed out that in both affective role-taking and sociodramatic play, the child must integrate differing elements or differing viewpoints. These researchers suggested that role-taking skills become more important as symbolic play increases in complexity.

In contrast, sociodramatic play was not significantly related to cognitive role-taking. Connolly and Doyle (1984) recognized that their measure may not have been a true reflection of cognitive perspective-taking skills, but still they felt that maturity in affective role-taking may be more important to peer interaction than maturity in cognitive role-taking.

Correlational studies, such as the one conducted by Connolly and Doyle (1984), support the view that symbolic play is important for social development. Other studies have found positive correlations between the frequency of symbolic play and cooperation with adults and peers (Singer, 1979), and performance on role-taking tasks and popularity with peers (Rubin & Maioni, 1975).

Although in these studies sociodramatic play is associated with positive social behavior, Fein (1981) points out that due to the correlational nature of this work, it is unclear whether these behaviors "are enhanced by the pretend

mode, are characteristic of the children who tend to play this way, or are aspects of the behavioral repertoire needed in order to play" (p. 1102).

Stronger support for the idea that symbolic play promotes social-cognitive development stems from studies that have used a symbolic play training paradigm to investigate the causal relations between play and social skills. In these studies, children are provided with a series of sessions in symbolic play with an adult. Their pre- and post-test scores on measures of social (e.g., impulse control) and social-cognitive (e.g., perspective-taking) functioning are compared with those of children who did not receive training. Connolly and Doyle (1984) note, however, that one difficulty with establishing a causal relation between sociodramatic play and social competence using the play training paradigm, is that the play in a training session may differ from sociodramatic play as it occurs spontaneously. During play training, two differences are noted: an adult is involved and children are engaging in a structured activity. These factors, rather than sociodramatic play, may affect social competence. Two studies have controlled for one or both of these factors.

In Rosen's study (1974) interventions were aimed at improving whatever abilities for engaging in sociodramatic play that the children lacked. The experimenter joined, rather than led, the free play of disadvantaged

preschoolers. Therefore, although an adult was involved, the play remained unstructured. The experimenter also led the control group in non-symbolic activities to control for adult involvement. As a result of sociodramatic training, improvements were found on measures of role-taking and group problem solving tasks that required cooperation rather than competition.

Saltz, Dixon, and Johnson's (1977) study controlled for adult involvement by exposing disadvantaged preschoolers to either thematic play training (similar to role-playing, children take on the roles of characters in fairy tales), sociodramatic play training (children choose their own role, story, and plot based on realistic events), or fantasy discussion (reading and discussing fairy tales). Results indicated that both thematic and sociodramatic play training, in comparison to fantasy discussion, led to an increase in impulse control. Impulse control was measured using delay of gratification tasks, such as resisting the temptation to play with a toy until the experimenter returned to the room.

Peer Interaction within Sociodramatic Play

In Piaget's (1962) view, play reflects the egocentric nature of children's thinking, play is pure assimilation in which children transform reality to fit their own desires. Symbolic play is merely a method of practicing newly acquired cognitive skills. The key factors leading to the

decline of egocentric thought are interaction and conflict with peers.

Rubin (1980) maintains that symbolic play provides an opportunity for children to interact and it is the interaction which causes the decrease of egocentric thought and leads to socialized thought. According to Rubin (1980), play interactions lead to discrepancies between a child's own view and those of his or her peers. When disagreements arise between playmates (causing cognitive disequilibrium), children are motivated to regain "mental homeostasis" and need to use their interactive skills, such as considering the viewpoint of a play partner, to resolve the conflict. In addition, throughout the play session, children need to negotiate and communicate the rules and plans of the play script and they need to be willing to abide by these rules and plans (Fein, 1981).

Rubin (1980) explains that the conflict and resolutions that arise in play are the causal agents in social-cognitive development. Once conflict arises in symbolic play, children "break frame" and behave in a literal manner. When conflicts are resolved, symbolic play can resume. Peer interaction and conflict, therefore, occurs within sociodramatic play, but is not a part of symbolic play itself. Rubin agrees with Piaget that symbolic play merely reflects newly acquired cognitive abilities (e.g., reversibility and decentration) which allow children to

distinguish fantasy from reality and which are further strengthened through play. According to Forbes and Yablick (1984), researchers holding this view are concerned with the types of social conflicts children encounter in the play context and the strategies that are adopted to resolve these conflicts. For instance, researchers have studied children's play as a context for learning about rules of conversation (e.g., how to signal agreement, defend play ideas, and signal when action is to be considered pretending and when it is to be taken literally).

Integration of the Symbolic and Interactive Components

Stockinger Forys and McCune-Nicolich (1984) contend that both the symbolic and interactive components of sociodramatic play further develop social and social-cognitive abilities. Sociodramatic play represents an integration of the symbolic and the social. Some degree of social and symbolic competence is required in order to engage in sociodramatic play. To engage successfully in sociodramatic play, children need social and communicative skills so that interactions can be sustained with play partners. Children involved in play also need sufficient representational knowledge of social roles and social events. According to Campbell (1990), social exchanges, such as sociodramatic play, which involve turn-taking, negotiation, and role enactment require self-control, representational thinking, perspective-taking, understanding

of intentionality, and the ability to respond appropriately to the partner's behavior. Individually, social and social-cognitive abilities are apparent in other types of play (i.e., non-symbolic social play and symbolic solitary play, respectively). However, Stockinger Forys and McCune-Nicolich (1984) maintain that in sociodramatic play "the social-interactive and social-representational abilities must be integrated by each player and coordinated with the other players" (p. 160). As both interactive and symbolic skills may be required for sociodramatic play to occur, a review of the very limited research on the play of aggressive children is warranted.

PLAY OF AGGRESSIVE CHILDREN

Aggressive children have significant difficulties in interpersonal relations which may have an impact on their ability to engage in sociodramatic play with others. Yet, the symbolic play of aggressive children has been examined only in connection with play therapy (a specialized application of play) and as a diagnostic tool in the assessment of psychological problems. Other forms of play have been found to correlate with a variety of measures of social competence. For instance, a relationship between aggression and non-toy exploration (i.e., play with objects in the room other than toys) was found among 2-4 year old parent-referred behavior problem children (Campbell, Szumowski, Ewing, Gluck & Breaux, 1982). In addition,

functional (e.g., sand play) and constructive (e.g., block building) play have been found to relate to measures of social competence (Rubin & Clark, 1982).

Symbolic Play

From a psychoanalytic orientation, fantasy is a vehicle which permits children to vent feelings which they cannot express in real life. Pretend themes are seen as a reflection of children's feelings and interpretations of reality (Campbell, 1990). For most children, play can function as a means of expressing conflicts and anxieties, and provides an opportunity to play out alternative solutions to social problems (Curry & Arnaud, 1984; Athey, 1984). In this tradition, symbolic play with a therapist is used to promote growth in appropriate peer interaction. Campbell (1990) explains that in play therapy, the therapist acts as either a playmate or participant observer to provide a supportive environment to help the child express his/her feelings (non-directive play therapy) or to interpret the child's play (psychoanalytic play therapy) as a means of promoting development.

However, therapeutic play may be of limited value with preschool aggressive children if they lack the capacity for symbolic play and reflective verbalization, as Willock (1983) claims is the case with preadolescent aggressive children. Willock explains that preadolescent aggressive children have difficulties symbolically communicating their

problems and usually avoid doing so, preferring more structured tasks (i.e., constructive play) which are less likely to activate intense anxiety. As a result, Willock states, play therapy is not usually successful with aggressive children. Nonetheless, Willock does not discuss the play of aggressive preschoolers.

Symbolic play has also been used as a means of assessing psychological problems of preschool children. Campbell (1990) explains that bizarre symbolic play or the inability to engage in symbolic play may be indicative of psychological or developmental problems. For instance, extremely aggressive or disorganized symbolic play may indicate that the child is having difficulties coping with stresses in their life (e.g, environmental changes, developmental transitions). In addition, children who cannot engage in symbolic play may have symbolic or language deficits reflecting cognitive-developmental delays, social withdrawal, or emotional constriction.

Campbell (1990) points out that despite the popularity of play therapy and the reliance on symbolic play in the assessment and treatment of psychological problems in preschoolers, there have been few studies conducted on the symbolic play of behavior problem preschool children. She notes that most reports of the play of aggressive children, such as Willock's (1983), are anecdotal in nature. Therefore, Campbell (1990) explains, it hasn't been

determined whether "clinically identified preschoolers show delays in the development of symbolic play, are reluctant to engage in symbolic play, or use fantasy as a way of escaping from an unsupportive or threatening environment" (p. 38). Furthermore, what differences in play might suggest in the understanding and treatment of preschool children's problems is still unknown.

Social Play

The turn-taking and complementary roles involved in sociodramatic play require control over one's behavior and anticipation of the reactions of the partner (Campbell, 1990). Aggressive children displayed inappropriate and impulsive behavior (e.g., grabbing another child's toy) and had difficulty in waiting to play with a toy during a delay of gratification task (Mahone & Budd, 1986). It has also been proposed that whereas rough and tumble play may help children learn to stop short of real aggression, it may also lead to a true fight depending upon the child's level of self-control (Campbell, 1990) or the child's perception of a peer's playful intentions (Smith & Boulton, 1990), both of which are issues for aggressive children. In addition, aggressive children typically have difficulty sharing, cooperating and following rules - social skills important for social play. This may lead to social rejection and/or these children may avoid playing with peers. Factor and Frankie (1980) have found that preschool children with

behavior problems (aggression or social withdrawal) typically engage in either solitary activities or teacher-oriented activities.

Sociodramatic Play

Given that aggressive children have problems with social, social-cognitive, and symbolic abilities, one would expect that they may also display quantitative and/or qualitative differences in the form of play that necessitates both social and symbolic competence (i.e., sociodramatic play). Children with social skill deficits may be less likely to engage in play with peers, as has been found by Factor and Frankie (1980). Alternatively, one might also predict that children who have problems with symbolic representation and communication would avoid symbolic play, as Willock (1983) has found with preadolescent aggressive children. Lastly, it is possible that aggressive children can engage in either social non-symbolic play or solitary symbolic play, but have difficulty integrating "the social-interactive and social-representational" (Stockinger Forys & McCune-Nicolich, 1984, p. 160) to engage in sociodramatic play.

Whether it is the peer contact (Rubin, 1980), the symbolic component (Smilansky, 1968; Singer, 1973), or both the social and symbolic aspects which contribute to social skill development, if aggressive children do not engage in sociodramatic play they are missing an important opportunity

to further their social competence.

While play training studies have been reviewed which show that sociodramatic play is related to social and social-cognitive abilities in normal children, and other studies have revealed social and social-cognitive deficits in aggressive children, only a few studies have examined the sociodramatic play of aggressive children (Rubin & Clark, 1983; Young, 1987) or trained them in sociodramatic play and measured its effect on social behavior (Strain & Wiegerink, 1976).

Rubin and Clark (1983) found significant positive correlations between children rated as aggressive by classroom supervisors, on the Preschool Behavior Questionnaire, and the frequency of total dramatic (solitary, parallel, and cooperative) play. This is contrary to what one would predict given both the relationship between sociodramatic play and social competence, and the social, social-cognitive, and symbolic deficits of aggressive children. Individually, however, each form of dramatic play (e.g., solitary play) did not correlate with aggression. In a similar study, Rubin (1982) had found that high rates of solitary- and parallel-dramatic play negatively correlated with measures of social competence (e.g., frequency of social interactions, sociometric nominations), whereas group-dramatic play positively correlated with this measure. Rubin and Clark

(1983) suggested that it would have been interesting to have investigated whether the play themes of aggressive children were more aggressive than those of non-aggressive children. Although this may provide interesting results, another important aspect that was not investigated was the complexity of the symbolic play.

As previously mentioned, Connolly and Doyle (1984) found that higher frequencies of complex sociodramatic play (i.e., episodes involving more than one symbolic transformation) correlated with affective role-taking ability. One might expect that the symbolic play of aggressive children would consist of simple, one-act symbolic transformations.

In a pilot study of the play of aggressive preschoolers conducted by this author (Young, 1987), it was found that while the frequency of symbolic play was equivalent for aggressive and non-aggressive children, the quality of their symbolic play differed. In particular, aggressive children engaged in more solitary symbolic play that consisted of one-act transformations, whereas non-aggressive children engaged in more sociodramatic play that involved a series of sequential transformations that formed a script-like episode (sociodramatic play).

In the only play training study conducted with behavior disordered children (i.e., disruptive and oppositional), the children were asked to play out the roles of story

characters and to perform certain verbal and/or motor behaviors typical of these characters during story-time (Strain & Wiegerink, 1976). This type of training was labeled sociodramatic play training, although it seems more similar to what Saltz, Dixon and Johnson (1977) called thematic fantasy play training (i.e., enactment of fairy tales rather than unstructured realistic events). Interestingly, the majority of the 7 stories used for training were aggressive in nature (e.g., Little Red Riding Hood, The Three Bears), despite the finding that children who listened to an aggressive story later engaged in more inappropriate or antisocial play with neutral toys than children who had listened to neutral stories (Feshbach, 1956). Nevertheless, Strain and Wiegerink (1976) did find significant increases in the occurrence of social play during intervention periods as compared to baseline periods. These researchers, however, did not assess the children's ability to engage in sociodramatic play before the intervention, the type of social play which occurred (e.g., constructive, symbolic), or whether there was a change in the rate of oppositional, disruptive behaviors following training.

SUMMARY AND IMPLICATIONS OF THE LITERATURE FOR THE DESIGN OF RESEARCH ON SOCIODRAMATIC PLAY OF AGGRESSIVE CHILDREN

In recent years, researchers have revealed deficits in the interpersonal problem solving skills of aggressive children (Dodge, 1980; Dodge & Frame, 1982; Shure & Spivack, 1970; Rubin & Clark, 1983). Although social and social-cognitive training programs have been widely implemented with school-age children, the most common interventions for preschool children have involved behavior modification techniques. Shure and Spivack (1979) argued that these programs do the thinking for the child, and they developed one of the few interpersonal problem solving training programs for preschoolers. Training was found to increase preschoolers ability to generate solutions and consequences to interpersonal acts. Social and social-cognitive skills were also shown to increase in aggressive preschool children when trained in role-taking tasks (Koenigs & Oppenheimer, 1985). A limitation of the cognitive-behavioral studies, however, is that they are not implemented during naturally occurring situations (Strain & Kohler, 1991) and are adult-led interventions (Smith, 1986). In addition, these types of interventions often do not lead to corresponding changes in behavior.

In agreement with Smith (1986), training children in sociodramatic play may have a greater impact on social development than adult-led training interventions. Children

who frequently engaged in sociodramatic play were found to be more socially competent with their peers. Conversely, social and social-cognitive skills have been shown to increase in normal subjects when they were trained in sociodramatic play (Rosen, 1974; Saltz, Dixon & Johnson, 1974). If sociodramatic play training is effective with children who are developing normally, it may be especially beneficial for aggressive children. For instance, perhaps engaging in the role-taking of sociodramatic play will allow them to more accurately judge the intentions of others when they are the "pretend" recipient, without the bias that occurs when they are the "real" recipient. In addition, by creating and enacting play scripts with peers, aggressive children may be exposed to other, more appropriate, solutions and get immediate feedback on the potential consequences of the solutions.

Given the previous arguments, sociodramatic play training may be a fruitful, age-appropriate intervention for aggressive preschool children. Rather than assuming that children who are aggressive also have deficits in sociodramatic play and implementing training, it is important to first gather data on the nature of aggressive children's sociodramatic play. If aggressive children do display significant delays or differences in their sociodramatic play, the training used with non-aggressive children may not be as effective for them. They may require

training in more basic prerequisite skills. On the other hand, if aggressive children do not have deficits in their ability to engage in sociodramatic play, the same training used with normal children will be appropriate. This study attempted to determine the nature of aggressive children's play.

Chapter 3

Research Questions

This dissertation research study was designed to improve understanding of the play of aggressive children. A specific emphasis was placed on comparing the naturally occurring sociodramatic play of aggressive kindergarten children (based on the Aggression dimension of the Achenbach Child Behavior Checklist, Achenbach & Edelbrock, 1983) with same-age non-aggressive children.

As a first step, a coding scheme reflecting typical kindergarten behaviors was developed. This scheme included behavior categories which Rubin & Clark (1982) found correlated with teacher ratings of social maladjustment (unoccupied) and social competence (onlooker). In addition, independent measures of the frequency and nature of the children's non-play interactions in the classroom (aggression and social interaction) were assessed.

A play subscale was designed to include play behaviors which have been found to correlate with various measures of social competence. The categories included on the play scale were: non-toy exploration, functional, constructive, rough and tumble, symbolic, and other. Symbolic play was defined as behavior that involved the transformation of objects, self, others, or situations.

Research has been reviewed which has shown that the

complexity of symbolic play varied as a function of affective role-taking ability. As role-taking is a skill that may be problematic for aggressive children, it was predicted that a detailed analysis of the various forms of symbolic play would reveal differences in the complexity of symbolic play between aggressive and non-aggressive children. The symbolic play coding scheme used in this study (derived from Cole & LaVoie, 1985; McLoyd, 1980) represented the various transformations which occur within symbolic play reflecting the developmental progression from object to ideational forms of transformation based on the amount and nature of the abstraction required. Object modes of transformation involve the attribution of an imaginary property or identity to a concrete object. In contrast, ideational transformations involve an abstraction, idea, or theme which is independent of any particular concrete object or material. In dramatic play, children combine transformations to create a script. That is, they take on roles (e.g., pretend to be the mother), create and transform objects (e.g., feed a doll pretend food from a plastic lid that represents a bowl), develop a pretend situation (e.g., dinner time), and create a story-line.

It was expected that non-aggressive children would engage in dramatic play, whereas aggressive children would be capable of performing one-act symbolic transformations, such as putting on dress-up clothes and stating "I am the

mother," but that they would not be able to combine transformations to play out a full story. That is, an aggressive child would not be able to pretend that she/he is the mother who is making dinner.

The first hypothesis, therefore, was:

1. The symbolic play of aggressive children will differ qualitatively from non-aggressive children. That is, aggressive children will engage in more one-act transformations (i.e., symbolic play that involves one transformation of either object, self, other, or situation), and less dramatic play (i.e., symbolic play that integrates transformations of objects, self, others, and situations).

Characteristic behaviors of aggressive children, such as impulsivity, inability to cooperate and negotiate, inability to take the perspective of another, and misinterpreting the intent of others, might not have a significant impact on their ability to engage in solitary symbolic play. For instance, a child playing alone does not need to take the perspective of another person and can abruptly change plots or roles without affecting anyone else. In other words, the child can be a less than competent player when playing alone. In addition, the weaknesses aggressive children bring to play situations may not affect social non-symbolic play because this form of

play may not require the negotiation and communication among the players as does sociodramatic play. However, when engaging in symbolic play with other children, a child who is unable to negotiate or accurately interpret the intent of others may disrupt the flow of the play sequence. Therefore, social and symbolic play on their own might not be a problematic for aggressive children, but the integration of the social and symbolic aspects required for sociodramatic play might be more troublesome. It was expected that although the overall frequency of symbolic play of aggressive children would not differ from non-aggressive children, there would be differences in the types of social engagement during symbolic play. Findings of previous studies (Rubin & Clark, (1983); Young (1987) supported this expectation. Therefore, the second hypothesis of the study was:

2. The symbolic play of aggressive children will occur most often when playing alone (i.e., solitary play) or within the same area as another child, but the children will not interact with each other (i.e., parallel play). In contrast, the symbolic play of non-aggressive children will occur more often with another child, and there will be interaction among the children as they engage in symbolic play (i.e., cooperative play). During non-symbolic play, however, aggressive

children will play with other children (i.e., engage in cooperative play) as much as non-aggressive children.

To test this hypothesis, the coding scheme included a social participation subscale (solitary, parallel, and cooperative) derived from Parten's (1932) description of the types of social play that are found on the preschool level.

Chapter 4

Method

This study compared the naturally occurring free-play behavior of 20 aggressive and 20 non-aggressive children using a focal sampling observation technique. This chapter will describe the subjects, design, procedure, and coding scheme used in this study.

SUBJECTS

The subjects were selected from a larger pool of non-referred kindergarten children attending an inner-city elementary school in East Harlem who were participating in a large-scale study conducted by the Child Psychiatry Department of Mount Sinai Medical Center. An aggression score was derived for each subject from the aggression scale of the parent version of the Achenbach Child Behavior Checklist (CBCL, 1991). To ensure an equal sampling of aggressive and non-aggressive children, 20 subjects who scored one standard deviation above the mean and 20 subjects who scored within the normal range were selected for this study. However, the scores from the subjects in this sample were on a continuum of aggression; they were not extreme groups. A score which is two standard deviations above the mean is considered clinically significant, but only six children in the sample deviated from the norm that extremely, as would be expected in a normal non-referred

kindergarten sample.

In order to ensure that the observers were blind to the subjects' classification at the time of data collection, play observations were made of all of the children participating in the larger Mount Sinai Study. Following data collection, the Achenbach aggression scale was scored and subjects who were classified as aggressive were matched with non-aggressive subjects on the basis of age, gender, and cognitive ability.

The New York City Board of Education administered an intelligence measure called the Kindergarten Screening of Intelligence (KSOI). However, due to absenteeism, 11 students were not present for this test. Therefore, it was decided that the PEER: Pediatric Examination of Educational Readiness (Children's Hospital Medical Center, 1982) pre-academic learning tasks which were administered to all of the subjects and correlated most strongly with the KSOI for this sample ($r=.6391$, $p<.001$) would be used to determine each child's relative cognitive ability. As differences were found between the classrooms with respect to SES and cognitive ability, children were matched with children within their own classroom, except in one case due to lack of available subjects.

From the total sample of 54 subjects who participated during the first year of the study, the play observations of 18 aggressive and 18 non-aggressive children were analyzed.

Additional play observations were made of 12 children during the second year of the project. From this data, the observations of two children rated as aggressive and two non-aggressive children were selected for analysis.

The resulting sample consisted of 32 Hispanic and 8 African-American children from families that had a mean Hollingshead socioeconomic status (Hollingshead & Redlich, 1958) of 17.11 (SD = 7.79) indicative of a low-income group. There were ten males and ten females who scored one standard deviation above the mean on the aggression scale, as well as ten males and ten females who scored within the normal range.

This study was coordinated with the Mount Sinai investigation which was concerned with the impact of prenatal biological insults (e.g., prenatal drug exposure) and family factors on behavioral, attentional, and learning disorders in kindergarten children. The children's cognitive and attentional abilities were assessed and later compared with the child's medical history and family rearing patterns, obtained from interviews with the child's mother or legal guardian. All interviews and tests were conducted in the child and parent's dominant language (Spanish or English). A copy of the informed consent statement is provided in Appendix A.

DESIGN

Children were observed during free-play sessions in which they were able to choose their own activities. Observers followed the same standard procedure in each classroom. Sequential focal sampling was used during the observations, such that a child was individually observed, a brief record period followed, and then another child was observed. When all the target children in a classroom were observed, the procedure was repeated.

Using this method, an observation period needed to be long enough for the observer to make an accurate judgment of the child's behavior. Johnson, Christie, and Yawkey (1987) considered a 15-second observation period "enough time for the observer to figure out what type of play is occurring, but...brief enough so that it is unlikely that the type of play will change during one observation period" (p. 152). However, symbolic play categories are harder to discern because dramatic play incorporates behaviors which are coded separately when they occur in isolation (e.g., pretend role, pretend situation). It was, therefore, decided that one-minute observation periods would be used in order to provide enough time to decide if a behavior (e.g., ironing) was combined with other pretense behaviors (e.g., pretending to be the mother) and therefore coded as dramatic play, or was an isolated one-act transformation (i.e., functional use of an object).

Furthermore, to ensure that the samples obtained for an individual child were independent, the time gap between two consecutive observations of the same child needed to be long enough to reduce the probability of a behavior at one sample influencing the behavior at the next time sample. Since activity spans have been found to last between 5 to 10 minutes for this age range (Smith & Connolly, 1978), it was decided that a minimum of 5 minutes should separate the observations of a particular child.

PROCEDURE

Observations were gathered in two English-speaking classrooms and one classroom in which the children's predominant language was Spanish. The author of this paper collected data in the two monolingual English classrooms, and a bilingual graduate student performed the observations in the bilingual classroom. As can be seen in Figure 1, the number of teachers and the variety of toys with which to play was relatively consistent across classrooms. Differences were apparent with respect to the size of the rooms, the timing of the free-play sessions, and the presence of other activities during free-play, such as arts and crafts.

Figure 1 Environmental Variables by Classroom

Variables	Classroom		
	A and D	B	C
Teacher Factors:			
Number of teachers	1	1	1
Number of assistants	1	1	1
Language Spoken	English	English	Spanish/ English
Physical Factors:			
Room Size	Small	Large	Large
Type of Toys	Standard	Standard	Standard
Schedule Variables:			
Time of Play Period	PM	AM and PM	AM
Distinct Play Periods	Y	N	Y

Note. Classrooms A and D refer to the same physical room and teacher. Class A refers to subjects from the first year of the study and Class D denotes subjects from the second year.

In an attempt to provide consistency in the procedures used to collect the data, the following was conducted. The observers remained as close to the target child as possible so that the child's activities were seen and any verbalizations were heard, but far enough away to ensure that the normal functioning of the class and the subject's behavior were not disrupted. A pre-printed coding sheet

(see Appendix B) was developed to allow the observer to quickly code the child's behavior. The coding scheme was adapted from previously used schemes (Children's Environments Research Group, 1987; Cole & LaVoie, 1985; McLoyd, 1980). A stopwatch with a quiet alarm was used to indicate the one-minute time intervals. Observers maintained an emotionless stance and ignored all attempts at interaction by the children. If an interaction did occur, coding was stopped and then restarted as soon as the interaction was over. In most cases, the children appeared to adapt to the presence of the observers rather quickly as evidenced by a decline in interactions with and glances at the observers.

The observers were unaware of the children's classification (aggressive or non-aggressive) at the time of data collection. Before each observation session, the names of the children were written on separate cards, the cards were shuffled, and the observer randomly selected one card at a time to determine the order of observation.

A total of 25 observations of each child were collected over a span of two months. If children were absent on a day when observations were being conducted, their records were made up with extra sessions immediately after all of the observations for that classroom had been gathered. There were no missing data.

PLAY MATERIALS

Although room sizes varied, each classroom was divided into the same play areas; in the smaller room, each play area was proportionally smaller. In each classroom, there was a block corner, housekeeping area, book corner, and an area where audiotapes, a tape recorder, and a computer were located. All of the play areas were furnished with the same standard toys. For instance, the housekeeping area in each classroom consisted of: a wooden stove, sink, refrigerator, and cradle; dress-up clothes; plastic food; pots and pans; dolls and a stroller. Constructive (e.g., puzzles and legos) and arts and crafts materials were available at the desks where learning activities were provided during the remainder of the day. All of the materials were available on a daily basis with the following exceptions: the painting easel was only occasionally available in Classroom B, but always accessible in the other rooms; the sand/water table was only available in Classroom C on a daily basis.

CODING SCHEME

In observing the children's behavior, seven categories of information were recorded: activity focus, type of aggression, provocation of aggression, social density in play area, type of play, mode of symbolic play, social or play partner, and social participation. The categories were such that the behaviors were easily perceived and needed little or no interpretation. All of the scales were

mutually exclusive within a category; that is, a child could receive only one code on each scale for each interval. See Appendix C for a complete description of the coding scheme.

Due to the focus of this study, two decisions were made prior to data collection. In the event that more than one behavior occurred during the one-minute observation, precedence was given to play behavior. That is, if a play behavior occurred at any point during the observation, it was coded on the activity focus scale for that interval. In addition, since symbolic play has a low frequency of occurrence in preschool (from 10-17%) and kindergarten (33%) populations (Fein, 1981), it was also decided that if a child engaged in both symbolic and another form of play during the observation period, precedence would be given to symbolic play. That is, the symbolic play event would be the one that was coded on the play scale.

Whenever the child engaged in play behavior, additional information was recorded regarding the type of social participation, the play partner, and who was in the target child's immediate play area (social density).

Activity Focus

Although the purpose of this study was to investigate differences in symbolic play, it was necessary to determine the overall rate of play of aggressive and non-aggressive preschoolers. It was also of interest to know how the children in this study utilized their free play time (e.g.,

engaging in another form of play, interacting with someone) when not engaged in symbolic play. Consequently, a number of additional behavioral categories reflecting possible kindergarten behaviors were used. Activity categories included unoccupied, onlooker, non-toy exploration, social interaction, play, aggression, and other.

As previously mentioned, in the event that more than one behavior occurred during the one-minute observation, precedence was given to play behavior. That is, if play occurred at any point during the observation, play was the behavior coded on the activity focus scale for that interval.

Aggression

The aggression scale was included to gather independent measures of aggression in the classroom. The type of aggression was coded as either verbal (a hostile, derogatory, or exclusionary verbal remark) or physical (non-play, hostile physical contact). In addition, aggressive acts were coded as provoked (i.e, immediately following aggression from a peer) or unprovoked (i.e., aggression not preceded by a peer's aggressive behavior).

Social Density

Social density in the play area was measured to evaluate whether non-social play occurred because other children were not readily available to a child or because the child chose not to interact with children who were in

the area. During each observation interval, the observer noted the presence of the caretaker or peers in the target child's immediate play area. These play areas were defined based on the teachers' explanations of how they divided their classrooms into distinct play areas, such as "the block corner".

Play

If the behavior recorded in the activity focus category was play, the type of play was coded using the play subscale. The categories included on the play scale were: non-toy exploration, functional, constructive, rough-and-tumble, symbolic and other.

Functional play included activities done for the enjoyment of the physical sensation it creates (e.g., manipulating toys, pouring sand and water in and out of containers). Constructive activities involve the manipulation of objects for the purpose of constructing or creating something (e.g., building castles with sand or blocks, putting puzzles together). Rough and tumble play was defined as physically playful behavior that was obviously not aggressive. Symbolic play involved the transformation of objects, self, others, or a situation (e.g., pouring pretend coffee from a pot, pretending to be a doctor).

As symbolic play has a low frequency of occurrence (from 10-17%) in preschool populations relative to other

forms of play, it was decided that if a child engaged in both symbolic and another form of play during the observation period, the symbolic play event would be the one that was coded.

Symbolic Play

In the event that the target child was engaged in symbolic play, the type of symbolic play was coded using the symbolic play subscale derived from scales developed by Cole and LaVoie (1985) and McLoyd (1980).

Functional use of objects was defined as using pretend toy objects as they are intended to be used, for example, taking pictures with a toy camera. Animation involved the attribution of living characteristics to an inanimate object (e.g., having a doll talk).

The creation of imaginary objects was coded in one of two ways depending on whether the pretend object was functionally related or not related to an existing object. Pretending to pour tea from a teapot would be considered an imaginary creation that is related to an existing object. An example of a non-related imaginary object would be pretending to fix the toaster with an imaginary screwdriver.

There were also two categories for the attribution of an object property. Attribution to an existing object, as in making siren noises while pushing a toy ambulance, and attribution to an imaginary/pretend object, such as making siren noises while pushing a block which represents an

ambulance.

Object substitution was coded when the child assigned a new identity and/or function to an existing object (e.g., referring to a cupboard as an oven). An example of creating a pretend situation would be pretending to be shopping in a supermarket. Taking on the role of a doctor is an example of the pretend role/character category.

Dramatic play involved the integration of objects, roles, and situations into play sequences. This form of play could occur alone or with another child. When two or more children took on different roles, and interacted and negotiated with each other to play out a script that they spontaneously created it was considered sociodramatic play, and was coded as dramatic (on the play scale) and cooperative (on the social participation scale).

Symbolic play categories are harder to discern because dramatic play incorporates behaviors that are coded separately when they occur in isolation. Therefore, observers needed to watch carefully to see if a behavior, (e.g., ironing), was combined with other pretense behaviors, (e.g., pretending to be the mother) or was an isolated incident of pretend (i.e., functional attribution).

Social Participation

Once play episodes were coded, each was also rated using the social participation scale adapted from Parten (1932). The categories included in the social participation

variable were: solitary, parallel, and cooperative. Solitary play occurred if the child was playing alone with toys or objects. In parallel play, the child is playing in an area with other children, but is not sharing the space or objects with them, even if a similar activity is played or similar toys are used. Cooperative was scored if a child is playing with others in the same space and they are engaged in a common activity and acknowledge each other's presence by either verbal or gestural communications.

Social and or Play Partner

Whenever the target child socially interacted or played with someone, the social or play partner was also coded. There were six categories of social or play partners: alone, caretaker, child, more than one child, children and caretaker, and observer. Information on the social and play partners of the target child was important for determining the frequency of the child's interactions with his/her caretaker and peers.

POST-HOC RECODING OF DATA

As defined in this study, dramatic play involved the integration of objects, roles, and situations into play sequences. Therefore, according to the coding scheme, when a subject performed multiple transformations, their symbolic play was classified as dramatic. From brief notes that were made during the observations which described the symbolic play, it appeared that in many cases although the children

performed multiple transformations, their play lacked the integration of behavior sequences around a script, generally considered to be an important component of dramatic play.

From the original data, using the brief notes made during observation, it was possible to recode dramatic play into two types: no-script, script. Non-scripted play was redefined as symbolic play that contained multiple transformations, but not a sequence of pretend behaviors. For example, a child constructed a structure with LEGO blocks. While holding it in the air and "flying" it around the desk, he stated "I'm Raphael, this is my spaceship." He then placed it back on the desk and began building again. According to the original coding scheme, this was coded as dramatic play because the child described a change in role ("I'm Raphael"), created a pretend object (the spaceship), and attributed an imaginary property to the object (the ability to fly). Yet, there was no apparent script that the child was following; this was a one-event symbolic episode. This was, therefore, recoded as *non*-scripted play.

Scripted play was redefined as symbolic play that contained multiple transformations and a sequence of pretend behaviors organized around a theme. An example of this form of play occurred when a child who was stirring blocks in a pot asked some children sitting at a table if they were hungry for dinner. She then asked some other children in the area "Do you want to stay for dinner? We're having

chicken and rice. Do you want corn? I'll have to cook it." Without waiting for their response, she put the "corn" in the pot and stirred it. Soon afterwards, she showed the children that it was ready and began spooning it onto their plates. In response, the children pretended to eat the "corn". In this situation, the child not only engaged in numerous transformations (the blocks as food, creation of a pretend situation, etc), but also combined actions and transformations to enact a script relating to dinner preparation.

INTERRATER RELIABILITY

The primary observer was the author of this paper. A bilingual graduate student performed the observations in one classroom in which the children's predominant language was Spanish. Training on the coding scheme was conducted until a criterion of 80% agreement was obtained on all coding schemes as determined by the Cohen's kappa (Cohen, 1960).

Cohen's kappa was chosen as it offers two advantages over other reliability measures: it corrects for chance agreement and the kappa table provides a graphic representation of agreement and disagreement (Bakeman & Gottman, 1986). This latter advantage was useful in training observers as it depicted point by point agreement, thus revealing patterns of disagreement which provided feedback to the observers on their performance and to determine whether further training was needed.

Reliability was subsequently assessed each time five hours of formal observations had been collected (20% of the sample) to ensure that reliability was maintained. This was accomplished by having the observers simultaneously code play sessions in the two non-bilingual classrooms. Interrater reliability was determined by comparing, interval by interval, the records of both observers. To be scored as agreement, both observers had to record the same behavior in the same interval. Cohen's kappa was calculated by computing the number of agreements divided by the number of agreements plus disagreements, corrected for chance agreement (Cohen, 1960). Agreement for each scale was: activity (kappa = .9499), type of aggression (kappa = .8535), provocation of aggression (kappa = .8535), density (kappa =.8814), play (kappa = .9460), symbolic play (kappa = .9474), partner (kappa = .8623), and social participation (kappa = .8806).

Chapter 5

Results

SUBJECT CHARACTERISTICS

Subject control was established by matching children rated as aggressive and non-aggressive from the parent version of the Achenbach aggression scale on the basis of age, gender, and cognitive ability. Ten males and females who were classified as aggressive were matched with ten males and females who were rated as non-aggressive. T-tests revealed that the aggressive and non-aggressive subjects did not vary significantly on age, cognitive ability, and socioeconomic status (SES); an alpha level of .05 was selected as the measure of significance in this study. Table 1 shows the means and standard deviations of these factors by group. Seventy months (5.8 years) was the mean age of non-aggressive and aggressive subjects. Relative cognitive ability as measured with the PEER: Pediatric Examination of Educational Readiness pre-academic learning tasks was not significantly different for aggressive and non-aggressive subjects. Socioeconomic status did not vary by group (Hollingshead & Redlich, 1958), the subjects were from a low-income population. The Achenbach Aggression Scale was the only measure which discriminated between aggressive and non-aggressive subjects ($t(38) = -7.18$, $p<.001$).

Table 1 Subject Variables: Means and Standard Deviations by Group

Subject Variables	Non-aggressive $\bar{X}$	Non-aggressive SD	Aggressive $\bar{X}$	Aggressive SD
Age at first observation[a]	70.7	3.1	70.0	4.3
Hollingshead SES	18.5	9.2	15.6	5.7
PEER[b]	28.4	11.6	25.3	11.8
Achenbach Aggression Scale*	8.2	3.8	17.6	4.5

Note. n = 20 for each group.
[a]Age of subject at first observation reported in months.
[b]PEER: Pediatric Examination of Educational Readiness.
*$p<.001$.

Table 2 presents subject characteristics by classroom. Analyses of variance revealed that the classrooms did not differ significantly with respect to the subjects' age and Achenbach aggression score. However, differences were found between the classrooms with respect to SES ($F(3, 39) = 4.82$, $p = .007$) and cognitive ability ($F(3, 39) = 7.36$, $p = .0006$). Classroom C, with the lowest SES and PEER scores, was a bilingual classroom consisting of children from newly immigrated Hispanic families. Classrooms A and D were actually the same room with the same teacher; Classroom D, however, denotes the subjects from the second year of the study.

Table 2 Subject Variables: Means and Standard Deviations by Classroom

Subject Variables	Room A (N=9)	Room B (N=7)	Room C (N=20)	Room D (N=4)
Age[a]				
Mean	71.5	69.8	69.9	70.6
SD	3.0	3.0	4.2	4.6
SES*				
Mean	24.0	15.4	13.9	22.6
SD	9.7	8.9	4.0	8.5
PEER[b]**				
Mean	35.0	33.3	21.0	37.0
SD	8.7	7.1	10.9	3.2
Achenbach[c]				
Mean	11.4	11.6	14.3	11.6
SD	7.2	4.5	5.8	9.6

[a]Age of subject at first observation reported in months.
[b]PEER: Pediatric Examination of Educational Readiness.
[c]Achenbach Aggression Scale.
*$p<.01$. **$p<.001$.

Pediatric Examination of Educational Readiness (PEER)

Scores on the individual PEER tasks can be classified into below average, average, and above average ranges. When the individual PEER scores for this sample were assigned to these categories, as shown in Table 3, a large percentage of the subjects scored below average on many of the tasks.

Table 3 Level of Performance on PEER Linguistic and Pre-Academic Tasks: Percentage of Sample Scoring at Each Level

	Levels		
Tasks[a]	Below Average	Average	Above Average
Pre-Academic Tasks:			
Names Days of Week	15.4	51.3	33.3
Counting Fingers	12.8	43.6	43.6
Counting Aloud	44.6	12.8	43.6
Names Symbols	51.3	17.9	30.8
Write Symbols	51.2	25.6	23.1
Linguistic Tasks:			
Names Pictures	41.0	46.2	12.8
Complex Sentences	65.7	34.3	0.0

[a] N = 40 for each task, except Complex Sentences (N = 36) due to discontinuation of task in the second year of the project.

The majority of children performed in the average or above average range on two tasks: naming the days of the week, and counting raised fingers (1-10 fingers). Subjects were split between the above average range (44%) and below average range (45%) in their ability to count aloud to twenty. Fifty-one percent of the subjects were in the below average range on two measures of basic school skills:

identifying and writing letters and numbers. The majority of subjects were split between the average range (49%) and below average range (43%) on a labeling task. On a task requiring the subjects to respond to questions regarding verbally presented information, 66% of the subjects performed in the below average range. In the normal population, 16% of scores fall in both the below and above average range on any cognitive measure.

There were no differences between subjects who were rated as aggressive and non-aggressive on the PEER pre-academic and linguistic tasks, as shown in Table 4.

Table 4 Level of Performance on PEER Linguistic and Pre-Academic Tasks: Percentage of Sample Scoring at Each Level by Group

Tasks[a]	Non-Aggressive	Aggressive
Names Days of Week		
Below Average	10.0	20.0
Average	50.0	55.0
Above Average	40.0	25.0
Counting Fingers		
Below Average	10.0	15.0
Average	35.0	50.0
Above Average	55.0	35.0
Counting Aloud		
Below Average	40.0	45.0
Average	5.0	20.0
Above Average	55.0	35.0
Names Symbols		
Below Average	55.0	50.0
Average	15.0	20.0
Above Average	30.0	30.0
Write Symbols		
Below Average	50.0	55.0
Average	25.0	25.0
Above Average	25.0	20.0
Name Pictures		
Below Average	40.0	40.0
Average	45.0	50.0
Above Average	15.0	10.0
Complex Sentences		
Below Average	61.1	72.2
Average	38.9	27.8
Above Average	0.0	0.0

Note. n = 20 in each group, except Complex Sentences (n = 18 in each group) task was discontinued in the second year of the project.
[a]Analyses were not significant at .05.

As Table 5 shows, when the classification of subjects on the PEER linguistic and pre-academic tasks were broken down by classroom, significantly more children in Classroom C scored in the below average range than children in the other classrooms. Children in two classrooms, Classrooms C and D, had more difficulty naming the days of the week than children in the other rooms, $\chi^2(9, 40) = 23.276$, $p = .006$. Although differences between classrooms were not apparent regarding the children's ability to count fingers (1-10 fingers), the majority of subjects in Classroom C were below average in their ability to count aloud (from 1-20), while the majority of subjects in the other classrooms were above average on this task, $\chi^2(9, 40) = 18.452$, $p = .0303$. Almost all of the children in Classroom C (89%) performed below average on the naming symbols task, while fewer children in the other rooms had difficulty on this task, $\chi^2(9, 40) = 29.118$, $p = .006$. The ability to write letters and numbers was below average for a larger percentage of the children in Classroom C (79%) and Classroom B (43%), $\chi^2(9, 40) = 19.528$, $p = .0211$. Although more subjects in Classroom C performed below average on a labeling task (53%), classroom differences on this task were not significant. Verbal comprehension skills were below average for many of the children in all of the classrooms, particularly the children in Classrooms B and C (more than 70%); however, classroom differences were not significant.

Table 5 Level of Performance on PEER Linguistic and Pre-Academic Tasks: Percentage of Sample Scoring at Each Level by Classroom

Tasks	Room A (N=9)	Room B (N=7)	Room C (N=20)	Room D (N=4)
Names Days of Week**				
Below Average	0.0	0.0	26.3	25.0
Average	22.2	71.4	68.4	0.0
Above Average	77.8	28.6	5.3	75.0
Counting Fingers				
Below Average	11.1	0.0	21.1	0.0
Average	44.4	28.6	47.4	50.0
Above Average	44.4	71.4	31.6	50.0
Counting Aloud*				
Below Average	33.3	14.3	68.4	0.0
Average	0.0	14.3	15.8	25.0
Above Average	66.7	71.4	15.8	75.0
Names Symbols***				
Below Average	11.1	14.3	89.4	25.0
Average	44.4	14.3	10.5	0.0
Above Average	44.4	71.4	0.0	75.0
Write Symbols*				
Below Average	22.2	42.9	79.0	0.0
Average	22.2	28.6	21.1	50.0
Above Average	55.6	28.6	0.0	50.0
Name Pictures				
Below Average	33.3	28.6	52.6	25.0
Average	55.6	57.1	42.1	25.0
Above Average	11.1	14.3	5.3	50.0
Complex Sentences				
Below Average	44.4	71.4	73.7	N/A[a]
Average	55.6	28.6	26.3	
Above Average	0.0	0.0	0.0	

[a]Not administered in the second year of the project.
*$p<.05$. **$p<.01$. ***$p<.001$.

Cognitive Test Results

The subjects in this study were also administered a battery of other cognitive tests as part of their participation in the larger study conducted by the Mount Sinai Medical Center (see Table 6). Overall, the subjects performed in the normal range on tests tapping their perceptual skills, the Beery Visual-Motor Integration Test and the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) Picture Completion subtest. Scores on the Illinois Test of Psycholinguistic Abilities (ITPA) Verbal Expression subtest, a task in which subjects use their own language to describe objects, was also in the normal range. However, verbal scores on the WPPSI-R were in the lower part of the average range, with scores on the Sentences subtest one standard deviation below the mean in the low average range. This task requires subjects to repeat verbally presented sentences verbatim. Commensurate with their below average performance on the PEER naming symbols task, many children were unable to perform the Rapid Automatized Naming (RAN) numbers and letters subtests (55% and 68%, respectively), while performance on the colors and objects subtests was within normal limits.

Table 6 Cognitive Test Results of the Sample and Population Norms: Means and Standard Deviations

Tasks	Sample $\bar{X}$	Sample SD	Population Norms $\bar{X}$	Population Norms SD
Beery VMI[a]	98.03	11.84	100.0	10.0
WPPSI-R				
Picture Completion[b]	9.61	3.01	10.0	3.0
Vocabulary[c]	8.08	2.75	10.0	3.0
Arithmetic[b]	7.66	2.79	10.0	3.0
Sentences[d]	6.71	2.78	10.0	3.0
ITPA				
Verbal Expression[b]	33.05	5.50	33.9	6.0
RAN				
Colors[e]				
Males	73.82	75.99	69.0	28.0
Females	88.28	53.16	61.0	15.0
Numbers[e]				
Males	19.53	32.62	62.0	27.0
Females	28.44	36.52	49.0	13.0
Objects[a]				
Males	108.53	43.49	86.0	32.0
Females	86.60	39.16	76.0	21.0
Letters[e]				
Males	19.41	37.62	59.0	23.0
Females	17.11	30.79	47.0	17.0

[a] $N = 40$.
[b] $N = 38$ due to task refusal.
[c] $N = 36$ due to task refusal.
[d] $N = 34$ due to task refusal and discontinuation of task in the second year of project.
[e] $N = 30$ due to discontinuation of task in the second year of project.

As shown in Table 7, t-tests revealed that there were significant differences between aggressive and non-

aggressive subjects on the RAN numbers task ($t(33) = 2.23$, $p = .034$). There were no other significant differences by group. Overall, both the non-aggressive and aggressive children had below average abilities on most of the verbal tasks.

Table 7 Cognitive Test Results: Means and Standard Deviations by Group

Tasks	Non-Aggressive $\bar{X}$	Non-Aggressive SD	Aggressive $\bar{X}$	Aggressive SD
Beery VMI[a]	98.79	12.34	97.30	11.60
WPPSI-R				
Picture Completion[b]	10.00	3.12	9.25	2.94
Vocabulary[c]	8.12	2.52	8.05	2.94
Arithmetic[b]	7.89	2.97	7.45	2.68
Sentences[d]	6.56	2.99	6.83	2.66
ITPA				
Verbal Expression[b]	32.28	5.53	33.75	5.51
RAN				
Colors[e]	100.82	75.00	62.78	48.27
Numbers[e]*	36.94	39.81	12.00	23.77
Objects[a]	100.32	41.46	94.40	43.88
Letters[e]	22.00	37.97	14.67	29.97

[a] $N = 40$.
[b] $N = 38$ due to task refusal.
[c] $N = 36$ due to task refusal.
[d] $N = 34$ due to task refusal and discontinuation of task in the second year of project.
[e] $N = 30$ due to discontinuation of task in the second year of project.
*$p = .05$.

Analyses of variance of the cognitive tests by classroom revealed that there were no significant differences across classroom on the Beery Visual-Motor Integration Test and the WPPSI-R Picture Completion subtest (see Table 8). Scores on the ITPA Verbal Expression subtest, also did not vary significantly by classroom. Although scores on the verbal subtests of the WPPSI-R (i.e., Vocabulary, Arithmetic, Sentences) were in the low average range for the subjects in Classroom C, in comparison to the average range performance of subjects in the other classrooms, these differences were not statistically significant. While subjects from all of the classrooms performed somewhat lower on the RAN numbers and letters tasks than on colors and objects, most of the children in Classroom C were completely unable to perform these tasks; RAN numbers $F(2, 34) = 5.2028$, $p = .0001$, RAN letters $F(2, 34) = 8.855$, $p = .0009$). Classroom differences were not significant on the RAN colors and objects tasks.

Table 8 Cognitive Test Results: Means and Standard Deviations by Classroom

Tasks	Room A (N=9)	Room B (N=7)	Room C (N=20)	Room D (N=4)
Beery VMI				
Mean	99.00	98.57	95.05	109.00
SD	8.20	10.61	12.27	15.71
WPPSI-R Picture Completion				
Mean	9.44	10.43	9.33[a]	9.75
SD	3.36	2.23	3.45	1.50
WPPSI-R Vocabulary				
Mean	9.11	9.00	6.94[b]	8.75
SD	2.89	1.83	2.93	1.89
WPPSI-R Arithmetic				
Mean	8.67	7.57	6.89[a]	9.00
SD	2.92	2.30	2.74	3.37
WPPSI-R Sentences				
Mean	7.89	7.83[d]	5.79[d]	N/A[c]
SD	2.80	3.71	2.20	
ITPA Verbal Expression				
Mean	34.22	34.00	31.94[a]	33.75
SD	5.17	4.24	6.58	2.50
RAN Colors				
Mean	84.67	77.71	80.95	N/A[c]
SD	26.15	43.09	83.49	
RAN Numbers*				
Mean	51.44	24.14	11.16	N/A[c]
SD	42.47	23.00	26.74	
RAN Objects				
Mean	109.11	93.71	100.42	92.00
SD	20.36	35.26	51.72	28.46
RAN Letters**				
Mean	39.00	41.00	0.00	N/A[c]
SD	49.50	29.94	0.00	

[a] n=18. [b] n = 16. [c] Not administered in second year of project. [d] n = 6.
*p=.0111. **p=.0009.

Achenbach Child Behavior Checklist (CBCL): Parent Version

The Achenbach Child Behavior Checklist (CBCL) presents means and standard deviations for normative samples from each gender, as raw scores on the individual scales have been found to reflect different degrees of deviance for each gender group. However, in this sample there were no signficant differences between males and females on the aggression scale, $t(38) = -.39$, $p = .702$.

The males who were classified as non-aggressive were not significantly higher than the mean on any other scales, as shown in Table 9. Although aggressive males scored one standard deviation above the mean on all but the attention problems scale, scores are generally considered clinically significant if they are two or more standard deviations above the mean. T-tests demonstrated that the differences between the aggressive and non-aggressive subjects on the Achenbach scales were statistically significant on the somatic ($t(38) = -2.37$, $p = .029$), anxious ($t(38) = -3.53$, $p = .004$), delinquent ($t(38) = -3.22$, $p = .005$) and aggression scales, ($t(38) = -6.20$, $p<.001$).

Table 9 CBCL: Means and Standard Deviations of Males

Scales	Non-Aggressive	Aggressive	Non-Referred Norms
Withdrawn			
Mean	3.00	4.40	1.8
SD	1.76	2.50	1.9
Somatic Complaints*			
Mean	1.30	3.70	0.8
SD	1.83	2.63	1.3
Anxious**			
Mean	3.50	8.50	3.1
SD	1.84	4.09	3.1
Social Problems			
Mean	3.00	4.60	2.0
SD	1.76	2.32	1.9
Thought Problems			
Mean	1.10	1.80	0.5
SD	1.10	1.14	0.9
Attention Problems			
Mean	4.70	5.90	3.3
SD	1.83	3.35	2.8
Delinquent Behavior**			
Mean	1.70	3.30	1.6
SD	1.16	1.06	1.7
Aggression***			
Mean	8.28	16.72	8.2
SD	2.87	3.20	5.8

Note. n = 10 in each group.
*p<.05. *p<.01. *p<.001.

The non-aggressive females were not significantly higher than the mean on any of the scales. Females who were classified as aggressive were one standard deviation above the mean on all but the withdrawn scale (see Table 10). Statistically significant differences were found between

non-aggressive and aggressive females on the social problems ($t(39) = -2.35$, $p = .031$), attention problems ($t(39) = -3.17$, $p = .005$), delinquent ($t(39) = -2.27$, $p = .036$), and aggression scales ($t(39) = -4.53$, $p < .001$).

Table 10 CBCL: Means and Standard Deviations of Females

Scales	Non-Aggressive	Aggressive	Non-Referred Norms
Withdrawn			
Mean	2.70	3.10	2.0
SD	1.57	3.07	2.0
Somatic Complaints			
Mean	1.70	3.90	1.0
SD	1.77	4.61	1.6
Anxious			
Mean	4.40	6.90	3.4
SD	3.20	5.34	3.3
Social Problems*			
Mean	2.30	4.60	1.9
SD	2.00	2.37	1.7
Thought Problems			
Mean	1.30	2.50	0.5
SD	1.70	2.07	1.0
Attention Problems**			
Mean	2.80	7.30	2.5
SD	2.82	3.50	2.5
Delinquent Behavior*			
Mean	1.60	3.30	1.2
SD	1.90	1.42	1.4
Aggression***			
Mean	8.12	18.42	7.0
SD	4.63	5.51	5.2

Note. $n = 10$ in each group.
*$p < .05$. **$p < .01$. ***$p < .001$.

ANALYSIS OF ACTIVITY CATEGORIES

The overall goal of the analyses was to determine whether there were differences in the social participation and complexity of symbolic play between aggressive and non-aggressive subjects. Data collection yielded 25 observations of each subject coded on eight scales of behavior: activity, type of aggression, provocation of aggression, social density in play area, play, symbolic play, play partner, and social participation in play.

The first analysis sought to determine whether there was a relationship between the overall frequency of play and non-play activities during the free-play period and scores on the aggression scale. Each observation was assigned to one of seven categories including: unoccupied, onlooker, non-toy exploration, social interaction, aggression, play and other (see Appendix C for a full description of the categories).

As the 25 observations of each child were not statistically independent, for each child the frequency of each activity was transformed to represent the proportion of that activity relative to the total number of observations of that child (25 observations). For example, for each child, the total number of observations coded as play was divided by the total number of observations. An arc sine transformation was then performed to rescale the data values so that the proportions were normally distributed. Table 11 presents the transformed means and standard deviations of

each activity by group.

Multiple regression analyses revealed that scores on the Achenbach aggression scale and cognitive ability (as measured with the PEER) were not predictive of engagement in play. Non-aggressive and aggressive subjects engaged in play during a comparable number of observations (85% and 81% of the observations, respectively). Similarly, none of the other activity categories were related to scores on the aggression scale or to cognitive ability.

Table 11 Activity Categories: Proportional Means and Standard Deviations by Group

	Non-Aggressive		Aggressive	
Activity	$\bar{X}$	SD	$\bar{X}$	SD
Play	1.03	0.19	0.95	0.18
Unoccupied	0.02	0.03	0.02	0.03
Onlooker	0.04	0.04	0.05	0.05
Non-toy Exploration	0.00	0.00	0.00	0.01
Social Interaction	0.01	0.05	0.09	0.07
Aggression	0.01	0.01	0.01	0.02
Other	0.02	0.03	0.02	0.04

Notes. Means represent proportions based on 25 observations. Analyses were not significant at .05. n = 20 in each group.

T-test comparisons of male and female subjects on the various activity measures revealed significant differences on only the social interaction category ($t(38) = -2.42$, $p=.02$), as shown in Table 12.

Table 12 Activity Categories: Proportional Means and Standard Deviations by Gender

	Male		Female	
Activity	$\bar{X}$	SD	$\bar{X}$	SD
Play	1.01	0.15	0.97	0.21
Unoccupied	0.02	0.03	0.02	0.03
Onlooker	0.05	0.05	0.04	0.05
Non-toy Exploration	0.00	0.00	0.00	0.01
Social Interaction*	0.05	0.05	0.09	0.07
Aggression	0.01	0.02	0.01	0.01
Other	0.02	0.03	0.03	0.04

Notes. Means represent proportions based on 25 observations. $n = 20$ in each group.
*$p<.05$.

Additionally, analyses of variance showed that there were no significant differences in activities between classrooms (see Table 13 for transformed means and standard deviations).

Table 13 Activity Categories: Proportional Means and Standard Deviations by Classroom

Activity	Room A (N=9)	Room B (N=7)	Room C (N=20)	Room D (N=4)
Play				
Mean	0.96	0.94	1.02	1.02
SD	0.21	0.22	0.15	0.25
Unoccupied				
Mean	0.04	0.02	0.01	0.01
SD	0.03	0.03	0.02	0.02
Onlooker				
Mean	0.06	0.08	0.03	0.03
SD	0.05	0.08	0.03	0.04
Non-Toy Exploration				
Mean	0.00	0.00	0.00	0.00
SD	0.00	0.00	0.01	0.00
Social Interaction				
Mean	0.07	0.07	0.07	0.09
SD	0.07	0.06	0.07	0.09
Aggression				
Mean	0.01	0.01	0.01	0.02
SD	0.02	0.02	0.01	0.04
Other				
Mean	0.02	0.03	0.02	0.02
SD	0.03	0.04	0.04	0.02

Notes. Means represent proportions based on 25 observations. Analyses were not significant at .05.

Symbolic Play in Comparison to Other Forms of Play

All instances of play were further coded using five play categories which included: functional, constructive, rough-and-tumble, symbolic, and other (see Appendix C for full descriptions). The next analysis sought to determine

whether there was a relationship between scores on the aggression measure and the frequency of each type of play.

For each subject, the frequency of each form of play was transformed to represent the proportion of that form relative to the total amount of play. In this way, each form of play was based on the number of observations in which the subject was engaged specifically in play rather than the overall number of observations. For instance, for each subject, the number of observations coded as symbolic play was divided by the total observations coded as play. Arc sine transformations were performed to correct for the non-normal distribution of proportional data. Table 14 presents the transformed means and standard deviations of the occurrence of each form of play by group.

Multiple regression analyses found that there was no relationship between aggression score and the type of play in which children participated. Play behaviors that were categorized as "other", including arts and crafts activities, were the most common form of play, representing 49% of the non-aggressive children's play and 46% of the aggressive children's play. Both aggressive and non-aggressive children engaged in comparable amounts of symbolic play; 22% of non-aggressive subjects' play and 23% of aggressive subjects' play was symbolic. Nor was a relationship found between cognitive ability and type of play.

Table 14 Play Categories: Proportional Means and Standard Deviations by Group

Type of Play	Non-Aggressive $\bar{X}$	Non-Aggressive SD	Aggressive $\bar{X}$	Aggressive SD
Symbolic	0.22	0.15	0.23	0.14
Functional	0.13	0.13	0.14	0.14
Constructive	0.16	0.22	0.17	0.23
Rough & Tumble	0.01	0.02	0.02	0.04
Other	0.55	0.27	0.48	0.21

Notes. Means represent proportions based on frequency of play. n = 20 in each group. Analyses not significant at .05.

Analyses of the play categories by gender revealed significant differences on two categories: constructive play ($t(38) = 3.46$, $p = .002$), and play that was categorized as "other" ($t(38) = -3.06$, $p = .004$). As shown in Table 15, no other differences were found between male and female subjects on the play measures.

Table 15 Play Categories: Proportional Means and Standard Deviations by Gender

	Male		Female	
Type of Play	$\bar{X}$	SD	$\bar{X}$	SD
Symbolic	0.20	0.12	0.24	0.15
Functional	0.14	0.16	0.13	0.10
Constructive*	0.27	0.27	0.06	0.06
Rough & Tumble	0.02	0.04	0.00	0.01
Other*	0.41	0.23	0.62	0.20

Notes. Means represent proportions based on frequency of play. n = 20 in each group.
*p<.01.

ANOVAs were performed to test for differences in each form of play as a function of classroom placement (see Table 16 for the transformed means and standard deviations, by classroom). Children in Classroom A engaged in significantly more play that was classified as "other" than children in Classroom C ($F(3, 36) = 5.3707$, $p = .0037$), and more of the children's play was assigned to the "other" category in all four classrooms. In addition, children in Classroom C engaged in significantly more functional play than children in Classrooms A and B ($F(3, 36) = 13.8389$, $p<.001$). No other differences were found.

Table 16 Play Categories: Proportional Means and Standard Deviations by Classroom

Play	Room A (N=9)	Room B (N=7)	Room C (N=20)	Room D (N=4)
Symbolic				
Mean	0.21	0.27	0.23	0.18
SD	0.16	0.19	0.13	0.06
Functional**				
Mean	0.03	0.02	0.23	0.09
SD	0.06	0.03	0.13	0.03
Constructive				
Mean	0.09	0.29	0.13	0.27
SD	0.07	0.36	0.19	0.28
Rough & Tumble				
Mean	0.01	0.03	0.01	0.02
SD	0.02	0.05	0.02	0.03
Other*				
Mean	0.76	0.46	0.44	0.48
SD	0.20	0.21	0.20	0.27

Note. Means represent a proportion based on frequency of play.
*$p<.01$. **$p<.001$.

Types of Symbolic Play

The next set of analyses tested the hypothesis that aggressive and non-aggressive children display qualitative differences in their symbolic play. The different forms of symbolic play that were analyzed included: functional use of pretend object, animation, creation of an imaginary object (related or non-related), attribution of object property (real object or imaginary object), object

substitution, pretend situation, pretend role, and dramatic.

Due to the low frequencies of symbolic play, the different forms of symbolic play had even lower frequencies. Table 17 shows that the transformed means and standard deviations of each form of symbolic play were very small. Therefore, it was not feasible to statistically compare the frequencies of the symbolic play categories.

Table 17 Symbolic Play Categories: Proportional Means and Standard Deviations by Group

	Non-Aggressive		Aggressive	
Symbolic Play	$\bar{X}$	SD	$\bar{X}$	SD
Functional Use of Object	0.22	0.25	0.20	0.35
Animation	0.02	0.05	0.06	0.19
Create Imaginary Object (Related)	0.02	0.05	0.02	0.06
Attribution of Object Property (Real Object)	0.02	0.08	0.02	0.05
Object Substitution	0.02	0.07	0.08	0.14
Create Imaginary Object (Not-Related)	0.04	0.11	0.00	0.00
Attribution of Object Property (Imaginary Object)	0.02	0.08	0.00	0.00
Pretend Situation	0.12	0.23	0.12	0.26
Pretend Role	0.06	0.14	0.07	0.14
Dramatic	0.45	0.33	0.49	0.32

Notes. Means represent a proportion based on frequency of play. n = 20 in each group.

Rather than comparing frequencies of aggressive and non-aggressive subjects, for each form of symbolic play, the subjects were classified as either engaging or not engaging in that form of symbolic play. For example, a child was classified as engaging in animation, if that child engaged in animation at least once during the observations. Table 18 presents the number of non-aggressive and aggressive subjects engaging in each form of symbolic play.

Table 18 Symbolic Play Categories: Number of Subjects Engaging in Each Form of Symbolic Play by Group

	Non-Aggressive	Aggressive	
Symbolic Play	f	f	χ^2
Functional Use of Object	12	6	3.64
Animation	3	3	0.00
Create Imaginary Object (Related)	4	2	0.78
Attribution of Object Property (Real Object)	1	2	0.36
Object Substitution	2	6	2.50
Create Imaginary Object (Not-Related)	3	0	3.24
Attribution of Object Property (Imaginary Object)	1	0	1.03
Pretend Situation	8	5	1.03
Pretend Role	4	5	0.14
Dramatic	15	17	0.63

Notes. n = 20 in each group. Analyses non-significant at .05.

From these transformations, a series of chi square analyses compared the number of aggressive and non-aggressive children who engaged in each type of symbolic play. No differences were found in the number of subjects who participated in each form of symbolic play, although two variables neared significance: functional use of object, $\chi^2(1, 40) = 3.64$, $p=.057$; create imaginary object (non-related), $\chi^2(1,40) = 3.24$, $p=.07$. The hypothesis that aggressive and non-aggressive children show qualitative differences in their symbolic play was not supported.

Multiple or One-Act Transformations

The data were also collapsed to combine all categories of one-act transformations (all symbolic categories except dramatic), and this was compared to dramatic play which involved multiple transformations. Subjects who engaged in symbolic play, were classified as one-act transformers if they engaged in one or more one-act transformations, but had no dramatic (multiple transformation) play. However, if a child engaged in dramatic play, they were classified as a multiple transformer, regardless of whether they had also engaged in one-act transformations. Significant chi-square analyses would have supported the hypothesis that there were differences between the aggressive and non-aggressive children in their engagement in one-act and multiple transformations in symbolic play. These analyses revealed that these differences were not significant. As can be seen in Table 19, the majority of both aggressive and non-

aggressive children engaged in multiple transformations in their symbolic play at least once.

Table 19 Number of Subjects Engaging in One-Act or Multiple Transformations by Group

Transformation	Non-Aggressive f	Aggressive f	χ^2
One-Act	4	3	0.173
Multiple	15	17	0.626

Note. n = 20 in each group. Analyses not significant at .05.

Social Participation

The level of social participation (i.e., solitary, parallel, cooperative) during play was examined to determine whether there was a correlation between social participation and aggression scores. A proportion for each form of social participation was determined by dividing the number of occurrences of that form of participation by the total occurrences of play for that subject. Table 20 presents the transformed means and standard deviations by group.

Multiple regression analyses comparing these proportions with aggressive and cognitive scores were then performed. These analyses revealed a negatively significant correlation for aggression score and solitary play ($r(39) = -0.395$, $p = .006$), but not for parallel or cooperative play. These analyses also showed that cognitive ability was not correlated with level of social participation.

Table 20 Social Participation: Proportional Means and Standard Deviations by Group

	Non-Aggressive		Aggressive		
Social Participation	$\bar{X}$	SD	$\bar{X}$	SD	r
Solitary	0.30	0.17	0.19	0.12	-0.395*
Parallel	0.39	0.18	0.43	0.12	0.259
Cooperative	0.35	0.17	0.42	0.16	0.126

Notes. Means represents a proportion based on frequency of play. n = 20 in each group.
*p<.05.

Analyses of variance were performed to determine class differences. As can be seen in Table 21, children in Classroom A engaged in significantly more solitary play than children in Classroom C ($F(3, 36) = .577$, $p = .003$). Children in Classroom C engaged in significantly more parallel play than in Classrooms A and B ($F(3, 36) = 5.319$, $p = .004$). The subjects in Classroom B engaged in significantly more cooperative play than those in Classroom D ($F(3, 36) = 3.584$, $p = .023$).

Table 21 Social Participation: Proportional Means and Standard Deviations by Classroom

Social Participation	Room A (N=9)	Room B (N=7)	Room C (N=20)	Room D (N=4)
Solitary*				
Mean	0.37	0.22	0.18	0.37
SD	0.18	0.09	0.11	0.19
Parallel*				
Mean	0.33	0.29	0.49	0.44
SD	0.07	0.12	0.15	0.13
Cooperative**				
Mean	0.33	0.52	0.39	0.23
SD	0.15	0.08	0.17	0.15

Note. Means represent a proportion based on frequency of play.
*$p<.01$. **$p<.05$.

Social Participation by Type of Play

The last set of analyses attempted to determine how the relationship of the types of play (i.e., symbolic and non-symbolic) and the social participation in play (i.e, solitary, parallel, and cooperative) varied as a function of aggression score. That is, the type of social participation that occurred during symbolic and non-symbolic play for each group of children were analyzed. Table 22 presents the means and standard deviations of social participation and type of play by group.

Table 22 Social Participation and Type of Play: Means and Standard Deviations by Group

Social Participation by Type of Play	Non-Aggressive $\bar{X}$	Non-Aggressive SD	Aggressive $\bar{X}$	Aggressive SD
Non-symbolic				
Solitary*	4.40	2.37	2.40	2.04
Parallel	7.70	4.01	7.80	2.91
Cooperative	4.65	2.78	5.50	2.61
Symbolic				
Solitary	1.60	1.40	1.50	1.19
Parallel	0.45	1.15	0.65	1.35
Cooperative	2.55	2.19	2.45	1.93

Note. n = 20 in each group.
*$p<.01$.

In order to perform this analysis, play was collapsed into non-symbolic and symbolic categories. Then, for each child a comparison was made of the relation between the type of play and the type of social participation in play. This was done by developing a 2x3 cross tabulation of play (N-S, Sym) by social participation (S, P, C) of the play observations for each child. This test proceeds with 2x2 analyses in which a measure of association of two variables is given by a cross product ratio. From the 2x3 cross tabulation, a cross product ratio from the sub-table of (N-S, Sym) by (S, P) was determined. Similar cross product

ratios were constructed for the (N-S, Sym) by (P, C) sub-table, and the (N-S, Sym) by (S, C) sub-table.

For each cross-product ratio, a t-test was performed to determine whether the association of type of play and social participation varied as a function of group (aggressive and non-aggressive). Although t-tests revealed that non-aggressive subjects engaged in significantly more solitary play during non-symbolic play ($t(38) = 2.86$, $p = .007$), analysis of the cross-product ratios did not demonstrate a relationship between overall social participation and type of play across groups. The hypothesis that aggressive and non-aggressive children differ in their social participation when engaging in different forms of play (i.e, symbolic and non-symbolic) was not confirmed. There was a tendency for both aggressive and non-aggressive children to engage in more parallel play during non-symbolic activities, and for their symbolic play to be more cooperative.

Play Partner

Analysis of play partners during symbolic and non-symbolic play activities was examined by transforming the frequency of play with each type of partner into a proportion based on the total amount of play. As can be seen in Table 23, the teachers rarely participated in the play of non-aggressive or aggressive children in either one-on-one or group situations. During play, children played most often with another child or with a group of children. The non-aggressive children played alone significantly more

often than the aggressive children during non-symbolic play ($t(38) = 2.72$, $p = .01$), while aggressive children played with another child significantly more during non-symbolic activities ($t(38) = -2.03$, $p = .049$). No other differences between aggressive and non-aggressive subjects were significant.

Table 23 Play Partners: Proportional Means and Standard Deviations by Group

	Non-Aggressive		Aggressive	
Play Partner	$\bar{X}$	SD	$\bar{X}$	SD
Non-symbolic				
Alone**	0.22	0.14	0.12	0.09
Teacher	0.01	0.03	0.01	0.03
Another Child*	0.27	0.16	0.38	0.18
Group of Children	0.22	0.11	0.19	0.11
Teacher and Children	0.08	0.07	0.09	0.08
Symbolic				
Alone	0.08	0.07	0.07	0.05
Teacher	0.00	0.00	0.00	0.00
Another Child	0.06	0.06	0.08	0.10
Group of Children	0.09	0.10	0.07	0.08
Teacher and Children	0.00	0.00	0.00	0.00

Notes. Means represent a proportion based on frequency of play. $n = 20$ in each group.
*$p=.005$.

POST-HOC ANALYSES

Validity of Aggression Measure

To test the validity of the Achenbach aggression scale as a measure of aggression, the correlation of this scale and other behavioral measures was examined. These included the Children's Aggression Scale (McKay, Halperin, Grayson, Hall, Peracchio, & Newcorn, 1993) and the Conners parent and teacher rating scales (Goyette, Conners, & Ulrich, 1978). The Achenbach aggression scale was significantly correlated with the Children's Aggression Scale ($r(32) = .6415$, $p<.001$) and with the conduct problems score on the Conners parent rating scale ($r(29) = .5871$, $p = .001$). As can be seen in Table 24, the Achenbach aggression scale was also significantly correlated with other scales on the Achenbach (i.e., somatic complaints, anxious, social problems, attention problems, and delinquency) and the parent version of the Conners rating scale (impulsivity-hyperactivity and hyperactivity index). However, the Achenbach aggression scale did not correlate with the Conners teacher aggression score ($r(39) = .2378$, $p=.140$) and only moderately correlated with teacher ratings of conduct problems ($r(39) = .3024$, $p=.058$). As shown in Table 25, observed aggression in the classroom was not correlated with parent ratings of aggression on the Achenbach or conduct problems on the Conners. Additionally, minimal--but not significant--correlations were found between observed aggression and the Children's Aggression Scale ($r(32) = .3156$, $p=.074$) and

ratings by teachers of conduct problems (r(39) = .2812, p=.079) and hyperactivity (r(39) = .2989, p=.061). Interestingly, aggression in the classroom was significantly correlated with the Achenbach withdrawn (r(39) = .3729, p=.018) and attention problems scales (r(39) = .4302, p=.006), and neared significance with the anxious scale (r(39) = .3079, p=.053).

Table 24 Correlation of Achenbach Aggression Scale with Other Behavioral Measures

Behavioral Measures	Achenbach Aggression Scale r
Achenbach[a]	
Withdrawn	.2291
Somatic Complaints	.5714***
Anxious	.6383***
Social Problems	.5284***
Thought Problems	.3033
Attention Problems	.6307***
Delinquency Problems	.6597***
Children's Aggression Scale[b]	.6415***
Conners Parent Version[c]	
Conduct Problems	.5871***
Learning Problems	.2946
Psychosomatic Problems	.3293
Impulsivity-Hyperactivity	.4220*
Anxiety	.2084
Hyperactivity Index	.4872**
Conners Teacher Version[d]	
Aggression	.2378
Conduct Problems	.3024
Hyperactivity	.2151
Inattention-Passivity	.0556
Aggression in the Classroom	.1955

[a]N = 40. [b]N = 33. [c]N = 30. [d]N = 40. [e]N = 40.
*p<.05. **p<.01. ***p<.001.

Table 25 Correlation of Aggression in the Classroom with Behavioral Measures

Behavioral Measures	Observed Aggression r
Achenbach[a]	
Withdrawn	.3729*
Somatic Complaints	.0144
Anxious	.3079
Social Problems	.2903
Thought Problems	.1597
Attention Problems	.4302**
Delinquency Problems	.1450
Aggression	.1955
Children's Aggression Scale[b]	.3156
Conners Parent Version[c]	
Conduct Problems	.0278
Learning Problems	.0431
Psychosomatic Problems	.0544
Impulsivity-Hyperactivity	.0484
Anxiety	.1899
Hyperactivity Index	.0043
Conners Teacher Version[d]	
Aggression	.2076
Conduct Problems	.2812
Hyperactivity	.2989
Inattention-Passivity	.1347

[a] $N = 40$. [b] $N = 33$. [c] $N = 30$. [d] $N = 40$.
*$p < .05$. **$p < .01$.

Comparison of Aggression Measures and Selected Play Behaviors

The Children's Aggression Scale, Conners teacher ratings of aggression and conduct problems, and Conners parent ratings of conduct problems were compared to the overall frequency of play and symbolic play. As shown in

Table 26, there were no significant correlations between overall amount of play or symbolic play and the other measures of aggression. Within symbolic play, the Children's Aggression Scale and the Conners teacher ratings of aggression and conduct disorder were significantly correlated with frequency of engagement in animation ($r(32)=.4685$, $p=.006$; $r(39)=.4335$, $p=.005$; $r(39)=.4764$, $p=.002$, respectively), a relatively low level of symbolic play. No other differences were found regarding levels of symbolic play.

Table 26 Correlation of Play and Symbolic Play With Other Aggression Measures

Aggression Measures	Play r	Symbolic Play r
Children's Aggression Scale[a]	-.3103	-.2477
Conners Parent Version[b]		
Conduct Problems	.1500	-.3466
Conners Teacher Version[c]		
Aggression	.0745	-.0937
Conduct Problems	.0549	-.0682

Note. Analyses were not significant at .05.
[a]N = 33. [b]N = 30. [c]N = 40.

Adequacy of the Play Coding Scheme

From the original data, dramatic play was recoded into two types: no-script, script. Table 27 presents the means and standard deviations of dramatic play with and without scripts.

Table 27 Dramatic Play With and Without Scripts: Means and Standard Deviations by Group

	Non-aggressive		Aggressive	
Dramatic	$\bar{X}$	SD	$\bar{X}$	SD
No-script	0.80	1.01	0.50	0.61
Script	1.40	1.79	1.90	1.83

Note. n = 20 in each group. Analyses not significant at .05.

Due to the low overall frequencies, analyzing differences between aggressive and non-aggressive subjects in terms of frequencies was not practical. Rather, as before, subjects were classified as engaging in each level of dramatic play if they engaged in it at least once during the observations. As can be seen in Table 28, more aggressive than non-aggressive subjects were classified as script players, yet chi square analyses revealed that this difference was not significant.

Table 28 Dramatic Play With and Without Scripts: Number of Subjects Engaging in Each Form by Group

Dramatic	Non-aggressive f	Aggressive f	$\chi 2$
No-script	10	6	.0000
Script	10	14	.9375

Note. n = 20 in each group. Analyses not significant at .05.

Chapter 6

Discussion

The goal of this study was to determine whether there were differences in the quantity and quality of social and symbolic play among aggressive and non-aggressive kindergarten children, with a particular focus on sociodramatic play. First, it was determined that non-aggressive and aggressive children engaged in play activities to a comparable extent during the observations of free-play. In addition, differences were not found between non-aggressive and aggressive children in their total engagement in symbolic play. Specifically, aggressive and non-aggressive children spent a similar proportion of their play engaged in symbolic play (23%, 22% respectively). This is consistent with the findings of Young (1987), but is slightly lower than the estimate of 33% proposed by Fein (1981) for kindergarten populations. Aggressive and non-aggressive children also did not differ in the other forms of play assessed in this study. Play that was classified as "other" consisted of any play activities other than functional, constructive, symbolic, or rough and tumble, such as arts and crafts. Most of the play of non-aggressive and aggressive children was coded as "other".

Classroom differences in the frequency of two forms of play appeared to be due to the availability of materials in these rooms. Children in the bilingual classroom engaged in

significantly more functional play than children in the other classrooms probably because the sand/water table was accessible on a daily basis. Additionally, children in one classroom engaged in more play that was classified as "other", (any play that was not symbolic, functional, constructive, or rough and tumble), possibly due to the availability of arts and crafts materials on a daily basis in that room.

Symbolic Play

Differences in the quality of symbolic play, as reflected in various forms of symbolic transformations, were expected between aggressive and non-aggressive subjects. Based on the work of Connolly and Doyle (1984) and Young (1987), it was predicted that aggressive children would engage in less advanced forms of symbolic play. The data did not support this prediction. A comparable number of non-aggressive and aggressive children engaged in each form of symbolic play. It was also found that the majority of both aggressive and non-aggressive children engaged in multiple transformations in their symbolic play, at least once.

Social Participation

A negative correlation was found, though not expected, between aggression scores and solitary play. The non-aggressive children engaged in more solitary play than the aggressive children. Solitary play was then examined as a function of type of play, non-symbolic or symbolic. It was

found that during non-symbolic play, the non-aggressive children tended to engage in more solitary play than aggressive children. Additionally, although not significant, during non-symbolic play, both aggressive and non-aggressive children tended to engage in more parallel play. Therefore, non-symbolic play tended to be non-social, either solitary or parallel. Rubin (1982) suggested that some forms of non-social play, such as parallel constructive play, may be adaptive because they resemble the kinds of activities elementary school teachers promote. For instance, teachers encourage children to work on their own projects and constructions at tables in close proximity to one other.

It was predicted that the symbolic play of aggressive children would be either solitary or parallel, whereas the symbolic play of non-aggressive children would be cooperative. Findings did not support this hypothesis. No differences in the social participation during symbolic play were found between aggressive and non-aggressive children. Rather, there was a non-significant tendency for both aggresive and non-aggressive children to play cooperatively during symbolic activities.

It was also found that the children's social participation in play varied as a function of their classroom placement, possibly as a result of the type of activities in which they engaged. For instance, the class which had the highest rate of functional (sand/water) play

also had the highest rate of parallel play.

Play Partner

In this study, both aggressive and non-aggressive children typically played with one or more children. In addition, it was found that non-aggressive children engaged in more solitary play during non-symbolic play than aggressive children, and that the teachers were rarely involved in the play (less than 1%) of either aggressive or non-aggressive children. These findings contrast with those of Young (1987) and Factor and Frankie (1980) who found that preschool children with behavior problems engage in more solitary or teacher-oriented activities than their peers. This may be due, in part, to the fact that there is movement toward more social play with peers from the preschool to the kindergarten age, and the children in this study were kindergartners, whereas the prior studies were conducted with preschoolers.

POST-HOC ANALYSES

To sort out the possible reasons for the lack of support for the hypotheses in this study, several post-hoc analyses were conducted.

Validity of the Aggression Measure

In addition to the Achenbach, parents also completed the Children's Aggression Scale and the Conners rating scale. The teacher version of the Conners rating scale was also completed for each subject in the study. The Children's Aggression Scale surveys the frequency of

specific acts of verbal and physical aggression toward people, objects, and animals.

On the other hand, the Conners rating scores--like the Achenbach scales--are composed of typical behaviors associated with problem children (Goyette, Conners, & Ulrich, 1978; Loney & Milich, 1982). Empirically based measures of this sort are based on the statistical identification of groups of items whose scores covary with each other. As a result, the aggression scale on the Achenbach is composed of seemingly unrelated items such as 'brags' and 'demands attention,' rather than items questioning the frequency of specific acts of aggression. Achenbach (1991) reported that children referred for mental health services obtained significantly higher scores on all behavior problem scales than matched controls. However, the association between individual scales (such as aggression) and referral status and/or independent observations of the behavior (i.e., aggression) have not been reported.

In this study, significant correlations were found between the Achenbach aggression scale and the Children's Aggression Scale. This appears to indicate that the children who scored high on the Achenbach aggression scale were children who truly displayed aggressive behavior. Significant correlations were also found between the Achenbach aggression scale and the conduct problems score on the Conners parent rating scale. Interestingly, scores on the Achenbach aggression scale were also significantly

correlated with six other scales on the Achenbach and three scores on the Conners parent rating scale. This might suggest that the children in this sample had a variety of problems, in addition to aggression, which crossed over the various scales. Achenbach (1991) has reported significant correlations between SES and scores on a range of the behavior problems scales. In addition, McConaughy, Mattison, and Peterson (1994) have found that children identified as having serious emotional disturbances and children identified as learning disabled under the Individuals with Disabilities Education Act (IDEA; PL 101-476, 1990) scored significantly higher than normal controls on all scales of the Achenbach, with the exception of somatic complaints.

Yet, in this study, the Achenbach aggression scale did not correlate significantly with either the conduct problem or aggression scores derived from the teachers' version of the Conners. Furthermore, observations of aggression in the classroom were not correlated with parent ratings of aggression or conduct problems. Observed aggression did correlate minimally, though non-significantly, with the Children's Aggression Scale and Conners teacher ratings of conduct problems.

One explanation for the lack of correlation between parent ratings and both teacher ratings and observed aggression is that parents may have overattributed problems to their children, possibly due to confusion in responding

to the questions. Many parents in this sample had limited reading skills, even in Spanish. In many cases surveys were conducted as face-to-face interviews if it appeared that a parent was having difficulty with the questions. But, it is possible that some of the parents who had reading difficulties filled out the questionnaires independently and possibly misinterpreted some of the questions.

Another explanation is that due to differences in parenting styles, the parents in this study overattributed problems to their children due to lack of tolerance with misbehavior. Wasserman, Rauh, Brunelli, Garcia-Castro, & Necos (1990), for instance, have reported that despite some variability within Hispanic subgroups (Puerto Rican and Dominican), Hispanic mothers put a greater emphasis on obedience and held stricter attitudes toward child rearing compared to African-American mothers. Puerto Rican mothers were also found to complain more often about child disciplinary problems than African-American and Caucasian mothers. This is significant because 80% of the children in this study were Hispanic compared to the 20% who were African-American.

Alternatively, it is possible that these discrepancies are due to situational variability in the children's aggressive behavior. Their aggressive behavior may not have been consistent across different contexts, indicating that their behavior problems may be related to family dynamics. Specifically, the children rated as aggressive by their

parents might have behaved less aggressively within the structure of the classroom, where aggression and misbehavior were not tolerated. The fact that aggression in the classroom was minimal appears to support this notion; three instances of aggression were committed by non-aggressive subjects and five instances were committed by aggressive subjects.

Comparison of Aggression Measures and Selected Play Behaviors

The Children's Aggression Scale, Conners teacher ratings of aggression and conduct problems, and Conners parent ratings of conduct problems were compared to the overall frequency of play and symbolic play to examine whether these aggression measures were better correlated with the play categories than the Achenbach aggression scale. There were no significant correlations between overall amount of play or symbolic play and these other measures of aggression. Within symbolic play, the Children's Aggression Scale and the teacher ratings of aggression and conduct disorders were significantly correlated with frequency of engagement in animation a relatively low level of symbolic play. It should be noted, however, that animation did not occur frequently; there were three instances among the non-aggressive subjects and six instances among the aggressive subjects. No other differences were found regarding levels of symbolic play.

Adequacy of the Play Coding Scheme

As defined in this study, dramatic play involved the integration of objects, roles, and situations into play sequences. Therefore, according to the coding scheme, when a subject performed multiple transformations, their symbolic play was classified as dramatic. In addition to recording play behaviors on the predetermined coding scheme that was developed, during the observations brief notes were made describing the play episodes. From these notes it appeared that in many cases although the children performed multiple transformations, their play lacked the integration of behavior sequences around a script generally considered to be an important component of dramatic play. Therefore, some children may have received an inflated dramatic play score.

From the original data, dramatic play was recoded into two types: no-script, script. When the data were recoded, however, it was found that the number of aggressive and non-aggressive children who engaged in non-scripted, one-event symbolic episodes was relatively similar. In addition, contrary to what was expected, more aggressive children engaged in scripted dramatic play than non-aggressive children; however, this was not significant.

DISCUSSION OF THE FINDINGS

As the majority of both aggressive and non-aggressive children engaged in multiple transformations in their symbolic play at least once it appears that they are capable of performing various symbolic transformations. In fact,

both aggressive and non-aggressive children typically engaged in multiple, rather than one-act, transformations. These findings are inconsistent with those of previous researchers (Connolly & Doyle, 1984; Rosen, 1974; Saltz, Dixon, & Johnson, 1974) who found that more mature forms of pretend were associated with better developed social skills and competencies. Instead, the current results suggest that there is no relation between aggression and symbolic play.

In addition, no differences were found between aggressive and non-aggressive children in their social participation during symbolic play. Rather, for both aggressive and non-aggressive subjects, there was a non-significant tendency for their symbolic play to be cooperative, which is what is normally expected of kindergarten children (Rubin, Watson, & Jambor, 1978).

One explanation for the lack of results in this study is that methodological problems such as the small sample size and the low incidence of symbolic play reduced the ability to obtain results. Specifically, because there was such a low incidence of symbolic play the frequency of play behaviors could not be analyzed, rather subjects were classified as either engaging or not engaging in these types of symbolic play. Differences on some symbolic play categories may have been significant if the sample size had been larger.

In addition, the nature of data collection may have reduced the opportunities to capture more instances of

symbolic play. In this study, subjects were observed in their classrooms during free-play in which they were able to choose the activities in which they wanted to engage. Implicit in the hypotheses was the intention of determining the play choices that aggressive and non-aggressive children make. However, this led to the possibility that there would not be a high frequency of symbolic play. As a result, even though approximately 20% of the subjects' play was symbolic, with only 25 one-minute observations of each child, the frequency of symbolic play was very low.

Rather than observing play as it occurs in natural settings, the studies from which the symbolic play categories were drawn structured the observation of play settings in ways which appear to have increased the measurement of symbolic play. For instance, Cole and LaVoie (1985) videotaped middle-class play dyads between the ages of two and six. The means and standard deviations from 16 dyads of five-year-old children in their study are substantially higher than that of the current study, as shown in Table 29. (Although in these studies different labels have been ascribed to the various forms of symbolic play, the behaviors measured are relatively similar.) This is possibly due to differences in the way the data was collected. Cole and LaVoie videotaped each dyad in separate play areas during nine 15-minute sessions. Furthermore, coding strategies were also different in these studies. In Cole and LaVoie's study, each change in play behavior was

entered as a frequency. In the current study, for each one-minute observation one code was assigned.

Table 29 Comparison of the Current Sample with 5-year-old Dyads from Cole and LaVoie's (1985) Study: Means and Standard Deviations

Symbolic Play	Current Study[a] $\bar{X}$	Current Study[a] SD	Cole and LaVoie[b] $\bar{X}$	Cole and LaVoie[b] SD
Attribution of Function[c]	0.80	0.77	10.81	4.20
Animation	0.15	0.37	0.06	0.25
Substitution	0.10	0.31	4.13	1.86
Insubstantial Material Attribution[d]	0.20	0.52	1.13	1.36
Insubstantial Situation Attribution[e]	0.55	0.22	1.13	0.96
Character Attribution[f]	0.30	0.66	2.63	3.69
Dramatic	2.20	2.07	3.75	2.52

[a] N = 40 subjects.
[b] N = 16 dyads.
[c] Functional Use of Object.
[d] Create Imaginary Object.
[e] Pretend Situation.
[f] Pretend Role.

McLoyd (1980) also videotaped 18 play dyads who were taken to a separate play area for a 20-minute play session. As transcripts of the videotapes were analyzed, McLoyd claimed that this probably underestimated the amount of fantasy, as only verbalized fantasy was recorded. Still, in McLoyd's study the children spent approximately 45% of their

free play in fantasy play. The means, collapsed for three-and-a-half and five-year-old dyads, were higher than those found in the current study (see Table 30). It appears, therefore, that observing children during spontaneous play time, in which a variety of activities were available, constrained the frequency of observing symbolic play. A different design in which more observations or another coding strategy was used may have increased the frequency of observing symbolic play.

McLoyd (1980) did not include a category for multiple transformations nor for dramatic play. Rather, observations of symbolic play were assigned to categories representing the various components of symbolic play. As a result, it was decided that instances in which an utterance represented more than one transformation mode, the utterance was assigned to the highest category. For example, one play episode is described in which a child held up a cup, picked up a long block in her other hand, pretended to used the block as a spoon to stir her imaginary coffee, and said "This is the spoon for my coffee." This utterance, McLoyd explained, involved both substitution (block as spoon) and reification (creation of nonexistent coffee in an existing cup), but was assigned to the substitution category because substitution is a higher level transformation. This contrasts with the current study in which this would have been coded as dramatic.

Table 30 Comparison of the Current Sample with 3 1/2 and 5-year-old Dyads from McLoyd's (1980) Study: Means and Standard Deviations

	Current Study[a]		McLoyd[b]	
	Girls	Boys	Girls	Boys
Symbolic Play	$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
Animation	0.05	0.25	36.67	20.22
Reification[c]	0.15	0.15	28.78	15.56
Attribution of Object Property[d]	0.00	0.15	4.00	5.56
Object Substitution	0.25	0.15	10.22	2.33
Object Realism[e]	0.00	0.15	4.89	0.00
Attribution of Nonexistent Object Property[f]	0.00	0.05	7.00	3.00
Situational Attribution[g]	0.35	0.30	15.11	9.67
Role Attribution[h]	0.25	0.20	13.00	1.44

[a] N = 40 subjects.
[b] N = 18 dyads.
[c] Create Imaginary Object (Related).
[d] Attribution of Object Property (Real Object).
[e] Create Imaginary Object (Not-Related).
[f] Attribution of Object Property (Imaginary Object).
[g] Pretend Situation.
[h] Pretend Role.

Although the finding that non-aggressive and aggressive subjects spent a comparable amount of time in symbolic play (approximately 22%) is consistent with the finding of Young (1987), in the prior study, a larger percentage of the symbolic play of the aggressive subjects was at lower levels

of symbolic transformation. For instance, 63% of their symbolic play was coded as functional use of an object as compared to only 13% in the current study. In contrast, in both studies the most common form of symbolic play among non-aggressive subjects was dramatic play; 59% in the prior study and 48% in the current study.

The question, therefore, remains why, with a similar coding scheme and method of data collection, are the results of the two studies contradictory? One possible explanation is that the contrary results may be related to the samples studied. In the prior study, although the sample size was even smaller (10 subjects in each group), it represented more ethnically and socioeconomically diverse groups. Subjects were from lower and middle class groups, with an equal number of subjects who were African-American, Caucasian, and Hispanic. In the current study, all of the children were from a low income, inner-city area of New York City, and many were from newly immigrated families. Many of these children have experienced considerable family instability (e.g., frequent moves, a variety of caretakers) and live in an area with a high rate of violence. As previously mentioned, the high scores on several Achenbach and Conners parent scales suggest that the children in this sample had a variety of problems in addition to aggression.

It was also found that these children demonstrated multiple school-related problems, particularly a lack of pre-academic and verbal skills. They were below average in

their ability to label pictures, write letters and numbers, and identify numbers and letters on a timed task. In addition, the majority of children were unable to respond correctly to questions regarding verbally presented information (such as, "The boy saw the man who was carrying a red ball. Who was carrying the red ball?"), indicating problems with verbal comprehension. The majority of children, however, were able to name the days of the week and count to ten, indicating that they were able to learn material which was taught to them.

Furthermore, the children in the bilingual classroom, from which half the sample was selected, displayed additional areas of difficulty, despite being tested in Spanish. Specifically, they were below average in identifying letters and numbers, counting aloud, repeating verbally presented sentences, and on tasks measuring vocabulary and arithmetic skills. These children, it should be noted, were from families that had the lowest SES, were primarily monolingual in Spanish, and were recent immigrants.

Another distinction between the subjects in the two studies is that the subjects in the prior study were classified as emotionally disturbed. The difference in the results may have been due to the emotionally disturbed children having more severe social impairments or because factors in the setting influenced play choices. For instance, the emotionally disturbed children were observed

in special education classrooms with small teacher to student ratios. This may have resulted in the higher incidence of solitary play and play with teachers because the teachers often separated the children into different play areas and played with them. Teacher involvement may have directed and possibly limited the play choices of the aggressive children. On the other hand, there were no differences between non-aggressive children in the current and prior study regarding their play partners. They played with other children or alone, but rarely with the teacher.

IMPLICATIONS OF THE CURRENT STUDY FOR FUTURE RESEARCH

It was also noticed that, in many cases, although the children engaged in multiple symbolic transformations while playing out scripts with each other, there was little communication and negotiation of roles, scripts, plans, and rules between them within their play. For instance, in the example cited previously of scripted, dramatic play, the child incorporated other children into her pretend sequence of dinner preparation, but the script was led and directed by her, and the other children were left to either follow or not follow her lead. Her play lacked the negotiation often associated with sociodramatic play.

These anecdotal findings appear to parallel those found in Smilansky's (1968) study of the sociodramatic play of advantaged and disadvantaged (who were also newly immigrated) Israeli children. Smilansky regarded six elements as essential to well-developed sociodramatic play.

They included: imitative role play, make-believe in regard to objects, make-believe in regard to actions and situations, persistence of play episode, interaction, and verbal communication. She maintained that the first four elements apply to dramatic play in general, and the last two apply specifically to sociodramatic play. She found that the sociodramatic play of the disadvantaged subjects occurred less frequently, tended to break up quickly, and consisted of verbalizations that were qualitatively different from advantaged children. For instance, she explained that the language disadvantaged children used to manage play consisting of statements such as "Bring me this...take that away..." (p. 27). She described disadvantaged children as "act and object minded", rather than "concept and word minded" as were the advantaged children. Anecdotally, it appeared that the symbolic play of children in this study consisted more of actions rather than verbalizations. In fact, their verbalizations often described their actions. For instance, "I'm cooking dinner." Westby (1991) claimed that by age five, children should be able to use language to invent props, and set the scene, actions, and roles in play, and to use language to plan several sequences of pretend events.

Among the advantaged children, Smilansky found that the leader works democratically with the other children, verbally discussing and negotiating the direction of the play. Among disadvantaged children, the leader gives orders

and there is no common planning or selection of roles. If the other children agree, there are no problems. But, when the children refuse or disagree, quarrels arise and play is often abandoned.

One might expect that aggressive children would have difficulty communicating and negotiating during play. As Smilansky pointed out "planning, developing, and maintaining the play demands cooperation, which is reached by verbal explanations, discussions, commands and so on" (p. 8). McDonough (1989) has reported that emotionally handicapped 8-9 year olds had shorter mean length of utterance and committed more errors of topic maintenance, inappropriate responses, and inappropriate speech style in their spontaneous dyadic conversations. McDonough speculated that these errors may result in misunderstandings and difficulty maintaining relevance to the initiated topic.

Fenson (1984) measured integration during symbolic play (i.e., the child's ability to combine separate actions into coordinated behavior sequences) in both the action and linguistic domains. Single-scheme combinations were credited when the same play-act was directed toward two or more recipients (e.g., the child combs her own hair, then the doll's hair), whereas single-scheme utterances were credited when two successive statements reflected variations on the same theme ("Put the doll to bed, now the bear."). Multischeme combinations were coded when two or more play-acts occurred in a logical order (e.g., child

places the doll in the bed, then covers the doll with a blanket), and multischeme utterances were scored when two consecutive statements showed a logical relationship ("Be careful. You will hurt yourself.").

It seems that the children in this study could engage in both multischeme actions and utterances as defined by Fenson. However, their ability to integrate actions and utterances interactively so as to maintain pretend sequences may have been more difficult for them. Unfortunately, the coding scheme used in this study did not differentiate between sociodramatic play that included verbalizations and negotiations between the children and sociodramatic play which did not. Furthermore, although brief notes were made on the coding sheets describing the play episodes, full transcripts were not obtained. Therefore, the data as collected could not be recoded to analyze the children's use of negotiation and communication in symbolic play.

It is recommended that obtaining transcripts of play episodes, rather than using a predetermined coding scheme, would be a beneficial way in which to analyze communication and negotiation in play. Perhaps a coding scheme such as the one developed by Nelson and Seidman (1984) could be adapted to study how interactive language maintains sociodramatic play. Nelson and Seidman defined speech exchanges as conversational turns in which a turn was taken by each partner. Conversational turns were classified as either continuous or discontinuous discourse. Continuous

discourse was defined as turns linked by topic collaboration, whereas discontinuous discourse was coded when a speaker did not engage in a topic that was connected to the preceding turn.

Adapting this scheme, it may be interesting to investigate how the verbal exchanges of aggressive and non-aggressive children during play vary in terms of continuity (actions or verbalizations connected to the play partner's prior action or verbalization) and how this influences the maintenance of pretend sequences.

However, if children from low SES groups do not use verbalizations and negotiations to cooperate during play, as Smilansky has found, differences between aggressive and non-aggressive children in this population may be obscured. Given the language problems of the children in this study (i.e., labeling, vocabulary, and verbal comprehension), their ability to integrate pretend sequences through verbal interactions may be impaired. Therefore, they may not be able to maintain sociodramatic play through verbal communication.

As a whole, these findings suggest that both the aggressive and non-aggressive subjects in this study had the rudimentary social and symbolic play skills to engage in sociodramatic play. Therefore, sociodramatic play training would not need to be modified to focus on preliminary skills. Whether or not aggressive and/or disadvantaged children need support in the communication and negotiation

aspect remains uncertain and is an important domain for future research. It appears that research on interactive language in play might be beneficial to the understanding of the play of both aggressive and disadvantaged children.

Appendix A

Consent Form

THE MOUNT SINAI MEDICAL CENTER
ONE GUSTAVE L. LEVY PLACE • NEW YORK, NY 10029-6574
Mount Sinai School of Medicine • The Mount Sinai Hospital

Dear Parent(s) (or Guardian):

You/your child are being asked to participate in a research study. The purpose of the study is to learn about the physical health, neighborhood and family factors that influence the likelihood of success for children in terms of school behaviors and school achievement. You/your child qualifies for participation in this study because your child is starting kindergarten and we want to study all of the kindergarten children in this entire school.

We plan to enroll all of the kindergarten children in two schools in District 4. This would be about 200 boys and girls. We plan to assess the children in kindergarten and then to follow their school progress in first and second grade. We are particularly interested in factors that affect tendencies toward disruptive or aggressive behavior and that affect a child's ability to pay attention in a learning situation. In particular we want to see what differences, if any, are related to medical factors including course of pregnancy, birth weight, health problems at birth or during the first year of life. We also want to learn how the early childhood experiences in the family and outside the home including prior school experiences such as Headstart or Pre-Kindergarten influence later growth and development.

We will do testing of your child for current developmental and intellectual status, school readiness and for response to specific tests of ability to pay attention. We will obtain teacher ratings and behavioral observations of your child. We will also obtain information from you as the parent (or guardian) about your observations, experiences and knowledge of your child. Your child's health history will be reviewed. We ask your consent to review your child's medical records. If your child has not had a recent test for anemia (blood iron) or lead level we will ask for consent to obtain them. We will also ask consent to review school records for kindergarten, first and second grade, also nursery school, Headstart or pre-K if these were attended. We estimate that the individual psychological testing of your child will take a total of four hours spread over several days. No single testing session would be longer than 45 minutes. The interview and questionnaires for you will take a total of about three hours spread over several days.

The evaluation of your child is similiar to but much more detailed than the medical and psychological assessment that is done by the schools for all entering kindergarten children. This study will be carried on entirely at the school and during school hours. There will be no charge to you for the additional detailed evaluation of this study. You will receive $20.00 for your time and effort in participation. You will be given a full report on our evaluation of your child. If any medical, behavioral or psychological problems are found, we will assure you that for medical problems, your child's pediatric doctor or clinic will be contacted and we will follow up to see that needed services are provided. Behavioral or psychological problems will be treated by the Mount Sinai Division of Child and Adolescent Psychiatry. Teachers will be advised about how to meet special teaching needs of your child if these are revealed by our tests.

There are no risks associated with this study. The psychological testing will use established measures that have been used in a standard way for kindergarten age children. The test for ability to pay attention is a computer-based test that resembles a video game like Nintendo. Children tend to like all of the individual testing. They find it novel and interesting. The anemia or lead level test, if needed, can be done with a finger prick and drop or two of blood. All of the information obtained by us regarding you and your child will be completely confidential. It will never be a part of the school records. All records will be stored at Mount Sinai Medical Center.

There are potential benefits to you and your child. Your child will have a very comprehensive assessment of his (her) readiness for school. You and the teacher will then be able to understand the talents and strengths of your child as well as areas in need of improvement in helping your child to succeed in school. There will be general benefit. This study can answer questions about whether or not the medical problems a child may have at birth will have lasting effects that may influence school behavior. We will learn about the way in which experiences inside the family and outside in the environment influence the later outcomes. In particular, we expect to learn more about the factors that enable at risk infants to have good outcomes. Teachers will benefit by understanding their kindergarten children and to meet their needs more effectively. A school-based intervention comparable to that being proposed is not otherwise available to you. The kindergarten test for ability to pay attention is unique to Mt. Sinai and is not available elsewhere. The other standard measures of developmental, behavioral and intellectual status would be available by taking your child to a private agency or clinic psychologist and neuropsychologist at your own expense and time out of school.

You may withdraw from this project at any time. While in the project you may refuse any part of the intervention. We are eager to have all of the kindergarten children participate so we do not forsee any circumstances in which your child's participation would be ended by us without your consent. The school is very cooperative with this project but it is not in any way required by the school.

Thank you very much for your help. If you have any questions about the study, please feel free to call this office and ask for Suzanne McIntyre. Our number is 241-4361.

Sincerely,

Beatrix A. Hamburg, M.D.

Beatrix A. Hamburg, M.D.
Professor of Psychiatry
and Pediatrics
Mt. Sinai School of Medicine

Parent's Consent

I have read the letter describing the Kindergarten Study and agree to participate and to allow my child to be in it.

PLEASE SIGN YOUR NAME DATE

PLEASE PRINT YOUR CHILD'S NAME

Appendix B

Play Coding Sheet

Date _____ School _____ Classroom _____ Observation _____ Coder _____

SUBJECT	ACTIVITY	TYPE OF AGGRESSION	PROVOCATION OF AGGRESSION	DENSITY	PLAY	SYMBOLIC PLAY	PARTNER	PARTICIPATION

ACTIVITY

1-UNOCCUPIED
2-ONLOOKER
3-NONTOY EXP
4-SOCIAL INT
5-AGGRESSION
6-PLAY
7-OTHER

TYPE OF AGGRESSION
1-VERBAL
2-PHYSICAL

PROVOCATION OF AGGRESSION
1-PROVOKED
2-UNPROVOKED

DENSITY

1-ALONE
2-CARETAKER
3-CHILD
4-CHILDREN
5-CHILDREN & CARETAKER

PLAY

1-FUNCTIONAL
2-CONSTRUCTIVE
3-ROUGH & TUMBLE
4-SYMBOLIC
5-OTHER

SYMBOLIC PLAY

1-FUNC USE OF OBJ
2-ANIMATION
3-CREATE OBJ (REL)
4-OBJ PROPERTY (REAL)
5-OBJ SUBS
6-CREATE OBJ (NOT-REL)
7-OBJ PROPERTY (IMAG)
8-PRETEND SITUATION
9-PRETEND ROLE
10-DRAMATIC

PARTNER

1-ALONE
2-CARETAKER
3-CHILD
4-CHILDREN
5-CHILDREN & CARETAKER

PARTICIPATION

1-SOLITARY
2-PARALLEL
3-COOPERATIVE

Appendix C

Description of Play Coding Categories

ACTIVITY FOCUS CATEGORIES

Code	Category	Description
1	Unoccupied Activity	Aimless, nondirected non-play behavior without any sustained focus. Includes standing around or glancing around the room and showing no activity other than restless movement.
2	Onlooker	Sustained observing of a social interaction or organized activity occurring between 2 or more individuals, or observing another individual. Differs from unoccupied in that the child is definitely observing others rather than anything that happens to be exciting.
3	Non-Toy Exploration	The child is manipulating or exploring objects other than toys.
4	Social Interaction	Interactions not occurring within a play situation. These include conversations, requests for information, praising another child. Also code with whom the child was interacting.
5	Aggression	Fighting or arguing over a toy, space, etc. Further code as verbal or non-verbal aggression.
6	Play	Child is engaging in play. Further code as to type.
7	Other	Waiting/preparing for an activity, personal needs.

Adapted from Children's Environments Research Group (1987)

SOCIAL DENSITY IN PLAY AREA

Code	Category
1	Child is Alone
2	Caretaker is in Area
3	One Other Child is in the Area
4	More Than One Other Child in Area
5	Children & Caretaker are in Area

TYPE OF AGGRESSION

Code	Category	Description
1	Verbal Aggression	Any hostile, derogatory, or exclusionary verbal remark including insults, threats, and cursing and yelling at others.
2	Physical Aggression	Any hostile physical contact (e.g., hitting, scratching, pushing/ shoving (code this only if it has no play overtone, otherwise code as rough and tumble play).

PROVOCATION OF AGGRESSION

1	Provoked Aggression	Aggression immediately following another's aggressive behavior (retaliation in 30 seconds or less).
2	Unprovoked Aggression	Aggression not preceded by a peer's aggressive behavior for at least 30 seconds.

PLAY CATEGORIES

Code	Category	Description
1	Functional/Sensorimotor	Child is engaged in sensorimotor activities (e.g., pouring sand/water in and out of a container), or using toys in a functional manner (e.g, manipulating toys).
2	Constructive Play	Child is manipulating objects for the purpose of constructing something (e.g., building sand castles, blocks; puzzles)
3	Rough and Tumble Play	Obviously physically playful rather than aggressive and/or restraining behavior. (If the behavior becomes overtly aggressive code as aggression).
4	Symbolic Play	Any symbolic transformation of objects, self, others or a situation. See symbolic play categories.
5	Other	Any other play activity not described above.

SYMBOLIC PLAY CATEGORIES

1	Functional Use of Pretend Object	Pretending with real objects as they are intended to be used (e.g., taking pictures with a toy camera).
2	Animation	Attributing living characteristics to an inanimate object (e.g., child saying "my baby doll is crying because she doesn't want to go to sleep" or having the doll speak).
3	Create an Imaginary Object (Related)	Creating an imaginary object which is functionally related to an existing object (e.g., pretending to pour pretend coffee from a coffeepot).
4	Attribution of Object Property (Existing Object)	Property is attributed to an existing object which is functionally related to an existing object (e.g., making siren noises and "vroom" sounds while pushing a fire truck and cars).
5	Object Substitution	Child assigns a new identity and/or function to an existing object (e.g., referring to a cupboard as a oven, rolling blocks to a stack of toys saying "I'm going to knock these things over with my bowling ball").
6	Create an Imaginary Object (Not Related)	Reference to materials that are not present in the playroom, pretending that an imaginary object or material exists. The imaginary object bears no functional relationship to an object in the play

		area (e.g., lifting up the front end of a car and pretending to hold up a pretend flashlight).
7	Attribution of Object Property (Imaginary Object)	A property is attributed to an imaginary object. For example, using a hand to iron clothes, and then telling play partner not to touch the iron because it is hot.
8	Pretend Situation	Pretending that an imaginary situation exists (e.g., pretending to be shopping in a store when in the playroom).
9	Pretend Role/Character	Portrayal of an imaginary character or role (e.g., pretending to be mother, superman).
10	Dramatic	Integrating objects, roles, and situations into the same play sequence (e.g., playing out some script). Included are playing house, doctor, cowboys and indians.

Dramatic/symbolic play scale adapted from D. Cole, and J. C. LaVoie (1985), and V. C. McLoyd (1980).

SOCIAL PARTICIPATION

1	Solitary	Child plays alone with toys or objects
2	Parallel	Child is playing in area that contains others, but is not sharing the space or objects with other, even though similar activity is played or similar toys are used.
3	Cooperative/Group	Child is playing with others in the same space and sharing objects; child is interacting with at least one other person; they are engaged in a common activity and acknowledge each other's presence by either verbal or gestural communications.

Social participation scale taken from Parten (1932).

SOCIAL/PLAY PARTNER
(Note: to be coded when child is engaged in social interaction or play)

1	Alone
2	Caretaker
3	Child
4	More Than 1 Child
5	Children and Caretaker

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