and experimental methodologies.

In the correlational study, 91 day-care children participated in a naturalistic investigation of the two phenomena. Social competence was assessed using behavioral observations during free-play, social role-taking tasks, the Kohn & Rosman Social Competence Scale and a measure of playmate popularity. Social pretend play was assessed quantitatively and qualitatively. Since little data are currently available regarding such qualitative assessment, a preliminary step in the research was to analyse the social pretend play of younger and older preschoolers so as to determine those aspects on which they differed. From these data were derived qualitative measures for use in the correlational study.

In the experimental study, 33 of the children were assigned to one of three groups. Two of the groups met with the author for eight 30-minute sessions and participated in either social pretend play activities or in individual non-fantasy activities. The third group received no treatment. The social competence measures collected for the correlational study served as pretest measures and the battery was re-administered at posttest. Observational monitoring of the group sessions was undertaken to evaluate the adult-child and child-child contacts in the two conditions.

The results of the developmental study indicated that the older children engaged in more social pretend play than did the younger children. Furthermore, a greater proportion of this play was of a complex nature, involving simultaneous transformations of multiple play elements. Indices of these two play components were therefore used in the correlational study. Striking sex differences in the content of the play episodes were also found and the implications of these findings are discussed.

The correlational data were analysed by means of multiple regression procedures. Each social competence measure was regressed on the social pretend play measures and on four covariates: age, sex, IQ and non-pretend social activity. Significant Multiple R's were obtained in the prediction of popularity, teacher ratings, behavioral measures of social activity and of successful assertiveness and social cognition. In each equation, the pretend play measures accounted for significant portions of the variance in addition to that accounted for by the control variables. The pretend play measures were not equally potent. Frequency of play was the only significant pretend predictor for the first four measures while complexity of play was the only significant pretend predictor of the last measure. More refined analyses of some of these data indicated that the relationships with the behavioral measures were possibly more pervasive for the males than

the females. A final exploratory analysis of the effect of pretend vs. non-pretend play context on specific social behaviors indicated that the pretend play context was characterized by superior social functioning.

Analysis of the training study posttest scores revealed no significant differences on any of the competence measures. The session monitoring data were also analysed and the failure of the training study was partially accounted for in terms of these results.

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In recent years there has emerged in the developmental literature a growing recognition of the value to young children of peer group social competencies (Hartup, 1978). The delineation of the dimensions of skilled interpersonal behaviors and specification of the processes underlying their acquisition are thus topics of considerable research interest. The goal of the research to be reported in this investigation was to extend our understanding of the development of peer group social skills in preschoolers by examining its relationships to those features of social play which have been considered important to its growth.

One of the unresolved issues in the study of peer social competence is the manner in which the construct is to be defined. Social competence is a term which has been derived from everyday language and it is thus associated with multiple differing referents. A diversity of operational definitions is, consequently, apparent in the literature. For example, Anderson & Messick (1974) list twenty-nine different psychological, cognitive, biological, physical and emotional variables which have been included within this broad term. Such inclusiveness is, however, of limited value only theoretically and most researchers focus on one or two of these dimensions in their investigations.

Social cognitive skills (Gottman, Gonso & Rasmussen, 1975), social behavioral skills (Wright, 1980), peer acceptance (Rothenberg, 1970) and teacher ratings of social competence (Jennings, 1975) are variables which have been used to define this construct. While researchers have in general tended to measure social competence by means of one or another of these variables, there is little research evidence to suggest that any one of them is more useful or important than another. In an extensive discussion of the role of peer relations in the development of social competence, Hartup (1978) suggests that all of the dimensions are relevant in specifying this construct. By defining social competence in terms of the capacity to initiate and engage in positive, sustained interactions, to become an accepted member of the peer group, and to demonstrate a mature level of non-egocentric thinking about one's social world, he indicates that all of these skills collectively contribute to successful peer group social functioning. Social competence is thus conceptualized as a multidimensional phenomenon which finds expression in many areas of psychosocial functioning.

Recognition of the importance of these competencies can be attributed to several factors. First, contrary to earlier opinion, it has been shown that young children can acquire and demonstrate considerable skill in their social interactions with peers (eg., Garvey & Hogan,

1974). Second, studies of social development in primates have demonstrated the salience of early peer contact in social skill acquisition (Suomi & Harlow, 1975). Finally, and perhaps most importantly there are several studies documenting its importance as a correlate of healthy childhood adaptation and as a predictor of healthy adult adjustment. For example, young children who are shy and reserved tend also to experience discomfort and anxiety in their social environment (Bronson, 1966). Additionally, those children who are not popular in their peer group tend to have higher delinquency rates as adolescents (Roff, 1961), are less likely to complete high school (Roff, Sells & Golden, 1972) and are at greater risk for emotional difficulties requiring psychiatric intervention in adulthood (Cowen, Pederson, Babigian, Izzo & Trost, 1973; Rolf, 1972).

These data clearly suggest that success in peer relations is a crucial dimension in the socialization of the child. However, very little is known about the processes by which such competent social behavior might be acquired. Recently it has been proposed that social fantasy play is one of the major channels by which young children learn new cognitive, social and emotional skills. (Bruner, 1973; Fein, Note 1; Garvey, 1977; Smilansky, 1968). By social fantasy play these authors are referring to those play activities which involve symbolic

transformations of the real life situation within the context of a social interaction. These transformations typically are applied to the current situation, to the child's self-identity and to objects in the environment (Fein, 1979; Garvey, 1977). Furthermore, in order for such fantasy play to be considered social, all partners must be in agreement as to the nature of the transformations. Fantasy play appears in its simplest form as solitary symbolic activity during the second year of life. By three years of age, the capacity for symbolic play is fully developed and during the preschool years, one sees its fullest elaboration in the form of social fantasy play. In fact, in the the preschool environment most of the observed fantasy play occurs within a social context (Sanders & Harper, 1976). After the age of six, fantasy play, both social and non-social, is said to become less and less prominent in the child's repertoire and to be gradually replaced by other activities. Early investigators of social fantasy play (Piaget, 1951) assumed that its appearance in the activities of the young child was a universally occurring phenomenon. More contemporary analyses have indicated that children from socially disadvantaged backgrounds do not engage in this form of play as frequently as do children from middle-class backgrounds (Rosen, 1974; Smilansky, 1968).

The theoretical foundations for the argument that social pretend play exercises an instrumental role in cognitive and socio-emotional development are to be found in the conceptual formulations of cognitive developmental psychologists such as Piaget (1951), Vygotsky (1966) and Bruner (1973). All of these researchers have analysed the forms and functions of early symbolic activity and all have singled it out as a phenomenon of considerable developmental significance. Piaget focused on a structural analysis of the different stages through which symbolic play develops and was relatively less concerned with the analysis of its possible functional value. Vygotsky and Bruner, on the other hand, have emphasized its leading role in language learning, impulse control and in the acquisition of rule conceptualizations, both social and non-social. Bruner (1972, 1973, 1974) incorporates both human and ethological research in his analyses and argues for the crucial importance of play in phylogenetic and individual development. He suggests that, in pretend play activity, patterns can be performed in an atmosphere which is characterized by a lack of risk, a lack of goal orientation and a high level of emotional involvement. Consequently, this form of play provides a medium in which the learning of new behavioral combinations and of their consequences is maximized. In this way, the novel and creative use of materials and behaviors is thus made more probable. Bruner states further that for the preschool

child, whose linguistic skills are still relatively primitive, symbolic play has a crucial function in teaching the child fluency with the rules and conventions of his social world. Vygotsky (1967) focuses on the cognitive significance of symbolic play and argues that this activity helps the child to begin to separate action from thought. Thus, through the conscious exercise of self-restraint over behavioral patterns, an understanding of underlying social and cognitive rules is acquired.

Bruner, Piaget and Vygotsky did not differentiate between social fantasy and solitary fantasy activity in their analyses of the functions of symbolic play. Smilansky (1968), after observing the play of Israeli preschoolers in order to identify those skills necessary for successful entry into elementary school, was one of the first contemporary theorists to suggest that sociodramatic play (elaboration of a pretend theme with another child) is the specific form of symbolic play linked to skill acquisition. She argued that this form of play is the most highly complex and that participation in such an activity necessitates the exercise of a number of sophisticated skills. These include such cognitive skills as the capacity for abstraction and the ability to attend to details and to discriminate the central features of a role. Also included are such socio-emotional skills as creativity, flexibility, cooperation, empathy and

self-control. By necessitating the use of these skills, social pretend play activates and consolidates the child's existing emotional, social and cognitive skills. In addition, it stimulates further growth and development in each of these areas. Smilansky suggests that, as a result, the more a child engages in social pretend play, the more these skills will be acquired and integrated at an earlier age.

This position has been amplified and reiterated by other psychologists who have studied the phenomenon of social pretend play. Fein (Note 1), for example, states that one of the problems confronting developmental psychologists is that of accounting for a child's mastery of complex social conventions, roles and principles in the absence of any formal training. In agreement with Smilansky, she hypothesizes that during the preschool years the acquisition of these multiple skills occurs within the safety and privacy of social pretend play. Singer (1976) has also emphasized the role of make-believe play in social development and discusses its utility in the acquisition of new behavior patterns and in other forms of social learning. Concurring with Smilansky, he feels that the child who is adept in make-believe skills will function better in complex academic and social situations. He is also in agreement with Bruner's suggestion that fantasy play is inherently pleasureable to the child and that it is

this property which makes it a natural vehicle for spontaneous learning during the preschool years. When in play, the child's elevated level of enjoyment permits him to be more daring and exploratory in his use of currently available concepts. Thus, through play, old skills are consolidated and new skills are acquired. Golomb (Note 2), in an analysis of the cognitive and social significance of pretense play, suggests that social pretend play represents the child's highest level of social and cognitive achievement. Within this form of play the child exercises his most advanced skills in multiple role-taking, in social communication with his peers, in the integration of partners within cooperative play and in the elaboration of a complex story theme. More than any other activity, therefore, social pretend play fosters the child's development of these complex conceptual, representational and social skills. Because this highly favoured activity of childhood offers great emotional satisfaction to the child and is so readily self-generated, its educational potential for informal learning is enormous.

Some of the most extensive examinations of the components and organization of social pretending and the ways in which such activities relate to growth and learning have been provided by the work of Garvey (Note 3, 1975, 1977). Two features of social pretend play are particularly important in her discussions. First, drawing on the work

of Bruner and of the ethnologists (Reynolds, 1976), she notes that play is a behavioral system which does not have any behaviors unique to itself. Instead, behavior patterns are transferred from other behavioral systems (eg., aggressive attack becomes rough-and-tumble play) and are used in the play context in a simulative or "non-literal" mode. Secondly, she points out that these behavior patterns appear in mutually regulated and contingent sequences which are governed by implicitly acknowledged rules. Thus, for social pretend play to be successful, the child must use the non-play behaviors in such a way that his/her actions can be understood by the partners and can elicit expected responses. S/He must first communicate that the activity is non-literal (ie., pretend) and then must demonstrate that his/her behaviors will follow certain expectations. Because the many cues deriving from everyday, structured, interpersonal relations (eg., mother putting baby to bed) are familiar to most preschoolers, these action patterns most easily facilitate this type of rule-dependent expectation. These two features of play then contribute both to the child's expertise as a player and to expanded learning in the non-play context. Specifically, the communication of a pretend state may be hypothesized to facilitate cognitive development (Golomb & Cornelius, 1977), while the execution of interpersonal routines may be seen as fostering social skill development. Incomplete or immature behavior patterns performed in the play context

are elaborated on and improvised on by the child to a greater extent than in non-play contexts. Therefore, when the behavior next appears in a non-play context, it will be better integrated, more skilled and more effective.

In summary, social pretend play has been identified as a phenomenon unique to the preschool period and theoretical analyses of its components suggest that it may be influential in the consolidation and growth of cognitive and social skills during this period. This influence is conceived of as interactional in nature. A minimum repertoire of behaviors is necessary for social pretend play to occur. The play activity itself then perfects and enhances these behaviors. Furthermore it leads to new growth and to the elaboration of new behaviors which have not yet occurred in the non-play context. Having been practiced within the relatively protected pretend situation, these new bahaviors may then be transferred to non-pretend contexts. In this way, the engagement in social pretend play and the acquisition of social and cognitive skills become mutually stimulating, with the play behaviors having the "leading edge". The purpose of the present research was be to examine empirically some aspects of this hypothesis. Specifically, the relationship of social pretend play to the development of the social competencies of preschool children was investigated, using both correlational and experimental methodologies.

Some limited empirical support for the hypothesis of the formative role of social pretend play in the development of social competence is currently available. Most of this support comes from studies which attempt to increase a particular skill by means of play training sessions, thereby supporting the inference that this play activity performs a causal role in the development of that skill. In its general form, this "training" paradigm consists of the assignment of small groups of children to either a treatment condition in which social pretend play is explicitly encouraged by an adult, or to a control condition in which the children receive no intervention. In addition, many of the studies include other control conditions in which the effects of positive adult attention or verbal stimulation may be assessed by providing these elements in the absence of social pretend play. This approach was first outlined by Smilansky (1968) in her research on the sociodramatic play of Isreali preschoolers. After finding that children from disadvantaged families demonstrated little social pretend play, she provided some of these children with specific encouragement and coaching in sociodramatic activities during the regular free-play period. Their performance on a selection of cognitive, language and social interaction measures was then compared to that of a group of children who received no such training. While Smilansky's description of her dependent measures is somewhat vague, it would appear that the

children receiving sociodramatic training showed increases in their verbal communication skills and in the amount of positive affective behavior shown, as well as a decrease in aggressive behaviors. A replication of Smilansky's free-play intervention approach, but which included an additional control group in which the children received positive adult attention in a non-pretend situation, has been provided by Rosen (1974). She found that sociodramatic play coaching given over forty free-play sessions caused posttest increases on experimental tasks requiring group cooperation and group effectiveness as well as on tasks of affective and spatial social role-taking. The control children, who received ten hours of adult coaching in non-pretend activities, did not show any such comparable changes.

Two studies by Saltz and his colleagues (Saltz & Johnson 1974; Saltz, Dixon & Johnson, 1977) investigated the impact of social fantasy training on an extensive battery of cognitive tasks, in which was included a task of affective social role taking. The training procedure used by these researchers was somewhat different from that used by Smilansky and Rosen. Experimental children were assigned to small groups, each composed of four children, which met twice weekly for seven months. In these groups they were taught to enact either familiar fairy tales, such as Little Red Riding Hood, or else themes typical of sociodramatic

play, such as enacting domestic activities. Compared with the control groups, which received either no treatment or training on non-fantasy tasks, the two pretend training groups showed improvement on most of the dependent measures. The thematic-fantasy group generally showed greater improvement than did the sociodramatic group. With respect to the social role-taking task, the results of the first study (Saltz & Johnson, 1974) indicated that thematic-fantasy training caused increases in empathy. The results of the second study provided only partial repliction of this finding (Saltz et al., 1977).

The effects of role-play training on social perspective-taking skills in particular have been examined in a few other studies. Burns & Brainerd (1979), Iannotti (1978), and Fink (1976) have all reported on short-term training procedures (four to eight sessions) which provide exposure to a variety of experiences involving pretend enactment. Their findings indicate increases on tasks of affective and cognitive social role-taking. In general, spatial perspective-taking is not influenced by these training procedures, although such an effect was reported in one study (Burns & Brainard, 1979).

The primary focus of the present research is the influence of social pretend play on social skill development and the literature has been reviewed from this

perspective. One should note however, that a number of these training studies have examined the effects of pretend play training on cognitive and language development. Linguistic skills, associative fluency, conceptual abilities and the attainment of quantity conservation have been reported to improve as a result of pretend play training activities (Feitelson & Ross, 1973; Fink, 1974; Freyberg, 1973; Saltz et al, 1977; Golomb & Cornelius, 1977). With respect to conservation skills, however, a failure to replicate has been reported (Guthrie & Hudson, 1972).

In summary, data have been reported suggesting that social pretend play may be influential in social and cognitive skill development. A number of issues, however, limit this inference. As noted above, some attempts to replicate these training studies have not been entirely successful. Additionally, as noted by other researchers (Burns & Brainerd, 1979; Rubin, 1980; Smith, 1977), these studies provide little information on the actual content and processes of the training and adult-attention control group activities. In these studies, positive results are attributed to the encouragement of pretend play in the experimental group. Nonetheless, other dimensions are certainly present in both groups. Thus it is possible that these posttest changes are the result of other factors occurring in the experimental groups, such as the

occurrence of positive adult-child contacts or of non-pretend peer interaction. Most of these studies included control groups which are described as receiving equivalent amounts of adult interaction. Yet no measurements of the amount or kind of interaction in the different situations are reported. Therefore differential treatment effects may be due to differences in the nature of the adult contact or to the amount of non-pretend play rather than to the playful nature of the peer group contact.

In attempting to clarify these issues, Smith & Syddall (1979) conducted a fifteen-session training study in which they measured the amount and quality of the adult-child interaction in both the experimental fantasy training group and in the non-fantasy activity control group. An analysis of the number of adult-child contacts indicated that they had succeeded in matching the two conditions on this variable. Interestingly, their results were unlike those of the studies previously described since differential treatment effects were not found for any of the cognitive or language variables which they administered. They did, however, find significant treatment effects for those measures which tapped social participation and social role-taking. At posttest, the children in the fantasy training group engaged in more peer group activity and were also more empathic. These results

clearly demonstrate the utility of monitoring actual child-adult behavior occurring within the group sessions and cast some doubt on results obtained in the earlier studies. They also suggest that the important dimension in producing the cognitive and linguistic changes found in earlier studies may be the amount of adult contact rather than the pretend play activity. Regardless of the careful monitoring and control of this variable, the experimental children still showed significantly more change on measures of social participation than did the control children. Perhaps, then, it is only the social skills dimension which is influenced by social pretend play training.

The Smith & Syddall study sets an important precedent by providing data to evaluate the adequacy of the training and control group procedures and further research with this paradigm should follow this lead. The monitoring of additional aspects of the training sessions would be beneficial in evaluating the validity of other results. Although the experimental sessions are designed to facilitate pretend interaction, there is no indication of the extent to which this has been successful. Monitoring of this variable, as well as of the amount of non-pretend interaction in both conditions would, therefore, seem crucial to the conclusion that pretend play is indeed an effective treatment.

Another issue which limits the nature of the conclusions to be drawn from these training studies deals with the relationship between experimentally induced phenomena and their naturally occurring counterparts. On the basis of studies using the training paradigm, one may argue that when groups of children are led by an adult in social pretend play, significant changes on cognitive and socio-emotional measures are found. This training paradigm is, however, a highly artificial situation. In the natural environment, adults rarely engage in much pretend play with preschool-aged children. In addition, play is characterized by it spontaneous, voluntary and pleasureable nature (Garvey, 1977) and it is not clear that these features are reproduced within the training paradigm. The results of these studies cannot automatically be generalized to the natural environment and at present, do not provide direct support for the basic hypothesis that spontaneously generated peer group fantasy play is instrumental in the socialization of the young child. Correlational analysis of the joint occurrence of these events in the natural environment would provide important information on both the validity and the generality of this hypothesis.

At present, little naturalistic research of this hypothesis has been conducted. The results of a few studies are, nonetheless, pertinent to this issue. Rubin & Maioni (1976) conducted a naturalistic study in the preschool

environment and found that the occurrence of dramatic play was correlated with peer group popularity and with advanced cognitive classificatory and spatial role-taking skills. A measure of empathy was also administered but this did not relate to dramatic play occurrence. Unfortunately, no distinction was made between social and non-social dramatic play in this study. Perhaps this lack of distinction explains the failure to find a correlation with the empathy measure. It may be that empathy is correlated only with social dramatic play and not with dramatic play in general. In an earlier study, Marshall (1961) investigated the correlates of language use and of the expression of hostility occurring within social interactions that were defined as either dramatic or reality-based. Popularity was found to be correlated with the incidence of dramatic play interaction but not with the "reality" variables. Despite the restricted definition of pretend play, Marshall's study does provide some supportive evidence that the occurrence of pretend play is associated with a measure of social competence. Finally Johnson (1976), in a study which differentiated between social and solitary fantasy play, found that creativity was related to the occurrence of social fantasy play but not to the occurrence of non-social pretend play. In general, these correlational results provide some tentative support for the hypothesis that spontaneously occurring social pretend play is correlated with social competence and suggest that further

investigation is warranted in this area.

A final limitation of both the correlational and the experimental studies is that the measures of social skill have often been restricted to the cognitive sphere and have consisted primarily of role-taking tasks. Only two of the training studies have included any behavioral indices of social functioning and few of the other studies have employed such traditional measures of social competence as peer popularity nominations or teacher ratings. Social competence has been suggested to express itself along many dimensions (Anderson & Messick, 1976; Hartup, 1978), including the behavioral, the cognitive, and the emotional. Furthermore, initial research into the dimensionality of this construct suggests that these different aspects are not all strongly intercorrelated (Connolly & Doyle, Note 4). Because a relationship is established between social pretend play and social role-taking, one cannot assume that this relationship also holds for different measures of social competence. A meaningful analysis of the relationship between social pretend play and social competence therefore entails a multi-dimensional assessment of social skill. In this context, social skill may be considered to manifest itself along behavioral, cognitive and affective dimensions. In addition, teacher judgements of competence and peer popularity measures should be included since these measures

are traditionally used and their inclusion would add to the generality of the results.

The behavioral evaluation of social skill has typically involved the quantitative measurement of the frequency of social interaction (eg., Smith & Syddall, 1979). Some research does suggest that qualitative aspects of social interaction are also important (Jennings, 1975; Wright, 1980). The successfulness of a social bid, the degree of social assertiveness demonstrated by the child and the affective tone of the social sequences have been identified as contributing to a child's level of skill (Hartup, Glazer & Charlesworth, 1967; Jennings, 1975; Wright, 1980). Evaluation of these qualitative, behavioral features of social skill should also be included in a comprehensive assessment of social competence.

With respect to the evaluation of the cognitive components of social skill, two types of social perspective-taking have most consistently been singled out; cognitive role-taking and affective role-taking (Wright, 1980). An adequate analysis of social cognitive skill should therefore include an assessment of both of these types of role-taking.

In reviewing the results and limitations of the relevant literature, two issues are in need of further

investigation. The first concerns the clarification of the relationship between spontaneously occurring social pretend play and social competence. As has been outlined above, the establishment of such a relationship is both theoretically important and as yet unexplored. A major goal of the present research was to comprehensively evaluate the viability of this relationship. In this analysis, careful attention was paid to providing comprehensive and meaningful assessments of both variables. With respect to the assessment of social competence, measures which have proven useful in previous research (Connolly & Doyle, Note 4) and which tap the full complex of social skill were included. With respect to the assessment of social pretend play, less research is available from which to determine meaningful variables. Clearly, an index of the overall amount of social pretend play is necessary. More refined measures may, however, be of value. Garvey (1977) has suggested that pretend play can involve different types of elements and transformations and can exist on different levels of complexity. She also suggests that these elements are related to the developmental maturity of the child. It would be useful, therefore, to include a measure of the degree of complexity or differentiation in the play itself. This refinement may provide greater prediction of the proposed relationship and would permit an examination of the correlates of both the amount and the maturity of social pretend play. Since data

are not available from which to derive such a measure, an initial step of the present research was to empirically derive a measure of play complexity to use in the correlational analysis.

The second issue which requires clarification in this literature concerns the generality and viability of the social pretend play training paradigm. As reviewed above, the majority of the training studies have not been sufficiently robust or extensive to support the inference that social pretend play is indeed a crucial variable in social competence development. With the exception of Smith & Syddall (1979), they have not provided any means of evaluating the specific contents of either the experimental or of the control groups. In addition, the assessment of social competence has not been explored in a comprehensive manner in any of these studies. The present research, by responding to these issues, attempts to provide a more extensive test of this hypothesis. To this end, monitoring of the play sessions was conducted to ensure that the children in the experimental pretend play training group did in fact engage only in social pretend play and that the children in the control group, while not engaging in any social pretend play, did receive an equal amount of adult-child contact. To provide a base-line for comparison, a no-treatment control group was included. Finally, as in the correlational study, extensive and meaningful

assessments of social competence were collected to permit a more complete and detailed analysis of this hypothesis.

The present research consists of two interrelated studies. In the first is is examined the relationship between social pretend play and social competence in preschool children aged three to six years. Using a correlational -approach, the joint occurrence of these two phenomena was evaluated within the context of the day-care environment. Quantitative and qualitative naturalistic observations of social behavior as well as non-observational measures of social competence were collected to assess a child's status on the social competence dimension. Concurrent naturalistic observations of social pretend play were collected to assess the child's status on the play dimension. A developmental analysis of these latter data was first conducted to derive a measure of qualitatively superior social pretend play. This measure was used in addition to the quantitative index of each child's level of social pretend play. These two sets of data, the social competence measures and the social pretend play measures, were then analysed so as to determine the degree of interdependency between them. In this analysis, it is hypothesized that the child's tendency to engage in social pretend play should be a significant predictor of his/her status on the concurrently collected measures of social competence. Furthermore, it is hypothesized that the

degree to which this social pretend play may be considered to be qualitatively superior should add significantly to these predictions of a child's competence status. Specifically, the more time a child spends in social pretend play, the more highly should he/she score on behavioral and cognitive measures of social competence. The social competence of this child should be evaluated more favourably by his teachers. Finally, he/she should show higher levels of social acceptance with peers. Prediction of these relationships should be sharpened by the inclusion of a qualitative measure of social pretend play.

The second study contained in the present research provides an extension of the results of the first study. An experimental manipulation of a child's level of social pretend play was carried out and the impact on social skill was examined. This manipulation was performed using the pretend play training paradigm. A subset of the children who participated in the correlational study were assigned to one of three groups. The first group took part in activities designed to facilitate social pretend play and the occurrence of this form of play was positively encouraged by the adult trainer. Other forms of social activity among the children in the training sessions of this group were discouraged so as to more clearly delineate the role of social pretend play in the acquisition of social competence. The second group took part in

constructive, crafts-oriented activities that would not promote social interaction, either pretend or non-pretend. They did however, provide the children with positive adult attention and stimulation. This group thus served as a control for the possibility that any posttest changes observed in the pretend play group are the results of the adult-child contact rather than the child-child contacts. The third group served as a no-treatment control. The ongoing processes of the first two groups were monitored by independent observers. These observations assessed two aspects of the group processes. First, observations of adult-child interaction were made to verify that the two groups were comparable on this dimension. Secondly, observations of child-child contact were made to verify that the children in the pretend play group did in fact engage in pretend play and not in other forms of social interaction. These child-child observations also served to verify that the children in the construction activities group did not engage in any social interaction among themselves. Upon completion of these training procedures, the posttest social competence data were analysed to ascertain any differential impact as a result of participation in the three different groups. It was hypothesized that the children participating in the pretend play training group should show significant improvement on the social competence measures as compared to the children in the other two groups who would not be expected to show

any systematic changes on their posttest social competence scores.

The methodologies and results of these analyses are reported in several separate chapters. In the following chapter, a brief overview of the participating subjects and of the experimental designs is given. In the next chapter, the developmental analysis of the social pretend play data and the resultant derivation of a measure of qualitatively superior social pretend play is described. The third chapter details the correlational examination of spontaneously occurring social pretend play and concurrent levels of social competence. The following chapter provides a description of the pretend play training study. In the final chapter, a summary and integration of all of the results is presented and the implications of these findings are discussed.

Methodological Overview of the Research Project

The data for the three analyses described in the preceding chapter were collected as a single unit. However, as outlined previously, they pertain to differing aspects of the overall investigation and therefore each is presented in a separate chapter. This section gives a brief overview of the sample and methods employed throughout the project. Subject selection procedures, demographic and descriptive data are outlined. As well, the research strategies of the different studies are described and the overlap between them is specified. Details on the specific procedures of each study are provided within the relevant chapter.

Ninety-one children enrolled in three day-care centres located in Montreal-area suburbs (Lachine, Lasalle and Notre Dame de Grace) took part in this study. In each centre, the parents of those children who were enrolled on a full-time basis and who were at least thirty-five months of age were asked if their children might participate in the study. The letter of solicitation sent to the parents is shown in Appendix A. The acceptance rate was high (97%) and resulted in two centres contributing twenty-nine

subjects each and one centre contributing thirty-three subjects. In the first two centres, all subjects were grouped together in the same class. In the third centre, the children were separated into a younger group (N = 23) and an older group (N = 10). The children had all been enrolled in the centre for a minimum of two months and most had been in the day care centre considerably longer (M = 13.63 months).

Demographic data were collected by means of a family biography form completed by the parents. A copy of the form is shown in Appendix B. The results indicated that the children were from predominantly middle- and lower-middle class families, with the average socioeconomic status of the children in the third centre somewhat higher than those of the other two centres. For the three centres, the mean socio-economic status values on the Pineo & Porter Scale (1967) were, 44.17, 43.85 and 55.47, respectively. Most of the children came from two-parent families and were typically the eldest of two children or the only child in the family. The majority of the children were attending day-care in their home language. Many of them were, however, exposed to another language during the week (M = 15.64 hours/week).

Overall, the children ranged in age from 35 to 69 months, with a mean age of 54.0 months. Within each centre

the mean ages were, 52.76, 53.45 and 55.63, respectively. Both across and within each centre, the boys outnumbered the girls (55:36). Within each classroom the proportions varied somewhat, but boys were always more heavily represented (15:14; 17:12; 15:7; 8:2). An index of each child's intellectual ability was assessed by means of the Peabody Picture Vocabulary Test. IQ scores ranged from 50 to 131 with a mean of 90.72, 93.38, and 103.21, in each centre.

Within each centre, all of the social competence and social pretend play measures used in the correlational study were collected for each child. The behavioral measures of social competence and the social pretend play measures were collected concurrently during the morning free-play period by three trained observers. Independent reliability checks were provided by the author. The remainder of the social competence measures were obtained at other times during the school day (usually the afternoon), also by the author. A multivariate correlational analysis of these data was employed to assess the degree of relationship between the two phenomena.

When all of the social competence and social pretend play measures had been collected for a centre, twelve of the participating children were selected to take part in the training study. These twelve children were

randomly assigned to one of three groups, which were matched for age, sex, IQ and social activity level. The groups were then assigned to one of three conditions: pretend play training, construction activities training or a no-treatment control. The first two groups met with the experimenter for eight half-hour training sessions and the third group received no treatment. Upon completion of the training sessions, the social competence of these twelve children was re-assessed through a posttest administration of the same battery of social competence measures as were collected for the correlational study. A comparison of these posttest scores was undertaken to determine if any differences were present among the three experimental conditions.

Upon completion of all data collection, a group of thirty younger children and a group of thirty older children were selected from the total sample such that the two groups would be more homogeneous with respect to IQ and sex ratio. The observational social pretend play data of these children were used in the developmental analysis of social pretend play. The scores of the two groups were then compared to determine those measures on which the younger and older children differed.

In summary, ninety-one children in three day-care centres participated in the total study. The data for all

of these children were analysed in the correlational study of social pretend play and social competence. The social pretend play of sixty of these children (thirty younger and thirty older) was analysed to determine qualitative differences between the play of younger and older children. Finally, within each centre, twelve children were selected to take part in the training study and the data of these children were analysed to determine the impact of social pretend play training on social competence.

Developmental Analysis of Social Pretend Play During the Preschool Years.

The goal of the analyses to be described in this chapter was to provide an empirical data base for the derivation of quantitative and qualitative measures of social pretend play. This process was considered a necessary preliminary step to the correlational study as there is very little currently available research on which to base such a measure. A developmental approach was taken in these analyses. The social pretend play measures that clearly distinguished the older from the younger preschoolers could then be used as indicators of quantitative and qualitative differences in their social pretend play.

Although few research studies on the development of pretend play have been conducted, some theoretical work exists which provides a starting point for the present analyses. In his discussion of the growth of symbolic activities in the young child, Piaget (1951) indicated that solitary symbolic activity first appears in rudimentary form around 18 months of age. By age three, the symbolic function is well developed and fantasy play in cooperation with another child begins to occur. It increases in

frequency over the preschool years and then diminishes in occurrence after age six or seven. With respect to qualitative changes, researchers focusing on the early stages of development have suggested that symbolic play becomes less imitative, less reality-bound and more complex over the second year of life (Lowe, 1975; Nicolich, 1977, Sinclair, 1975). Researchers focusing on qualitative changes in symbolic play after age three have suggested that during these years changes in complexity and level of integration can also be seen (Fein, 1979; Garvey, 1977; Smilansky, 1968). They suggest that social pretend play may be conceptualized as typically involving the non-literal treatment of the self-identity, of objects in the environment and of the ongoing activity itself (Garvey, 1977). The frequency of occurrence of these elements and their level of complexity are postulated to change with age.

As regards the identity transformations, these may be classified into three types (Garvey, 1977). The first involves the adoption of the role of a member of the family, such as the mother, the father or a child. The second type involves taking on the identity of a character encountered in daily living, such as the fireman, or of a character more remotely encountered as in books, on television, or in movies. The third possible type of identity transformation involves the taking on of a

non-specific functional role which is defined not by the attributes of the identity itself but rather by the requirements of the action sequence. Younger children are described as enacting the simpler family roles, while older children are said to be more likely to enact character and functional roles. With respect to the use of objects and of the setting in social pretend play, Garvey suggests that the incorporation may involve a realistic use of the object as a replica (eg., ironing with a toy iron), the non-realistic use of an object as a substitute for whatever object is needed in the play (eg., using a wooden block as an iron) or the invention of an object by suggestion alone (eg., making ironing movements without an object). By age three, most children are able to use objects in all three manners and the type of object use is not suggested to change in frequency over the preschool years. All preschool children would be expected to be equally proficient in the use of objects in a realistic, substitute or invented manner. Finally, with age comes increasing familiarity and sophistication with these play materials. This in turn, permits the occurrence of more complex play routines involving multiple identity, object and situation transformations.

The age-related increase in the frequency of symbolic play described in the preceding paragraphs has been supported by several studies (Lowe, 1975; Markey,

1935; Sanders & Harper, 1976; Tizard, Philps & Plewis, 1976). In addition, qualitative changes in symbolic play up to age three have been moderately well documented (Lowe, 1975, Nicolich, 1977). Qualitative changes in social pretend play after age three have not, however, been investigated. Consequently, in the present study, developmental changes in the type of identity enacted, in the type of object and setting used and in the incidence of complex pretend play were assessed.

Method

Subjects

Two groups of thirty subjects each were selected from the ninety-one children participating in the overall project. The two groups were selected such that they would differ in mean age (48.3 vs. 60.1 months). The younger and older groups were however, selected such that they would be comparable with respect to IQ (M = 95.7 and M = 97.6, respectively), male:female ratio (17:13 and 16:14, respectively) and approximate numbers selected from each day care centre (11:10:9 and 11:8:11), respectively.

Procedure

The amount and quality of the social pretend play of

the subjects was assessed by means of one-minute observational scans of their free-play activities. These scans were scheduled at regular intervals during each observation session. Forty scans were obtained in each centre with a maximum of three per session. Because the free-play rooms were very large, they were subdivided into four quadrants which were each observed for one minute in rotation. This procedure resulted in a total of forty minutes per quadrant. At the beginning of each minute, the observer recorded the names of all children who were present in the quadrant. At the end of the minute, a record was made of all of those children who had engaged in at least ten seconds of social pretend play during that time. Social pretend play was defined as the joint occurrence of symbolic play and of social interaction with at least one other child. Symbolic play was defined according to the work of Garvey (1977) and consisted of those play episodes in which the children engaged in a transformation of some feature of their current situation. Such transformations could be indicated in a number of ways. These included the verbal or physical enactment of an imaginary role, the imaginary use of some feature of the environment, the discussion of procedures and role assignments (either prior to or during the play sequence) and finally, the use of pretend "signals", such as laughing and giggling while wrestling. A social interaction was defined as a behavioral sequence consisting of any physical

or verbal social bid that was directed to another child and which was acknowledged by that child within ten seconds.

In addition to recording the occurrence of social pretend play during each one-minute interval, a description of the pretend play behavior was included. For each interval, the following categories were scored; identity transformations, object or setting incorporations and the predominant use of physical motion in the play. Identity transformations were classified as familial (any member of the nuclear family), stereotypic (occupational roles encountered in every day situations such as policeman or teacher), fictional (roles taken from books, movies or television), functional (non-specific roles defined in terms of the ensuing activity such as "driver" or "server") and animal/machine.

Object incorporations were classified as to whether the object was large (ie., non-portable) or small. Small objects were also described as to whether they were used as a replica in a realistic fashion, used as a substitute for something else or invented in a purely fantasized manner. Setting incorporations were defined as those instances in which the child referred explicitly to an aspect of the physical location and stated a pretend transformation of the milieu (eg., "pretend this is a restaurant"). These were recorded if and when they occurred.

Motion-use was classified as to whether its principal components were gross motor movements (running, jumping or wrestling) or fine motor movements (hand or facial gestures). In order for the motion-use category to be scored, the motoric component had to occupy a central feature of the pretend episode such that its removal would qualitatively alter the play. The manual for the scoring of the social pretend play scans is included in Appendix C.

Interrater reliability was calculated on 38% of the one-minute intervals. The mean percent agreements between two independent judges were 93% for presence in quadrant, 81% for identity transformations, 71% for object use, 89% for settings and 61% for physical motion.

Measures

The frequency of occurrence of each of the pretend play categories was calculated for each child, summing across the forty scans. To adjust for differences in the number of scans for which each child was present, (M = 27, range = 10 to 40), all raw scores were divided by the number of scans in which a child was recorded as present. This procedure yielded frequencies expressed as proportions of the number of participating scans for each child. The proportions were then normalized using the arcsin transformation (Winer, 1971).

Inspection of these scores indicated that the majority were of too low a frequency for meaningful analysis (non-zero scores for less than 60% of the sample). More global scores were therefore computed by summing across conceptually meaningful categories. A first score measuring the total amount of social pretend play was calculated by summing together all intervals in which any pretend elements were observed, either alone or in conjunction with another element. A series of three scores was calculated to reflect differences in the complexity of pretend elements used in the play. These included the proportion of play involving an identity transformation only (summed across all of the identity categories), the proportion of play involving an object incorporation only (summed across all of the object use categories) and the proportion of play involving both an identity and an object transformation (again summed across the identity and object categories). A further three scores were calculated to reflect the type of identity transformation employed by the child. These included the proportion of episodes involving any functional identity transformation, the proportion involving any familial identity transformation and the proportion involving any character identity transformation, either stereotypic, fictional or animal/machine. These latter scores included episodes in which only the identity was transformed as well as episodes in which other elements were included in the play. Finally, two scores were

calculated to reflect the type of object incorporation used by the child. These included the proportion of episodes in which small objects were used as replicas in a realistic fashion and the proportion of episodes in which large or small objects were used in a substituted or invented fashion. These two scores included episodes with only an object and episodes with an object and other elements. The motion and setting categories were recorded only very rarely and were therefore disregarded in the calculation of these variables.

Results

Method of Analysis

Separate analyses were conducted to assess differences in the overall amount of social pretend play, differences in the complexity of social pretend play, differences in the three identity categories and differences in the two object use categories. A univariate analysis of variance was employed in the calculation of the first comparison. The latter three analyses differed from the first in that they included multiple dependent measures and therefore multivariate analyses of variance were employed. For each univariate and multivariate analysis, age (younger vs. older) was treated as a between group factor. In addition, sex was included as a second between group factor in order

to assess whether this variable influenced the nature of any obtained age changes. In the multivariate analyses of variance, subsequent univariate results were interpreted only when a significant overall multivariate F was obtained.

Amount of Social Pretend Play

A two-factor univariate analysis of variance for the total amount of social pretend play was calculated and a significant age effect was obtained, $F(2,56) = 9.367$, $p<.01$. The analysis of variance table is shown in Appendix D. The results indicated that the older children spent a significantly greater proportion of their time in social pretend play than did the younger children (.37 vs .25). These means are shown in Table 1. Neither the sex effect nor the interaction effect was significant.

Complexity of Play

A two-factor MANOVA for the three types of complexity of play variables (identity only, object only, identity and

Table 1

Raw Proportions of the Social Pretend Play Measures, Calculated Separately for Younger and Older Children.

	Younger		Older	
	M	(SD)	M	(SD)
Total Amount of Social Pretend Play	.25	(.14)	.37	(.17)
Complexity of Play				
Identity Only	.04	(.04)	.05	(.05)
Object Only	.07	(.08)	.09	(.08)
Identity And Object	.13	(.11)	.22	(.15)
Identity Transformations				
Functional	.08	(.06)	.11	(.06)
Familial	.05	(.08)	.09	(.10)
Character	.04	(.08)	.08	(.08)
Object Use				
Replica	.08	(.06)	.14	(.09)
Substitute	.13	(.10)	.17	(.10)

object), was computed. A significant multivariate effect for age was obtained, $F(3,54) = 3.2889$, $p<.05$. The multivariate analysis of variance summary table is also shown in Appendix D. The univariate ANOVAS indicated the two groups did not differ in the proportion of time spent in identity only or object only play, $F(1,56) = .2879$, and $F(1,56) = .6856$, respectively. The older children did however, spend a greater proportion of time in identity and object play, $F(1,56) = 8.1143$, $p<.01$. The means for these categories are shown in Table 1. The multivariate F's testing the effects of sex and of the age group x sex interaction showed no significant differences between males and females on these measures.

Identity Transformations

A two-factor MANOVA for the three types of identity transformation was calculated and it also showed a significant multivariate effect for age, $F(3,54) = 1.5028$, $p<.05$, (See Appendix D). The univariate ANOVAS revealed that the older children showed more functional identity use than the younger children, $F(1,56) = 3.7781$, $p<.05$. Trends in the same direction were noted for familial identity use, $F(1,56) = 3.7781$, $p<.10$, and for character identity use, $F(1,56) = 3.5399$, $p<.10$. The MANOVA also indicated a significant multivariate effect for sex on these dependent variables, $F(3,54) = 15.5392$, $p<.001$. The univariate ANOVAS

indicated that the boys showed significantly more character identity transformations, $F(1,56) = 6.0175$, $p<.05$. Conversely, the girls showed significantly more familial identity transformations, $F(1,56) = 18.7470$, $p<.001$. In addition, a trend was noted for the boys to show more functional identity transformations, $F(1,56) = 3.2523$, $p<.10$. The means for these categories, calculated separately by sex, are shown in Table 2. The multivariate test of the sex x age interaction was not significant.

Object Use

The two-factor MANOVA for the two types of object use showed a significant multivariate age effect, $F(2,55) = 7.4218$, $p<.001$, (See Apppendix D). The univariate ANOVAS indicated that the older children differed from the younger in their greater use of objects as replicas, $F(1,56) = 15.0841$, $p<.001$, but not in their use of objects as substitutes, $F(1,56) = 2.0184$, $p<.50$ (See Table 1). A significant multivariate F ratio was also obtained for sex, $F(2,55) = 6.3373$, indicating that the boys and girls used objects in different ways (See Table 2). The univariate ANOVAS indicated that the boys were observed to use objects as substitutes more frequently than the girls, $F(1,56) = 8.1760$, $p<.01$, but did not differ from the girls in their use of objects as replicas. The multivariate F for the age x sex interaction was not significant, $F(2,55) = 1.0723$.

Table 2

Raw Proportions of the Social Pretend Play Measures, Calculated Separately for Males and Females.

	Males		Females	
	M	(SD)	M	(SD)
Total Amount of Social Pretend Play	.33	(.16)	.29	(.17)
Complexity of Play				
Identity Only	.05	(.05)	.05	(.05)
Object Only	.11	(.08)	.06	(.06)
Identity And Object	.17	(.12)	.18	(.15)
Identity Transformations				
Functional	.11	(.06)	.08	(.06)
Familial	.03	(.06)	.11	(.11)
Character	.08	(.09)	.03	(.05)
Object Use				
Replica	.10	(.07)	.12	(.10)
Substitute	.18	(.10)	.12	(.09)

Discussion

The purposes of the present study were twofold; to confirm the occurrence of an age-related increase in social pretend play and to isolate qualitative features that differentiated this global increase. These results were preliminary to the derivation of the measures of pretend play to be used in the correlational analysis of social pretend play and social competence. With respect to the first aim, the results indicated that the older children were observed in social pretend play significantly more often than were the younger children (37% vs 25%). This finding confirms the results of previous research (Lowe, 1975; Tizard et al, 1977) reporting age-related increases in symbolic play. In addition, it extends these findings to include a specific increase in social pretend play. The failure to find sex differences in the amount of pretend play is at variance with some other reports that boys engage in higher levels of fantasy play than do girls (Sanders & Harper, 1976). This result may perhaps be due to the wide variety of qualitatively different types of pretending which were assessed in this study. More specifically, boys were found to show more character roles and substitute object use whereas the girls showed more familial roles. If boys and girls generally show these preferences for different types of pretend activities, sex differences in the amount of pretend play may be obtained

if the observational categories favor the play preferences of one sex or the other.

With respect to the second purpose, several differentiating features of a qualitative nature were identified. The older children's increase in social pretend play appeared to be the result of a specific increase in play that involved the concurrent employment of both an identity and an object change. This was in contrast to the younger children's play which more often involved only a single transformation of either the identity or the object. With increasing age and increasing skill in pretend social play, children were more able to enact pretend play routines entailing the complex task of integrating both a pretend identity and a pretend object into the action sequence. This age-related increase in complexity occurred equally for both the boys and the girls. These developmental changes are in agreement with Garvey's discussions (Garvey, 1977).

When the focus of the analysis was on the type of identity enacted in the play sequence, regardless of the presence or absence of other elements, the results were somewhat different. There was a tendency for all three identity types to increase in the older group. Functional identities showed a significant increase and the other two identity types showed strong trends in that direction.

Notable sex differences were also found on this measure. The girls demonstrated a marked preference for enacting familial roles and the boys demonstrated an equally strong preference for enacting character roles. These results suggest that the overall increase in identity and object play found in older children is qualitatively different for the two sexes. Girls enact functional and familial roles while the boys enact functional and character roles.

The age-related increase demonstrated for functional identity transformation is in line with Garvey's predictions, although the increase is perhaps less pronounced than would be expected. On the other hand, the failure to obtain a significant increase in character roles in older children, as well as the findings of sex differences in character and familial roles, were not anticipated from her discussions. In the present study, functional roles appeared to be very popular, regardless of the child's age or sex, and all role enactments generally increased with age. Differential role enactment appeared to be more a function of the sex of the child than of the age of the child.

The investigation of the manner in which objects are incorporated into the play also showed both age and sex differences. Older children were more likely to incorporate replica objects into their play in a realistic manner,

treating the object in a fashion appropriate to its intended use. Boys of all ages, when compared with the girls, more often used objects as substitutes for other objects in their play. These age differences are contrary to those expected. The extant literature suggests that if age changes were to occur, they would demonstrate increased flexibility and ease in using objects in a non-realistic manner (Lowe, 1975; Overton & Jackson, 1975). The present research differed however, from the previous experimental studies in that object uses were observed in the free-play environment. Perhaps under these more naturalistic circumstances, greater maturity is reflected in the use of objects in an appropriate rather than idiosyncratic fashion. Although sex differences in the type of pretend play with objects were not predicted, they are in accordance with findings indicating sex differences in the types of objects boys and girls choose to play with (Maccoby & Jacklin, 1975).

In summary, age-related increases in play complexity were found as well as a tendency for older children to prefer functional role enactment and to use objects in a realistic manner. In addition, it was apparent that the girls preferred to enact the familial roles while the boys preferred to enact character roles. Boys also preferred to use objects in a less reality-bound fashion, transforming them into whatever object was needed in the

play. The implications of these results for the derivation of a measure of play maturity or complexity are not straight-forward. As a result, several criteria were specified to aid in determining such a measure. The measure should clearly differentiate the younger and older children. The measure should not be biased in favour of one sex or the other. Finally, the measure should be theoretically and conceptually consistent with current literature. Bearing these criteria in mind, the results suggested that an appropriate measure would be the amount of complex social pretend play, ie., play involving both an identity and an object transformation. This measure differentiated the age groups but not the two sexes. Its employment would therefore, not discriminate against either males or females who did show differences on the more refined breakdowns of the identity and objects categories. This measure was further recommended for use by its relatively high rate of occurrence, thus assuring that adequate variability would be obtained in the correlational study. Finally, the use of such a measure would be consistent with the theoretical arguments of Garvey (1977) and other researchers (Fein, Note 1) who suggest that one of the hallmarks of mature social pretend play is its increase in the integration of complex and multiple elements with a single play sequence.

A Correlational Study of Social Pretend Play and Social Competence during the Preschool Years.

In this chapter the correlational study of the relationship between social pretend play and social competence is described. As outlined in the first chapter, a positive relationship between these two phenomena has been hypothesized and evidence in support of this claim is beginning to accumulate (Fink, 1976; Garvey, 1977; Saltz et al, 1977; Smilansky, 1968; Smith & Syddall, 1979). Examination of the designs and results of these studies indicates that the majority of them have addressed this issue through analysis of posttest changes in a variety of dependent measures following explicit coaching in social pretend play. It was suggested that an alternate approach to this issue was through the correlational study of these two events in the natural environment. Such an analysis may, in fact, be seen as a necessary first step in establishing the ecological validity of this hypothesis and in providing a meaningful description of its components. Only a limited number of pertinent correlational studies have been conducted (Johnson, 1976; Marshall, 1961; Rubin & Maioni, 1976). None of these studies were directly concerned with the present experimental hypothesis and consequently only quite restricted measures of the relevant

constructs were collected. However, the results are generally supportive of the hypothesis and indicate the utility of exploring this relationship in more detail. The purpose of the present analysis was, therefore, to provide a correlational analysis of naturally occurring social pretend play and current levels of social competence, using comprehensive measures of both constructs.

Method

Subjects

All of the ninety-one children observed in the three day-care centres took part in this phase of the research. In total there were fifty-five boys and thirty-six girls. The children ranged in age from 35 to 69 months, with an average age of 54.0 months. They also showed a wide range of intellectual abilities. The Peabody IQ scores ranged from 50 to 131, with a mean score of 95.8 (SD = 17.43).

Procedure

Within each centre, the participating children were administered social competence measures which tapped four dimensions: behavioral interactions, social cognition, peer group popularity and teacher ratings of social competence. In addition, the amount of time that each child spent in

social pretend play was recorded, as well as the level of complexity of that play. The collection of these measures was carried out simultaneously in each centre and was generally completed within two months.

Measures

Teacher rating of social competence. In each classroom, the head teacher was asked to complete the Kohn & Rosman Social Competence Scale (Kohn, 1977) for all of the children participating in the study. This scale contains seventy-three items describing a wide variety of preschool behaviors. The child is rated on each item using a seven-point scale. A copy of the scale is included in Appendix E. Based on the ratings of these items, two scores are calculated. The first score is labelled Interest-Participation and reflects the child's capacity to interact effectively with his peers and his skill in using the social and non-social features of the preschool environment. The second score is labelled Cooperation-Compliance and reflects the child's willingness to follow the teacher's directives and his/her ability to function within the structure of the classroom. Since the focus of the research in this thesis was on peer-peer interactive skill, only the first factor was scored. Adequate reliability of this measure has been reported in the literature (Kohn & Rosman, 1972). In previous research

conducted by the author (Connolly & Doyle, In Press), adequate interrater correlations between head and assistant teachers were also obtained in two classrooms. In the first classroom, the correlation was .89 (N = 19) and in the second it was .97 (n = 9). Reliability was therefore, not re-assessed in the current research.

Peer popularity. Two measures of popularity were collected in this study. The picture sociometric measure (Moore, 1967) was administered by presenting to each child in a class a board on which were mounted 3" X 4" black-and-white photographs of all the participating children in that class. Each child, tested individually in a separate room, was asked to name the pictured children and then was asked to pretend that the examiner had brought a new game to the centre which only two children could play. The child was asked to point to the picture of the child with whom he would most like to play. In the two larger classrooms (N = 31, N = 30), the child was requested to give three such nominations. In the two smaller classes (N = 23 and N = 10), the number of nominations requested was made proportional to the class size (2 and 1, respectively) as recommended by Kane & Lawler (1978). Each child's popularity score was then calculated as the number of nominations received divided by the number of nominating children.

A second measure of popularity was collected using the teacher's rank ordering method (Greenwood, Walker, Todd & Hops, In Press). This method was employed because dissatisfaction has been expressed with the data obtained using the traditional sociometric approach (Asher, Singleton, Tinsley & Hymel, 1979; Gottman, 1977; Peery, 1979). These authors point out that sociometric popularity is often an unreliable measure with preschoolers and that inconsistent relationships with independent validating measures such as rates of social interaction and social cognitive functioning have been reported. In addition, the manner in which the test is administered and scored can vary considerably and these methodological differences can significantly alter the results. In an earlier research project, the author found that the use of teacher rankings of peer popularity resulted in a more meaningful measure of the popularity construct (Connolly & Doyle, In Press). Specifically, when compared to the sociometric popularity measure, the teacher popularity ranking measure was more reliable and was more predictive of independent teacher ratings of social competence and of observations of competent social behavior. These results supported the utility of this measure as a research tool but were considered to be only tentative at that time. Both measures were therefore, included in the present study in order to test the replicability of these results. It was decided that if the teacher ranking method again appeared

superior, it would serve as the exclusive popularity measure in this study.

The teacher popularity measure was collected by requesting the head teacher in each class to rank order the children, according to both the frequency and the extensiveness with which each was selected as a playmate by his/her peers. The lowest score (1) was assigned to the most popular child and the highest score to the least popular child. In calculating the teacher popularity score, each child's assigned rank was divided by the class size, in order to adjust for differences in size across classes. A copy of the teacher popularity ranking form is included in Appendix F.

The reliability of these two popularity measures was also assessed in the previous research project (Connolly & Doyle, In Press) and adequate correlations in the two preschools were found at that time. Test-retest reliability of the sociometric popularity measure was .71 in the first classroom (N = 28) and .77 in a second (N = 16). Interrater reliability of the teacher ranking of popularity was .95 (N = 28) and 1.0 (N = 9), respectively, in the two classrooms. The reliability of these measures was, therefore, not re-assessed for this project.

Social cognition. Two measures of social cognition, one assessing affective role-taking and one assessing cognitive role-taking, were administered to each child. Affective role-taking was measured using a task described by Urberg & Docherty (1976). In this task, the child, tested individually in a separate room, was presented with pictorially illustrated story sequences. The sequences focus on the activities of two same-sex children and the following themes were depicted. In the first story, a child's bag of candy is taken by another child; in the second story, a child's friend wins the game they are playing; in the third story, the teacher resolves a toy conflict in favor of one of the children. In each case, the child was asked to identify, and then give reasons for the feelings of the two depicted children. One point was assigned for each feeling correctly identified. Another point was assigned for each explanation that took into account the sequence of events described in the story. This resulted in a maximum score of 12. Details on the instructions and on the scoring procedures are given in Appendix G.

Cognitive role-taking was assessed using a task described by Flavell (1970). In this task, again administered privately, the child was presented with an array of objects: toy cosmetics, a doll, a toy truck, a man's tie, a woman's purse and a necklace. He/she was

asked to select from these objects a birthday gift for mother, father, teacher, and an opposite-sex friend. One point was assigned for each appropriate gift choice, with a maximum score of 4. Details on the instructions and scoring procedures are also given in Appendix G.

Social behavior observations. During the free-play period, three female undergraduate students and one female graduate student, all of whom were unfamiliar with the results of the other social competence measures, observed the peer social interactions of each child. Forty one-minute observations were collected for each child and no more than four observations were made on any one day. The order of subject observation was based on a class list through which the observers sequentially rotated in selecting the target child. A copy of the observation manual is included in Appendix H.

During each recorded interval, the observer noted whether or not the child was interacting with another child. A social interaction was defined as a behavioral sequence consisting of any verbalization, physical gesture, or other deliberate verbal or non-verbal behavior which was directed to another child and which was responded to or acknowledged by that child within ten seconds. If any such interactions occurred, the total amount of time spent in interactions was recorded in seconds, using a stopwatch.

At the end of the one-minute interval, if any social interaction had occurred, the observer rated the overall interval according to certain descriptive features. First, the predominant affective tone of the social interaction in the interval was classified as either negative, neutral or positive. An interval was rated as negatively toned if any verbal or non-verbal gesture of anger, hostility, sadness or refusal to cooperate, was noted. It was rated as positively toned if any friendly gesture, such as smiling, sharing, laughing, or touching were noted. Intervals were rated as neutral if no such negative or positive gestures were observed. If both negative and positive gestures occurred in the same interval, the tone which predominated was selected. Secondly, the observer also recorded whether the preceding social interaction had been primarily dyadic, ie., involving only two children; or group, ie., involving three or more children. In order for an interaction interval to be considered non-dyadic, contiguous social interaction sequences must have been observed between the target child and at least two other children. Third, the observer indicated whether or not the target child had made use of language during the social interactions, or if he/she had been primarily non-verbal in the interaction. Finally, the observer classified the social interaction interval as having consisted primarily of literal activities (eg., conversations, construction tasks, art work or reading) or

of pretend play (when any mutually agreed upon make-believe transformations of the self, of objects or of the setting occurred in the interaction). If no social interaction with another child occurred during the interval, the observer indicated whether or not the child had interacted with the teacher during that time.

From these time and interval-rating observations, eight variables were calculated for each child, summing across the forty intervals. To begin with, three scores reflecting the amount of social activity were computed. The first was the number of observation intervals in which social interaction was observed (total interaction intervals). The second was the mean duration of all recorded social interactions (computed as total time/ total interaction intervals). A third frequency score reflecting the number of observation intervals in which the child interacted with the teacher was also computed. Secondly, five scores reflecting the qualitative aspects of the interaction were calculated. These consisted of the proportions of negative, of neutral and of positive interaction intervals, the proportion of social interactions which were rated dyadic, and the proportion of social interactions in which language was used. Each of these scores was defined as the frequency of the respective category's occurrence, divided by the total number of social interaction intervals. In this way, qualitative

scores of social exchange were derived which were independent of a child's overall rate of social activity.

In addition to the time and interval ratings made for each one-minute observation, the occurrence of seven discrete peer-directed social behaviors was recorded on an on-going basis as they were observed during the interval. These behaviors are derived from the Social Behaviors Checklist (White & Watts, 1973) and focus on qualitative components of individual social bids. These behaviors included, 1) Attracts-attention, which was scored whenever the child attempted to attract another child's attention by calling his name, showing or telling him something, moving toward and standing near; 2) Uses-as-resource, which was scored for instances when the child sought explanation, clarification, information or help from a peer; 3) Leads-activities, defined as either a verbal or non-verbal attempt to direct the activities of a peer or as an instance in which the child's activities are copied by a peer without having been given directions to do so; 4) Competes-for-equipment, which was scored whenever a child entered into verbal or physical competition over classroom objects or equipment; 5) Follows-lead-of-peer, defined as instances in which the child obeyed a peer's directives, followed after a peer, joined in a peer's activity, verbally supported a peer or demonstrated involved observation of a peer's activities; 6) Refuses-to-follow,

defined as instances in which a child resisted, refused, disobeyed or ignored a peer's directions and finally 7) Expresses-affection, defined as an instance of friendliness including smiles, laughter, friendly statements, touches, hugs, offers of help and sharing. The first three behaviors, attracts-attention, uses-as-resource, and leads-activities, were further classified according to whether the social bid had been successful or unsuccessful in achieving its goal.

On the basis of these social behavior observations, thirteen scores were calculated for each subject, again summing across the forty intervals. First, an index of the frequency of occurrence was calculated as the sum of the total social behaviors across all categories. Secondly, the proportion of behaviors occurring within each category was calculated using the formula: frequency of behavior/ total social behaviors. As with the interval rating scores, proportions were computed in order to derive qualitative measures of social behavior which were independent of a child's overall rate of interaction. These proportions were calculated for six of the seven behavior categories described above and for the three unsuccessful behavior categories. The behavioral category, leads-activities-successful, was subdivided into three scores, depending on whether the behaviors occurred within an interval scored as negative, neutral or positive.

Proportions were then calculated for each of the sub-categories, rather than for the overall category.

In summary, a total of twenty-one indices of social behavior were calculated for each child. Eight were based on the time and interval ratings and thirteen were based on the observations of the discrete social behaviors. These scores provide measures of both the frequency of each child's social activity, and of the quality of his/her social behavior, independent of rate of activity. One additional breakdown of these scores was also provided by calculating these variables for only those observation intervals which had been categorized as literal activity and then for only those observation intervals which had been classified as social pretend play. In computing the behavioral proportions occurring within each of the two play/activity contexts, the denominator reflected the incidence of activity within each context, rather than overall rate of activity. Specifically, the number of literal intervals and the number of pretend intervals served as the denominators for the interval rating scores, while the total literal social behaviors and total pretend social behaviors served as the denominators for the social behaviors scores.

Prior to data analysis, all of the proportions were normalized using the arcsin transformation. The

duration measures were normalized using the logarithmic transformation (Winer, 1971).

Observers were trained in the observational coding system until interrater agreement between each observer and the author was at least 80% across all categories. Interrater agreement was also periodically re-assessed during data collection on 7% of the observations. Mean percent agreement values were computed for the interval ratings and for the discrete social behaviors categories. A Pearson correlation coefficient was computed for the time in interaction measure. These values may be considered as conservative estimates since they were based on only those cases where at least one of the raters had recorded the occurrence of that particular event. Observations in which no event was recorded in a category by either the observer or the author were not included in the calculation of that category's reliability. Percent agreement values for the discrete social behavior categories averaged 77.7%, with a range of 33% to 85%. Percent agreement values for the interval rating scores averaged 84.4% with a range of 78% to 95%. The Pearson correlation coefficient for time in interaction was .89. The reliability values for the individual categories are shown in Table 3.

Table 3

Interrater Reliability Estimates of the Individual Social Behavior Observation Variables:

Variable	Reliability Estimate
Time[a]	.89
Interval Ratings[b]	
Affective Tone	79%
Dyadic/Group	83%
Language-Use	82%
Discrete Social Behaviors[b]	
Attention-Successful	72%
Attention-Unsuccessful	76%
Resource-Successful	78%
Resource-Unsuccessful	33%
Leads-Successful	78%
Leads-Unsuccessful	75%
Follows-Peer	85%
Refuses-to-follow	66%
Affection	76%
Competes-for-Equipment	73%

a Reliability estimated by means of Pearson Correlation Coefficient

b Reliability estimated by means of percent agreement between observers

Social pretend play observations. Concurrent with the collection of the social behavior measures described above, the observers also recorded the amount and quality of social pretend play shown by each child across forty one-minute observation scans. The procedures used and the measures collected have been described in detail in the preceding chapter. In addition, an analysis of the measures which differentiated the younger and the older children was reported and two measures were suggested for use in the present correlational analysis. The first measure was the quantitative index of the amount of time spent in social pretend play. It was calculated as the total number of episodes in which any pretend elements - identity, objects or both - were recorded. As discussed earlier, this value was expressed as a proportion of the observation scans for which the child was present in order to adjust for individual differences in the number of scans in which each child participated.

The second measure was an index of the proportion of social pretend play which can be considered qualitatively superior. The developmental analyses of the previous chapter indicated that older children differentially increased in their amount of play with more than one element, ie., play incorporating an object and an identity transformation. More refined analyses of the separate identity and object categories indicated the

presence of sex differences in addition to age differences. The more global category was therefore considered most appropriate since it was applicable to both the boys and the girls. Thus for the correlational analysis, a measure of complex social pretend play was calculated as the proportion of play episodes in which both an identity and an object were integrated into the play sequence. This measure was expressed as a proportion of pretend play intervals rather than as a proportion of the number of scans for which the child was present so as to derive a complexity measure which was relatively independent of the overall level of social pretend play reflected in the first measure. Both of the social pretend play proportions were normalized using the arcsin transformation (Winer, 1971) prior to use in the statistical analyses.

Results

Method of Analysis

The relationship between social pretend play and social competence was examined by means of multiple regression analysis. Each of the social competence measures was separately regressed on the two social pretend play measures, as well as on a number of potentially significant control variables. These control variables included age, sex, IQ score and frequency of non-pretend

social activity, which was defined as the number of literal interaction intervals. These variables were selected as control variables because the sample was heterogeneous with respect to them and it was suspected that they would show correlations with either or both sets of measures. In order to rule out the possibility that these variables were the cause of any obtained correlations between social pretend play and social competence, they were entered into the regression analysis prior to the entry of the pretend variables and thus functioned as covariates in the analysis. In this way, the amount of criterion variance accounted for by the pretend variables, independently of and in addition to the control variables, can be determined.

Calculation of Social Competence Measures

Several measures of social competence were calculated for each child. These include a measure of popularity, the Kohn & Rosman Interest-Participation score, a social cognition score, and four scores based on the behavioral variables. With reference to the popularity measure, although two measures were administered to the children, only the teacher popularity ranking score was used in the present analysis. The two measures were highly inter-correlated ($r = -.52$, $p<.001$) and independent analyses replicated earlier indications of the superiority

of the teacher popularity rank as a measure of competence (Connolly & Doyle, In Press).

With reference to the social cognition score, the affective and cognitive role-taking tasks were found to correlate .47, $p<.001$. Therefore a total social cognition score was calculated by summing together the scores on the two tests.

The four behavioral scores were derived by means of a factor analysis of the behavioral observation variables, submitting for analysis those values computed for literal social interaction intervals and the number of Teacher interaction intervals. The pretend interaction intervals, which represented 32% of the total interaction intervals, were excluded for this analysis so as to obtain behavioral social competence measures which were unconfounded with levels of pretend play activity. The values for the total and for the literal behavior observation variables are shown in Tables 4 and 5, respectively. The twenty literal social behavior variables and the teacher variable were factor analysed using the principal components method. Using the Scree test (Gorsuch, 1967), four factors accounting for 53% of the variance were retained and then rotated according to Varimax criteria. These factors were labelled Social Initiatives-Positive, Social Activity-Verbal, Social Initiatives-Negative and

Table 4

Mean Values of the Social Behavior Variables, Calculated for Total Social Interaction Intervals.

	M	SD
Time Measures		
Interaction Intervals	29.52	7.43
Duration (Seconds)	32.12	6.98
Teacher Intervals	1.20	1.66
Interval Ratings[a]		
Proportion Negative Intervals	.07	.06
Proportion Neutral Intervals	.56	.13
Proportion Positive Intervals	.37	.13
Proportion Dyadic Intervals	.78	.13
Proportion Language-Use Intervals	.84	.16
Discrete Social Behaviors[b]		
Total Social Behaviors	105.46	33.47
Proportion Attracts-Attention-Successful	.09	.04
Proportion Attracts-Attention-Unsuccessful	.07	.05
Proportion Resource-Successful	.04	.00
Proportion Resource-Unsuccessful	.01	.02
Proportion Leads-Negative-Successful	.02	.02
Proportion Leads-Neutral-Successful	.11	.06
Proportion Leads-Positive-Successful	.10	.05
Proportion Leads-Unsuccessful	.08	.04
Proportion Competes-for-Equipment	.02	.02
Proportion Follows-Peer	.28	.08
Proportion Refuses-to-Follow	.05	.03
Proportion Affection	.13	.06

a Variate is expressed as a proportion of total interaction intervals.

b Proportions are expressed as relative to total social behaviors.

Table 5

Mean Values of the Social Behavior Variables Calculated for Literal Social Interaction Intervals.

	M	SD
Time Measures		
Literal Interaction Intervals	20.00	6.52
Duration (Seconds)	28.04	6.98
Interval Ratings[a]		
Proportion Negative Intervals	.09	.09
Proportion Neutral Intervals	.58	.23
Proportion Positive Intervals	.34	.13
Proportion Dyadic Intervals	.83	.16
Proportion Language Intervals	.83	.16
Discrete Social Behaviors[b]		
Total Literal Social Behaviors	66.86	25.12
Proportion Attracts-Attention-Successful	.10	.05
Proportion Attracts-Attention-Unsuccessful	.07	.06
Proportion Resource-Successful	.05	.04
Proportion Resource-Unsuccessful	.02	.02
Proportion Leads-Negative-Successful	.02	.03
Proportion Leads-Neutral-Successful	.11	.06
Proportion Leads-Positive-Successful	.08	.05
Proportion Leads-Unsuccessful	.08	.04
Proportion Competes-for-Equipment	.03	.03
Proportion Follows-Peer	.27	.10
Proportion Refuses-to-Follow	.05	.04
Proportion Affection	.13	.07

a Variable is expressed as a proportion of literal interaction intervals

b Proportions are expressed as relative to total literal social behaviors.

Assertion-Successful, respectively. The variables which define these factors and their factor loadings are shown in Table 6 and Appendix M. The first factor, Social Initiatives-Positive, is defined by high loadings on positive interaction intervals, affection-to-peer, leads-positive-successful and a negative loading on neutral interaction intervals. This factor appears to be reflecting the overall affective tone of the interactions. The next factor, Social Activity-Verbal, is defined by positive loadings on the activity variables, ie., interaction intervals, total social behaviors, and duration; on leads-unsuccessful and language use, and by a negative loading on Teacher Intervals. The third factor, Social Initiatives-Negative, is defined by high loadings on variables reflective of negative mood, negative intervals, and hostile, uncooperative behaviors, ie., leads-negative-unsuccessful, refuses-to-follow and competes-for-equipment. The last factor, Assertion-Successful, has high and positive loadings on variables indicative of the use of positive and successful social gestures, resource-use-successful, and leads-neutral-successful and negative loadings on variables demonstrating unsuccessful or unassertive social behaviors, follows-peer and attention-unsuccessful. In addition, duration and teacher intervals load again on this factor, indicating that both sustained interaction with peers and interaction with the teacher are concomitants of these successful, assertive behaviors.

Table 6

Principal Components Factor Analysis of the Social Behavior Variables: Factor Structure and Variable Loadings.

Factor I		Factor II	
Social Initiatives-Positive		Social Activity-Verbal	
Positive Intervals	.87	Interaction Intervals	.86
Neutral Intervals	-.85	Total Social Behaviors	.84
Affection	.82	Teacher Intervals	-.59
Leads-Positive-Successful	.72	Language-Use	.56
		Leads-Unsuccessful	.52
		Duration	.42
Eigenvalue = 4.00		Eigenvalue = 2.69	

Factor III		Factor IV	
Social Initiatives-Negative		Assertion-Successful	
Negative Intervals	.90	Leads-Neutral Successful	.79
Leads-Negative-Successful	.74	Resource-Successful	.73
Refuses-to-follow	.47	Follows-Peer	-.57
Competes-for-Equipment	.47	Duration	.50
		Attention-Unsuccessful	-.41
		Teacher Intervals	.40
Eigenvalue = 2.51		Eigenvalue = 1.88	

In terms of the social behavior factors, one would anticipate that the socially competent child would score highly on Social Initiatives-Positive, Social Activity-Verbal and Assertion-Successful and would receive a low score on Social Initiatives-Negative. With respect to the other social competence measures, one would expect the socially skilled child to receive a high rating on the Kohn & Rosman Interest-Participation factor, to be ranked by the teacher as popular with his peers and to show a high level of non-egocentric thinking about his social world.

Correlations among Social Pretend Play, Social Competence and Control Measures

Prior to the calculation of the multiple regression analyses, the correlations among the dependent and independent variables were computed. The means and standard deviations of these variables are shown in Table 7 and the resulting intercorrelation matrix is shown in Table 8. These results indicate that the social pretend play measures are significantly correlated with all but two of the criterion social competence measures (the exceptions being Social Initiatives-Positive and Social Initiatives-Negative). When viewed as a whole, the control variables likewise demonstrate some significant correlations with the social competence measures. Age correlated with four of the measures while IQ and activity level correlated with three.

Table 7

Mean Values of the Social Pretend Play, Social Competence and Control Measures.

	M	SD
Social Pretend Play Measures		
Amount Social Pretend Play	.28	.17
Complexity of Pretend Play	.51	.30
Social Competence Measures		
Kohn & Rosman Interest-Participation Score	8.90	37.29
Popularity	.51	.29
Social Cognition	9.57	5.23
Social Initiatives-Positive	.00	1.00
Social Activity-Verbal	.00	1.00
Social-Initiatives-Negative	.00	1.00
Assertion-Successful	.00	1.00
Control Measures		
Age	54.02	7.15
IQ	95.78	17.43
Literal Interaction Intervals	20.00	6.52

Table 8

Intercorrelations among Social Pretend Play, Social Competence and Control Measures

Measures	2	3	4	5	6	7	8	9	10	11	12	Age
Social Pretend Play												
1. Amount Pretend	.63**	.82**	-.46**	-.21*	.08	.29**	.00	.28**	.09	.05	.05	.26*
2. Complexity Pretend		.24*	-.35**	.29**	.17	.24*	.05	.17	.09	-.11	.06	.10
Social Competence												
3. Kohn & Rosman Interest-Participation			-.68**	.39**	.07	.29**	.04	.27**	.24*	.00	.26*	.23*
4. Popularity				-.38**	.02	-.35**	-.12	-.36**	-.28**	-.08	-.15	-.30**
5. Social Cognition					.04	-.14	-.08	.44**	-.17	.11	.57**	.49**
6. Social Initiatives-Positive						.00	.00	.00	.11	-.16	-.10	.03
7. Social Activity-Verbal							.00	.00	.86**	.05	.02	.00
8. Social Initiatives-Negative								.00	.01	-.08	-.14	-.14
9. Assertion Successful								.00	.12	-.33**	.24*	.33**
Control												
10. Literal Activity											-.12	.00
11. Sex											.04	.04
12. IQ												.11

** $p < .01$

* $p < .05$

amount of pretend did not.

Insight into the interactive nature of the relationships between social competence and the pretend and control variables can be obtained by examining the relative sizes of the standardized Beta weights, calculated for the last step of each of the regression analyses. It can be seen that although the pretend variables were forced to enter very late in the regression equation, when all predictor variables are considered simultaneously, the relative importance of the pretend variables in the prediction of the competence measures is emphasized. Specifically, in the prediction of teacher popularity, amount of pretend receives the largest Beta weight, followed by age and activity. In the prediction of the two behavioral factors, Social Activity-Verbal and Assertion-Successful, amount of pretend receives the second largest Beta weight, following activity level and sex in the two equations respectively. In the prediction of the Kohn & Rosman Interest-Participation factor, amount of pretend is relatively less important, receiving the third largest Beta weight, after IQ and activity level. Finally, in the prediction of social cognition the Beta weight for complexity of social pretend play is the third largest, after IQ and age.

Sex Differences in the Relationship between Social Pretend Play and Social Competence

The multiple regression analyses indicated that for two of the regression equations, ie., Social Activity-Verbal and Assertion-Successful, sex was among the group of significant covariates . As was previously discussed, the use of a hierarchical, stepwise regression procedure permitted an evaluation of the relationships between the social pretend play and the social competence measures independent of the effects of the covariates. However, differential sex effects were also obtained on some of the measures analysed in the developmental study of the pretend play scans. Additionally, current developmental research has indicated the potency of gender as a variable influencing the socialization processes. Further exploration of the impact of this particular covariate seemed warranted. Separate regression equations for males and females were therefore calculated for those two dependent variables where significant Beta weights for sex had been obtained.

In these analyses, three additional social pretend play measures were used in conjunction with the amount of pretend play and the complexity of play. The developmental analysis of the social pretend play data identified familial identity transformations, character identity

transformations, and substitute object use as variables showing differential sex effects. More specifically, girls enacted more familial roles while the boys enacted more character roles and demonstrated more substitute object use. New variables were therefore calculated using these categories. They were then included in the present analyses in order to provide a more refined examination of possible sex-specific qualitative differences in the relationship between social competence and social pretend play. These variables were the proportion of pretend play involving a familial identity transformation, the proportion involving a character identity transformation and the proportion involving substitute object use. Each of these variables was calculated as a proportion similar to the complexity of play measure, ie., as a proportion of the total amount of social pretend play. The means for the social competence, social pretend play and control variables, computed separately for sex, are shown in Table 10.

Significant Multiple R's were obtained for both the males and the females in the prediction of Social Activity-Verbal (See Table 11). In both analyses, literal activity was the only covariate to account for a significant portion of the criterion variance. This finding duplicates that of the total sample regression analysis (see Table 9) and suggests congruency between the sexes in the functioning of the covariates. Also, in both the male

Table 10

Mean Values of the Social Pretend Play, Social Competence and Control Measures Calculated Separately for Males and Females.

	Males N = 55		Females N = 36	
	M	(SD)	M	(SD)
Social Pretend Play Measures				
Amount Social Pretend Play	.29	.17	.27	.16
Complexity of Pretend	.46	.29	.58	.29
Familial Identities	.07	.13	.36	.29
Character Identities	.20	.22	.09	.14
Object as Substitute	.49	.29	.29	.26
Social Competence Measures				
Kohn & Rosman Interest Participation Score	8.67	38.66	9.25	35.65
Popularity	.49	.30	.54	.28
Social Cognition	9.09	5.48	10.31	4.81
Social Initiatives-Positive	-.13	1.05	.20	.89
Social Activity-Verbal	.03	.79	-.06	1.27
Social Initiatives-Negative	-.06	.87	.09	1.17
Assertion-Successful	-.27	.92	.40	.99
Control Measures				
Age	53.75	6.60	54.44	7.99
IQ	95.16	18.33	96.72	16.16
Literal Interaction Intervals	19.49	5.53	20.77	7.81

Table 11

Multiple Regression Analyses Predicting Social Activity-Verbal and Assertion-Successful from Social Pretend Play and Control Variables, Calculated Separately by Sex.

Dependent Variable	Predictors (Step Entered)	Standardized Beta	F Ratio (R^2 Increase)	R^2 (Final Equation)
Social Activity	1. Literal Activity	.82	135.77***	
Verbal	2. IQ	.09	3.81	
	3. Age	.03	.27	
Males Only	4. Substitute Object Use	.18	15.72***	
	5. Amount Pretend	.18	1.35	
	6. Character Identity	-.08	1.27	
	7. Complexity Pretend	-.04	.16	
	8. Familial Identity	-.01	.04	.90***
Social Activity	1. Literal Activity	.91	130.04***	
Verbal	2. IQ	.21	.31	
	3. Age	-.07	.05	
Females Only	4. Complexity Pretend	.13	14.00***	
	5. Familial Identity	-.20	2.49	
	6. Amount Pretend	.11	3.40	
	7. Character Identity	.21	1.56	
	8. Substitute Object Use	.20	6.16*	.91***

*** $p < .001$

** $p < .01$

* $p < .05$

Table 11 (Con't)

Dependent Variable	Predictors (Step Entered)	Standardized Beta	F Ratio (R^2 Increase)	R^2 (Final Equation)
Assertion Successful	1. Age	.38	19.49***	
	2. IQ	.30	8.66**	
	3. Literal Activity	.25	10.17**	
Males Only	4. Amount Pretend	.32	14.99***	
	5. Complexity Pretend	.10	.59	
	6. Familial Identity	-.04	.21	
	7. Character Identity	-.01	.01	
	8. Substitute Object Use	-.008	.002	.77***
Assertion	1. Literal Activity	-.14	1.00	
Successful	2. Age	.08	.24	
	3. IQ	-.14	.05	
Females Only	4. Complexity Pretend	-.08	1.66	
	5. Object as Substitute	-.30	.74	
	6. Character Identity	-.23	.72	
	7. Amount Pretend	.13	.23	
	8. Familial Identity	.001	-.0002	.37 n.s.

and the female analyses, the entry of a social pretend play variable resulted in a significant increase in the amount of criterion variance accounted for. The two analyses differed however, in terms of the social pretend play variables which entered significantly. For the males, substitute object use was the only pretend variable to significantly increase the value of R. For the females, the initial entry of complexity of pretend play and then the subsequent entry of substitute object use each resulted in significant increases in R.

Examination of the relative sizes of the standardized Beta weights for the prediction of Social Activity-Verbal for the males and the females indicates differences between the two sexes. For the males, literal activity and then substitute object use, were clearly the most important variables. For the females, literal activity level was also very important. However, IQ, substitute object use and character identity transformations received comparable positive Beta weights while familial identity transformations received a high negative Beta weight. This pattern of results suggests that for the females also, high scores on those variables which define a male pattern of social pretend play (high on character roles and substitute object use; low on familial roles) results in a more accurate prediction of their social competence scores.

Turning to an inspection of the separate male and female regression analyses for Assertion-Successful, a significant Multiple R was obtained only for the males (see Table 11). With respect to the male analysis, the three covariates again acccounted for significant portions of the dependent variable variance. The addition of the amount of pretend play variable also produced a meaningful increase in R . The other social pretend play variables did not produce any significant changes upon entry into the equation. Inspection of the Beta weights indicates that age, IQ, literal activity level and amount of pretend play were all important in the calculation of the maximal regression equation. These results are similar to those obtained for the total sample, with the exception that literal activity level is important in the male analysis but not in the total analysis.

Effects of Play Context on Social Behavior

Because the regression analyses were supportive of the potential beneficial influences of social pretend play on social competence, a post hoc exploratory analysis of its possible effects on social behavior was considered informative. The amount of time spent in social pretend play appears to be related to a child's level of social competence in other situations, Thus, it may be hypothesized that the social behaviors occurring within

this type of play are different in some ways from behaviors occurring within other types of activities. More specifically, a child's social behaviors within the context of social pretend play might differ quantitatively and qualitatively from his social behaviors in non-pretend social activities. Although the data were not collected to answer these questions, an exploratory analysis of some of the social behavior data was nonetheless conducted. In this analysis, examination was focused on the possible effects of context on these variables.

It will be recalled that all of the social interaction intervals recorded during the behavioral observations were categorized as either pretend or literal and all time, interval-rating and discrete social behaviors scores were computed separately for the two contexts. Treating context of play as a within-subjects factor with two levels of repeated measures, the scores obtained within each activity level were compared, thus indicating the manner in which the pretend play context differentially influenced social behavior. Although context of play was initially coded as a dependent variable, it was considered acceptable to treat it as a repeated measures factor in these exploratory analyses for several reasons. Although the two levels of play were not theoretically independent, the amount of observed social interaction was much less than the maximum possible of forty minutes, and therefore

the number of pretend intervals could, in reality, vary independently of the number of literal intervals. As well, the context of play rating was made subsequent to and independently of, the values assigned to the other behavioral categories. Finally, the social behaviors variables were scored for both play contexts in an equivalent fashion, thus maintaining similarity of measures across the two conditions.

In addition to context, sex was included as a between groups factor since the regression analyses had indicated sex differences in the relationship between social pretend play and two of the behavioral measures of social competence. Four subjects who had shown no social pretend play were eliminated from these analyses since it was not considered meaningful to include subjects with zero scores in these comparisons.

Many of the social behavior categories occurred very infrequently within the pretend context (non-zero values for less than 60% of the sample). Therefore, only the total social behaviors variable (ie., sum of the discrete social behavior categories) and those time and unit variables which were based on the total number of intervals were analysed. The variables in the analysis therefore included the number of interaction intervals, duration of interaction, total social behaviors, proportion of dyadic

intervals and proportion language use intervals. The means for the two contexts are shown in Table 12. Because of the large number of potentially correlated dependent variables, a multivariate analysis of variance with two factors, sex and context (pretend vs. literal), was employed. Univariate ANOVAS were interpreted when the overall Multivariate F was significant.

The MANOVA results indicated a significant difference between the two contexts on these social behaviors, $F(5,81) = 56.8551$, $p<.001$. The multivariate analysis of variance summary table is shown in Appendix I. Computation of the univariate ANOVAS indicated significant differences for interaction intervals, $F(1,85) = 95.5065$, $p<.001$, for duration, $F(1,85) = 123.9289$, $p<.001$, for total social behaviors, $F(1,85) = 44.6377$, for proportion of dyadic intervals, $F(1,85) = .2285$, $p<.001$ and for proportion of language use intervals, $F(1,85)= 36.4130$. Inspection of the means of these variables within each context (see Table 12) indicated that literal social interactions and social behaviors occurred more frequently than did pretend social interactions (20.33 and 68.23 vs. 9.96 and 40.40, respectively). However, pretend social interactions were of longer duration (41.42 seconds vs. 28.25 seconds), more often involved language use (.86 vs. .82) and were less likely to include only two children (.66 vs. .82). The multivariate F's for the sex and for the

Table 12

Mean Values of the Social Behavior Measures, Calculated Separately by Context.

	Pretend		Literal	
	M	SD	M	SD
Interaction Intervals	9.96	5.84	20.33	6.52
Duration (Seconds)	41.42	12.41	28.25	6.98
Total Social Behaviors	40.40	25.91	68.23	25.12
Proportion Dyadic Intervals	.66	.23	.82	.11
Proportion Language-Use Intervals	.86	.26	.82	.16

sex x context interaction effects were not significant, $F(5,81) = 1.4046$, $p<.25$, and $F(5,81) = 2.1189$, $p<.10$, respectively.

Discussion

In this chapter were reported the results of several correlational analyses examining the relationship between social competence and social pretend play. The major results of the research are contained within the multiple regression analyses in which several measures of social competence were separately regressed on four control variables (age, sex, IQ and literal social activity level) and two social pretend play variables. On the basis of the results of these regression analyses, it would appear that a significant relationship does in fact exist between spontaneously occurring social pretend play and social competence in the preschool. Children with high levels of social pretend play are ranked by their teachers as more popular with their peers and are rated higher on their level of Interest-Participation. Their social behavior in the non-pretend context occurs at a higher frequency, and they show a greater capacity for sustained interactions involving language use and successful assertive social bids. With respect to the social role-taking measures, amount of pretend play was less important than the complexity of that play. Children who showed a greater

proportion of complex pretend play also demonstrated more mature levels of social cognitive thought. All of these relations obtained even with the effects of age, sex, IQ and non-pretend social activity partialled out.

In a first set of supplementary analyses, a more refined examination of the effects of sex on the nature of these correlational analyses was examined. The two social competence measures for which the total sample regression analyses indicated a significant Beta weight for sex were isolated. Each was then regressed on the independent variables, separately by sex. These analyses included three additional social pretend play measures on which sex differences had been obtained. The results suggest that the relationship between social pretend play and the two behavioral measures of competence is somewhat stronger for the boys than for the girls. More specifically, both measures of competence were significantly predicted for the boys whereas only one of the measures was significantly predicted for the girls. Furthermore, when the predictive equations for Social Activity-Verbal were examined, the results for the males were highly congruent with the overall results while the results for the females were more atypical. For this measure it was found that the boys' engagement in an aspect of social pretend play which was had been identified as masculine (substitute object use) added to the overall prediction. For the girls however,

engagement in those aspects of social pretend play which were less sex-typical was predictive of this measure.

These sex differentiating results are intriguing and suggest that certain aspects of behavioral social competence may have different implications for the boys and the girls. Caution must however, be exercised in interpreting these results. It should be noted that, on three of the other competence measures, influences due to sex were not obtained. This suggests that in general, sex was not an influential covariate in this relationship. Further, the three additional sex-specific social pretend play measures were calculated for variables with quite low frequencies and therefore one might expect such multivariate results might to be somewhat unstable. Finally, the behavioral social competence measures were based on factor analyses in which the males contributed more subjects than did the females. These factors may thus be more representative of male social activity. Exploration of these findings within the context of a project designed to maximize the occurrence of all types of social pretend play for both males and females would be useful in clarifying these findings.

A final series of analyses, also exploratory in nature, examined the differential impact of social activity context (pretend vs. literal) on a number of the social

behavior variables. The results of these analyses support the notion that engagment in pretend play is significantly related to the nature of the ongoing social behavior. Within pretend play the social interaction is of longer duration, groups of children rather than dyads are more often involved, and language use occurs more often than within literal activities. All of these variables increase with age and may be considered to reflect superior social skills. These data further substantiate the argument that pretend social interaction is related to competent social functioning. Some collaboration of these results may be found in the previously described significant correlation found between age and number of pretend interaction intervals and the lack of correlation found between age and number of literal interaction intervals. Taken as a whole, these results indicate that both social and developmental maturity are related to the occurrence of social pretend play. These conclusions must be considered as speculative since these analyses are post hoc and also based on possibily unstable data. Replication of these findings in future research would be a necessary step in validating these results.

Effects of Social Pretend Play Training on Social Competence.

In this chapter the methodology and the results of the pretend play training study are reported. As was described in the first chapter, the training paradigm has been the major experimental tool by which the cognitive and socio-emotional influences of social pretend play have been investigated (Fink, 1976; Rosen, 1975; Saltz et al., 1977; Smith & Syddall, 1979). The results of these studies have provided some support for the hypothesis that social fantasy play influences the acquisition of these skills during the preschool years. A number of issues do, however, remain to be clarified.

With the exception of the Smith & Syddall study, it is not clear to what degree possible confounding sources of influence have been adequately controlled for in these studies. Specifically, within the pretend play training sessions, positive adult-child interaction and literal child-child interaction may both be presumed to occur and either of these factors may be responsible for the obtained posttest improvements. Previous training studies have considered the first source of bias and have dealt with it by including in the design a comparison control group

receiving training in a non-pretend activity and receiving positive adult attention. As has been indicated by the work of Smith & Sydall (1979), actual monitoring of the processes occurring within the two groups is necessary in order to ascertain how well the control group served its function. The second source of bias, non-pretend child-child interaction, has not been dealt with specifically in these studies. Presumably, it did not occur in either the pretend play or the construction control groups. Ongoing monitoring of this dimension within the groups would however, greatly increase the confidence one may place in the obtained results.

A second limitation to the inference that social competence is influenced by social pretend play training is the restricted manner in which the construct has been assessed. Most of these studies have examined cognitive aspects of social competence or else very global measures of social activity. As was outlined earlier, social competence is a complex phenomenon and meaningful assessment entails measurement along many dimensions in addition to the social cognitive skills. Generalization from one type of measure to another cannot be automatically assumed.

The design of the present study attempted to deal with these issues. Both a construction activity control

group and a no-treatment control group were employed. In addition, the actual ongoing processes of the pretend play and construction activity groups were monitored so as to provide a description of the adult-child and child-child contacts. Finally, a comprehensive assessment of the social competence construct was provided and included cognitive, behavioral and traditional methods of measurement. The results of this phase of the research thus provide an extension of earlier findings with this training paradigm and help clarify the direction of influence indicated by the results of the correlational study reported in the previous chapter.

Method

Subjects

Thirty-six of the ninety-one subjects who took part in the correlational study also participated in the training study. Immediately following the collection of the correlational measures in each centre, three groups of four children were selected such that the groups were equated with respect to age, sex, IQ, level of social interaction, level of social pretend play, teacher ratings of social competence, and maturity of social cognition. In two of the centres, the groups were matched on all variables. In the third centre, however, the number of girls enrolled was

very small and it was not possible to equate the groups on that variable. In that centre, nine boys and three girls were assigned to the three groups such that the groups were equivalent with respect to the other variables. Within each centre, the three groups of children were then randomly assigned to one of three conditions: pretend play training, construction activity training, or a no-treatment condition. All subjects who took part in the training study were fluent in English.

During the course of the study, two children in one centre, one in the pretend play group and one in the no-treatment control group, became ill for the duration of the training period and did not participate in any of the training sessions. After the study was completed, one subject was selected at random from the construction-activity group. This subject was then excluded from the statistical analyses so as to maintain a balanced design. For the purposes of analysis, the three groups therefore consisted of eleven subjects each. There were six males and five females in both the pretend play group and the construction activity group and there were eight males and three females in the no-treatment control group. None of the three groups differed significantly from the others on any of the control measures. The mean ages for the pretend play, construction activity and no-treatment groups were 52.46, 53.18 and 53.27 months, respectively.

The mean IQ scores were 98.46, 98.73 and 98.74, respectively. The average number of interaction intervals for the three groups was 30.64, 33.09 and 32.25, respectively, and the average number of pretend interactions was 9.27, 9.09 and 9.18. The social cognition values for the three groups averaged 9.27, 9.64 and 9.60. Finally, the teacher ratings of social competence for the groups averaged 24.91, 22.00 and 30.36, respectively. The analysis of variance results for the tests of the differences between these values are shown in Appendix J.

Procedure

The experiment consisted of a pretest assessment phase, a training phase and a posttest assessment phase. The social competence measures described in the previous chapter were used as the dependent measures to evaluate training effectiveness. The scores obtained for each subject in the correlational phase of the study were used as the pretest measures. The training phase was completed within four to five weeks at each of the centres. Posttest data for the social behavior observations were collected in two stages, in order to evaluate immediate vs. delayed training effects. In order to accomplish this, the posttest observations were initiated midway during the training study. Approximately half, therefore, were collected during the second phase of the training study while the remainder

were collected after the training sessions were completed. Posttest data for the other social competence measures were obtained for each child during the week immediately following the last training session.

Measures

All social competence measures collected during pretest were also collected at posttest. These included the popularity tests, the Kohn & Rosman Social Competence Scale, the two social cognition tasks and the observations of social behaviors. In order to obtain comparable data, all variables calculated from these tasks at pretest were recalculated with the posttest data in exactly the same fashion. Three exceptions were made in the calculation of the behavioral variables. While all behavioral variables were calculated for total social interactions, only the time, duration and total social behavior variables were computed separately for the pretend variables. As was discussed in the previous chapter, inspection of the pretest scores for the pretend context indicated that the more refined breakdowns resulted in variables with extremely low frequencies. Second, separate calculation of the variables for the literal intervals was considered unnecessary and redundant with the variables calculated for the total (ie., pretend plus literal) intervals. The final exception in the treatment of these social behavior

variables, was the separate calculation of the data for the two posttest collection phases. This resulted in two sets of posttest social behavior variables: during-training variables and after-training variables.

Training Conditions

Pretend play training. The procedure for the pretend play condition consisted of eight twenty-minute sessions conducted twice weekly in a comfortable and private room at each day-care centre. The rooms differed one from the other but were all quite large, well furnished and pleasant locations. During the eight sessions, four fairy tales were presented to the children. The stories were selected so as to be familiar to the children, to involve sequences of interpersonal behaviors which could readily be acted out and to consist of four story characters so that each child could assume a different role. The stories, in order of presentation, were: The Three Little Kittens, The Three Billy Goats Gruff, Little Red Riding Hood and The Three Bears. The presentation and enactment of the stories occupied two sessions each. In the first session, the adult trainer read the story out loud to the children, providing pictorial illustrations of the story sequence. Upon completion of the reading, the story was reviewed and discussed with the children until it was clear that all four children understood the roles of the four characters

and the general plot of the story. It was then suggested to the children that the story be acted out and a role was assigned to each child. When the story had been enacted, roles were reassigned, with each child receiving a new role, and the story was again played out. During the initial enactment, the adult was extremely active, encouraging the children, cueing them as to story sequence, prompting and suggesting ways to improvise and pretend. No story props were provided and the children were helped to adapt the contents of the room to the specific requirements of the play. For example, the beds required in Little Red Riding Hood were often improvised by pushing two chairs together. During the second enactment, the children were usually more comfortable with the activity and story line and were generally able to carry out the story with less intervention from the adult. If sufficient time remained, the story was enacted a third time. During the second session, the story was reviewed by the adult who encouraged the children to remember and recite the sequence of events. Then the story was enacted four times, with the children rotating through each of the roles. During each session, social interaction within the pretend context was actively reinforced. At the same time, peer interaction in a non-pretend context was not. At the end of the session, each child selected a coloured sticker that could be glued to a sheet as a reinforcement for participating in the session.

Construction activity training. The construction activity condition also consisted of eight twenty-minute sessions conducted twice a week. The sessions took place in the same room as did those for the pretend play group. Half were scheduled immediately preceding the pretend play sessions and half were scheduled to take place immediately following them. In each session a non-pretend construction activity was introduced to the children. Activities were selected such that the children would not be encouraged to interact with each other in fantasy or non-fantasy play but would be exposed to a small group experience with other children and would have a comparable opportunity for positive adult contact. The construction tasks all made use of materials familiar to the children such as coloured paper, paste, scissors, wooden sticks and pencils. The following objects were presented for construction: paper lanterns, paper caterpillers, paper chains, collages, paper windmills, kleenex holders, pencil holders and paper weaving. In each session the adult showed the children an example of the finished product and then demonstrated how it was made. Each child was then provided with the necessary materials and encouraged to make the object. In each session the adult was warm and interactive with the children, praising each one for his/her efforts and providing individual help in completing the project. However interaction among the children themselves was not encouraged. At the end of the session each child selected

a sticker as in the pretend play sessions. In addition each child kept the object which he or she had constructed during the session.

All the training sessions, both pretend play and construction activities, were conducted by the author who was not blind to the children's pretest scores or to the hypotheses of the study. The monitoring of adult-child contacts was considered an adequate method of evaluating possible bias in the adults' interaction patterns with the two different groups.

For both the pretend play group and the construction activity group, no session was conducted with fewer than three children. In one centre, absences necessitated conducting ten sessions in order to ensure that each child participated in at least eight sessions. However, in this centre no child participated in more than nine sessions altogether.

No-treatment control. The children in the control group did not take part in any small group experience and received no treatment of any kind. They participated only in the pretest and posttest assessment phases.

Training Session Observations

In order to assess whether the pretend play and construction activity groups differed in terms of the amount of pretend play social interactions but did not differ along other important dimensions, half of the training sessions were monitored by two female undergraduates. The training manual is shown in Appendix J. Both students were unfamiliar with all other phases of the research and did not take part in other assessment procedures of the study. Each session was divided into alternating fifteen-second adult observation intervals and twenty-second child observation intervals. The end of each observation interval was reserved for a five-second "record" period.

During the ten-second "observe" period of the adult observation interval, the observer noted whether the adult engaged in any positively or negatively reinforcing behavior with any of the children during that time. Positive reinforcement included such behaviors as smiling, touching, praising, encouraging, or helping with the activity. Negative reinforcement included such behaviors as verbal or physical restraint, reprimands or gestures indicating disapproval. During the "record" period, the observer categorized the interval as positive or negative.

Following an adult observation, one of the children was observed, in rotating order. During the fifteen-second "observe" phase of the child observation interval, the observer noted whether the child interacted with another child (or other children) and whether the observed interaction was pretend or literal. During the five-second "record" period, the preceding interval was described according to these obsevations. The definitions of social interaction and of pretend and literal activities were identical to those used in the other observational phases of the research. Briefly, a social interaction consisted of any initiation-response sequence completed within ten seconds. Pretend play was defined as any social activity in which the children verbally or non-verbally referred to a transformation of the self-identity, of objects in the environment or of the action sequence. Literal activity was defined as any social activity in which persons, objects or actions were treated in a concrete and reality based manner. After the session was completed, the observer made two ratings on a five-point scale for each child. The first rating reflected the amount of interest and involvement shown by the child in the activities of the session. The second rating reflected the amount of direct, participatory motor activity shown by the child during the session.

Five scores were calculated, summing across the values of all of those training sessions in which process observations took place (N = 24). To adjust for slight differences in the lengths of the sessions, scores were expressed as percentages of the total adult or total child observations collected. The child scores included the percentage of intervals in which pretend interaction occurred, the percentage in which literal interaction occurred and the mean ratings on the involvement and activity scales. The adult score was the percentage of adult intervals in which positive adult-child interaction was observed to occur. During 25% of the sessions, the two observers were both present and independently collected data on the session. Interrater reliability was calculated as the mean percent agreement between the two observers for each of the variables. These averaged 89% for peer social interaction, 78% for positive adult-child interaction, 95% for involvement rating and 92% for activity rating.

Results

Training Session Observations

The differences and similarities in the variables and ratings for the two training conditions were so clear that statistical procedures were not conducted. These results are shown in Table 13. The percentage of intervals in which positive adult-child interaction was observed was not different in the two training conditions; 82% in the pretend play sessions and 80% in the construction activity sessions. Inspection of the children's social interaction scores indicate that in the pretend play sessions, social pretend play occurred in 30% of the observed intervals, while literal play occurred in .05%. In the construction activity sessions, pretend play occurred in 0% and literal social activity occurred in .3% of the intervals. Finally, the involvement and activity ratings for the two training conditions were very similar. The mean ratings for involvement and activity were 4.6 and 4.8, respectively, for the pretend play sessions and 4.7 and 4.7, respectively, for the construction activity sessions. In summary, the two groups were equivalent with respect to adult-child interaction, the overall ratings of degree of involvement and activity in the group activities and the virtual non-occurrence of literal social interaction. They were however, very different in the amount of pretend play

Table 13

Mean Values of the Adult-Child and Child-Child Training Session Measures, Calculated Separately for the Two Training Conditions.

	Pretend Play Training	Construction Activity Training
Adult Measures		
Positive Adult-Child Interactions[a]	82%	80%
Child Measures		
Pretend Play Interaction Intervals[a]	30%	0%
Literal Activity Interaction Intervals[a]	.05%	.3%
Involvement Rating[b]	4.6	4.7
Activity Rating[b]	4.8	4.7

a. Variable is expressed as a percent of the total observations

b. Maximum score = 5

social interaction, which occurred only in the pretend play sessions.

During-Training and After-Training Posttest Comparisons

Prior to the analysis of the effects of pretend play training on social competence, the two sets of posttest data were examined to determine whether any differences existed between the observations collected during training and the observations collected after training. For the purposes of this analysis, the time variables, ie., total interaction intervals, pretend interaction intervals, total social behaviors, pretend social behaviors and teacher interaction intervals, were all expressed as proportions of the number of observations collected during each posttest phase, since the mean number of observations varied slightly (18 vs. 22, respectively). All other variables were expressed as proportions in the same manner as described for the calculation of the pretest scores. These values are shown in Table 14. Prior to analysis, all of the proportions were normalized using the arcsin transformation (Winer, 1971). The mean values obtained for the individual variables collected at the two different times were compared by means of correlated t tests and no significant differences found (see Table 14). The two sets of posttest data were therefore pooled and these combined posttest values were used in further analyses.

Table 14

Mean Values of the During-Training and After-Training Social Behavior Variables and t Values[d] for the Difference between the two Means.

	During		After		
	M	(SD)	M	(SD)	t(df=32)
Time Measures[a]					
Interaction Intervals	.84	(.14)	.84	(.13)	-1.17
Duration (Seconds)	36.63	(8.35)	35.81	(9.56)	- .30
Teacher Intervals	.04	(.07)	.03	(.06)	.26
Pretend Intervals	.30	(.21)	.31	(.20)	- .08
Pretend Duration	43.27	(16.29)	44.18	(13.95)	- .27
Interval Ratings[b]					
Negative Intervals	.09	(.09)	.09	(.10)	- .25
Neutral Intervals	.51	(.19)	.46	(.19)	1.49
Positive Intervals	.41	(.18)	.45	(.21)	-1.12
Dyadic Intervals	.72	(.15)	.76	(.14)	1.35
Language Use Intervals	.85	(.15)	.85	(.17)	- .91

Table 14 (Con't)

	During M	During (SD)	After M	After (SD)	t(df=32)
Discrete Social Behaviors[c]					
Total Social Behaviors [a]	2.92	(.80)	3.15	(.76)	1.00
Pretend Total Social Behaviors [a]	1.22	(.89)	1.35	(1.0)	.74
Attention-Successful	.08	(.05)	.09	(.05)	- .77
Attention-Unsuccessful	.05	(.05)	.05	(.05)	-1.24
Resource-Successful	.04	(.04)	.05	(.05)	-1.24
Resource-Unsuccessful	.02	(.03)	.01	(.02)	.24
Leads-Negative-Successful	.02	(.03)	.02	(.03)	- .26
Leads-Neutral-Successful	.10	(.07)	.08	(.06)	.47
Leads-Positive-Successful	.12	(.07)	.12	(.09)	.47
Leads-Unsuccessful	.08	(.05)	.07	(.03)	.42
Competes-For-Equipment	.02	(.04)	.02	(.02)	- .06
Follows-Peers	.28	(.10)	.30	(.11)	- .69
Refuses-to-Follow	.07	(.04)	.05	(.04)	1.45
Affection	.13	(.07)	.13	(.06)	- .76

a. Variable is expressed as an untransformed proportion of the number of observations collected at each posttest phase, 18 and 22, respectively.

b. Variable is expressed as an untransformed proportion of Total Interaction Intervals at each phase.

c. Variable is expressed as an untransformed proportion of Total Social Behaviors at each phase.

d. The t values were computed for arcsin transformed variables.

Social Pretend Play Training Effects

Method of analysis. The occurrence of posttest changes in the social competence measures was examined by means of multivariate analyses of covariance in which the pretest scores served as covariates. This analytic strategy was chosen in preference to the repeated measures design since recent comparisons of the two approaches have suggested that the former model more adequately reflects the data at hand (Huck & McLean, 1975).

The dependent variables were analysed in six separate clusters. The pretest and posttest means for the variables within each cluster, calculated separately for the three groups, are shown in Table 15. The non-behavioral competence measures, popularity, social cognition and the Interest-Participation factor of the Kohn & Rosman Scale were analysed in the first cluster to assess whether increases as a result of training had occurred. The three variables calculated for the pretend intervals only, ie., interaction intervals, duration and total social behaviors, were analysed in a second cluster to assess whether pretend training had increased spontaneously occurring social pretend play.

Table 15

Mean Values of the Pretest and Posttest Social Competence Measures, Calculated Separately by Training Condition.

Measures	Pretend Play		Construction Activity		No-Treatment Control	
	Pre	Post	Pre	Post	Pre	Post
Non-Behavioral Cluster						
Kohn & Rosman	24.91 (34.17)	13.64 (23.58)	22.00 (36.37)	17.91 (24.68)	30.36 (31.63)	28.00 (39.42)
Popularity	.34 (.31)	.47 (.25)	.51 (.23)	.50 (.24)	.38 (.27)	.36 (.27)
Social Cognition	9.27 (4.75)	12.55 (3.75)	9.64 (5.33)	12.09 (2.63)	9.60 (5.52)	10.73 (4.76)
Pretend Cluster						
Interaction Intervals	9.27 (6.75)	[illegible]27 ([illegible]43)	9.09 (5.28)	12.36 (8.44)	9.18 (4.45)	11.73 (5.93)
Duration	40.36 (9.72)	44.27 (10.41)	38.00 (14.75)	43.18 (15.46)	42.55 (8.71)	48.45 (6.31)
Total Social Behaviors	38.27 (36.37)	47.18 (33.20)	36.45 (21.87)	52.45 (36.51)	37.91 (17.76)	49.18 (27.26)

Table 15 (Con't)

Measures	Pretend Play		Construction Activity		No-Treatment Control	
	Pre	Post	Pre	Post	Pre	Post
Social Initiative-Positive Cluster						
Positive Intervals	.34 (.13)	.42 (.17)	.40 (.12)	.41 (.18)	.38 (.11)	.46 (.14)
Neutral Intervals	.57 (.12)	.47 (.17)	.54 (.10)	.53 (.19)	.56 (.11)	.46 (.14)
Affection	.11 (.05)	.13 (.05)	.14 (.05)	.13 (.03)	.12 (.06)	.14 (.06)
Leads-Positive-Successful	.10 (.04)	.10 (.06)	.10 (.04)	.13 (.10)	.09 (.03)	.12 (.04)
Social-Activity Verbal Cluster						
Interaction Intervals	30.63 (5.57)	33.90 (4.23)	33.09 (4.39)	31.55 (5.77)	32.45 (4.06)	33.82 (2.82)
Total Social Behaviors	109.18 (26.90)	117.91 (27.18)	117.45 (24.99)	117.18 (35.38)	119.45 (14.64)	124.91 (19.67)
Teacher Intervals	1.45 (1.73)	.42 (-.05)	.73 (1.00)	.69 (-.14)	.35 (-.66)	.40 (-.04)
Language-Use	.86 (.07)	.88 (.07)	.90 (.11)	.86 (.11)	.90 (.05)	.83 (.17)
Leads-Unsuccessful	.07 (.04)	.09 (.03)	.09 (.04)	.07 (.03)	.08 (.03)	.06 (.03)

Table 15 (Con't.)

Measures	Pretend Play		Construction Activity		No-Treatment Control	
	Pre	Post	Pre	Post	Pre	Post
Social-Initiatives-Negative Cluster						
Negative Intervals	.09 (.06)	.12 (.09)	.07 (.05)	.06 (.05)	.06 (.06)	.08 (.07)
Leads-Negative-Successful	.02 (.02)	.02 (.02)	.01 (.02)	.01 (.01)	.02 (.03)	.01 (.01)
Refuse-to-follow	.07 (.02)	.06 (.02)	.07 (.03)	.05 (.03)	.04 (.02)	.06 (.03)
Competes-for-Equipment	.03 (.02)	.02 (.02)	.02 (.02)	.01 (.01)	.02 (.01)	.02 (.03)
Assertion-Successful Cluster						
Leads-Neutral-Successful	.14 (.09)	.10 (.04)	.10 (.03)	.09 (.05)	.12 (.06)	.09 (.06)
Resource-Successful	.04 (.04)	.06 (.04)	.05 (.03)	.06 (.05)	.04 (.03)	.03 (.02)
Follows-Peer	.26 (.06)	.26 (.08)	.26 (.07)	.28 (.09)	.28 (.08)	.34 (.08)
Duration	32.73 (5.85)	34.45 (7.22)	32.64 (7.42)	35.91 (9.07)	33.82 (6.13)	38.55 (6.62)
Attention-Unsuccessful	.08 (.03)	.05 (.03)	.06 (.05)	.06 (.05)	.08 (.06)	.05 (.03)

Note: Standard Deviations are shown in brackets.

The individual social behavior measures (combined over pretend and literal intervals) were analysed in four clusters, organized according to the factor analytic structure obtained on the same variables in the observational study (See Table 8). The individual variables were used rather than the summary factor scores because it was not possible, using only the participating thirty-three subjects, to obtain a factor structure that remained stable from pretest to posttest. Since the purpose of these analyses was to determine whether qualitative changes occurred in the relative frequency of the observed social behaviors, these variables were again expressed as proportions of the total values, as described in the factor analysis. The first cluster consisted of the variables defining Social Initiatives-Positive: positive intervals, neutral intervals, affection-to-peer and leads-positive-successful. In the second of these clusters were the variables defining Social Activity-Verbal: interaction intervals, duration, total social behaviors, teacher intervals, language use, and leads-unsuccessful. In the third of these clusters were the variables defining Social Initiatives-Negative: negative intervals, leads-negative-successful, refuses-to-follow and competes-for-equipment. In the last cluster were included the variables which defined Assertion-Successful: leads-neutral-successful, resource-successful, follows-peer, and attention-unsuccessful. Although

duration and teacher intervals loaded on both the second and the fourth factors, they were analysed only once, in conjunction with the variables composing the second factor.

Multivariate Analyses of Covariance

The results of these six MANACOVAS indicated that no significant differences occurred between the three groups at posttest. The six multivariate F's for the condition were; $F(6,52) = .1923$, $p<.50$, $F(6,52) = .0960$, $p<.95$, $F(8,48) = .9100$, $p<.50$, $F(10,44) = 1.6939$, $p<.11$, $F(8,48) = .3199$, $p<.95$ and $F(10,44) = .9781$, $p<.50$, respectively. The summary tables for these analyses are shown in Appendix L. Since no significant Multivariate F's were obtained, the results of the univariate analyses were not interpreted.

Discussion

The purpose of the study reported in this chapter was to evaluate experimentally the relationship between social pretend play and social competence. Groups of children randomly assigned to a pretend play, a construction activity or a no-treatment control group were compared a posttest on behavioral, cognitive, popularity and teacher

rating measures of social competence. No differences were found between any of the groups, using the the pretest values as covariates. In summary, it would appear that the training provided in this study by the pretend play training condition was not instrumental in effecting changes in social competence. The issue of causality raised by the positive results of the correlational study remains unclarified.

Summary and Discussion of the Research Project

The purpose of the present research was to examine the hypothesis that the preschool child's participation in social pretend play is related to his/her development of competency in social skills. Two research strategies were used in this investigation. A correlational analysis of the joint occurrence of the two phenomena in the natural environment was undertaken. In addition, an experimental study of the effects of pretend play training on posttest assessments of social competence was conducted. A corollary hypothesis of the correlational study was that not only the quantity but also the quality of the social pretend play would be related to the social competence measures. Unfortunately, no empirical basis was currently available in the literature from which to derive a measure assessing the qualitative superiority of the social pretend play. A secondary component of research reported in this study was, therefore, a comparison of the social pretend play of younger and older preschoolers. This analysis produced meaningful data on the development of qualitative aspects of social pretend play and led to the derivation of a developmentally linked measure of complex social pretend play.

With respect to the developmental analysis of social pretend play, it was anticipated that older preschoolers would be characterized by higher frequencies of social pretend play than would younger prechoolers. Furthermore, it was anticipated that their play would differ along qualitative dimensions. Based on the work of Garvey (Note 2, 1977), older preschoolers were expected to enact functional and character identities more often than familial identities. They were also expected to engage in more complex pretend sequences in which multiple identity and object transformations were simultaneously incorporated. In contrast, the younger preschoolers were expected to demonstrate less complex play sequences and to enact familial roles more often than the other types of identities. Variations were expected to occur in the manner with which objects were incorporated into the play but they were not expected to discriminate the two age groups. Younger children were expected to be as adept as older children in their use of objects in a realistic manner and in their use of objects in a substitute manner. The possibility of sex differences on these measures was also explored since a higher incidence of pretend play among males has been reported in the literature (eg., Sanders & Harper, 1976). The occurrence of sex differences on the qualitative dimensions was also considered although no specific hypotheses were formulated regarding the nature of these differences.

The results of the developmental analysis indicated that the older children did in fact engage in significantly more social pretend play than did the younger ones. This is in agreement with previous reports of an increase in fantasy play during these years (Sanders & Harper, 1976; Tizard et al, 1977). The results also revealed qualitative distinctions between the play of the younger and that of the older children. These distinctions were not, however, all in line with those expected. The most pervasive distinguishing feature of the older children's play was that it more often involved multiple fantasy elements, ie., both identities and objects being transformed within the same play sequence. With regard to the incidence of play episodes involving the unitary transformation of a single element, either an identity or an object, the younger and older children did not differ. Based on these data, it would appear that the developmental increase in the incidence of social pretend play may be attributed more specifically to a differential increase in this complex form of social pretending. While age differences were found in the amount of complex social pretend play, sex differences were not found. Because of this equivalence across sex and because this measure showed a theoretically meaningful developmental increase, it was decided to use the relative incidence of this type of pretend play as the qualitative play measure in the subsequent correlational analysis.

The other anticipated developmental changes were not clearly supported by the results. The older children did demonstrate a small but significant increase in functional identity use. When this finding was considered in conjunction with increases that approached significance on both of the other two measures of identity type, it appeared that the type of identity is not a salient discriminating feature of more mature social pretend play. Conversely, the data suggest that all three types of identity transformation increased among the older children, with only a slight preference toward enactment of the functional roles.

The type of identity enacted was however, strongly associated with the sex of the child. Regardless of their age, the boys enacted far more character roles and far fewer familial roles than did the girls. This differential identity preference shown by the boys and girls is in agreement with other reported sex differences in the literature. Tizard et al (1977) found that preschool girls were more likely to enact domestic themes and chose more often to play with domestic objects and dolls. On the other hand, boys enacted themes such as driving cars or fighting and played more with cars, wheeled vehicles and outdoor materials. Ethological studies of children's play have found that boys prefer more physically active, mobile games, while the girls' play is more sedentary

(Blurton-Jones, 1972; Smith & Connolly, 1972). In terms of the present study, these findings are highly congruent. The character roles enacted by the boys often centered on attacker-chaser themes or on driving-cars themes and included a great deal of physical movement. The familial roles enacted by the girls were more sedentary, involving more intimate interactions with many of the domestic toys.

Although age differences in object use were not anticipated, the results showed that older children used objects as replicas more often than did the younger children. This finding is somewhat unexpected. Most other research in this area has indicated that, with increasing age, children show a greater capacity for treating objects in a non-realistic fashion (Fein, 1975; Lowe, 1975; Overton & Jackson, 1973). These other researchers examined symbolic play under more prescribed experimental conditions and focused only on object transformations. Perhaps in the context of naturally occurring pretend play sequences, factors other than developmental maturity take precedence in determining the manner in which objects are used. Specifically, much of the replica object use occurred within play sequences where the child also assumed a pretend identity. It may be that the demands of integrating multiple elements into the play sequence are sufficiently taxing that the child simplifies the task by using objects in a more realistic and concrete manner. One

would therefore expect that among children older than those observed in this study, the non-realistic use of objects in conjunction with identify transformations would show an increase. An alternative explanation would suggest that within naturally occurring social pretend play, realistic object use is a sign of greater maturity rather than a sign of lesser maturity. Such realistic object use may be an indication that the child recognizes the need to conform to certain reality standards if the pretend play sequence with another child is to continue. The child respects these limits in order to facilitate the pretend play episode with the partner.

Sex differences were also found in the manner in which objects were incorporated into the play. The boys and the girls were equivalent in their use of objects as replicas but the boys showed more use of objects in a substitute manner. This result is closely related to three other findings; the differential sex preferences for identity enactment, the types of toys preferred by the children and the types of toys provided by these day-care centres. All of the centres provided the children with toys that were replicas of domestic objects, such as miniature pots and pans, stoves and doll carriages. These objects are readily assimilated into the kinds of familial enactments shown by the girls. One may hypothesize, therefore, that the girls are not as strongly motivated to

use objects in a substituted or invented fashion. On the other hand, the centres did not provide the children with toys such as guns, space suits, or x-ray glasses. Yet these were the objects apparently required by the boys in their enactment of character roles such as Bionic Man or "monster". Thus the boys were compelled to use the objects available at the centre in a substitute fashion. This analysis suggests that the children first select an identity to enact and then incorporate objects into the play sequences implied by that particular identity. When appropriate toys are not available, they invent and substitute with what is available. While the data cannot directly support this notion, they do clearly suggest that an intimate relation exists between object use and identity transformation in pretend play sequences.

Summarizing the results of the developmental study, age-related differences were found in the quantity of social pretend play, in the incidence of complex play sequences and in the realistic use of objects. Older children engaged in more social pretend play of which a greater proportion involved the integration of multiple pretend elements. They also showed a preference for using toys in an appropriate and reality-based fashion. Striking sex-related differences were found in the content of the play. The boys preferred character roles coupled with more substitute object use while the girls preferred familial

roles. Both sets of results indicate that a close relationship was observed between the identity enacted and the choice of objects. Further research is needed to determine which, if either, of these elements is more influential in shaping the nature of the play and to determine the basis for the age- and sex-related preferences.

Turning now to the correlational study of the relationship between social pretend play and social competence, it was anticipated that the amount of time that a child spent in social pretend play would be positively related to his social competencies as assessed behaviorally, cognitively and by means of popularity and teacher ratings. It was also anticipated that these relationships would be increased by taking into account the quality of the pretend play and by including in the analyses of the complexity measure obtained from the developmental study. Finally, it was expected that the relationships would be significant even controlling for the effects of age, sex, IQ and amount of non-pretend social activity.

In reference to the relationship between the amount of social pretend play and social competence, the results clearly supported the hypothesis. Controlling for a child's age, sex, IQ and level of non-pretend social

activity, a significantly increased prediction of his/her status on a majority of the social competence measures was obtained by including in the regression equations a knowledge of the overall level of participation in social pretend play. In addition, inspection of the Beta weights with all of the control and pretend variables in the equation, indicated that the amount of pretend play was a highly potent predictor for the majority of the social competence measures. In three of the five significant equations, the pretend measures received either the largest or second largest Beta weight out of the six variables. In the other two equations, it received the third largest Beta weight. These data indicate that the child who demonstrated a higher incidence of social pretend play during his activities in the day-care centre was also rated by his teachers as being more active and interested in his social and non-social environment and as being more competent in his dealings with both the available resources of the centre and with the other children at the centre. Likewise, this child was ranked by his teachers as being more popular with his peers. The relations with the behavioral factors indicated that a higher level of social pretend play was related to a child's standing on Social Activity-Verbal and Assertion-Successful. Although the two individual variables, amount of pretend and number of literal interaction intervals, did not themselves correlate significantly, amount of pretend was significantly related

to the less global Social Activity-Verbal factor. This difference may be attributed to this factor's reflection of specific dimensions of social activity such as a preference for interacting with peers over adults, the use of language in interaction and the tendency to make numerous leadership bids. It appears, therefore, that the child who interacts extensively in social pretend play is inclined to participate as well in many non-pretend peer interactions. These interactions are characterized by their verbal character, their longer duration and their high frequency of social bids, particularly those directed at organizing and influencing the peers' activities. Furthermore, children who are active in social pretend play show higher levels of successful assertiveness in their non-pretend interactions. They take an active, initiatory role in interactions, are successful in directing peer activities and are able to obtain verbal or physical support and assistance from peers. In addition, they are more able to engage in peer interactions of a sustained duration.

It was anticipated that these relationships would be sharpened by futher information regarding the quality of the child's social pretend play. Overall, the results of the study did not provide support for this notion. The complexity of social pretend play measure was a significant predictor in one out of the seven regression analyses. Only in the prediction of social cognition did it enter

significantly. In the prediction of this measure, the pretend play complexity was the more potent of the two pretend variables accounting uniquely for a significant proportion of the dependent variable variance. With respect to cognitive manifestations of social competence then, it appears that the complexity of the pretend play is more closely related. When one considers the skills which are required in the two situations, the basis for this relationship is somewhat clarified. In the process of engaging in complex social pretend play, the child must integrate two disparate elements into a meaningful sequence. Likewise, in completing the role-taking tasks, the child must be able to consider a social situation from the differing points of view of the two participants. To be successful on these tasks, he must recognize that they do not, of necessity, have to agree with each other. In both situations then, the child is using his conceptual and perspective-taking skills to maintain an integration of two different elements. The results of the present research would suggest that the skills needed in one situation are related to skills needed in the other.

In general, however, no additional discriminatory power was obtained by including the complexity measure in the analyses. This failure may be attributed to the fact that the complexity measure correlated quite highly with the amount of pretend play. In addition, the partial

correlations with the dependent social competence measures were generally lower than the partial correlations between the amount of pretend measure and the social competence measures. Thus, when the complexity of pretend measure was considered in conjunction with the amount of pretend play measure, it did not account for a greater proportion of the variance than the frequency measure. Furthermore, it did not account for additional unique portions of the variance in a statistically meaningful fashion. Only in the prediction of one measure, ie., social cognition, was this situation reversed. In general, then, these results indicate that finer discrimination of the quality of the social pretend play was not effective in increasing the obtained relationships with social competence because the measure continued to be highly associated with the amount of pretend play. The complexity of play measure was, however, significantly correlated with several of the dependent measures. This pattern of individual correlations suggests that this variable does possess potential discriminative power. Continued search for a more refined qualitative measure which would be statistically independent of the quantitative measure may be a useful avenue for further research. At the present time, however, one can only conclude that knowledge of global levels of social pretend play effectively predicts a child's status on the peer acceptance and teacher rating measures and the child's behavioral competence in interacting extensively,

successfully and assertively with his peers. Knowledge of a child's tendency to engage in high level social pretend play is predictive of the capacity for non-egocentric thinking about complex social situations.

In reviewing these findings, it is apparent that the relationship between social pretend play and social competence is not a simple one. Differential findings due to the varying impact of the control variables, due to the type of measure used to assess pretend play and to the type of measure used to assess social competence were all indicated. The complexity that is revealed when extensive assessments of the relevant constructs are included indicates the utility of a multivariate approach. The differences among the seven regression equations indicate that a simple generalization from the results of one social competence measure to another is not justified. The measures tap varying aspects of the overall construct and, although they are related to some degree, there also are important differences among them and in the manner in which they relate to social pretend play. If only one of the social competence measurements had been used in the assessment of this construct, misleading conclusions might have been drawn regarding its relationship with social pretend play. While the collection of multiple measurements is somewhat more time-consuming than is the use of a single instrument, valuable additional information

is obtained and our understanding of this relationship is considerably broadened.

To summarize the overall results of the multiple regression analyses, empirical documentation has been provided for the hypothesized relationship between social pretend play and social competence. They suggest that participation in this unique form of activity has significant behavioral and cognitive correlates for the child. As well, correlates in terms of the more traditional social competence measurements of teacher ratings and peer acceptance were found. These findings have important implications for the current interest in early peer relations and social competence. It has been suggested that peer interaction is a necessary precondition for the acquisition of the many skills underlying this construct (eg., Hartup, 1978). It may be, however, that not all peer activities are equally relevant to this learning process. Specifically, the correlational findings indicate that the amount of social pretend play was, in general, a better predictor than was the amount of non-pretend social activity. This would appear to suggest that peer interaction is not a uniform phenomenon. Closer inspection of its differing manifestations reveals the pre-eminence of interaction within the pretend context. In this regard, social pretend play may be considered as a mediator between peer experience and social competence. It is not

sufficient merely to expose a child to peer contacts in order for that child to acquire socially competent behaviors and skills. In addition to determining whether or not a child has opportunities for interaction, it is necessary to examine what the child actually does in that interaction. The results of the present study would suggest that peer interaction within the context of pretend play may be an important element in creating out of those experiences a potential for skill acquisition. This suggestion that social pretend play may be functioning as a mediating variable has some support in the literature. Over the years several studies have documented the enhancement of creative object use when young children are provided with an opportunity for unstructured play with the object prior to assessment (Dansky & Silverman, 1973, 1975; Smith & Dutton, 1979). Recently it has been shown that this effect is operative only for those children whose free-play repertoire includes make-believe play (Dansky, 1980). In other words, the occurrence of pretend play functioned as a mediator between unstructured activity and creativity in this study. Although the variables under consideration in the Dansky study and in the present research are not the same, the results suggest a parallel role for the symbolic function in both the social and the non-social context. Further exploration of the specifics which differentiate pretend from non-pretend play may aid in clarifying the function of this behavior.

The significant results of the regression analyses indicated the utility of two further sets of post hoc explorations of the data. The first of these examined the possibility of differential sex effects for the regression equations in which sex was found to be a significant predictor. Separate male and female analyses for Social Activity-Verbal and for Assertion-Successful were therefore calculated. These analyses included as additional predictors the social pretend play measures which differentiated the sexes. The frequency and complexity measures used in the overall regression analyses were also included. In general, the results paralleled those obtained using the total sample. These aspects of behavioral social competence were again significantly predicted by social pretend play. Two important discrepancies were noted however. First, it appeared that the relationship between social pretend play and social competence may be somewhat more pervasive for the males than for the females. For the males, prediction of both dependent behavioral measures was meaningfully improved by the addition of a measure of social pretend play into the equation. For the females, a significantly improved prediction was obtained only for Social Activity-Verbal. A significant regression equation for Assertion-Successful was not obtained. A second discrepancy was noted in the social pretend play measures which accounted for the improved prediction of Activity-Verbal. For the females, complexity of pretend was

the most useful predictor with additional prediction being obtained from substitute object use. For the males, substitute object use was initially selected from among the group of pretend variables and no other pretend measure added to the overall results. Inspection of the Beta weights confirmed this difference and suggested that the pretend variables of predictive significance for both the males and the females were those which defined the typical male social pretend play pattern.

These differing results have several possible explanations. It may be that, in fact, the hypothesized relationship is less potent for the females than for the males. The occurrence of significant findings on the other regression equations does not support this interpretation. It suggests rather, that the sex-related findings are more specifically linked to the behavioral social competence measures. Since there were more boys than girls contributing data to the factor analysis, it may be that the behavioral factors are less clearly measures of social competence for the girls than for the boys. On the basis of the present data, it is not possible to fully explore these differences. Behavioral factors derived by means of factor analyses separately for sex would be necessary to clarify these issues and the size of the present sample precluded such an approach. Further research in this area could examine this possibility using larger samples of boys and

girls.

The findings of the correlational study indicating the potential functional value of social pretend play suggested a second series of post hoc analyses. In these analyses, some of the data were examined in order to further elucidate the ways in which pretend and non-pretend interaction may differ. A comparison of some of the social behaviors observed within pretend and literal interaction indicated that the pretend context of play was significantly related to these variables. Specifically, social interaction within the context of pretend play was more sustained, more often involved the use of language and more often took place among groups of children. Since all of these behaviors increase with age, they may be considered to be manifestations of more adequate social functioning. It would appear, therefore, that the pretend context facilitated in some way the occurrence of these more mature forms of social functioning. Many authors have argued that within social pretend play the child demonstrates his most advanced level of functioning (Golomb, Note 3; Smilansky, 1968). The results reported in this thesis would be supportive of this argument.

This context of play analysis revealed an additional point of interest. Specifically, the child's sex was not found to have any impact on the way in which activity

context affected the different social behaviors. Unlike the developmental analyses of the different components of pretend play in which striking sex differences were found, the context analysis indicated that this variable affects all of the children in a similar way. On the basis of these two sets of results, it would appear that while a child's sex may influence the content of his or her play, ie., the identities and objects which are chosen, it does not influence the process of the interaction occurring within that play. Both the boys and the girls appeared to function in a more socially competent fashion within the pretend play context, regardless of the actual pretend sequences which were being enacted.

In terms of social competence then, the content of the play would appear to be of less relevance than is the participation in the pretend play itself. Unfortunately, the relatively lower frequency of pretend play interactions precluded further analyses of its impact on the individual social behaviors. Based on these results, a fruitful avenue for further research on the relationship between social competence and social pretend play would be to explore in more detail the ways in which social interaction patterns change in the two contexts. Differences in the kinds of behaviors occurring in the two contexts and in the ways in which the transition from one type of activity to the other is effected may increase our understanding of the meaning

of the relationship between social pretend play and social competence.

The findings of the correlational study indicated that there is a definite relationship between a child's tendency to engage in social pretend play and the competency of his social functioning. These findings cannot provide any information on the directionality of this effect. As has been suggested by numerous researchers, the relationship may obtain because social pretend play enhances social competence. Alternative explanations are however, available. For example it may be that socially skilled children engage in more social pretend play.

In order to assess whether the first statement possessed any explanatory power, a pretend play training study was undertaken. It was anticipated that those children who received specific exposure to, and coaching in social pretend play would show improved social skills when compared to children who received either equivalent exposure to an adult-led small group within the context of non-pretend activities, or no treatment. The results of the training study did not support the hypothesis. The posttest assessments of the children in the pretend play training group were not different from those of the children in the other two groups. Specific exposure and training in social pretend play did not influence in any

way the child's current levels of social functioning. These findings are somewhat at variance with the results of previous pretend play training studies reported in the literature. Increases in perspective-taking skills, in social interaction skills, in cognitive/linguistic skills and in pretend play have all been described (Burns & Brainard, 1979; Fink, 1976; Rosen, 1974; Saltz & Johnson, 1974; Saltz et al, 1977; Smilansky, 1968; Smith & Syddall, 1978). Inspection of the results of the training session observations and of the ways in which the present study differed from those previously described may help to account for the differences in the findings.

Turning first to the data obtained from the training session observations, the present study provided evidence that positive adult-child contact was equivalent in the pretend and construction activities groups. This finding provides empirical documentation that the construction group was, in fact, an adequate control for this variable. It also raises again the question of the extent to which previous research has objectively demonstrated that its control groups adequately fulfilled their function. The necessity of controlling for the possibility of posttest changes due to adult-child interaction rather than to social pretend play among the children has been recognized

in the majority of these studies. However, with the exception of Smith & Syddall (1978), no process analysis of any kind has been provided by these studies to support their contention that adult-child stimulation was equivalent to the play and non-play groups. In the Smith & Syddall study, where process analysis indicated group equivalence on this dimension, significant training effects were not found for many of their cognitive and social tasks. It may be argued that, as a whole, the previous studies have not unambiguously demonstrated the effectiveness of social pretend play training for cognitive and social growth. In this regard, the results of the present study support the work of Smith & Syddall in confirming the relative non-effectiveness of the treatment when adult-child contact is controlled for. Nonetheless, Smith & Syddall did find increases in the amount of group social interaction following pretend play training, even controlling for the effects of adult-child contact. The failure of the present study to obtain any comparable significant findings cannot, therefore, be entirely attributed to the control exercised over this variable.

The training session observations also provided information on another relevant dimension which has not been directly explored in other research. Consideration of the results on the monitoring of this dimension may clarify the findings of the training study. Specifically the

observers recorded the amount of time that the children spent in pretend and in literal interaction, thus verifying that non-pretend social interaction did not occur and that the sole distinguishing feature of the pretend play group was their engagement in social pretend play. The neglect on the part of other studies to provide documentation on this issue limits the degree to which they can categorically assume that pretend play exposure was the prepotent dimension in their training groups. It is possible that the children also engaged in non-pretend interaction and that it was this feature which produced the posttest changes. The process analysis of the present research clearly eliminated the possibility of confounding by this variable since it indicated that only negligible amounts occurred in either condition. Perhaps the failure to obtain any significant posttest changes that replicate the findings of the previous training studies may be attributed to the absence of non-pretend interaction in the training sessions. In the correlational study reported earlier, naturally occurring levels of non-pretend (literal) interaction did not relate to higher levels of social competence, thus negating the feasibility of this explanation.

An alternative explanation is available by inspection of the other measure of child-child interaction. The results of the session observations indicate that the

children in the pretend play group engaged in social pretend play 30% of the time. This figure is approximately the same as that obtained for the spontaneous occurrence of social pretend play when observed in the free-play environment (32%). This indicates that the procedures of the pretend play group in the current training study did not alter the level of social pretend play from that which would have occurred in the absence of any intervention. In order for pretend play training to be effective, perhaps it is necessary to substantially increase the rate of occurrence of social pretend play within the training sessions relative to its rate of occurrence in the natural environment. The pretend play training may not have been effective because its procedures were unable to elevate the level of social pretend play among these children. In this regard it is interesting to note that most of the previous successful training studies have been conducted with "disadvantaged" children who, as a group, typically show much lower levels of naturally occurring social pretend play than do middle-class children (Rosen, 1974; Saltz & Johnson, 1974; Saltz et al, 1977; Smilansky, 1968). Perhaps then, these training procedures are most appropriate and most effective when used with children who initially demonstrate abnormally low levels of social pretend play. In order to be effective in increasing the level of social pretend play of middle-class children such as those used in the present study, modifications may be

needed to intensify the impact of the training procedures.

A final possibility that could account for the failure to obtain posttest differences between the groups deals with the time at which the posttest assessments were collected. In the present study, collection of posttest data was initiated midway during the training. This was prompted by the consideration that if training was facilitative of the emergence of new skills, their initial appearance might be quite fragile. Minimization of the time lag between training and assessment was seen as important in capturing these potentially unstable changes. It may be, however, that social pretend play exercises only a consolidating function. In that case, a longer period of time between training and assessment may be necessary in order for consolidation of skills to occur. Perhaps if the collection of posttest data had been delayed by a few months rather than immediate, differences between the groups would have been observed.

In summary, some possible causes of the failure to obtain significant posttest differences in the training may be identified. First, when the effects of adult attention and non-pretend social interaction are controlled for, pretend play training may not be causally linked to social competence acquisition. Second, the collection of

posttest data immediately following training may have obscured the appearance of a consolidation effect. Alternatively, the specific pretend play training procedures used in this study may themselves not have been sufficiently potent with this group of middle-class children, already adept in social pretend play. The results of the process observations suggest that a failure to incease the level of social pretend play may be the underlying cause. At present, however, it is not possible to determine which of these explanations, or indeed, if any, may most adequately account for the present data. Given that the results of the correlational study identified a significant and positive relationship between social pretend play and social competence, the non-significant results of the training study should be interpreted cautiously. On the basis of the results of the first study, it may be assumed that the two phenomena are related in some fashion. In the light of these findings, the training study results may be seen as reflecting not on the existence of the relationship per se but rather on the directionality of the relationship. The purpose of the training study was to identify social pretend play as a causative agent in the development of social competence. The present results are clearly unable to support such a statement and the meaning of the relationship isolated in the correlational study remains unexplained. Further research in this area is still warranted. The training

paradigm can support powerful statements regarding causality and its continued use in the investigation of these phenomena should be persued. Modifications should however, be made in its future use. Training procedures should be carefully designed to ensure that they are sufficiently powerful to cause an increase in the children's observed level of social pretend play. In addition, one could select as participants those children who are significantly lower than their peers on this dimension. Both of these approaches would help clarify the extent to which such training procedures can be generalized to children with differing levels of social pretend play. It is possible that these methods are applicable only to children who are deficient in this area. Second, posttest assessments should be made both immediately and after a period of delay. A comparison of these two sets of data could reveal more clearly whether the role of training is to facilitate the emergence of new skills or the consolidation of skills already in the child's repertoire. A third methodological modification would be to ensure that the posttest assessments are collected by individuals who are unfamiliar with the children's group membership. In all of the studies to date (the present one included), there has not been completely blind posttest data collection on all measures. The extent to which this may be introducing bias into the obtained results needs to be examined. Finally, process analysis of the training sessions should

be undertaken in order to objectively assess the actual ongoing activities of the different conditions.

Viewed in its entirety, an issue of considerable importance to the understanding of the social development of the young child was addressed in this research. Results were provided which clarify some facets of this issue and which indicate fruitful directions for further research. The correlational study of the relationship between naturally occurring social pretend play and current levels of social competence confirmed that these two phenomena are interdependent. Higher levels of social pretend play were predictive of more positive teacher ratings of social competence, of greater popularity as a playmate in the peer group, of more frequent, verbally-laden peer social activity and of a greater capacity to interact in a positive, successful and assertive fashion. Higher levels of qualitatively superior social pretend play in which multiple pretend elements were included, were predictive of more non-egocentric social cognitive thinking. An additional analysis of the influence of play context on specific social behaviors indicated that pretend play was associated with a longer duration of the ongoing social interaction, with more language use and with a larger sized play-group.

Overall, these results indicate the value of social

pretend play in the young child's repertoire and suggest that it may exercise a mediating function between peer experience and social competence. Further clarification of this issue, by means of an experimental study of the effects of adult-led coaching in social pretend play, was not obtained. The results of the training study were uniformly non-significant and the explanation for its failure were not immediately apparent. Taken together, the results of the two studies indicate that a positive correlational relationship exists between social pretend play and social competence but the causative nature of this relationship is unknown. Further research and exploration of this relationship is indicated by the results. One avenue for the future would be to re-apply the training paradigm to this issue, taking into account the difficulties which were encountered in the present training study. The use of a more homogeneous sample and the modification of the actual content of the training study to ensure its effectiveness in meaningfully elevating the level of social pretend play over a sufficient period of time, would be necessary changes. A second direction for future research would be to examine the ways in which the pretend play context influences the nature of the ongoing social interaction. Some tentative findings regarding its influence were obtained though post hoc analyses of the present data. Replication and extension of the findings would increase our understanding of this complex behavior.

A subsidiary analysis was also reported in this thesis. Although initially designed to answer a methodological requirement of the correlational investigation, the analysis of social pretend play differences among younger and older children provided results which are informative on their own. They confirmed the aged-related increase in social pretend play and specified more precisely the nature of this change. Multi-element pretend play, in contrast to single-element pretend play, was shown to undergo a differential increase in the older children. The results also illustrated the manner in which the content of play changed as a function of the sex of the child. While the boys and girls did not differ in their overall amount of social pretend play, they were shown to use objects in different ways and to enact different types of identities. The source of these differences was not clear from the results of the present study. Environmental factors are certainly implicated and further research in this area would be valuable. Although the developmental analysis revealed striking sex differences in social pretend play content, when viewed in terms of the results of the correlational analyses, it seems clear that play content is a less important variable than is the play process. Regardless of the content differences in their play, significant patterns of relationships were obtained between the social pretend measures and the social competence measures for both sexes.

Furthermore, pretend play context was shown to be uniformly related to the nature of their social interactions. Further examination of the pretend play process and of its implications for socio-emotional growth are needed to extend and amplify these findings.

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APPENDIX A

Request for Participation

Letter to Parents

CONCORDIA UNIVERSITY

Telephone: 879-5936 (days)
481-5247 (evenings)

August, 1978

Dear Parents:

We are continuing to study the social development of young children attending daycare. We are interested in knowing whether a child's language fluency and his/her play preferences influence his/her learning to interact successfully with other children. This information will be valuable to psychologists and teachers in their planning preschool programs to maximize a child's growth.

We would like to work with your child at the day care centre during his/her regular class time there. This research project has already been approved by the director. Our work with your child will involve his participation in 8 short play sessions with other children in his class, as well as participation in some brief language and social awareness games. These activities use toys and pictured materials which young children find enjoyable, and of course no child is ever forced to participate. In addition, we would like to watch your child, along with other children at the day care centre for approximately one hour during their free play time. If you do not wish your child to participate in this study, please sign and return the enclosed non-participation form on the back of this letter.

If you are willing to have your child participate in our project, we would be grateful if you would fill out the enclosed family biography form. A stamped enveloped is enclosed for your use. Of course, any individual information on your child and your family will be kept confidential in reports of this study.

In return for allowing your child to participate we will send you a report of the results as a whole when completed. If you have any questions, you are welcome to call at the above numbers. We are planning to begin our work in your centre early in the fall and hope you will permit your child to participate.

Yours sincerely,

Jennifer Connolly, M.A.
Graduate Student
Concordia University

Anna-Beth Doyle, Ph.D.
Associate Professor
Concordia University

SIR GEORGE WILLIAMS CAMPUS
1455 DE MAISONNEUVE BLVD. WEST
MONTREAL, QUEBEC H3G 1M8

If you are willing for your child to participate, there is no need to return this form.

If you do not wish your child to participate, please return this form in the envelope provided.

I do not wish my child _____
(name of child)
to participate in the study of language and play directed by Dr. Anna-Beth Doyle and Jennifer Connolly of Concordia University.

Signature of Parent _____

APPENDIX B

Family Biography Form

Family Biography Form

1. Name of child _____

2. Age of child _____

3. Date of Birth _____

4. Date of entry at this day care centre (month and year) _____

5. Did your child attend another day care or nursery school before this one? _____

   If yes, how long did he/she attend? _____

6. Does your child have any brothers and sisters? _____

   If yes, please list their ages and sex. _____

   _____

7. Does your child regularly hear any language besides English at home? _____

   If yes, what other languages does he/she hear? _____

   How much does he/she hear another language, eg. number of hours per day? _____

8. What is mother's occupation? _____

9. What is father's occupation? _____

10. What days of the week and hours of the day does your child attend the centre? _____

Parents name _____

Address _____

_____

_____

(to receive a report of the study)

Appendix D

Univariate Analysis of Variance Summary Table: Effects of Age and Sex on Total Amount of Social Pretend Play

Effect	MS	F (1,56)
Age	1.189	9.367 ***
Sex	.152	1.199
Age x Sex	.038	.298

*** $p < .001$

Appendix D

Multivariate Analysis of Variance Summary Table: Effects of Age and Sex on Complexity of Play Measures.

Age Group

Multivariate F (3,54) = 3.2889**

Univariate F (1,56)	MS	F
Identity Only	.0220	.2879
Object Only	.0866	.6856
Identity And Object	1.0573	8.1143**

Sex

Multivariate F (3,54) = 2.3056

Univariate F (1,56)	MS	F
Identity Only	.0294	.5375
Object Only	.7295	5.7784*
Identity And Object	.0132	.1016

Age Group x Sex

Multivariate F (3,54) = .7811

Univariate F (1,56)	MS	F
Identity Only	.0524	.6851
Object Only	.0006	.0047
Identity And Object	.1248	.9511

** $p < .01$

* $p < .05$

Appendix D

Multivariate Analysis of Variance Summary Table: Effects of Age and Sex on Identity Transformation Measures.

Age Group

Multivariate F (3,54) = 2.8972

Univariate F (1,56)	MS	F
Functional Identity	.2316	4.3887*
Familial Identity	.4029	3.7781
Character Identity	.4116	3.5399

Sex

Multivariate F (3,54) = 15.5392***

Univariate F (1,56)	MS	F
Functional Identity	.1716	3.2523
Familial Identity	1.9999	18.7471***
Character Identity	.6997	6.0175*

Age Group x Sex

Multivariate F (3,54) = 1.5028

Univariate F (1,56)	MS	F
Functional Identity	.1907	3.6133
Familial Identity	.0036	.8545
Character Identity	.0003	.9609

*** $p < .001$

** $p < .01$

* $p < .05$

Appendix D

Multivariate Analysis of Variance Summary Table: Effects of Age and Sex on Object Use Measures.

Age Group

Multivariate F (2,55) = 7.4218**

Univariate F (1,56)	MS	F
Object as Replica	1.14475	15.0841**
Object as Substitute	.2035	2.0184

Sex

Multivariate F (2,55) = 6.3373*

Univariate F (1,56)	MS	F
Object as Replica	.0970	1.2783
Object as Substitute	.8242	8.1760*

Age Group x Sex

Multivariate F (2,55) = 1.0723

Univariate F (1,56)	MS	F
Object as Replica	.1771	1.7571
Object as Substitute	.0027	.0355

** $p < .001$

* $p < .01$

APPENDIX E

Kohn & Rosman Social Competence Scale

CHILD'S NAME _____ RATED BY _____

CHILD'S AGE _____ _____ head teacher

ROOM OR GROUP _____ _____ asst. teacher

NAME OF CENTRE _____ _____ observer

_____ other

code no. _____

SOCIAL COMPETENCE SCALE
(for full day preschool programs)

THIS SCALE IS DESIGNED TO MEASURE THE DEGREE OF COMPETENCE WITH WHICH A 3-5 YEAR OLD CHILD MASTERS VARIOUS ASPECTS OF A FULL DAY PRESCHOOL PROGRAM. IT CONSISTS OF 73 STATEMENTS ABOUT A CHILD'S BEHAVIOR. YOU ARE ASKED TO RATE EACH STATEMENT IN TERMS OF THE FREQUENCY WITH WHICH YOU HAVE OBSERVED THE BEHAVIOR DURING THE MOST RECENT WEEK.

THE RATINGS CONSIST OF SEVEN DIFFERENT CATEGORIES OF FREQUENCY RANGING FROM ALWAYS TO NEVER. PLEASE CIRCLE THE NUMBER (1, 2, 3, 4, 5, 6, 7) WHICH CORRESPONDS TO THE CATEGORY WHICH, IN YOUR JUDGEMENT, IS MOST DESCRIPTIVE OF THIS CHILD'S BEHAVIOR FOR THE MOST RECENT WEEK.

PLEASE DO NOT CONSULT WITH ANYONE CONCERNING YOUR RATINGS. WE ARE INTERESTED IN RESPONSES WHICH ARE BASED ON YOUR KNOWLEDGE OF AND EXPERIENCE WITH THE CHILD.

THESE RECORDS ARE BEING USED AS PART OF AN INDEPENDENT RESEARCH PROJECT AND ARE STRICTLY CONFIDENTIAL.

RATING INSTRUCTIONS

1. BASE YOUR RATING ON THE CHILD'S BEHAVIOR DURING THE MOST RECENT WEEK. CONSIDER ONLY WHAT THE CHILD DID DURING THAT TIME PERIOD AND TRY TO DISREGARD PRIOR BEHAVIOR AND ACTION.
2. CONSIDER EACH QUESTION INDEPENDENTLY. IT IS WELL KNOWN THAT CHILDREN MAY EXHIBIT SEEMINGLY CONTRADICTORY BEHAVIOR.
3. BASE YOUR RATINGS ON HOW YOU HAVE OBSERVED THE CHILD FUNCTIONING IN THE CLASSROOM.
4. SOME ITEMS CONTAIN A NUMBER OF SPECIFIC BEHAVIORS WHICH ARE ONLY SLIGHTLY DIFFERENT FROM EACH OTHER. DO NOT HESITATE TO MAKE A RATING EVEN THOUGH THE CHILD DOES NOT EXHIBIT ALL OF THE SPECIFIC BEHAVIORS.
5. ANSWER EVERY ITEM. DO NOT LEAVE ANY BLANKS.
6. DO NOT HESITATE TO USE THE EXTREME POINTS WHERE APPROPRIATE.

THANKS FOR YOUR HELP

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
1. CHILD CAN COMMUNICATE HIS EMOTIONAL NEEDS TO THE TEACHER	1	2	3	4	5	6	7
2. CHILD SEEKS ADULT ATTENTION BY CRYING	1	2	3	4	5	6	7
3. CHILD NEEDS ADULT AID FOR EACH STEP OF ACTIVITY	1	2	3	4	5	6	7
4. CHILD IS RESPONSIBLE IN CARRYING OUT REQUESTS AND DIRECTIONS	1	2	3	4	5	6	7
5. CHILD SEEKS PHYSICAL CONTACT WITH TEACHER	1	2	3	4	5	6	7
6. CHILD ADDS FREELY (VERBALLY OR NON-VERBALLY TO TEACHER'S SUGGESTIONS	1	2	3	4	5	6	7
7. CHILD EXPRESSES OPEN DEFIANCE AGAINST AUTHORITY	1	2	3	4	5	6	7
8. CHILD SHIES AWAY AND WITHDRAWS WHEN APPROACHED BY OTHER CHILDREN	1	2	3	4	5	6	7
9. CHILD RESPONDS WITH IMMEDIATE COMPLIANCE TO TEACHER'S DIRECTION	1	2	3	4	5	6	7
10. CHILD CAN BE INDEPENDENT OF ADULT IN HAVING IDEAS ABOUT OR PLANNING ACTIVITIES	1	2	3	4	5	6	7

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
11. CHILD FROWNS, SHRUGS SHOULDERS, POUTS OR STAMPS FOOT WHEN SUGGESTION IS MADE BY TEACHER	1	2	3	4	5	6	7
12. CHILD CAN BE INDEPENDENT OF ADULT IN OVERCOMING DIFFICULTIES WITH OTHER CHILDREN OR ACTIVITIES	1	2	3	4	5	6	7
13. CHILD NEEDS EXCESSIVE PRAISE AND ENCOURAGEMENT FROM TEACHER IN ORDER TO PARTICIPATE IN ACTIVITIES	1	2	3	4	5	6	7
14. OTHER CHILDREN SEEM UNWILLING TO PLAY WITH THIS CHILD	1	2	3	4	5	6	7
15. CHILD IS UNWILLING TO CARRY OUT REASONABLE SUGGESTIONS FROM TEACHER EVEN WHEN HAVING DIFFICULTY	1	2	3	4	5	6	7
16. CHILD FEELS COMFORTABLE ENOUGH WITH OTHER CHILDREN TO BE ABLE TO EXPRESS HIS OWN DESIRES OR OPINIONS	1	2	3	4	5	6	7
17. CHILD HITS TEACHER	1	2	3	4	5	6	7
18. CHILD IS FEARFUL IN APPROACHING OTHER CHILDREN	1	2	3	4	5	6	7

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
19. CHILD CAN ACCEPT TEACHER'S IDEAS AND SUGGESTIONS FOR PLAY OR WAYS OF PLAYING	1	2	3	4	5	6	7
20. CHILD GETS WILLING COOPERATION FROM MOST OTHER CHILDREN	1	2	3	4	5	6	7
21. CHILD NEEDS TEACHER'S ATTENTION AT NAP TIMES	1	2	3	4	5	6	7
22. CHILD GIVES THE APPEARANCE OF COMPLYING WITH TEACHER'S SUGGESTIONS, BUT DOES NOT DO SUGGESTED ACTIVITY	1	2	3	4	5	6	7
23. CHILD IS BOSSED AND DOMINATED BY OTHER CHILDREN	1	2	3	4	5	6	7
24. CHILD'S IDEAS HAVE IMPACT ON MANY CHILDREN IN THE CLASSROOM	1	2	3	4	5	6	7
25. CHILD REBELS PHYSICALLY, FOR EXAMPLE: HAS TEMPER TANTRUMS, HITS, KICKS, ETC.	1	2	3	4	5	6	7
26. CHILD EASILY GETS ATTENTION OF OTHER CHILDREN	1	2	3	4	5	6	7

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
27. CHILD NEEDS SPECIAL ATTENTION AT LUNCH OR SNACK TIME	1	2	3	4	5	6	7
28. CHILD HAS DIFFICULTY DEFENDING HIS OWN RIGHTS WITH OTHER CHILDREN	1	2	3	4	5	6	7
29. CHILD COOPERATES WITH RULES AND REGULATIONS	1	2	3	4	5	6	7
30. CHILD DAWDLES WHEN REQUIRED TO DO SOMETHING	1	2	3	4	5	6	7
31. IN PLAY WITH OTHER CHILDREN, CHILD CAN SHIFT BETWEEN LEADING AND FOLLOWING, DEPENDING ON THE SITUATION	1	2	3	4	5	6	7
32. CHILD REACTS NEGATIVELY TO TEACHER'S IDEAS AND SUGGESTIONS FOR PLAY ACTIVITIES	1	2	3	4	5	6	7
33. CHILD IS UNABLE TO OCCUPY HIMSELF WITHOUT OTHER CHILDREN DIRECTING ACTIVITIES FOR HIM	1	2	3	4	5	6	7
34. CHILD IS WILLING TO TURN TO OTHER CHILDREN FOR HELP AND ASSISTANCE	1	2	3	4	5	6	7

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
35. CHILD ACTIVELY DEFIES TEACHER'S RULES AND REGULATIONS	1	2	3	4	5	6	7
36. CHILD CAN GIVE IDEAS TO OTHER CHILDREN AS WELL AS GO ALONG WITH THEIR IDEAS	1	2	3	4	5	6	7
37. WHEN MAKING A CHANGE FROM ONE ACTIVITY TO ANOTHER, CHILD RESISTS ENTERING THE NEW ACTIVITY	1	2	3	4	5	6	7
38. CHILD APPEARS AT A LOSS IN UNSTRUCTURED FREE PLAY TYPES OF ACTIVITIES	1	2	3	4	5	6	7
39. CHILD EASILY MAKES THE CHANGE FROM ONE ACTIVITY TO THE NEXT	1	2	3	4	5	6	7
40. CHILD SEEMS TO ENJOY BOTH PLAY WITH OTHERS AND BY HIMSELF	1	2	3	4	5	6	8
41. CHILD IS HOTSILE OR AGGRESSIVE WITH OTHER CHILDREN, FOR INSTANCE PUSHES, TAUNTS, BULLIES, ETC.	1	2	3	4	5	6	7
42. OTHER CHILDREN COPY THIS CHILD'S IDEAS FOR PLAY	1	2	3	4	5	6	7

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
43. CHILD HAS TO BE A LEADER IN ORDER TO PARTICIPATE IN ACTIVITIES WITH OTHER CHILDREN	1	2	3	4	5	6	7
44. CHILD PARTICIPATES IN A HALF-HEARTED WAY	1	2	3	4	5	6	7
45. CHILD IS A PICKY EATER	1	2	3	4	5	6	7
46. CHILD TAKES POSSESSION OF OTHER CHILDREN'S EQUIPMENT WITHOUT THEIR PERMISSION	1	2	3	4	5	6	7
47. CHILD DEMONSTRATES LITTLE INTEREST IN THINGS AND ACTIVIITIES	1	2	3	4	5	6	7
48. CHILD IS OPEN TO THE IDEAS AND SUGGESTIONS OF OTHER CHILDREN	1	2	3	4	5	6	7
49. CHILD IS RESPONSIBLE IN FOLLOWING THROUGH ON ROUTINES, FOR EXAMPLE, GETTING DRESSED OR UNDRESSED, WASHING HANDS, ETC.	1	2	3	4	5	6	7
50. CHILD IS QUARRELSOME	1	2	3	4	5	6	7

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
51. CHILD SEEMS EAGER TO TRY NEW THINGS	1	2	3	4	5	6	7
52. CHILD IS DOMINATING AND BOSSY WITH OTHER CHILDREN	1	2	3	4	5	6	7
53. CHILD SPENDS TIME SITTING AROUND, LOOKING AROUND OR WANDERING AROUND AIMLESSLY	1	2	3	4	5	6	7
54. CHILD CAN REMAIN ALERT AND INTERESTED IN AN ACTIVITY	1	2	3	4	5	6	7
55. CHILD PREVENTS OTHER CHILDREN FROM CARRYING OUT ROUTINES	1	2	3	4	5	6	7
56. CHILD SUCCEEDS IN GETTING OTHERS INTERESTED IN WHAT HE IS DOING	1	2	3	4	5	6	7
57. CHILD HAS DIFFICULTY RESTING DURING NAPTIME	1	2	3	4	5	6	7
58. CHILD SHOWS INTEREST IN ONLY A FEW TYPES OF THINGS	1	2	3	4	5	6	7
59. CHILD PUTS THINGS AWAY CAREFULLY	1	2	3	4	5	6	7

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
60. CHILD IS UNWILLING TO PLAY WITH OTHER CHILDREN EXCEPT ON HIS OWN TERMS	1	2	3	4	5	6	7
61. CHILD RESPONDS WELL WHEN THE ACTIVITY IS PLANNED OR DIRECTED BY THE TEACHER	1	2	3	4	5	6	7
62. CHILD DISRUPTS ACTIVITIES OF OTHERS	1	2	3	4	5	6	7
63. CHILD EASILY LOSES INTEREST AND FLITS FROM ONE ACTIVITY TO ANOTHER	1	2	3	4	5	6	7
64. CHILD CAN PARTICIPATE ACTIVELY IN STRUCTURED ACTIVITIES AS WELL AS FREE PLAY TYPE OF ACTIVIITIES	1	2	3	4	5	6	7
65. CHILD HAS DIFFICULTY LEAVING SCHOOL AT END OF DAY	1	2	3	4	5	6	7
66. CHILD HAS DIFFICULTY FALLING ASLEEP DURING NAPTIME	1	2	3	4	5	6	7
67. CHILD EASILY GIVES UP WHEN CONFRONTED WITH A DIFFICULTY	1	2	3	4	5	6	7
68. CHILD SHOWS ENTHUSIASM ABOUT WORK OR PLAY	1	2	3	4	5	6	7

	ALWAYS	VERY OFTEN	OFTEN	SOME-TIMES	SELDOM	HARDLY EVER	NEVER
69. CHILD HAS TROUBLE KEEPING TO THE RULES OF THE GAME	1	2	3	4	5	6	7
70. CHILD CRIES DURING NAPTIME	1	2	3	4	5	6	7
71. CHILD SEEMS TO BE AT A LOSS WHEN FIRST COMNING INTO THE CLASSROOM	1	2	3	4	5	6	7
72. CHILD ACTS SILLY AT LUNCH TABLE, FOR EXAMPLE: GIGGLES, THROWS FOOD, SHRIEKS, ETC.	1	2	3	4	5	6	7
73. CHILD RESISTS GOING ALONG WITH THE IDEAS OF OTHER CHILDREN	1	2	3	4	5	6	7

APPENDIX F

Teacher Popularity

Ranking Form I

PLAYMATE POPULARITY RANKING

To the Teacher:

We are interested in how popular the children in your class are with their classmates. By popular, we mean being selected often as the preferred playmate by many of the other children.

Please help us by using the spaces below to rank all the children in your class in terms of how much they are preferred as playmates by their classmates. In other words, give the rank of 1 to the child who is most often chosen as a playmate by the greatest number of other children, give the rank of 2 to the one who is next most preferred and so on until you reach the last place which is given to the child who is least often chosen as a playmate by his classmates.

We have attached a list of the children in your class. Please use this list in ranking the children to ensure that all children are ranked.

When you have finished, please return this list to the yellow envelope along with the completed Social Competence Scales. We will pick up the envelope on.

Thank you very much.

1_____	13_____	25_____
2_____	14_____	26_____
3_____	15_____	27_____
4_____	16_____	28_____
5_____	17_____	29_____
6_____	18_____	30_____
7_____	19_____	31_____
8_____	20_____	32_____
9_____	21_____	33_____
10_____	22_____	34_____
11_____	23_____	35_____
12_____	24_____	36_____

APPENDIX G

Social Cognition Tasks: Administration and Scoring Procedures

Affective Role-Taking Task

Procedure and Instructions:

Prior to the administration of the three story sequences, the child was first presented with different pictures of a child's face on 8¼" X 11" sheets of paper. Each picture portrayed a different emotional state - happy, sad, mad, and afraid - and the child was requested to "tell me how this little (boy/girl) feels". If the child was unable to identify the emotions the examiner provided him with the answer. All subjects were presented with pictures of same-sex children.

Story 1. The examiner presented the first picture and said, "Here you are with a bag of your favorite candy". The second picture was then shown and the examiner said, "Now another child has found your bag of candy and is eating them all up. How do you feel? Do you feel happy, sad, mad or afraid?". The examiner then waited for the child to respond. After stating how he/she would feel, the examiner asked, "Why do you feel _____?". The examiner then pointed to the other child in the picture and said "How does this child feel? Happy, sad, mad or afraid?". After the child had replied the examiner asked "Why does he/she feel _____?".

Story 2. The examiner presented the first picture and said, "You and your friend are playing a game together." The second picture was then presented and the examiner said, "Now your friend has won the game. How do you feel? Do you feel happy, sad, mad or afraid?" After the child has responded to this question, he/she was asked, "Why do you feel _____?". The examiner then pointed to

the other child in the picture and asked about that child's feelings and why he/she would be feeling that way.

Story 3. The examiner presented the first picture to the child and said, "You and your friend both want the same ball to play with". The second picture was then presented and the examiner said, "Now the teacher gives the ball to you. How do you feel? Do you feel happy, sad, mad or afraid?". When the child responded, he was asked to justify his answers as in the previous stories. The examiner then pointed to the other child in the picture and asked how he/she felt, and why he/she felt that way.

Scoring

For each story, one point was awarded for correctly identifying the emotional state of the first child and another point was awarded for providing an adequate explanation of that feeling. A third point was given if the emotional state of the second child was correctly identified and a final point was given if the child provided an adequate explanation for that feeling. The labelling of the emotional state and the adequacy of the explanation were judged in terms of the story content.

In Story 1, the correct answer for the first child was "mad" and the correct answer for the second child was "happy". Adequate justification for the emotions required that the subject refer to the loss or gain of the candies as the cause of the emotional states. In story 2, the correct answer for the first child was "sad" and for the second child was "happy". Adequate justification of the emotions required that the subject refer to the outcome of the game as the cause of the emotions in the two children. In story 3, the correct

answer for the first child was "happy", and the correct answer for the second child was "sad". Adequate justification of the emotions required that the child refer to the outcome of the teacher's intervention as the cause of the children's emotions.

Cognitive Role-Taking Task

"Birthday Gift" Selection

The child was seated at a low table and was first presented with each object individually and asked to name it. If the child could not name the object, the experimenter told him/her the name and probed to determine that the child understood its use. The objects were: a toy gun, a toy truck, a small doll, a necklace, a woman's handbag, a pair of stockings, a pair of men's socks, a small China flower, and a child's toy cosmetic kit.

After naming each object, they were all placed on the table facing the child. The child was then asked to pretend that "we are in a store" and that he/she was to select from the objects in front of him/her a birthday gift for his/her "mummy". After selecting an object, the child was verbally reinforced, and the object was replaced. He/she was then asked to select a present for his/her "daddy". After making his selection, the chosen gift was also replaced and the same selection procedure was repeated for "your teacher" and for "a little girl/boy". Girls were asked to select a gift for a little boy, while the boys were asked to select a gift for a little girl.

Scoring: One point was assigned for each age-and sex-appropriate gift selection.

Social Behaviors Observation Manual

Introduction

The observation manual is designed to collect information along four dimensions 1) specific social behaviors,

2) time spent in social interaction,

3) the occurrence of social pretend play,

4) the composition of the interaction in terms of the participating members, the language by the target child, and the overall emotional tone of the interaction.

Procedure

Each child will be observed for 40 one-minute intervals on a rotating basis over a period of 5-6 weeks. No child will be observed more than three times on any given day. Tape recorded one-minute intervals will be used to time the observations.

During the one-minute interval, the observer will record the occurrence of specific social behaviors using the Social Behavior Checklist - Modified. In addition, during that time, the observer will also record the amount of time spent in social interaction.

Following the one-minute interval, the observer will categorize the occurring social interaction as pretend play or literal interaction and will describe its composition.

1. Social Behaviors Checklist - Modified

The following categories are scored each time they occur during the one-minute interval.

1) Attention of Peer:

Designed to score those times when the child does something in order to gain a peer's attention.

Each of the following behaviors is scored each time it occurs:

- moves toward and stands or sits near peer
- touches peer
- call to peer - repeated calls without a pause are scored only once
- begins an interaction by 1) tells something (do not score continuing dialogue)
  2) shows something

To score "attention", children cannot be interacting beforehand.

2) Peer as Resource:

Tendency to use peers as a means of obtaining information or help, whether or not help is actually needed.

- Question-asking
- Information-seeking
- Judgement in a dispute
- Help with equipment, eg., help me build a house
- Asking a permission

Score as successful if get information when asked for. But if ask for action, only score successful if requested action is performed.

3) Leads Peer:

This category combines both positive and negative, verbal and non-verbal leadership attempts. It includes all attempts to control or influence the behavior of peers. These attempts could occur both as initiation attempts and as part of an ongoing interaction. To avoid double scoring, actions that are intended to control the behavior of a peer in order to obtain a resource are scored under (2). A child taking a toy where the peer offered no resistance is scored as a Leads (not as Competes).

Strongly worded commands showing hostility are scored here. However, hostility as such (hitting, name-calling, etc.) is not scored as Leads. Such negative behaviors would be indicated by recording the Affective Tone of the interval as negative.

In addition, the category Serves as Model is scored as a Leads, i.e., if the subject attempts to influence behavior of a peer by setting himself up as a model to be imitated or by being spontaneously imitated.

4) Follows Lead of Peer:

This category combines following behaviors where verbal and/or physical directions have been given and when they have not been given. Following implies that the child actively participates in behavior. Simply acquiescing in an inattentive or passive manner is not enough. Eg., if a child is pushed by another child, just being moved does not count; actively moving would be scored.

All instances where the subject follows the lead of a peer- including imitations, modeling, following, verbal leads, involved

observations, verbally supporting a peer's statements, following a peer around, joining peers in a specific activity - are scored here.

Involved observation is scored when S shows constant observation of a peer's activity to the exclusion of his own, for at least five seconds. Each subsequent five-second period of involved observation is also scored.

5) Refuses to Follow:

All occasions where the S refuses to follow a peer's directives, refuses to answer a question or ignores him.

Be careful not to score negative leads here. A negative lead involving refusal to follow is further defined by trying to control the child's action, eg., "No" and pushing is scored as a Refuses and as a Leads.

6) Expresses Affection to Peer:

a. Verbal, eg., smile, laugh or friendly statement

b. Physical, eg., touches, offers of help, sharing

For laughing and smiling to be scored, there must be direct eye contact with the peer.

An unsuccessful sharing attempt is still scored as a share. Extended episodes of laughing are scored only once every five seconds.

7) Competes for Equipment:

Competition may be a silent tug-a-war over a toy, a verbal argument or a combination of physical and verbal tussles.

"Competes" takes precedence over "Leads" and "Follows", i.e., Do not score the Leads and Follows. Only score as Competes.

If S does not respond to competition initiated by P, score Follows Lead of Peer rather than Competes. Eg., peer grabs shovel out of S's hand and says, "give me that" - S lets peer take shovel - score Follows Lead of Peer.

Prolonged competitions are scored once for every five seconds.

The following categories are further defined as to whether or not the behavior was successful - Leads, Resource, and Attention.

Scoring Notes:

In order to avoid double scoring, Uses Peer Resource Expresses Affection, and Leads in Peer Activities take precedence over Attention-Peer.

Certain behaviors cannot be scored, eg., responding to a statement or question with another statement, "How do you do it?" "It's easy" - can't score.

2. Time Spent in Social Interaction

This is recorded in seconds. When observing the child, the stopwatch is turned on during any social interaction with a peer. It is stopped only if the interaction stops and can be started again if another interaction occurs. At the end of the interval, record the total amount of time spent in social interaction.

A social interaction is defined by an initiation-response sequence which is completed within 10 seconds.

An initiation is defined as any attempt to engage another child in social interaction. This refers to any bid for attention, leadership attempt or any behavior specifically directed toward a peer in order to elicit a response, possibly also active directed smile/laugh. Physical

gestures (offer toy, wave) physical contact (touch, pat, hit) verbal directives or requests (ask, command, comment on) and possibly also active smile/laugh would be included. In order to assume that an initiation has occurred, it must be possible for the observer to identify the target to whom it is addressed.

A response is defined as any acknowledgement by the target of the social bid directed toward him. All behaviors described under Initiations could also serve as a Response. In addition a Response may be indicated by a look, smile, frown, compliance with a command, crying, reception of a given object.

An interaction is considered to have terminated if the partners make NO response to each other within 10 seconds.

Response - can be a look, or continued coordination of activity, ie., both are involved in mutual regulation

If a teacher joins an interaction and the interaction is then focused on the teacher, count 10 seconds and turn off the watch if no peer interaction occurs.

If no peer interaction occurred during the one minute, but the child was involved in social interaction with the teacher, this is indicated by scoring "If none, Teacher?".

If a child is interacting in a group with a teacher and another child, determine if his primary interest is centered on the teacher or the child and score accordingly. If he is focused on the teacher, then this is not scored or timed as peer social interaction.

If two children are interacting, then one starts doing his own thing and the other goes on looking, this is not an interaction.

3. Occurrence of Pretend vs. Literal Play

Following the minute interval, the Observer characterizes the predominant activity of the social interaction as being either pretend or literal.

Pretend play refers to any activity which involves the transformation of identity, setting, object, action plan or of the child's actual situation. Pretend transformation involves attributing to the objects, setting, people or materials, properties other than those which they actually possess. These features of the environment are treated in an "as if" fashion rather than literally (according to common and appropriate use).

Such transformations can range from simple animation of miniature objects, such as making a car say "vroom" to more complex assumptions of different role identities. (Building with blocks and leggo - and saying "I'm making a house" is literal activity).

Communication of Pretend

The presence of a pretend transformation may be communicated in a number of ways.

A) The most obvious is by explicit mention of the transformation of one or more of the components of play. These verbalizations may include specific mention of the partner's or the child's role or plan of activity, as well as mentioning the transformation or invention of an object.

B) Another form of verbalization which may signal pretend play is the Negation of Pretend - terminate an identity

- deny existence of an imaginary object
- to reaffirm the reality status of an object

While verbalization of the pretend state is most easily identified, pretend may also be communicated by other devices.

C) Enactment - Pretend may be indicated by any overt representation of vocal quality (whining), content of Speech (scolding), physical gestures (waving), attitudes (anger), acts or actions (ironing), when put forth by the pretender as characteristic of an adopted identity, or appropriate to a play situation resulting from a particular transformation. Enactment thus includes ongoing pretend dialogue, and animation of toys and objects.

Appropriate toy use of miniature replicas of real objects (such as toy cans, dolls, irons, etc.) is sometimes difficult to score as Pretend or Literal. Appropriate toy use in the context of any assumed identity (such as riding a bike and making machine noises or setting the table with toy dishes) is considered Pretend.

However, playing with cars must be accompanied by a further animation such as making care noises in order to be scored. The use of miniature objects without any further elaboration in the form of pretend gestures or, vocalizations, is not scored as Pretend.

Finally, Pretend may be indicated by:

D) Procedural or Preparatory Behaviors - revolving around the nature of the pretend sequence. This may be indicated by i) invitation to playful activity. If the second child agrees to play and then acts in a "pretend play" manner, this is scored. However, if a child says "No" when asked to play, this is not scored. ii) offering a prop. iii) clarification of rights and, iv) discussion of roles.

Remember, when deciding if pretend play is to be scored, we are only interested in social interaction with peers that is predominantly pretend. Solitary pretend play is not scored.

Furthermore, if a social interaction was mostly literal in content, with only very brief pretend elements, then the interaction is not predominantly pretend and is not scored. We are interested in the intersection of social and pretend, not either/or. score only when the two occur together.

Following the minute interval, the observer also describes certain elements of the interaction. With the exception of tone, reference is made only to the predominant element of the social interaction during the minute.

4. Components

1) Tone. This refers to the affective quality of the social interaction.

Positive - indicated by such behaviors as giving, sharing, smiling, laughing, touching, verbal agreement, cooperation, verbal support.

Negative - indicated by such actions as hitting, hostile deliberate pushing, name-calling, strong denials or refusals, negative commands, crying, grabbing toys, etc.

Neutral - when no indication of mood is shown by the child, and when his interactions are very matter-of-fact, score here. Unlike other scoring categories, where we are interested in describing the prevailing attribute, when scoring the tone of the social interaction, one positive or negative gesture is sufficient to warrant that score.

If both positive and negative gestures occur within the same social interaction, decide which of the two lasted longer or was predominant, and score that.

2) Size. This refers to the predominating number of children in an interaction. It can be either dyadic or group.

Dyadic - when only 2 children are interacting together (subject plus partner)

Group - this refers to interactions involving the subject and more than one child. For group to be scored, the subject must make a response to both of the children, or engage in an initiation-response sequence with both children within 10 seconds of each other.

Parallel play situations in which the subject interacts with one child, stops (for more than 10 seconds) and then interacts with another child, is not scored as group.

3) Language by Child. If the child uses any language during the social interaction record whether it was french or english. If he uses both, pick the one which was more predominant. If he did not speak, record None.

APPENDIX I

Multivariate Analyses of Variance Summary Tables: Effects of Context and Sex on Social Behavior Measures

Appendix I

Multivariate Analysis of Variance Summary Table: Effects of Context and Sex on Social Behavior Measures.

Context

Multivariate F (5,81) = 56.8551***

Univariate F's (1,85)	MS	F
Interval	4675.8851	95.5065***
Duration	6.0607	123.9289***
Total Social	33740.9713	44.6377***
Proportion Dyadic	16.1983	31.2285***
Proportion Language	35.2327	36.4130***

Sex

Multivariate F (5,81) = 1.4046

Univariate F's (1,85)	MS	F
Interval	.0316	.0015
Duration	.1873	1.6278
Total Social	.6358	.0014
Proportion Dyadic	.0980	.1919
Proportion-Language	3.5154	4.5572**

Context x Sex

Multivariate F (5,81) = 2.1189

Univariate F's (1,85)	MS	F
Interval	159.6141	3.2602*
Duration	.0092	.1886
Total Social	1649.2930	2.1819
Proportion Dyadic	2.5970	5.0067*
Proportion-Language	5.3607	5.5403*

*** $p < .001$

** $p < .01$

* $p < .05$

APPENDIX J

Analyses of Variance Summary Tables: Effects of Training Condition on Pretest Matching Measures

Appendix J

Analyses of Variance Summary Table: Effects of Training Condition on Pretest Matching Measures.

Training Condition Variate	MS	F (2,30)
Age	2.2121	.0560
IQ	.2727	.0024
Interaction Intervals (Total)	17.8485	.8014
Interaction Intervals (Pretend)	.0909	.0029
Social Cognition	.4848	.0178
Kohn & Rosman Interest-Participation Score	198.3030	.1687

APPENDIX K

Training Sessions

Observation Manual

Training Sessions Observation Manual

Introduction:

The monitor will observe the training session of twenty minutes duration and will record certain aspects of the adult trainer's behavior and certain aspects of the children's behavior. A tape recorder with earphone will be used to time the observation intervals.

Adult Observations:

The adult will be observed for ten seconds. Following these ten seconds, there will be a five-second record period in which to record whether the interval had been primarily positively reinforcing or negatively reinforcing.

Positive reinforcement is defined by any behavior made by the adult to the child/ren which provides him/her with positive feedback. The following behaviors would be included; smiles, touches, verbal statements, etc.

Negative reinforcement is defined as any behavior made by the adult and directed to one of the children which provides him/her with negative feedback on their actions. This would include verbal statements such as "stop that", physical restraint, and verbal or nonverbal gestures indicating disapproval or a prohibition.

Each adult interval must be described as either positive or negative.

Child Observations:

After observing the adult, the children will be observed in rotating order, alternating with an Adult observation, ie., A; C_1; A; C_2; A; C_3; A; C_4.

The child is observed for twenty seconds, with the last five seconds serving as a record period. During the record time the observer will indicate whether or not the child was involved in social participation with any of the other children during the preceding observation interval. In this context social participation refers to any group or dyadic activity where the child interacts substantially with the other children in an on-going activity. This may be indicated verbally, visually, or by the nature of the organization of the play. Parallel play, where the children are in proximity but engaged in independent tasks, does not count.

Social interaction must have occurred in over half of the observation interval in order to be scored. In this context, a social interaction was defined as any initiation - response or response-response sequence completed within ten seconds. An invitation refers to any attempt to engage another child in social interaction, such as verbal directives, physical gestures, or physical contact.

If social interaction occurred during the observation interval it is further categorized as either Pretend or Literal. Pretend social interaction refers to all those interaction sequences in which mutually agreed upon object and/or identity transformations are present. Literal social interaction refers to all other episodes in which environmental elements and the self-identities are treated in a realistic, concrete manner.

Activity and Involvement Ratings:

Immediately following completion of the training session, each of the participating children is independently rated on two five-point scales. The first scale assesses the amount of active involvement

shown by the child in the session's activities. A score of 5 is given if the child was highly engrossed and responsive for the whole session. A score of 1 is given if the child was uninterested and did not appear to be following directions.

The second scale assessed the amount of actual activity shown by the child, ie., the extent to which he physically participated in the session procedures. A score of 5 is given if the child engaged extensively in all activities. A score of 1 is given if the child engaged in few activities and/or engaged in other activities.

APPENDIX L

Multivariate Analyses of Covariance Summary Tables: Effects of Social Pretend Play Training on Posttest Social Competence Measures, with Pretest Measures as Covariates

Appendix L

Multivariate Analysis of Covariance Summary Table: Effects of Training Condition on the Posttest Non-Behavioral Social Competence Measures, with Pretest Measures as Covariates.

Training Condition

Multivariate F (6,52) = .1922

Univariate F's (2 ,27)	MS	F
Kohn & Rosman Interest-Participation Score	431.6086	1.2192
Social Cognition	185.8813	1.8737
Popularity	1.0252	1.2564

Covariate (Within Cells Regression)

Multivariate F (9,81) = 9.6740***

Univariate F's (3,27)	MS	F
Kohn & Rosman Interest-Participation Score	5877.69	16.6030***
Social Cognition	83.3122	12.1014***
Popularity	.2873	7.5683***

*** $p < .001$

Appendix L

Multivariate Analysis of Covariance Summary Table: Effects of Training Condition on the Posttest Pretend Measures, with Pretest Measures as Covariates.

Training Condition

Multivariate F (6,52) = .0997

Univariate F's (2,27)	MS	F
Pretend Interaction Intervals	3.8324	.0941
Pretend Duration (Seconds)	.0967	.9999
Pretend Total Social Behaviors	87.4190	.1098

Covariate (Within Cells Regression)

Multivariate F (9,81) = .38067

Univariate F's (3,27)	MS	F
Pretend Interaction Intervals	172.5608	4.2885**
Pretend Duration	.0468	.4845
Pretend Total Social Behaviors	342.9013	4.3076**

** $p < .01$

Appendix L

Multivariate Analysis of Covariance Summary Table: Effects of Training Condition on Variables in the Social Initiatives - Positive Cluster, with Pretest Variables as Covariates.

Training Condition

Multivariate F (8,48) = .9099

Univariate F's (2,26)	MS	F
Positive Intervals	.0463	.9579
Neutral Intervals	.0030	.1346
Affection	.0032	.1341
Leads-Positive-Successful	.0498	.9881

Covariate (Within Cells Regression)

Multivariate F (16,104) = .6715

Univariate F's (4,26)	MS	F
Positive Intervals	.0404	.8374
Neutral Intervals	.0180	.8226
Affection	.0366	1.5220
Leads-Positive-Successful	.0712	1.4133

Appendix L

Multivariate Analysis of Covariance Summary Table: Effects of Training Condition on the Variables in the Social Activity-Verbal Cluster, with Pretest Variables as Covariates.

Training Condition

Multivariate F (10,44) = 1.6939

Univariate F's (2,25)	MS	F
Total Interaction Intervals	28.1157	1.6093
Total Social Behaviors	169.1365	.2591
Teacher Intervals	.0004	1.3923
Proportion Language-Use	.0362	1.9794
Leads-Unsuccessful	.0172	3.8322*

Covariate (Within Cells Regression)

Multivariate F (25,125) = .9694

Univariate F's (5,25)	MS	F
Total Interaction Intervals	30.9027	1.7689
Total Social Behaviors	1491.7764	2.2854
Total Teacher Intervals	.0002	.8097
Proportion Language-Use	.0349	1.9050
Leads-Unsuccessful	.0113	.6586

* $p < .05$

Appendix L

Multivariate Analysis of Covariance Summary Table: Effects of Training Condition on the Posttest Variables in the Social Initiatives-Negative Cluster, with Pretest Variables as Covariates.

Training Condition

Multivariate F Ratio (8,48) = .31984

Univariate F's (2,26)	MS	F
Negative Intervals	.0185	.8495
Leads-Negative-Successful	.0077	.4558
Refuses-to-Follow	.0056	.3605
Competes-for-Equipment	.0086	.4657

Covariate (Within Cells Regression)

Multivariate F (16,104) = 1.5852

Univariate F's (4,26)	MS	F
Negative Intervals	.0522	2.3970
Leads-Negative-Successful	.0730	4.3319**
Refuses-to-Follow	.0100	.6236
Competes-for-Equipment	.0537	2.8987*

** $p < .01$

* $p < .05$

Appendix L

Multivariate Analysis of Covariance Summary Table: Effect of Training Condition on the Posttest Variables in the Assertion-Successful Cluster, with Pretest Variable as Covariates.

Training Condition

Multivariate F (10,44) = .97811

Univariate F's (2,25)	MS	F
Leads-Neutral-Successful	.0003	.0132
Resource-Successful	.0597	1.7100
Follows-Peer	.0571	2.5936
Duration	.0108	.9965
Attention-Unsuccessful	.0063	.1755

Covariate (Within Cells Regression)

Univariate F's (5,25) = 1.3061	MS	F
Leads-Neutral-Successful	.0143	.4777
Resource-Successful	.0304	.8687
Follows-Peer	.0975	4.4300**
Duration	.0088	.8089
Attention-Unsuccessful	.0716	1.9918

** $p < .01$

APPENDIX M

Varimax Rotated Factor

Matrix of Literal Social Behaviors -

All Variable Loadings