SOCIAL COGNITION IN PRESCHOOLERS: SOCIAL PERCEPTION, SOCIAL KNOWLEDGE, AND RELATIONSHIP GOALS AND EXPECTATIONS

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Darrell Wesley Meece, son of Arthur Wesley Meece and Cheryla (Pemberton) Everly, was born April 16, 1968, in Stanford, Kentucky. He graduated from Lecanto High School, in Lecanto, Florida, in 1986. In December, 1990, he graduated with a Bachelor of Arts degree in Psychology from Huntingdon College in Montgomery, Alabama. He began his graduate studies at Auburn University in September, 1991.

THESIS ABSTRACT

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The purpose of the present study was to test the utility of a model of young children's social cognition as a predictor of preschoolers' social competence with same-age peers. The model investigated in this study proposes that three, relatively independent, domains of social-cognitive processes are pertinent to young children's peer relations. The first of these processing skills, social knowledge, was conceptualized as a repertoire of social strategies. The second skill, social perception, was conceptualized as both the accurate encoding of relevant social cues and the positive interpretation of social cues that have been encoded. The final element of this model of social cognition is young children's relationship goals and expectations, or the extent to which preschoolers would like to

play with other children and feel that other children would like to play with them.

Subjects in this study were 34 4- and 5-year-old children who completed multiple assessments that were developed or adapted to measure each of these domains with preschoolers. Results indicated that measures of each of the three hypothesized domains were associated with measures of children's peer competence. Furthermore, measures of aspects of two of the domains - the quality of social knowledge and positive interpretation of social cues - independently predicted teacher-rated peer competence when the subjects' general verbal ability was statistically controlled. These results are interpreted as evidence that multiple, at least partially independent, social cognitive processes may guide children's social behavior.

Associations among measures of the three hypothesized domains of social cognition suggest that the hypothesis that these domains are independent may not be entirely adequate. Furthermore, the pattern of associations among measures of these domains and measures of children's verbal ability and peer competence provide some evidence that a two-factor model may provide a more accurate and parsimonious description of young children's social cognitive processing.

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I. INTRODUCTION

Social interaction with peers begins at an early age and becomes increasingly important to children's development during the preschool years (Cassidy & Asher, 1992; Hartup, 1983; Mize, Ladd, & Price, 1985; Olson & Brodfeld, 1991). Some researchers have suggested that early peer relationships provide an essential context for acquiring skills, such as emotional regulation and cooperative behavior, necessary for optimal socioemotional development (Hartup, 1989; Parker & Gottman, 1989). Individual differences in social behavior are apparent in children as young as 14 to 24 months old in daycare settings (Howes & Matheson, 1992). Moreover, young children's social competence and peer acceptance show moderate stability over the preschool years and predict children's adjustment during the transition to kindergarten and elementary school (Ladd & Price, 1987; Ladd, Price & Hart, 1988; Olson, 1992).

Attempting to identify sources of individual differences in young children's social interaction styles, researchers from both the social learning and the information processing perspectives have suggested that the ways children think about, understand, and evaluate relationships with peers guide their social behaviors. Several models that describe how such social-cognitive processes may operate have been proposed (Dodge,

Pettit, McClaskey & Brown, 1986; Ladd & Mize, 1983; Pettit & Mize, 1993; Rubin & Krasnor, 1986). These models typically propose several discrete cognitive, perceptual, and affective processes that are activated during social interaction and that are essential for competent functioning with peers. Elements that are common to most of these models include attention to and encoding of relevant social cues, interpretation of the stimuli that have been encoded, and a knowledge base from which possible responses to social stimuli can be generated.

Recently, Pettit and Mize (1993) proposed a model that describes three social-cognitive processes that may be particularly relevant as children negotiate peer interactions: (1) social perception, defined as the process of attending to, encoding, and accurately interpreting relevant social stimuli (cues); (2) social knowledge, defined as a knowledge base or repertoire of social strategies; and (3) relationship goals and expectations, defined as an individual's motivation in regard to affiliative behavior and expectations about social outcomes (Pettit & Mize, 1993). Pettit and Mize (1993) hypothesize that individual differences exist between children within each of these domains. These authors further propose that individual differences in social cognition are responsible for variations in children's orientations toward, and interactive behaviors with, peers.

The processes that comprise the Pettit and Mize model have been linked individually to children's behavior or acceptance with peers (for example, see Asher & Renshaw, 1981; Dodge, Murphy & Buchsbaum, 1984; Evers-Pasquale & Sherman, 1975; Gouze, 1987; Mize & Ladd, 1988; Pettit, Dodge, & Brown, 1988; Putallaz, 1983; Renshaw & Asher, 1982; Rubin, Daniels-Bierness, & Hayvern, 1982; Spivack & Shure, 1974) but to date the extent to which these social-cognitive processes together predict children's social competence has not been assessed. Furthermore, to date all of these processes have not been assessed among samples of preschoolers. The purpose of the current research is to develop measures to assess these three constructs (social perception, social knowledge, and relationship goals and expectations) for use among preschoolers. The associations between these three domains will be examined. Further, the extent to which these processes independently, additively, and interactively predict young children's social acceptance will be examined. Although there has been no previous examination of these three domains of processes within a single investigation, each of the social-cognitive domains that comprise the model is grounded in prior research and theory.

Previous research points to two processes that may be critical to children's social perception skills: the ability to attend to and accurately encode relevant social cues and the attributions that children make concerning the intentions of others. Deficits in encoding of social cues has been empirically linked to aggressive behavior whereas skill in this process has

been linked with peer acceptance. In a study of attention to social stimuli, preschool boys who exhibited aggressive behavior in the classroom were found to focus their attention upon aggressive videotape-based stimuli more than less aggressive boys (Gouze, 1987). Putallaz (1983) demonstrated that the children who were most skilled at perceiving and describing the ongoing play of two child confederates also were more adept at entering ongoing play, and were better liked by peers four months later in first grade. Dodge et al. (1986) report that in a sample of kindergartners through second graders, the children who identified more relevant social cues presented in videotaped vignettes displayed more prosocial and effective behavior in an actual group entry situation. Together these studies suggest that children who are more capable of attending to and reporting pertinent social cues are more successful socially with peers than are children less skilled in this domain.

The second aspect of social perception, attributions of intent, involves interpreting social events and drawing inferences about the reasons or motives for others' social behavior. Kindergartners, second-graders, and fourth-graders classified through peer ratings as sociometrically popular and average were more accurate in the manner in which they interpreted the intentions of child actors in videotaped vignettes than were their sociometrically neglected or rejected classmates (Dodge et al., 1984). Moreover, socially successful children tend to interpret the intentions of others more positively than do socially unsuccessful children. A bias among

aggressive and peer-rejected children towards attributing hostile intentions to others has been well documented among elementary-school-age children (Dodge, 1980; Dodge & Frame, 1982; Feldman & Dodge, 1987). For example, when presented with a hypothetical provocation in which the intent of the peer is unclear or ambiguous (such as being hit from behind with a ball) aggressive and socially rejected children are more likely to interpret the intentions of the peer as hostile than are other children (Dodge, 1980).

Although attributions of intent have been linked with social outcomes in studies of older children, little research in this area has been conducted with preschoolers. One prior attempt to assess attributions of intent among 4- and 5-year-old children found little variance in the attributions preschool children made regarding the intentions of others (Pettit et al., 1988). Pettit and his colleagues found that among their sample of economically disadvantaged children almost all of the children displayed a bias for attributing hostile intentions. However, Dodge, Bates and Pettit (1990) report that the preschoolers in their sample who made more hostile attributions were observed to behave more aggressively with peers than were the children who made fewer hostile attributions. It is unclear whether the findings of Pettit et al. (1988) reflect a developmental trend in the way children make attributions concerning the intentions of others, or a unique characteristic of the economically disadvantaged sample studied. For this reason, it is important to assess attributions of intent in other samples which include young

children from different social ecologies than the one studied by Pettit and his colleagues.

In the current research, multiple measures were designed to assess social perception skills among preschoolers. Children were shown a series of videotaped vignettes of peer interaction situations portrayed by child actors. Following the presentation of videotaped vignettes both forced-choice and free-response items were used to assess the accuracy with which preschoolers encode relevant social stimuli. Likewise, forced-choice and free-response items were used to assess the attributions that subjects made about the intentions of child actors in these videotaped vignettes.

The second social cognitive process, social knowledge, has been linked with social success with peers among preschoolers, kindergartners, and elementary-school-age children. Social knowledge has typically been assessed by presenting children with hypothetical social dilemmas such as a provocation by a peer, or entry into a new social group. Following presentation of the social dilemma, children are asked to state one or more things that they could do if confronted with this situation. Two approaches have been followed in the study of how social strategy knowledge shapes social behavior: the first focuses on assessing the number of relevant strategies children can generate in response to social dilemmas, and the second focuses on assessing the quality of these responses.

Researchers who have concentrated on assessing the number of children's social strategies (Pettit et al., 1988; Rubin, 1983;

Spivack & Shure, 1974) propose that the greater the number of relevant strategies children are able to generate, and thus the more choices available, the more likely the child is to select an appropriate or positive strategy (Spivack, Platt, & Shure, 1976). Children who are able to generate a greater number of relevant strategies in response to hypothetical social dilemmas have been observed to display more prosocial behavior than children who generate fewer relevant strategies (Mize & Cox, 1989) and are rated by teachers as more competent (Pettit et al., 1988). Other research, however, failed to find significant associations between the number of relevant social strategies preschoolers generate to hypothetical social situations and teacher ratings of social status (for example, Krasnor & Rubin, 1978; for a review, see Rubin & Krasnor, 1986).

The second approach to the study of children's social knowledge emphasizes assessment of the quality of the first strategy children generate in response to hypothetical social problems (Asher & Renshaw, 1981; Mize & Cox, 1989; Mize & Ladd, 1988; Rubin, 1983; Rubin et al., 1982). Researchers who have followed this approach propose that the quality of the first strategy children generate is a better reflection of how children actually relate to peers (Mize & Cox, 1989; Mize & Ladd, 1988). Perhaps the clearest theoretical rationale for this approach relies on Nelson's (1981) concept of scripts (Mize & Cox, 1989; Mize & Ladd, 1988). Scripts can be thought of as cognitive representations of familiar experiences that are accessed to guide behavior in similar situations. According to the quality-

of-first-response view, children's behavior in peer interaction situations typically is guided by initial, automatically-accessed scripted strategies, rather than by reflective (i.e., thoughtful) selection of strategies. The first responses of more socially successful children tend to be more relevant to the social problem (Pettit et al., 1988), more effective (Asher & Renshaw, 1981) and more prosocial and less hostile (Asher & Renshaw, 1981; Pettit et al., 1988; Rubin, et al. 1982) than the responses generated by less socially successful children.

Moreover, researchers working within the script framework suggest that strategies generated with enactive procedures, in which children act out problematic social situations using puppets or dolls and other props, are more accurate representations of the scripts that guide children's peer interactions than are their verbal responses to hypothetical social dilemmas. Researchers have found that children produce a greater variety of strategies in response to social situations presented through enactive techniques than when the situations are presented verbally (Getz, Goldman, & Corsini, 1984). Prosocial behavior has been linked with "friendly" strategies generated in response to enactive stimuli (Mize & Ladd, 1988). Mize & Ladd's (1988) findings provide support for the hypothesis that enactive assessments of social knowledge may be more suitable for use among preschoolers than verbal assessments, in that the quality of strategies elicited through verbal techniques did not add to the prediction of prosocial behavior beyond the enactive responses.

Because both the number and quality of strategies generated in response to hypothetical situations have been linked with preschoolers' social behavior and peer acceptance, both were assessed in the current research. In order to allow for comparisons between previously used approaches and in order to establish construct validity, a multi-method procedure was utilized to assess subjects' social knowledge. Both the quantity (Pettit et al., 1988; Rubin, 1983; Spivack & Shure, 1974) and quality (Asher & Renshaw, 1981; Mize & Ladd, 1988; Rubin, 1983; Rubin et al., 1982) of subjects' social strategies were assessed using a verbal measure in which children were presented line drawings and read an accompanying story concerning peer interaction and were asked to suggest as many potential responses as possible. The quality of children's first response to hypothetical situations was assessed through an enactive procedure in which subjects used puppets to enact hypothetical social interactions (Mize & Cox, 1989; Mize & Ladd, 1988) and a verbal assessment in which children were asked to suggest responses to hypothetical social interactions portrayed by videotaped child actors (Dodge et al., 1986; Pettit et al., 1988).

The third domain of social-cognitive processes, relationship goals and expectations, has been considered theoretically important (for example, see Krasnor & Rubin, 1983; Renshaw & Asher, 1982; Gottman, 1986) because it incorporates children's motivations and feelings concerning social interaction into otherwise predominantly cognitive models. Similar to the

concept of internal working models from the attachment literature, relationship goals and expectations is proposed to involve two conceptually related processes. The first, relationship goals, is defined as the extent to which an individual is motivated to interact socially and establish positive relationships with peers. In the context of preschoolers' peer interaction, relationship goals refer to how much a child wants to play with other children (Pettit & Mize, 1993). The second process, relationship expectations, is defined as an individual's beliefs concerning others' desires and motivations to engage the self. For preschool children, relationship expectations refer to the child's beliefs about how much others want to play with him or her. Children's relationship goals and expectations are crucial factors in understanding the association between children's social cognition and social behavior, and may moderate this link. Specifically, a child may accurately encode and interpret relevant social cues and may possess knowledge of appropriate responses to a particular social situation but may not act on the strategies because of non-affiliative goals, fear of rejection, feelings that social interactions are often unpleasant, and so on (Renshaw & Asher, 1982).

Assessment of preschool children's social goals has proved more problematic and less straight forward than assessment of their social strategies. For instance, asking children to state their goals in given situations appears to produce meaningful responses for elementary school children, but not with

preschoolers. Renshaw and Asher (1982) presented third- through sixth- graders with hypothetical social dilemmas through stories and pictures. After children described a strategy, the experimenter asked subjects to explain why they would respond with that particular strategy. Subjects classified as high social status (using peer ratings) suggested significantly more positive and socially outgoing goals than did children classified as low in social status. In an attempt to replicate the Renshaw and Asher findings in a sample of preschoolers, however, Mize (personal communication, November 12, 1992) found that preschoolers could not explain their social goals in meaningful ways.

In an attempt to overcome problems associated with asking young children to describe their motivations, some researchers have taken a less direct route in the assessment of preschool children's social goals. For example, Krasnor and Rubin (1983) identified social problem solving attempts during naturalistic observation and inferred the social goals that the children were attempting to achieve and the strategies that the children used to attempt to meet these goals from their behavior. Each social problem solving attempt was coded as successful if the desired outcome, or goal (as inferred by the observer), was achieved following the attempt. The authors concluded that children's social goals were better predictors of the success of problem solving attempts than were the quality of the strategies the children employed (Krasnor & Rubin, 1983). Children were most successful when their goals involved seeking attention from

others or initiating interaction with others. These results suggest that the quality of children's peer relationships may be partly a function of their relationship goals, and that some goals, particularly goals to initiate interaction, are more likely to be successful than are others. Equally important to the current research, the Krasnor and Rubin (1983) study also demonstrates the feasibility of inferring social goals from children's behavior.

A social skills intervention study (Evers-Pasquale & Sherman, 1975) with socially isolated preschoolers provides yet a third approach to assessing social goals, and yields perhaps the strongest evidence for the role preschoolers' social goals may play in their peer interaction. Children were classified as peer-oriented and not peer-oriented based on responses to hypothetical situations in which they were asked whether they would prefer to engage in a series of typical preschool activities alone, with a peer, or with an adult. Following a film-based social skills modeling intervention, observed peer interactions increased significantly for subjects classified as peer-oriented, but not for subjects classified as non-peer-oriented. These results suggest that peer affiliative goals are an important influence upon children's social behavior in that some children may fail to interact with peers as a result of non-affiliative goals.

Because of the relatively sparse data base to serve as a guide to developing relationship goals measures, several approaches were taken. Three measures of relationship goals were

derived from the videotape based assessment. First, children were asked to rate how much they would like to play with the children presented in each of the 14 vignettes. Five of the videotaped vignettes depicted a situation in which the protagonist was faced with deciding between a peer-affiliative and a non-affiliative goal. Following the presentation of each of these 5 vignettes, subjects were asked to make an explicit choice as to whether they would prefer to play with the peer or remain alone. Children's social goals also were inferred from their strategy responses to videotaped vignettes, using a procedure similar in concept to that used previously to infer young children's social goals from their social behavior (see Krasnor & Rubin, 1983). These inferred social goals were classified dichotomously as either peer-affiliative or not peer-affiliative (Evers-Pasquale & Sherman, 1975).

Additional measures of relationship goals were derived from the line-drawing, enactive, sociometric, and goal-choice interviews. Relationship goals were inferred from the social strategies elicited during the line-drawing and enactive interviews in the same manner used during the videotape-based interview. During the sociometric interview, subjects were asked to rate how much they liked to play with each of the children in their preschool class; the average rating a subject gave to classmates comprised an additional index of peer-affiliative goals. Finally, during the goal-choice interview subjects were shown pictures of typical preschool activities and asked if they would prefer to engage in each of the activities with someone

their own age, by themselves, or with an adult (adapted from Evers-Pasquale & Sherman, 1975).

..... The development of measures of children's relationship expectations, or beliefs concerning one's own competence and the social goals of others, has lagged behind that of other social-cognitive processes. In one study, Goetz and Dweck (1980) presented fourth- and fifth-graders with hypothetical rejection situations, and asked them to endorse one of five possible causes (for instance, personal incompetence, misunderstanding, or negative traits of the rejector) for the rejection. Results indicated that low peer acceptance was associated with the endorsement of personal incompetence. Furthermore, children who credited personal incompetence for peer rejection also tended to give up easily or to persist with the same ineffective strategy when presented with a peer rejection situation. Goetz and Dweck's (1980) findings suggest that beliefs about others' reactions to the self and the extent to which one expects acceptance from others are associated with differences in children's acceptance by peers, in that children who feel that rejection is due to personal incompetence are less accepted by their peers than are other children.

In another study that included children's relationship expectations, Dodge and his colleagues (1986) operationalized the construct of "interpretation of social cues" by asking children to rate how much they thought that children in a videotaped social interaction scene would like to play with them. In the

Dodge study this variable did not add to the prediction of behavioral group entry success beyond the prediction of other social cognitive variables including strategy generation and social cue utilization. This may have been due in part to the fact that only one social scenario, a scene in which two children are playing a card game, was used to assess relationship expectations. Also, only one outcome variable, the success of group entry as observed in an analog social situation, was assessed by Dodge and his colleagues. In this analog social situation, the experimenters instructed the children to join an ongoing dyad in play. Because these instructions gave children a social goal, it may be that relationship expectations are not especially relevant to the group entry situation investigated by Dodge and his colleagues. In the current research, children's relationship expectations were assessed by asking how much they thought the children in each of 14 videotaped vignettes, depicting seven distinct themes of typical preschool social interactions, would like to play with them.

The major goal of this study was to examine the associations among measures of children's social cognition and measures of children's competence with peers. A multi-dimensional approach was taken in the assessment of children's social competence; specifically social competence was conceptualized as being represented by peer acceptance and social behavior with peers. Estimates of social behavior were obtained through teacher ratings. Two teachers in each classroom completed the Teacher's Checklist of Peer Relations (Dodge & Somberg, 1987), which

contains six items related to children's peer competence, seven items pertaining to children's social sensitivity, and five items related to aggressive behavior. Two measures of peer acceptance were obtained through sociometric interviews (Asher, Singleton, Tinsley, & Hymel, 1979), a peer nomination measure and a peer rating measure.

Models of children's social cognition such as the Pettit and Mize (1993) model assert that social-cognitive processes reflect discrete or distinct processes and are not merely a reflection of maturation or general cognitive or verbal ability. It may be, however, that relations between social cognition and children's peer acceptance and/or social behavior are due in part to a third variable - verbal ability - and its associations with measures of both social cognition and peer competence. For example, the quantity and quality of strategies suggested to hypothetical social dilemmas may be related to children's social competence simply because children with greater cognitive or vocabulary skills are able to generate more high-quality responses, and also are better liked, than are less verbally adept children. Similarly, the accuracy with which children report and identify relevant aspects of videotaped interaction scenarios may be a function of general intelligence, verbal ability, or maturation, rather than individual differences in social perception skills. Also, because children become more interested in peer interaction as they grow older (Hartup, 1983), relationship goals and expectations may be associated with indices of maturation.

A few studies that have examined single aspects of children's social cognition have controlled for children's general cognitive ability or I.Q. (Dodge et al., 1984; Gouze, 1987; Spivack et al., 1976) or verbal ability (Getz et al., 1984). In all of these studies single aspects of social cognition were found to be relatively independent of measures of intelligence. The role of general cognitive or verbal ability and maturation as a covariate when multiple social-cognitive processes are assessed concurrently, as in the present research, remains unknown. In the current research verbal ability was deemed a potentially important covariate of social-cognitive skills. The responses of preschoolers to hypothetical tasks may be especially sensitive to individual differences in verbal ability because the assessments used are highly verbal in nature. Children must understand the hypothetical situation, which is usually presented at least partially verbally, as well as the researcher's questions. Children must also be able to express thoughts verbally in order to respond to most assessments. For this reason, the Peabody Picture Vocabulary Test (PPVT) was used to assess subjects' verbal ability in the current research. It is hypothesized that social-cognitive skills are at least partially distinct from verbal ability, and so measures of social-cognitive skills will continue to be predictive of social competence even when verbal ability is controlled.

The purpose of this research was to develop measures, or adapt existing measures, to assess preschool children's social perception, social knowledge, and relationship expectations and

goals. The internal consistency of each of these measures was examined. Multiple measures of each domain were used in order to assess the convergent and discriminant validity of the measures. It was hypothesized that measures within a domain would be more strongly related to one another than measures across domains. For example, forced-choice and free response measures of intent attributions and forced-choice and free response measures of accuracy of encoding social cues, all conceptualized as measures of social perception, should be strongly interrelated. The relationship between these variables and measures of social knowledge, such as the number and quality of strategies, should not be as strong.

Furthermore, this research sought to examine the extent to which measures of social perception, social knowledge, and relationship goals and expectations independently, additively, and interactively predict measures of children's social competence. It was hypothesized that each of the three domains of social-cognition would independently and additively predict measures of children's social competence. This research also examined the extent to which measures of relationship goals and expectations moderate both the association between measures of social knowledge and measures of peer acceptance, and the association between measures of social perception and measures of peer acceptance. It was predicted that social knowledge and social perception would be more strongly related to social competence among children who had more positive relationship goals and expectations than among children who possessed more

negative views of social interaction. Finally, the relations between measures of each of three social-cognitive domains, social perception, social knowledge, and relationship goals and expectations, and measures of children's social competence were assessed while controlling for the children's verbal ability and age. It was hypothesized that measures of each of these social-cognitive domains would predict children's social competence even when verbal ability and age were controlled.

II. REVIEW OF THE LITERATURE

This review focuses on research that has been conducted among preschoolers and kindergartners. As such, no attempt has been made to provide an exhaustive review of all prior research that has examined social cognition within a developmental framework. The review begins with a discussion of research pertinent to the domains of social cognitive processes that comprise the model investigated in the current research (Pettit & Mize, 1993). This model proposes that three domains of social cognitive processes, social perception, social knowledge, and relationship expectations, are particularly important to young children's social behavior and peer interaction. Pettit and Mize (1993) hypothesize that these three domains represent discrete processes, and that individual differences in these social cognitive domains are associated with variation in children's social behavior. Following this is a review of studies of young children's social cognition that have controlled for subjects' general intelligence or verbal ability. Finally, this review concludes with a summary of research that has examined social cognitive processes as discrete predictors of children's social competence, and a listing of the goals and hypotheses of the current research.

Social Perception

Social perception is the ability to attend to, encode, and accurately interpret appropriate social cues. Research has

examined many aspects of social perception among older children, but few specific methods have been designed to assess social perception among preschoolers. Consequently, little is currently known about social perception among kindergartners and preschoolers. In order to develop effective measures of social perception in preschoolers, it is necessary to review research that has been conducted with kindergartners and older children.

Encoding of social cues. Social perception requires the ability to attend to relevant social cues. In a study of aggression in preschool-age boys, Gouze (1987) found that boys who displayed aggressive behavior differed from nonaggressive classmates in the manner in which they attended to aggressive stimuli. First, aggressive preschoolers attending nursery school were less capable of shifting their attention away from a videotaped puppet show depicting aggressive interactions than were non-aggressive preschoolers. The experimenter also asked the subjects to complete a task in which rings were tossed on to pegs. Aggressive boys were more likely to be distracted from completing this ring-toss task by video-taped cartoons depicting aggressive behavior than were their non-aggressive day care classmates. These findings indicate a link between children's social behavior and the manner in which they attend to social stimuli; in particular, children who behave in an aggressive manner are more likely to attend to and to be distracted by

aggressive stimuli than are less aggressive children. However, based upon this study we do not know if other specific behaviors, such as pro-social behavior or peer acceptance, are associated with any distinct patterns of attending to social cues.

In a study of children's attention to and encoding of social cues, Putallaz (1983) arranged for two child confederates to present first grade subjects with scripted social problems. Subjects were individually led to a research trailer where the two unfamiliar child confederates were already engaged in playing a game. The experimenter introduced the three children and left. The behavior of the two child confederates followed a set script. For the first five minutes the children continued to play the board game, while engaging in a series of verbal games: an imitation game, a rhyming game, and a questioning game. Next the children acted out a series of staged social knowledge situations: a helping situation, a conflict management situation, and a peer rejection situation. Each child's attempts to enter the dyad were videotaped from behind a one-way mirror. All of the subjects' verbalizations to the confederates were coded as relevant to the peers' play, irrelevant, or tangential. The percentage of relevant comments was associated with children's sociometric status four months later. Presumably, the percentage of relevant comments is a reflection of children's ability to read social cues. Furthermore, experimenters interviewed the subjects following this experimental session. During the interview, the experimenter and subject watched a videotaped record of the subject interacting with the two child

confederates. At the six points that corresponded to the particular scripted themes of the experimental session, children were asked "what were the other two boys doing here?" The subjects' answers were coded for accuracy, and the mean number of correct responses was considered a measure of perception. Results from this study indicate that children's ability to fit into an ongoing group is predictive of sociometric status as assessed four months later. Although the social perception measure did not add to the prediction of sociometric status, the interaction of relevant conversation by social perception did significantly contribute to this prediction. One interpretation of this interaction is that subjects who accurately perceived the group's behavior were more adept at fitting into the group through contributing relevant conversation, and thus are viewed as more competent by peers.

The findings reported by Dodge et al. (1986) provide additional support for the hypothesis that young children's encoding of relevant social cues is associated with their social behavior. These researchers presented kindergarten, first-grade and second-grade children with a series of five videotaped vignettes of two children playing a board game. Each subject viewed five scenarios: in each, a third child uses one of five strategies to join the two children already engaged in play. Following the presentation of each of the five scenarios, subjects were asked to make an interpretation of the videotaped actors' behavior; specifically, subjects were asked "will these children like to play with you?" To determine if the subjects

utilized relevant cues presented in the videotape to make this interpretation, the subjects were asked why they answered the way that they did. Responses were scored as to whether subjects used specific social cues presented on the videotape in making the interpretation: responses that cited presented cues were scored one, and responses that did not were scored zero, and these scores were summed to provide a measure of cue utilization. One to two weeks after the interview, subjects were led to a play room where two same-sex classmates had been playing for five minutes. Each subject was instructed to go into the room and begin playing with the two children. After seven minutes, subjects were led back to their classrooms. Trained coders rated the group entry success and competence of the target child. The use of presented cues in making an interpretation during the videotaped interview was significantly associated with observer rated success and competence in the analog group entry situation. Together with Putallaz's (1983) data, these results highlight the importance of attention to relevant social cues for children as young as kindergarten age.

A study of parental influences upon children's aggressive behavior further demonstrates the importance that accurately encoding relevant social cues plays in children's social behavior (Weiss, Dodge, Bates, & Pettit, 1992). These researchers presented kindergartners with 24 videotaped vignettes, each of which portrayed a negative event. Following the presentation of each of these scenarios, subjects were asked to recall what had happened in the story. These descriptions were coded on a zero

(fully relevant) to 2 (fully irrelevant) scale, based upon the degree to which subjects utilized cues presented in the videotaped stimulus. Subjects whose descriptions were more irrelevant displayed more aggressive behavior as reported by teachers and trained observers than did children who were more accurate in their descriptions. These findings suggest that children's ability to accurately perceive relevant social cues is associated with their social behavior.

Interpretation of social cues. When a particular social cue is attended to and encoded, the child is able to interpret and develop an understanding of the meaning of this cue. The interpretation of social cues often requires that a judgement be made about the causal intentions of others. Two central questions have guided research in this area. First, do differences exist in the accuracy with which individuals interpret social cues? and second, are differences in the accuracy of social cue interpretation related to individual differences in social behavior?

In an effort to examine the accuracy of children's interpretations of the intentions of others, Dodge et al. (1984) presented kindergartners, second-graders, and fourth-graders with an intention-cue discrimination task and an intention-cue identification task. In the discrimination task, subjects viewed 10 sets of three vignettes in which one child provoked another, for example, one child knocked over another's blocks. The intentions of the provocateur were either hostile (e.g., the target child displayed purposefully destructive behavior with

accompanying facial expressions and verbalizations), prosocial (e.g., the target child purposefully destroyed the peer's play material but did so in an effort to help the peer), accidental (e.g., the target child unintentionally destroyed the peer's play material), or simply being present (e.g., the peer destroyed his or her own play materials and then blamed the target child). Each of the 10 sets contained two vignettes in which the provocateur portrayed the same intention, and one in which the provocateur depicted a different intention. Following the presentation of the three vignettes in a set, subjects were asked to identify which vignette portrayed an intention that was different from the intentions depicted in the other two vignettes. Responses were coded as correct or incorrect, based upon the agreement of adult judges who watched the vignettes. During the intention-cue identification task, subjects were presented a series of vignettes in which the protagonist portrayed two examples of each intention type per series. In the identification task, five categories of intentions were included: hostile, prosocial, accidental, ambiguous, or simply present. After the subjects watched each vignette, they were asked to verbally identify the intentions of the provocateur. Results indicated that children classified as popular or average through peer nominations performed significantly better on both the intention-cue discrimination and identification tasks than did their sociometrically rejected and neglected classmates. Sociometrically popular children also scored significantly higher than sociometrically average children on both tasks.

The findings of Dodge et al. (1984) support the hypothesis that socially maladjusted children are less accurate in the interpretation of social cues than are more socially competent children. Moreover, socially unsuccessful children tend to interpret the intentions of others more negatively than do more socially skilled children. In fact, a bias among aggressive children towards attributing hostile intentions to others has been well documented among second- though eighth-grade children (Dodge, 1980; Dodge & Frame, 1982; Feldman & Dodge, 1987; Gouze, 1987; Steinberg & Dodge, 1983). This bias, however, seems to be most apparent when the intentions of the provocateur are ambiguous. For instance, Dodge (1980) examined the attributions made by second- fourth- and sixth-grade boys by reading to them a series of four hypothetical social situations, in which the protagonist is the target of a negative outcome. The intentions of the peer in each story were unclear. The subjects were asked to imagine that they were the victims of the negative outcome and to describe the intent of the provocateur. Dodge reported that aggressive boys made hostile attributions of the peers' intentions about 50% more often than did their nonaggressive classmates.

Although there is a fair amount of research supporting the presence of a "hostile attribution bias" in aggressive and peer rejected older children, to date there has been little research focusing on this phenomenon in preschool children. Pettit et al. (1988) attempted to assess the hostile attributions made by four- and five-year-old children. Pettit and his colleagues report

that almost all of the children in their sample were biased toward attributing hostile intentions to others. The authors state that the preschoolers appeared to focus solely upon the outcome of hypothetical situations, in this case a peer provocation, and seemed to assume that intentions were necessarily hostile since outcomes were negative.

Currently it is impossible to state whether the Pettit et al. (1988) findings are indicative of a developmental trend in the attributions of intent made by young children or if these findings are a reflection of the sample studied by Pettit and his colleagues. The particular sample was drawn from a federally sponsored preschool for economically disadvantaged children. The authors report that 30% of the children studied and 54% of their mothers were suspected of having been the victims of child or spouse abuse. Because of the high degree of early social stress in this sample, Pettit and his colleagues suggest that the children may have learned to over attribute hostility, regardless of characteristics of a particular situation.

However, there is evidence that individual differences do exist in the manner in which preschoolers interpret the causal intentions of others, and that meaningful variation can be assessed among this age group. In a study of inter-generational transmission of aggression, Dodge et al. (1990) presented five-year-olds with eight picture-based scenarios depicting an ambiguous provocation by a peer. Following each of the eight vignettes, subjects were asked why the hypothetical peer acted the way that he or she did. Responses were coded dichotomously,

as either benign intent or hostile intent. Findings reported by Dodge and his colleagues (1990) state that the percentage of hostile attributions significantly predicted observed aggressive behavior. These findings are consistent with the results of Weiss et al. (1992) who report that kindergartners who made more hostile attributions about the intentions of videotaped child actors were observed to behave more aggressively with peers than were kindergartners making fewer hostile attributions. These findings suggest that the "hostile attribution bias" may be present in aggressive children as young as age five. However, the focus of the Dodge et al. (1990) and Weiss et al. (1992) studies were upon aggressive behavior, and so at the present time we do not know if deficits or biases in the manner in which young children interpret social cues is related to their acceptance by peers or to other measures of social competence.

Summary. Differences seem to exist in the accuracy with which children attend to and encode social cues. Moreover, these differences appear to be related to differences in social behavior (Dodge et al., 1986; Gouze, 1987) and peer acceptance (Putallaz, 1983). Socially skilled children also appear to be more accurate in the way that they interpret the intentions of others. Furthermore, the inaccurate attributions children make about the intentions of others are not random errors, but seem to reflect systematic biases. Specifically, among older children, sociometrically popular and average children tend to interpret the intentions of others as more positive and prosocial than do socially rejected and aggressive children, who tend to view the

intentions of others as more negative and hostile when outcomes are negative. Currently evidence is mixed in regards to whether reliable individual differences exist among preschoolers in their attributional styles, and if so, whether these differences are related to measures of social competence with peers.

Despite evidence linking social perception to children's social competence, few studies have included children younger than kindergarten age. Because of the limited vocabulary of preschoolers, the methodology employed by previous studies (e.g., showing children a hypothetical social dilemma and asking them to tell what happened; for instance, Dodge et al., 1984; Dodge et al., 1986) may not be well suited for use with preschoolers. For this reason, measures of encoding and interpretation of social cues designed specifically for use among preschoolers were designed for the current study.

Social Knowledge

Social knowledge is conceptualized as an individual's repertoire, or cognitive representation, of potential responses to social stimuli. Social knowledge also involves the hierarchical structure, or judgements about the appropriateness, of these social strategies. Social knowledge has most often been assessed by presenting children with hypothetical social dilemmas, such as a provocation by a peer, or entry into a new social group, and then asking the children to state some things that they could do if confronted by this dilemma. Presentation of such dilemmas may be done through reading a story and by providing the child with accompanying pictures (for instance,

Asher & Renshaw, 1981; Pettit et al., 1988; Rubin et al., 1982), videotape-based stimuli (Dodge et al., 1986; Pettit et al., 1988), or enacting hypothetical social problems with puppets, dolls, and/or other props (Getz et al., 1984; Mize & Cox, 1989; Mize & Ladd, 1988). Typically, a social goal is made explicit to the child. For instance, children might be asked "what are some things you could do to play with those children," or "what could you do to get that toy?". Following the presentation of each vignette, experimenters ask the subject to state or act out what he or she might do if confronted with a similar situation.

Number of strategies. Early studies of children's social knowledge focused upon the quantity of responses generated, based upon the assumption that children who generate a large number of responses to a particular situation will be more versatile and adept at social interaction. Such studies often employed methodology labeled "hypothetical-reflective" (Krasnor & Rubin, 1981) because the tasks use hypothetical situations and attempt to measure considered, thoughtful responses. For example, the Preschool Interpersonal Problem Solving Test (PIPS) developed by Shure and Spivack (1974) presents children with pictures and verbal descriptions depicting two hypothetical situations: obtaining an toy from a peer and avoiding maternal anger. Children are shown multiple pictures depicting similar situations (e.g., acquisition of a doll, acquisition of a game, etc.) in an attempt to elicit as many different yet relevant responses as possible. For preschoolers, the number of responses generated to hypothetical social dilemmas has been found to relate positively

to teacher ratings of social adjustment (Pettit et al., 1988; Shure & Spivack, 1980; Spivack et al., 1976), and to observations of prosocial behavior (Mize & Cox, 1989). However, other studies have found no relation between the number of relevant strategies and children's peer-based sociometric status (Butler, 1978; Krasnor & Rubin, 1978; Sharp, 1978) and teacher ratings of social behavior (Mize & Cox, 1989). In fact, Ladd and Oden (1979) report that the number of unique responses to hypothetical helping situations was inversely related to sociometric status.

Quality of strategies. Some researchers who have studied children's responses to hypothetical social situations suggest that differences in the quality of hypothetical strategies might be better predictors of actual social success than differences in the number of strategies generated. Mize (Mize & Cox, 1989; Mize & Ladd, 1988) based this approach on the concept of "scripts" (Nelson, 1981). Scripts are cognitive representations of familiar experiences that are accessed to guide behavior in similar situations. A common example of a script is entering a fast food restaurant: the roles and potential dialogue of the various players in the situation are known beforehand. Researchers who have followed this approach in the study of social problem solving propose that the quality of the first strategy children generate is more typical of how children would actually relate to peers (Mize & Cox, 1989; Mize & Ladd, 1988). These researchers posit that children's behavioral responses to actual peer interaction situations typically are guided by the first, or "top of the bin," script that children access rather

than by reflective, or thoughtful, selection of a strategy. In other words, children may not weigh all of the possible alternatives to a given situation and enact the solution deemed most likely to succeed. Rather, children's behavior is more automatic, relying upon past experience in similar situations. Thus, researchers began to examine the quality of children's hypothetical social strategies.

Asher and Renshaw (1981) asked kindergartners to respond to hypothetical social dilemmas, presented through picture based stories depicting peer conflict and friendship initiation. In response to conflict situations, unpopular kindergartners were more likely than their popular classmates to respond aggressively. When confronted with a friendship initiation situation, unpopular children tended to be more vague and more likely to seek adult intervention than popular children. The responses of popular children were judged to be more effective and prosocial than the responses of unpopular children, across situations.

Rubin et al. (1982) presented preschool- and kindergarten-age children with eight picture stories depicting a social dilemma (acquisition of an object). Subjects were asked to tell the experimenter what the target child in each of the scenarios could do or say to get the object. The quality of each response was coded as one of five categories: prosocial, aggressive, authority intervention, bribe or trade, manipulate affect. Proportion scores were calculated by dividing the total number of responses in each category by the total number of responses. No

relation was found between the quality of the responses generated and social status for preschoolers. For the kindergartners, high peer acceptance (as measured through peer ratings) was positively related to the frequency of prosocial responses, and negatively related to the frequency of aggressive responses.

Pettit et al. (1988) employed a similar methodology, picture-based stories depicting hypothetical object acquisition and friendship initiation dilemmas, to assess the response generation of 4- and 5-year-old children. The number of responses generated was positively correlated with social preference, a continuous measure of peer social acceptance. Social preference was positively associated with responses that were relevant and prosocial, and negatively related to aggressive responses.

Although both the number and quality of strategies children generate verbally have been linked to social competency, researchers working within the "script" framework have suggested that strategies elicited through enactive interviewing procedures, in which an experimenter and children act out hypothetical social interaction themes using puppets or dolls and other props, are more accurate representations of the scripts that guide children's peer interactions than are their verbal responses to social dilemmas. Getz et al. (1984) report that three- four- and five-year-old children generated more responses reflecting a greater variety of social problem solving strategies when props were used to present a social dilemma than when picture-based stimuli were used. These findings fit well with research conducted by Mize and Ladd (1988), who used both a verbal assessment, in which children were shown a series of pictures depicting problematic social situations, and an enactive procedure, in which social situations were acted out using puppets and props, to elicit social strategies from preschoolers. The "friendliness" ratings (prosocial, low hostility) of enactive responses predicted teacher and observer ratings of prosocial and aggressive behavior. Quality ratings of verbal responses were found to contribute little to the prediction of these ratings beyond the enactive responses. These findings suggest that, with preschoolers, enactive procedures might be better suited for the assessment of social knowledge than verbal measures.

Summary. Research with preschoolers and kindergartners supports the hypothesis that social knowledge is related to children's success with peers: socially successful children tend to generate a greater number of responses to hypothetical social dilemmas, and the responses of more socially successful children tend to be more prosocial and less hostile than the responses generated by less socially successful children. Because both the number of social strategies and the quality of these strategies have been implicated in children's success with peers, both were assessed in the current work. The current research also employs a multi-method approach in the assessment of preschoolers' social knowledge. Because both "hypothetical-reflective" techniques and enactive techniques have been used successfully to estimate young children's social knowledge in the past, both techniques were used here. This multi-method approach was taken for several reasons. First, it will allow for the comparison of the utility of the number of strategies to the quality of strategies as predictors of social competence. Also, comparisons can be made between strategies elicited through hypothetical-reflective techniques and enactive techniques. Although these analyses are not primary goals of this work, this will provide important replication of earlier research (such as Mize & Ladd, 1988). Finally, it may be that a more complete estimate of each subject's social knowledge can be obtained by using multiple assessments with different methodologies.

Relationship Goals and Expectations

Relationship goals and expectations are conceptualized as the degree to which an individual finds social interaction to be a positive, rewarding experience and feels accepted by others. As conceptualized in the current research, the domain of relationship goals and expectations is comprised of two related processes. The first, relationship goals, is defined as the extent to which a child is motivated to interact socially with peers and establish positive relationships. In essence, relationship goals refer to how much a child wants to play with other children (Pettit & Mize, 1993). The second process, relationship expectations, involves the child's beliefs concerning the degree to which others desire to engage the self. For preschool children, relationship expectations refer to the child's beliefs about how much others want to play with him or her.

As mentioned previously, a hypothesis of the current investigation is that relationship goals may moderate the associations between social perception and social competence and between social knowledge and social competence. This hypothesis is based upon the competence - performance distinction (see Flavell & Wohlwill, 1969, for an extended discussion). It may be that some children possess the social perception and social knowledge skills to perform competently, but do not use these skills because of negative relationship goals (Renshaw & Asher, 1982). For example, if a child's goals are not peer-affiliative, the child may not initiate peer contact despite possessing the appropriate knowledge of how to do so. Likewise, if a child

feels that his or her attempts to engage with others will be met with negative reactions, the child may withdraw from social interaction, even though the child may possess knowledge of appropriate behavior. Similarly, a child may accurately encode and interpret the ongoing actions of others, and yet choose not to interact with others because of alternative goals or fear of rejection. Although relationship goals and expectations as conceptualized here have not been measured previously among preschoolers, prior research that has focused upon social goals offers some guide to how this variable can be measured with young children.

Social goals. To date there are few empirical studies that have explicitly focused on young children's social goals. The few that have, however, suggest that meaningful differences exist among children in the extent to which they desire to interact with peers. Renshaw and Asher (1982) presented third through sixth graders with hypothetical social dilemmas depicting friendship initiation, a failed group entry attempt, relationship maintenance, and a peer provocation, using stories and pictures. Unlike most studies of social strategy knowledge, no social goal was made explicit in the four stories. For example, subjects were not asked "what could you do to get those kids to play with you?" Instead, children were asked what they would do or say if confronted with a similar situation. First, subjects were asked to describe a potential strategy. Next, the experimenter asked subjects to explain why they would respond with that particular strategy. Five general types of social goals were identified.

Positive-outgoing goals were highly friendly and assertive; positive-accommodating goals were highly friendly, but average in assertiveness; avoidance goals expressed the desire to leave the situation and focused upon the potential of experiencing negative emotions; hostile goals were low in friendliness and highly assertive; and rule-oriented goals were neither overly friendly or hostile, but focused upon upholding the rights of the children in the story. Subjects classified as high social status (using peer ratings) suggested significantly more positive and socially outgoing goals than did children classified as low in social status.

In an attempt to replicate the Renshaw and Asher findings in a sample of preschoolers, Mize (personal communication, November 12, 1992) found that preschoolers could not meaningfully describe their social goals verbally. Mize concluded that the preschoolers in her sample were not very self-reflective; she reported that when asked why they said they would behave in a certain way preschoolers most frequent responses were "because I want to," or "just 'cause." Mize added that she was unable to classify such vague explanations meaningfully.

Another approach to the assessment of preschool children's social goals was taken by Krasnor and Rubin (1983). These researchers made naturalistic observations of social interaction among preschoolers and identified naturally occurring social problem solving attempts. Eight categories were used to classify the social goals that were inferred from the children's behavior: stop-action, the desire to prevent another's actions; object

acquisition, an attempt to gain sole use of an object; self-action, a bid to seek permission to engage in activities; attention, directing another's attention to an object, event, or person; affection, attempt to receive or give social contact; information, elicit or clarify information; nonspecific initiation, initiate conversational interaction; and other-action, an active response not otherwise coded for goal. Results indicated that children's social goals were better predictors of successful problem solving attempts than the quality of the strategies the children employed to meet those goals (Krasnor & Rubin, 1983). The most successful goals, in terms of achieving the desired outcome, were bids for attention from others and initiations toward others. Although these results tell us that the most successful goals for young children are those that are positive and socially-oriented, we do not know how these goals relate to children's peer acceptance or social competence. One aspect of the Krasnor and Rubin (1983) study important to the current research is methodological: this study suggests that perhaps preschoolers' social goals can be inferred from their social strategies.

The importance of young children's relationship goals also was demonstrated in a social skills intervention study. Evers-Pasquale and Sherman (1975) conducted a social skills intervention among preschoolers identified by teachers as socially isolated. The children in this sample were asked to choose whom they would prefer to join in a series of 11 typical preschool activities, such as playing with blocks, reading a

story, and painting a picture. The children were shown three pictures, a child alone, a child with a same-age peer, and a child with an adult, as well as a picture of one of the activities. The experimenter asked each child "would you rather play with blocks by yourself, with someone your own age, or with a grown-up?" The children could answer by pointing to the corresponding picture. Based upon these responses, children were classified into one of two categories. Peer-oriented children answered "with someone my own age" for the majority of items, while non-peer-oriented children answered either "by myself" or "with a grownup" for the majority of items. Following a film-based social skills modeling intervention, observed peer interactions increased significantly for subjects classified as peer-oriented, but not for subjects classified as non-peer-oriented. These results suggest that peer affiliative goals are an important influence upon children's social behavior, in that some children may fail to interact with peers as a result of non-affiliative goals. Moreover, the Evers-Pasquale and Sherman (1975) study provides an easily adapted method of assessing young children's social goals.

Relationship expectations. Relationship expectations involves the degree to which a child believes social relationships to be enjoyable, positive, experiences. In the present work, the term relationship expectations is meant to reflect children's beliefs concerning the reactions of others to the self. In simple terms, relationship expectations is conceptualized as how much a young child feels that others want

to play with him or her. The guiding hypothesis is that children who feel that they will be accepted and treated positively by others should be more likely to actively seek out and engage in social interaction than children who believe that social interaction will result in negative consequences. Because relationship expectations is conceptualized as the child's beliefs concerning the motivations of peers, relationship expectations is not simply a reflection of some global self-concept. However, the child's self-efficacy in social situations would seem to be implicated. Although there has been only a small amount of research on this process, the findings from a few prior studies demonstrate the potential importance of this construct.

Goetz and Dweck (1980) presented fourth- and fifth-graders with hypothetical peer-rejection situations. Following presentation of a scenario, the children were asked to imagine that they had been the victim of this rejection. Subjects were asked to endorse one of five possible causes, such as personal incompetence, misunderstanding, or negative traits of the rejector, for the rejection. Subjects low in peer acceptance tended to attribute peer rejection to personal incompetence more often than did children accepted by their peers. Furthermore, when children were presented with an actual peer rejection (in this case subjects were refused acceptance in a "pen-pal" club) the children who credited personal incompetence for peer rejection also tended to give up easily or to persist with the same ineffective strategy. Goetz and Dweck's (1980) findings

suggest that beliefs about the cause of others' reactions to the self are associated with differences in children's behavior with peers and acceptance by peers.

In another study that included variables similar in concept to relationship expectations, Dodge and his colleagues (1986) presented kindergarten, first-grade, and second-grade children with videotaped vignettes of two children engaged in on-going play. After watching the videotaped vignette, children were asked to rate how much they thought that children presented on the videotape would like to play with them. In the Dodge study this variable did not add to the prediction of behavioral group entry success beyond the prediction of other social cognitive variables including strategy generation and social cue utilization. However, there are at least two potential explanations for these null findings. First, the children were presented with only one social scenario, a scene in which two children are playing a card game. The use of only one social situation limits the ability to generalize these findings to other situations. For example, it is possible that subjects were aware that these children were already socially occupied, and this influenced the subjects' judgements concerning how much they felt the children on the videotape would like to play with them. Also, it may be that relationship expectations are not especially relevant to the manner in which the social outcome variable, group entry success, was assessed in the Dodge study. To measure group entry success, the subjects were lead to a trailer in which two children were engaged in play and instructed to "go into the

room and begin playing with the host children" (Dodge et al., 1986, p. 14). The instructions in this analog situation explicitly gave children a social goal. It is reasonable to assume that children who possess low relationship expectations might behave differently from children with positive relationship expectations in that they would have less desire to enter the group in the first place. By giving the subjects a social goal, in this case to play with the other children, Dodge and his colleagues could not address such a difference in orientation towards the group entry situation. Because children were given this social goal, one can only speculate upon "real-world" peer initiations that are never attempted because of negative expectations.

Pettit, Harrist, Bates and Dodge (1991) presented five-year-old children with four scenarios depicting potential conflict with a peer (for example, the target child is watching a television show and another child turns the channel). Following each of the scenarios, subjects were presented with each of three types of possible behavioral responses: competence, aggressive, and passive. For each potential response, subjects were asked if they believed the presented response would lead to the desired outcome, e.g., each child was asked if the response "please ask before you change the channel" would lead the other child to "ask before changing the channel" or "not ask before changing the channel." Results demonstrated that the percentage of aggressive strategies subjects endorsed predicted teacher ratings of aggressive behavior. The findings of Pettit and his colleagues

(1991) suggest that children's expectations concerning the outcomes of social situations are associated with their behavior.

Summary. The body of literature investigating children's relationship goals and expectations is small at the present time. Although there is some evidence suggesting that relationship goals and expectations are an important influence upon children's peer relations, we have only limited information about how these processes may operate. Few studies in this area have focused upon preschoolers. As a result, few measures have been developed to assess young children's relationship goals and expectations. For this reason, measures of young children's relationship goals and expectations were developed in the current research. At the current time, we do not know if young children's relationship goals and expectations are related to their social behavior and peer acceptance. Furthermore, we know nothing of the associations among young children's relationship expectations and goals and other aspects of social cognition, such as social perception or social knowledge. The current research seeks to answer these questions.

General Cognitive Ability and Social-Cognition

Due to concerns that social-cognitive processes may simply reflect general cognitive or verbal ability, some studies of social-cognition have statistically controlled for general cognitive (Dodge et al., 1984; Gouze, 1987; Putallaz, 1983; Shure & Spivack, 1980) or verbal ability (Getz et al., 1984). For the most part, these studies conclude that social cognitive processes

are independent of general intelligence. However, it is rare that results of these analyses are reported in any detail. For example, in the study of intention-cue identification and discrimination, Dodge and his colleagues (1984) included a geometric shape discrimination task to control for general cognitive ability. These authors reported that scores from the discrimination task were entered as a covariate of intention-cue identification and discrimination resulting in "...similar findings to those reported in the MANOVA (pp. 167-168)." The only study reviewed here that includes the results of analyses controlling for general intelligence was conducted by Gouze (1987). In this study Gouze reported that fourteen variables assessing attention to aggressive stimuli were significantly correlated with aggressive behavior. When scores from the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) were partialled out, six of these correlations were no longer significant. Because findings in this area are somewhat vague and inconsistent, it is reasonable to conclude that the association between social-cognition and general intelligence is not fully understood and more research is needed.

Moreover, general cognitive ability has been controlled only in studies that have focused upon a single aspect of social cognition, such as social cue interpretation or the number of social strategies. In the current research, multiple social-cognitive processes were measured simultaneously, in order to assess how these processes may additively and interactively predict children's social competence. Because the role of verbal

intelligence as a covariate of social-cognition has not been examined when multiple processes have been assessed, it was considered important to control for in the current research.

Conclusion

The research that has been reviewed here supports the hypothesis that social perception, social knowledge, and relationship goals and expectations, when assessed independently, are associated with children's social behavior and relationships with peers. However, to date there is little information concerning how preschoolers' social perception, especially intent attributions, preschoolers' relationship goals, or preschoolers' relationship expectations may relate to their peer acceptance. At the present time, we do not possess information about the interrelations among measures of social perception, social knowledge, and relationship goals and expectations among preschool children, or the extent to which these domains serve as independent predictors of young children's social success.

There have been few prior studies that have sought to simultaneously assess the multiple processes comprising a model of social cognition. In one study, Dodge et al. (1986) presented kindergarten, first-grade, and second-grade children with videotaped vignettes depicting two child actors engaged in an on-going card game. Following presentation of the vignettes, the children were asked a series of questions designed to assess five hypothesized social cognitive variables: (1) encoding of social cues, (2) interpretation of social cues, (3) generation of social strategies, (4) evaluation and selection of a social

strategy, and (5) behavioral enactment of a social strategy. Four of these processes are very similar to two of the social cognitive domains included in the Pettit and Mize model: encoding and interpretation of social cues are represented in the Pettit and Mize model by social perception, and strategy generation and evaluation are represented by social knowledge. Dodge and his colleagues found that among their sample, estimates of four of the five social cognitive processes investigated contributed uniquely to the prediction of children's behavioral success in a group entry situation: encoding of social cues, social strategy generation, social strategy evaluation, and behavioral enactment.

The unique contributions of single social cognitive processes beyond other social-cognitive processes to the prediction of peer group entry success were somewhat small. For example, Dodge and his colleagues found that, in the prediction of behavioral social success, the R^2 increment for social cue utilization was .08, and for evaluation of strategies the contribution was .06. The model as a whole accounted for 38% of the variance in subjects' success in a peer group entry situation. The work of Dodge et al. (1986) demonstrates that social-cognitive processes independently make contributions to the prediction of behavioral outcomes, supporting the hypothesis that such processes represent discrete domains, at least among elementary-school-age children. To date, however, multiple social-cognitive processes have not been investigated in a sample of preschoolers. It is thus still not clear whether the hypothesized domains are distinct in children so young. It is

possible that these perceptual, knowledge, and evaluative processes do not become distinct until the elementary school years.

The present research seeks to expand our understanding of social-cognition in preschoolers. In the current study, instruments were developed or adapted to assess the social perception, social knowledge, and relationship goals and expectations of preschoolers. This was done to address several questions that remain unanswered by previous research, supply valuable replication of past findings, as well as to provide evidence for several primary hypotheses.

First, questions that remain unanswered by past research examining preschoolers' social perception, social knowledge, and relationship goals and expectations will be examined. Research that has examined social perception suggests that deficits in young children's attention to and encoding of social cues is associated with aggressive behavior (Gouze, 1987), whereas skill in this process is associated with successful group entry behavior (Dodge et al., 1986; Putallaz, 1983). The current study seeks to expand these past findings by including measures of children's peer acceptance. Also, despite evidence of a hostile attribution bias in the interpretation of social cues among aggressive elementary-school-age children, there is only limited evidence of this phenomenon among preschoolers (Dodge et al., 1990; Pettit et al., 1988). Through developing measures of social cue interpretation for use with preschoolers, the current work sought to establish that an association exists between young

children's interpretation of social cues and their social behavior and peer acceptance.

Although a fairly large body of research examining the relation between young children's social knowledge and young children's social competence exists at the present time, the current study seeks to replicate some past findings in this area. First, both the number of social strategies generated in response to hypothetical events and the quality of these strategies was assessed in the present research. Analyses were conducted to examine the relative utility of the number of strategies and the quality of strategies as predictors of young children's social behavior and peer acceptance. Also, both hypothetical-reflective and enactive methodologies were employed in the assessment of social knowledge in the current study. This allowed for comparing the relative power of social strategies elicited using the two techniques in the prediction of preschoolers' peer acceptance and social behavior.

Finally, there has been little research examining young children's relationship goals and expectations. Assessments of preschoolers' relationship goals and expectations were designed or adapted for use in the present study. Because no previous research has linked preschoolers' relationship goals and expectations with their peer acceptance, the inclusion of this domain of processes is one important contribution of the current work.

Several primary hypotheses concerning the relations among preschoolers' social perception, social knowledge, and

relationship goals and expectations, and their peer acceptance and social behavior were also addressed:

1. It is hypothesized that social perception, social knowledge, and relationship expectations each represent discrete domains of processes, and so measures of each process are hypothesized to be more highly related within a domain than between domains.

2. It is hypothesized that measures of young children's social perception, social knowledge, and relationship goals and expectations are each related to children's peer acceptance and social behavior.

3. It is hypothesized that each of these three domains of processes independently predicts children's peer acceptance and social behavior beyond the prediction of the other domains.

4. It is hypothesized that these social cognitive domains are distinct from general verbal ability, and that these domains will be predictive of children's social acceptance and social behavior when general verbal ability is controlled.

5. It is hypothesized that preschoolers' relationship goals moderate both the associations between children's social perception and their social behavior and peer acceptance and between children's social knowledge and their social behavior and peer acceptance.

III. METHOD

Subjects

Letters of informed consent were sent to the parents of 38 children attending four- and five-year-old classrooms at a university sponsored preschool in Alabama (a sample letter is included as Appendix A). This preschool primarily served middle income, professional families. Parents of 34 of the children (89.5%) agreed to allow their children to participate. Of this 34, 19 were boys and 15 were girls. Subjects ranged in age from 55 months to 77 months (mean = 65 months, sd = 6.7). Seven of the 34 children (20.5%) included in the study were members of minority groups.

Preparation of Measures

Preparation of the videotape-based assessment. A set of three videotapes were developed to use in the videotape based interview. Each tape consists of 14 vignettes in which child actors portray hypothetical social dilemmas. To develop these tapes a set of scripts were written depicting variations on seven typical peer interaction themes that were deemed especially relevant to preschoolers. These themes were identified from prior studies of preschool children's peer interaction and social knowledge (Dodge et al., 1986; Krasnor & Rubin, 1983; Ladd & Oden, 1979; Mize & Ladd, 1988), information from parents (Pettit

& Cullen, in preparation), and from studies of problematic social situations (McFadyen-Ketchum, 1991). On each tape there are vignettes depicting seven social interaction themes: (1) peer support (Ladd & Oden, 1979; Mize & Ladd, 1988; Wheeler & Ladd, 1983); (2) initiating new relationships (Gottman, Gonso, & Rasmussen, 1975; Renshaw & Asher, 1982); (3) object acquisition (Rubin & Krasnor, 1986; Spivack, & Shure, 1974); (4) mild rejection by peers (Putallaz, 1983; Richard & Dodge, 1982; Rubin & Krasnor, 1986); (5) maintaining relationships when a play partner leaves to play with something else (Asher & Renshaw, 1981; Mize & Ladd, 1988); (6) conflict over materials in which the target child is provocateur (Zahn-Waxler, Radke-Yarrow, & King, 1979); and (7) conflict over materials in which the target child is victim (Dodge et al., 1984). Because of concern that a single vignette could not adequately represent each of the social problem solving themes, each of these seven themes is represented by two sub-themes. For example, the theme of peer support is represented by two sub-themes: (1) the target child observes a peer who is being teased by another child, and (2) the target child observes a peer drop an object such as a tray of cups, a puzzle, etc. For most vignettes, the goal of the target child was not made explicit in the stories. For example, the vignettes described above depict a child in need of peer support, but there

is no explicit direction to the subject that "you want to help this child."

Three- to 7-year-old children were trained to act out scripts of the social interaction themes for videotaping. These scripts are included as Appendix B. Four versions of each of the 14 sub-themes were videotaped, and three were selected for use in the current research based upon clarity of the actions and props portrayed, sound quality, and visual clarity. A total of 42 vignettes were retained, one for each of the 14 sub-themes for three versions of the videotape stimulus. The same children served as actors and played the same roles within a theme across all tapes in order to control for actor effects within a theme. Each of the tapes includes an approximately equal number of male and female child actors, and the sex of the children within vignettes were mixed. African-American, Asian-American, and European-American children also are represented in approximate proportions to their numbers in the local community. For each set of 14 vignettes, a white male was a central actor five times, a black male was a central actor five times, a black female was a central actor five times, and a white female was a central actor six times (more than one child could be a central actor in some of the vignettes). The order in which the sub-themes were presented was randomly determined for each of the three stimulus tapes.

Preparation of other assessments. The enactive and line-drawing-based social knowledge interviews were adopted from Mize and Ladd (1988). In the enactive interview, children and the

experimenter used puppets to enact six social situations: (1) a play partner leaves to play with something else; (2) a third child disrupts ongoing play; (3) the target child is the victim of peer provocation involving conflict over objects; (4) the target child observes a peer being teased; (5) the target child is rebuffed during a group entry attempt; and (6) the target child views peers engaged in ongoing play (relationship initiation). During the line-drawing based interview children were presented with line drawings and accompanying narratives of the same six stories. Detailed descriptions of each story as well as instructions for conducting the enactive and line-drawing-based interviews are included as Appendix C.

A peer affiliation assessment was developed, based upon the procedure used by Evers-Pasquale and Sherman (1975). Laminated pictures were produced that depicted ten common preschool activities: playing ball, riding a trike, swinging, reading a book, playing with blocks, playing with toys, playing with toy animals, working puzzles, sitting at a table, and painting. A poster board with line drawings portraying a child alone, a child with a peer, and a child with an adult also were produced. The peer affiliation assessment was conducted by asking children to place the picture of each activity on the picture of either the child alone, the child with a peer, or the child with an adult, based upon by whom the children would prefer to be accompanied by during the activity. Detailed instructions for conducting this assessment are included as Appendix D.

Procedures

Overview. Subjects were asked to individually participate in each of the procedures during the normal course of the day at the preschool. If a subject did not want to participate at a given time he or she was told that it was O.K., and was assured that there would be an opportunity to participate later. Children participated in six individual interviews: (a) a videotape-based interview in which children were shown videotaped vignettes of child actors portraying typical social situations; (b) an enactive interview in which children and an experimenter used puppets to portray a series of social situations; (c) a line-drawing-based interview in which children were presented with line-drawings depicting typical problematic social situations and were read an accompanying narrative; (d) a peer affiliation interview in which children were asked to indicate whether they would prefer to engage in a series of typical preschool activities by themselves, with a peer, or with an adult; (e) a standard sociometric interview; and (f) administration of the PPVT. Multiple measures were derived from several of these assessments. The videotape-based interview was used to derive measures of each subject's (a) accuracy of social cue encoding, (b) attributions of others' intentions, (c) quality of social strategies, (d) relationship goals, and (e) relationship expectations. Children's responses during the enactive interview were used to derive measures of each subject's (a) quality of social strategies and (b) relationship goals. Responses during the line-drawing-based interview were used to

derive measures of each subject's (a) quality of social strategies, (b) number of strategies, and (c) relationship goals. Children's responses during the goal choice interview and the sociometric ratings assigned by the subject to each of his or her classmates provided additional measures of children's relationship goals. The PPVT was administered to control for response variability due to subjects' level of verbal ability. Finally, both teacher ratings and peer based sociometric measures were used to provide estimates of children's peer acceptance and social behavior. In the following descriptions of the procedures, the constructs that each item is designed to assess are underlined. See Appendix J for a summary of constructs and variables.

Sociometric interview. During the fall, each subject was individually interviewed by a trained research assistant using a procedure developed by Asher, Singleton, Tinsley, and Hymel (1979). There are two segments in this interview, a peer nomination procedure and a peer rating procedure. In the first segment of this procedure, each subject was presented with a set of photographs of all participating classmates in random order. First each subject was asked to name each of his or her classmates in the photographs. Once it was established that the child recognized all classmates, he or she was asked to name and point to the photographs of three children "who you especially like to play with." This resulted in three positive nominations. Subjects were next asked to name and point to three classmates who "you don't like to play with very much," resulting in three

negative nominations. The liked most score is the total number of positive nominations that a subject receives from classmates divided by the total number of nominations made within a class. The liked least score is the total number of negative nominations each child receives from classmates divided by the total number of nomination made within a class.

Following the procedures outlined in Coie, Dodge, and Coppotelli (1982), each subject's social preference score is calculated by subtracting the liked least z-score from the liked most z-score. Positive and negative peer nomination measures have been shown to have reasonable test-retest reliability with elementary school age children (Asher & Hymel, 1981), and moderate stability with preschoolers (in the .40 to .60 range over 4 weeks; Asher et al., 1979).

In the second portion of this procedure, subjects were instructed in using a 3-point rating scale that consisted of a smiley face, which stood for "like a lot," a neutral face, which stood for "like a little," and a frowny face, which stood for "don't like much." Using this system subjects were asked to rate how much they like to play with each of their peers by pointing to one of the three faces. The ratings that each subject received from his or her peers ranged from one (don't like) to two (kinda like) to three (like a lot). The ratings that each subject received from all classmates were averaged to produce the peer rating. This rating scale measure has been found to have reliability superior to the nomination measure among preschool children (Asher & Hymel, 1981); for example, Asher and colleagues (1979) report test-retest correlations over a four week period to

be in the .70 to .80 range for the rating measure. A measure of each subject's relationship goals was also derived from the peer rating procedure. The average rating each subject *gave* to classmates comprised rating of peers. Following the sociometric interview, children were read a short story to distract them from the nature of the interview before returning to their preschool class. More detailed instructions for completing the sociometric interview are included as Appendix E.

Teacher ratings. The head teacher and graduate assistant in each classroom completed the Teacher's Checklist of Peer Relationships (Dodge & Somberg, 1987) which consisted of 18 items rated on 5-point Likert-type scales. Six items pertained to children's peer competence, for example, "this child is accepted by other children in the group." Teacher-rated peer competence was the total rating teachers gave subjects on the six items that pertain to how well children get along with peers. Five items described aggressive behavior, such as "this child starts fights with peers." Teacher-rated aggressiveness was the total score on the five aggression items (Pettit & Harrist, 1993). Seven items that described children's social problem solving skills and sensitivity to peers were not included in the current study. A copy of the rating form is included as Appendix F. The correlation between ratings completed by the two teachers in each classroom were statistically significant (for competence, r = .61, $p < .01$; for aggression, r = .33, $p < .01$) and so ratings from the two teachers were summed. Internal consistency for teacher-rated peer competence was alpha = .90, and for teacher-rated aggression was alpha = .53.

Peabody Picture Vocabulary Test. Prior to the social-cognitive assessment procedures, each subject was administered the PPVT. The PPVT is a receptive vocabulary test that is recognized as one of the most reliable and valid measures of verbal ability for use with young children. In this assessment subjects were shown a series of panels containing line drawings of four common objects, and subjects were asked to select which of the four objects depicted a particular term. For example, for one item subjects were shown a panel composed of pictures of a flashlight, a sailboat, a basket, and a hot-air-balloon. Subjects were next asked to "point to the boat." Standardized scores on the PPVT have a mean of 100 and a standard deviation of 15. Detailed instructions for conducting the PPVT as well as reliability and validity information for this instrument can be found in Dunn and Dunn (1981). Correlations from alternate-forms retests, over 9 to 31 days, ranged from .58 to .78 for children ages 3 to 6, and correlations between the PPVT and other vocabulary tests range from .20 to .89 (Dunn & Dunn, 1981). Children's raw score on the PPVT constituted the measure of verbal ability.

Videotape-based interview. Each subject was presented with one of the three videotapes, selected at random,[1] by a trained

[1] Although it was originally intended to present each of the three versions of the stimulus tapes to an equal number of children, delays in the production time for the stimulus tapes coupled with a limited amount of time for data collection resulted in disproportionate numbers of children viewing each of the

research assistant. Detailed protocols for each version of the videotapes can be found in Appendix G, and complete instructions for conducting the interview and coding can be found in Appendix H. Each videotape-based interview was audio-recorded, and the experimenter repeated each child's verbal answers and described the child's behavior (for example, if the child slapped at a line-drawing picture of a provocateur from the videotaped vignettes, the experimenter would say "so I see that you would hit him, is that right?"). Inter-rater reliability was assessed for all scores that relied upon the judgement of the interviewer through a second coder coding 25% of the subject's interviews and are presented in Table 1. Reliability information is not presented for codes that did not require experimenter judgement (e.g., forced-choice measures).

Following the presentation of each of the videotaped vignettes subjects were asked by the experimenter to describe what the children in the story were saying and doing. For all vignettes, responses to this question were scored on a 0 to 3 scale of free response accuracy. To be scored 0, the child's response contained virtually nothing that actually occurred on the tape. A score of 1 represented a response that contained some, but not

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three tapes. Fourteen children (6 girls) viewed tape #1, eleven children (7 girls) viewed tape #2, and nine children (3 girls) viewed tape #3.

Table 1

Inter-Coder Reliability Data.

Construct	r	kappa
Free response accuracy	.79	.74
Spontaneous attributions	.70	.66
Assertiveness of strategies		
Video	.90	.85
Enactive	.96	.92
Line-drawing	.98	.91
Sophistication of strategies		
Video	.68	.71
Enactive	.85	.77
Line-drawing	.81	.63
Friendliness of strategies		
Video	.93	.88
Enactive	.93	.89
Line-drawing	.97	.90
Inferred goals		

Video	.86	.86
Enactive	1.0	1.0
Line-drawing	1.0	1.0

most, relevant information or contained most relevant information but some added information that did not occur on the tape. Responses scored as 2 described the significant actions portrayed on the tape, and did not contain additional, irrelevant, information. Responses scored as 3 contained all the significant actions in the story as well as additional relevant details of the event (coding scheme adapted from Weiss, Dodge, Bates, & Pettit, 1992). Inter-rater reliability was established through two raters coding 25% of the subjects' answers (percent agreement = 86.5%, kappa = .74, r = .79).

Children's responses were recorded and coded for the presence of hostile attributions. Instances in which a hostile attribution was spontaneously generated during the description of the actions presented on the videotape-based stimuli were scored as 1; if no hostile attribution was spontaneously generated a score of 0 was assigned. Spontaneous attributions equaled the total number of descriptions of the videotaped actions in which a subject made a hostile attribution divided by the total number of descriptions that subject provided. Inter-rater agreement for this variable was 99.2% (kappa = .66, r = .70).

For each vignette, there was also a forced-choice question concerning the actions portrayed in the story in which subjects

were asked to identify which of two descriptors was accurate. For example, the forced-choice question for one story was "was the child smiling or frowning." A line drawing accompanied each of the two choices, and subjects were encouraged to respond verbally and also to point to the line drawing that they believed to be correct. A second measure of the accuracy of social cue encoding was obtained from answers subjects provided to these forced-choice questions. Correct answers were coded as 1, incorrect as 0. The proportion of the total correct answers to the total number of questions answered comprised forced-choice accuracy.

For vignettes depicting peer conflict (10 vignettes), subjects also were asked if the provocateur was being mean or not being mean. Responses in which subjects said the provocateur was being mean were scored as 1, and responses in which subjects said the provocateur was not being mean were scored as 0. Forced-choice attributions were calculated as the total number of hostile attributions made divided by the total number of forced-choice questions.

For each vignette children were next asked "what would you do if that happened to you?" Each subject's quality of social strategies was assessed by scoring each strategy on 5-point Likert type scales of friendliness, assertiveness, and sophistication. A complete description of the rating scales can be found in Appendix H.

First, strategies were coded on a 5-point Likert type scale of assertiveness. Highly assertive responses were engaging

responses that would likely result in friendly interaction with the peer, and would serve to sustain or enhance a positive relationship between the subject and the peer in the story. Responses that were active and that were likely to continue some form of direct interaction, but were not likely to foster sustained, positive interaction (such as an aggressive response), comprised the middle range of this scale. Responses coded low in this dimension were responses that were unlikely to result in continued, positive interaction: i.e., withdrawal or passive strategies. Interrater reliability was assessed for the assertiveness rating (kappa = .85; r = .90). Assertiveness of strategies (video) was computed by dividing the total of subjects' assertiveness ratings by the total number of strategies coded.

Strategies were also rated on a 5-point Likert type scale of sophistication. A highly sophisticated response was one that made use of relevant environmental and social cues presented in the vignette in the framing of a strategy, and was mature and elaborated. Responses scored in the mid-range of this scale were slightly vague, less elaborated upon, and less mature. An unsophisticated responses was one that was so vague or general that it could be equally applicable to any situation, or of unlikely relevance to the current situation. Reliability was established through multiple coders rating 25% of the vignettes (kappa = .71, r = .68). The total sophistication score divided by the total number of responses coded provided scores of sophistication of strategies (video).

Finally, strategies were coded on a 5-point Likert type scale of friendliness. Strategies coded high in friendliness were prosocial or helpful to peers. Strategies in which the subject suggested asking an adult to intervene or suggested doing nothing comprised the mid-range of this scale. Strategies coded low in friendliness were hostile or harmful to the peer, and included verbal threats and direct physical or verbal aggression. Inter-rater reliability for this rating was adequate (kappa = .88, r = .93). Friendliness of strategies (video) was calculated by dividing the total friendliness ratings by the total number of strategies generated.

Subjects' relationship goals were inferred from the strategies they suggested to the hypothetical social dilemmas. Strategies that stressed peer affiliative goals, such as playing with a peer, were coded as one, strategies that did not stress peer interaction, such as playing with materials alone, were coded as zero. Interrater reliability was assessed through multiple coders rating 25% of the strategies (kappa = .86, r = .86). The total number of strategies that stressed peer-affiliative goals divided by the total number of strategies suggested yielded inferred goals (video).

As an additional measure of relationship goals, following stories involving a social goal choice, such as the relationship maintenance and initiation themes (5 vignettes), subjects were asked a forced-choice question about their social goals. These questions posed two possible courses of action - one involving peer play and one involving solitary play - and children were

asked to select the course of action that they would pursue. For example, following a vignette in which a play partner leaves to play with something else children were asked, "would you play with the other kids at the puzzles, or would you play with the legos by yourself?" Forced-choice answers that stressed peer interaction were coded as 1, forced-choice answers that did not were coded as 0. The proportion of the total number of forced-choice responses that stressed peer interaction to the number of forced-choice goal questions answered comprised forced-choice goals.

For all vignettes, subjects were next asked, "How much would you like to play with these children?" (relationship goals). Subjects were instructed to answer by pointing to one of three faces: a smiling face representing "very much," (coded as 3) a neutral face representing "a little" (coded as 2) and a frowny face representing "not very much" (coded as 1). Play with others represented the total of these scores divided by the total number of questions answered.

Subjects were next asked "how much would these children like to play with you?" These questions were also answered by pointing to one of the three faces. These answers ranged from 1, "not much" to 3, "a whole lot." The total of these scores divided by the total number of questions answered will be referred to as relationship expectations in subsequent analyses. Detailed instructions for conducting the videotape-based social cognitive assessment are included as Appendix H.

Enactive and line-drawing based interviews. On a separate occasion subjects were asked by a trained research assistant to "play a game with puppets and pictures." The experimenter asked the child to select a puppet "to pretend to be you," and, using additional puppets and small toy props enacted each of six social situations in a random order. The experimenter acted out the dialogue and actions of the story with the puppets and subjects were encouraged to spontaneously enact a response to the presented social dilemma. In the event that the child did not spontaneously begin to enact a response, he or she was prompted with "can you show me what you would do now?" All of the interview sessions were audio-recorded. The experimenter repeated the subjects' responses and described the subjects' actions so these would be clear on the audiotaped record. The quality of strategies was scored on 5-point Likert-type scales of assertiveness, sophistication, and relevancy. These scales were identical to those used to code strategies during the videotape-based interview, and coding details can be found in Appendix C. The proportion of the sum of the scores from each of these three scales to the total number of strategies provided measures of assertiveness of strategies (enactive), sophistication of strategies (enactive), and friendliness of strategies (enactive). Relationship goals were inferred from each enactive strategy by coding the presence of peer-affiliative and non-peer-affiliative goals, in a procedure identical to that used to code relationship goals during the videotape-based interview. Inferred goals (enactive) was calculated as the proportion of

enactive strategies containing peer-affiliative goals to the total number of enactive strategies. Inter-rater reliability data for the enactive measures are presented in Table 1.

Both the enactive and the line-drawing assessments were conducted during the same interview session. The enactive interview was always presented first, because this interview is designed to elicit spontaneous social strategies. It was deemed most appropriate to conduct the line-drawing based interview second because this interview is intended to assess thoughtful, reflective social strategies. Following the enactive procedure, subjects were shown line-drawings and read accompanying narratives depicting the same six social dilemmas. After each of the six stories subjects were asked "what are some things that you could do if that happened to you?" Subjects were encouraged to generate as many potential responses as possible, to a maximum of five per story. Standardized prompts, such as "what are some other things you could do?" and "can you think of anything else that you could do?" were used to ensure that all children generated as many responses as they were capable. An estimate of each child's <u>number of strategies</u> was calculated by dividing the total number of strategies elicited during the line-drawing-based interview by the total number of stories completed.

Every response that children made in response to hypothetical social situations presented in the line-drawing-based interview was recorded and the <u>quality of strategies</u> was coded in the same manner used for the videotape-based and enactive interviews. Three measures of quality of social

strategies were derived from the first strategy generated in response to each scenario presented during the line-drawing-based assessment: assertiveness of strategies (line-drawing), sophistication of strategies (line-drawing), friendliness of strategies (line-drawing). The first strategy generated to each story presented during the line-drawing based interview was also coded for the presence of peer-affiliative goals. The total number of strategies that contained peer-affiliative goals divided by the total number of strategies comprised inferred goals (line-drawing). Inter-rater reliability data for the line-drawing-based measures are presented in Table 1. Detailed instructions for conducting and coding the enactive and line-drawing-based interviews are provided as Appendix C.

Goal choice assessment. Materials for the peer affiliation assessment, described previously, were set up as a center activity in the subjects' classrooms. Children completed the assessment during the normal course of center time at their kindergarten or preschool. Subjects were first shown the line drawings and it was explained that the pictures represented "you by yourself, you with another kid your age, and you with a grownup." Subjects were then presented with pictures of 10 activities, one at a time in random order. Children were asked to place each activity picture on one of the drawings, depending on with whom they would like to do the activity. For example, children were asked "Would you rather paint a picture by yourself, with another kid, or with a grownup?" After the subjects had sorted the 10 pictures of the activities they were

helped to record their responses on a check sheet themselves, or the experimenter recorded their choices. Peer affiliation was calculated by dividing the total number of activities that subjects choose to engage in with a peer by the total number of choices subjects made.

IV. Results

Results testing each of the five primary hypotheses are presented in the following sections. First, descriptive data as well as the associations among measures within and between the three domains of social knowledge, social perception, and relationship goals and expectations are presented to test the hypothesis that these three constructs represent discrete domains of social cognitive processes. When supported by convergent and discriminant data, composite scores were constructed within domains. Second, the hypothesis that measures of each of these three domains are related to measures of children's social behavior and peer acceptance is examined. Third, the extent to which measures of each of these three domains independently predict peer acceptance and social behavior is examined. Fourth, analyses were conducted to test the hypothesis that each of these social cognitive domains is distinct from general verbal ability. Finally, the hypothesis that preschoolers' relationship goals moderate the associations between peer acceptance and both social knowledge and social perception was tested.

Associations Within and Among Domains of Social Cognition

The first step in the analysis procedure was to examine descriptive data and the inter-correlations of measures within each of the three domains of social cognition. In the following

section, the intra-domain associations of measures of social knowledge, social perception, and relationship goals and expectations are examined. Descriptive results for each measure also are presented in the first section.

Associations Within Domains

Social knowledge. Descriptive data for measures of social knowledge are presented in Table 2. Average ratings on the three ratings scales of assertiveness, sophistication and friendliness were fairly consistent across the procedures (i.e., the videotape-based, enactive, and line drawing interviews). The mean ratings for the 5-point scale of assertiveness ranged from 2.64 to 2.72 across the three rating procedures, reflecting responses that approximately matched the mid-point of the scale. Likewise, the mean ratings for sophistication ranged from 2.52 to 2.82 on the 5-point scale. The friendliness ratings for subjects' strategies also were quite similar across the three procedures; the mean scores for friendliness ranged from 2.97 to 3.18, indicating that responses tended to be more helpful to the peers than aggressive. The coefficients of variation (*SD* / *M*) for the three scales also were similar across the interview procedures: for assertiveness, the coefficient for variation ranged from .21 to .24; for sophistication .18 to .22; and for friendliness, .13 to .20.

Associations among measures of the quality of social knowledge are presented in Table 3. Scores derived from these rating scales were moderately correlated across procedure and rating dimensions (*r* s ranged from -.06, n. s., to .82). Scores within each procedure were moderately to highly interrelated across rating dimensions (*r* s for measures derived from the enactive procedure ranged from .58 to .82, all $p < .01$, and averaged .67; *r* s for measures derived from the line drawing

procedure ranged from .49 to .79, all $p < .01$, and averaged .58; and r s for measures derived from the videotape-based procedure ranged from .37 to .74, all $p < .05$, and averaged .51). Ratings of assertiveness and sophistication were moderately to highly associated across the three interview procedures (for assertiveness, r s ranged from .40, $p < .05$, to .56, $p < .01$,

Table 2

Descriptive and Reliability Data for Quality of Social Knowledge Measures

Construct	Format	M	S.D.	alpha	M/SD
Assertiveness:					
Vasst	video	2.72	.57	.75	.21

Enasst	enactive	2.70	.59	.48	.22
Ldassrt	line drawing	2.64	.65	.56	.24
Sophistication:					
Vsoph	video	2.73	.52	.79	.19
Ensoph	enactive	2.82	.51	.62	.18
Ldsoph	line drawing	2.52	.56	.57	.22
Friendliness:					
Vfrnd	video	3.12	.52	.73	.17

Enfrnd	enactive	3.18	.41	.22	.13
Ldfrnd	line drawing	2.97	.59	.65	.20
Number	line drawing	1.90	.91	.83	.46

Note: Assertiveness: mean ratings on 5-point scale of assertive (5) vs. passive (1); Sophistication: mean ratings on 5-point scale of sophisticated (5) vs. vague (1); Friendliness: mean ratings on 5-point scale of friendly (5) vs. aggressive (1). Number: mean number of strategies suggested to six line drawing stories (maximum number of strategies allowed per story = 5).

average *r* = .50; for sophistication, *r* s ranged from .33, *p* < .05, to .59, *p* < .01, average *r* = .50). Ratings of friendliness were not as highly associated across procedures as were ratings of assertiveness and sophistication (*r* s ranged from .19, n. s., to .34, *p* < .05, average *r* = .26).

Table 3

Associations among Measures of Social Knowledge

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Enasst										
2. Enfrnd	.61**									
3. Ensoph	.82**	.58**								
4. Ldasst	.56**	.29*	.49**							
5. Ldfrnd	.42*	.34*	.25	.49*						
6. Ldsoph	.60**	.39*	.59**	.79**	.46*					
7. Vasst	.40*	-.06	.28*	.54*	.47*	.54*				
8. Vfrnd	.24	.25	.20	.11	.19	.36*	.37*			
9. Vsoph	.47*	.03	.33*	.51*	.40*	.59**	.74**	.42*		
10. Number	.22	.00	.08	.17	.07	.33*	.28*	.27*	.40*	

Note: N = 34; 1-tailed significance levels: * p < .05; ** p < .01

The number of subjects' strategies was estimated using a single index, the number of strategies subjects suggested in response to the six vignettes presented during the line drawing interview. Subjects suggested an average of 1.9 strategies per vignette; the minimum number of strategies suggested to any particular vignette was one, and the maximum number was five (five was the maximum number of strategies interviewers attempted to elicit per story). Associations between the number of strategies and measures of the quality of social knowledge can be found in table 3; *r* s ranged from .00, n. s., to .40 *p* < .05, and averaged .20.

Social perception. Descriptive data for the social perception measures are presented in Table 4. As indicated by this table, the accuracy of children's descriptions (free-response accuracy) was rated on average as 1.53. A score of 1 on this scale indicates that the description did not contain all of the important elements of the story, whereas a score of 2 denotes descriptions that accurately portrayed the essential actions of the vignette. Subjects were moderately successful in answering forced-choice questions concerning actions portrayed in the video-taped vignettes (forced-choice accuracy); correct answers were coded as 1, incorrect answers were coded 0. The mean score of .70, with a standard deviation of .14, indicates that subjects identified the correct actions portrayed for the majority of vignettes. The internal consistency for all the social perception measures, with the exception of forced-choice accuracy (alpha = .29) was adequate (alphas = .86, .64, and .58 for free-

response accuracy, spontaneous attributions, and forced-choice attributions, respectively).

Subjects rarely made hostile attributions spontaneously in their descriptions of the actions portrayed in the video-taped vignettes. Spontaneous attributions were coded in only 9% of the subjects' descriptions. Subjects were more likely to attribute hostile

intentions to a provocateur when forced to choose what the provocateur's intentions were. For each of 10 video-taped vignettes depicting provocations, a forced-choice hostile

Table 4

Descriptive and Reliability Data for Social Perception Measures

Construct	Format	M	SD	alpha	M/SD
Accuracy:					
Free-response accuracy	video	1.53	.45	.86	0.29
Forced-choice accuracy	video	0.70	.14	.29	0.15
Attributions:					
Spontaneous attributions	video	0.09	.14	.64	1.56
Forced-choice attributions	video	0.64	.22	.58	0.34

Note: Free-response accuracy: mean rating of description of vignettes, 0-3 scale of not at all accurate (0) to fully accurate and highly detailed (3); Forced-choice accuracy: proportion of correct forced-choice items, 1 = correct, 0 = incorrect; Spontaneous attributions: proportion of spontaneous hostile

attributions from 10 provocation vignettes, 0 = not hostile, 1 = hostile; Forced-choice attributions: proportion of forced-choice attributions for 10 provocation vignettes, 0 = not hostile, 1 = hostile.

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attribution was coded as 1, whereas a non-hostile attribution was coded as 0. Subjects' chose the hostile attribution an average of slightly more than six times across the 10 provocation vignettes, with a standard deviation of .22.

Associations among measures of social perception are presented in Table 5. Due to the low internal consistency of the forced-choice accuracy measure, as well as the modest associations of this measure with other measures of social perception (*r* s ranged from .08, n.s., to .33, *p* < .05, average *r* = .17), the forced-choice accuracy measure was excluded from further analysis. The free-response accuracy measure was also only modestly related to the two measures of interpretation (*r* = .21, n.s., for spontaneous attributions, -.31, *p* < .05, for forced-choice attributions). A non-significant association was also found between the two attribution measures (*r* = .11). Free-response accuracy, spontaneous attributions, and forced-choice attributions were retained for discriminant validity analyses.

Table 5

Associations among Measures of Social Perception

	1.	2.	3.	4.
1. Free-response accuracy:				
2. Forced-choice accuracy:		.08		
3. Spontaneous attributions:	-.21	-.09		
4. Forced-choice attributions:	.31*		-.33*	.11

Note: N = 34; 1-tailed significance level: * p < .05 ** p < .01

Table 6

Descriptive and Reliability Data for Relationship Goals and Expectations Measures

Construct	Format	M	SD	alpha	M/SD
Relationship goals:					
Peer affiliation	classroom interview	0.37	.20	.47	.54
Video play with others	video	2.03	.14	.75	.07
Ratings of classmates	sociometric	2.02	.31	--	.15
Video forced-choice goals	video	0.66	.41	.11	.62
Inferred goals (enactive)	enactive	0.40	.22	.33	.55
Inferred goals (line drawing)	line drawing	0.37	.25	.51	.67
Inferred goals (video)	video	0.47	.23	.71	.49
Relationship expectations:					

Relationship expectations	video	2.12	.53	.87	.25

Note: Peer affiliation: ratio of peer choices to total number of choices; Video play with others: average rating of how much subject wants to play with children on videotape, not at all (1) to a whole lot (3); Ratings of classmates: average liking rating subject gave to classmates, not at all (1) to a whole lot (3); Video forced-choice goals: ratio of total peer oriented choices to total choices; Inferred goals (enactive, line drawing, video): ratio of strategies that stressed peer interaction to total number of strategies; Relationship expectations: average rating of how much subject thinks children in vignettes would like to play with him or her, not a lot (1) to a whole lot (3).

Relationship goals and expectations. Table 6 presents descriptive data for measures of relationship goals and expectations. The mean values for video play with other and ratings of classmates were quite similar, 2.03 and 2.02 (both on 3-point scales), respectively. The mean value for peer affiliation, .37, suggests that, on average, subjects chose to engage in an activity with a peer about one-third of the time. However, considerable variation existed in subjects' choices on the peer affiliation measure (coefficient of variation = .54); some subjects (n = 3) choose to engage in activities with a same-age peer at least seven out of ten times, whereas other subjects (n = 2) never chose to join with a same-age peer.

The mean values for inferred goals were somewhat consistent across the three measurement procedures (.40 for enactive, .37 for line-drawing, and .47 for videotape-based procedures). These values suggest that slightly less than half of all subjects' strategies stressed peer interaction. All of the measures of relationship goals, with the exception of forced-choice goals (alpha = .11), demonstrated adequate internal consistency (alphas ranged from .33 to .75).

Table 7 presents associations among measures of relationship goals and expectations. The forced-choice goals obtained during the video-tape based assessment had poor internal consistency and only negative or modest positive associations with the other indices of relationship goals (r s ranged from -.24 to .43, average = .04). This measure was dropped from further analysis. The remaining six measures of relationship

goals were only modestly to moderately inter-correlated (*r* s ranged from -.14, n. s., to .56, *p* < .01, average *r* = .25), and were retained for discriminant validity analyses.

Only a single measure served as an index of relationship expectations, the average rating that subjects made when asked how much the children presented on the videotape-

Table 7

Associations among Measures of Relationship Goals and Expectations

	1.	2.	3.	4.	5.	6.	7.	8.
1. Peer affiliation								
2. Video play with others	.12							
3. Ratings of classmates	.41*	.15						
4. Video Forced choice goals	-.24	.12	-.11					
5. Inferred goals (enactive)	.32*	.16	.27*	.20				
6. Inferred goals (line-drawing)	.13	.25	. 52**	-.14	.56**			
7. Inferred goals (video)	-.04	.34*	.29*	.43*	.25	.26*		
8. Relationship expectations	-.12	.68**	.16	.33*	.06	.07	.27*	

Note: N of cases: 34; 1-tailed significance level: * p < .05 ** p < .01

---

based stimulus would like to play with them. Subjects' ratings averaged 2.12, on a three point scale in which 1 represented not at all, 2 just a little bit, and 3 a whole lot. The coefficient of variation for this measure, .25, suggests only modest variation in subjects' responses to this measure. Cronbach's alpha for this measure was .87. Relationship expectations was modestly correlated with measures of relationship goals (average r = .21), with the only significant correlations being with goal measures derived from the video-based assessment. For instance, the relationship expectations measure was highly correlated with how much children said they would want to play with characters in the vignette (r = .68, p < .01).

Associations Across Domains

To estimate the discriminant validity of measures of social knowledge, social perception and relationship goals and expectations, associations among measures of each of these domains were examined. When warranted, based on conceptual similarity and inter-correlations, measures where summed to form composite variables.

Social knowledge and social perception. Table 8 presents correlations between measures of social knowledge and measures of social perception. Free-response accuracy was moderately related to measures of the quality of social knowledge (r s ranged from .06, n. s. to .64, p < .01; average r = .35). These associations were most pronounced for associations between free-response accuracy and those measures of social knowledge obtained during

the videotape-based interview, but also were moderate for the line-drawing measure (for videotape-based social knowledge measures, *r* s ranged from .27, n. s. to .64, *p* < .01; average *r* = .47; for enactive-procedure-based measures of social knowledge, *r* s ranged from .06 to .24, all n.s., average = .17; and for measures of social

Table 8

Associations among Measures of Social Perception and Social Knowledge

	Free-response accuracy	Spontaneous attributions	Forced-choice attributions
Enasst	.24	.01	-.19
Enfrnd	.06	-.07	.16
Ensoph	.21	.03	-.10
Ldassrt	.49**	-.11	-.09
Ldfrnd	.35*	-.07	-.08
Ldsoph	.42*	-.04	.17
Vasst	.51**	-.08	-.06
Vfrnd	.27*	-.01	.18
Vsoph	.64**	-.18	.02

Note: N = 34; 1-tailed significance level: * p < .05 ** p < .01

knowledge obtained from the line drawing procedure, *r* s ranged from .35, *p* < .05, to .49, *p* < .05, average = .42). Associations between the two attribution measures and measures of the quality of social knowledge were more modest (*r* s ranged from -.19, n. s. to .18, n. s.; average *r* = -.03, n. s.), providing support for the discriminant validity of the attribution measures.

Social perception and relationship goals. Table 9 presents associations among measures of social perception and relationship goals. Pearson's r s for these associations ranged from -.27, n.s. to .55, p < .01. The average value of these associations was .10. Free-response accuracy was significantly associated with several measures of relationship goals (r s ranged from .16, n. s., to .55 p < .01, average = .32). As was the case for

Table 9

Associations Among Measures of Social Perception and Relationship Goals

	Free-response accuracy	Spontaneous attributions	Forced-choice attributions
Peer-affiliation	.19	-.17	-.06
Play with others	.55**	-.15	.11
Rating of peers	.26*	-.07	.10
Inferred goals (enactive)	.16	-.07	-.09

Inferred goals (line drawing)	.33*	-.15	-.19
Inferred goals (video)	.40*	-.10	.03
Relationship expectations	.15	.05	-.12

Note: N = 34; 1 tailed significance level * p < .05 ** p < .01

associations between free-response accuracy and measures of social knowledge, free-response accuracy was most highly associated with measures of relationship goals obtained from the videotape-based procedure (for play with others, r = .55, p < .01; for inferred goals video r = .40, p < .05) although these were not the only significant associations

with accuracy (for rating of peers, r = .26, p < .05; for inferred goals line drawing r = .33, p < .05).

Associations between spontaneous attributions and forced-choice attributions and measures of relationship goals were quite modest (r s ranged from -.19 n. s., to .11 n. s., average = -.07), providing further support for the discriminant validity of the two attribution measures. Due to the conceptual similarity between spontaneous attributions and forced-choice attributions, these two measures were summed to form a composite index of attributions for use in subsequent analyses (alpha for the 20 items = .62). Because the free-response accuracy measure, although internally reliable (alpha = .86), was only modestly related to the two measures of interpretation (r = .21, n.s., for spontaneous attributions, -.31, p < .05, for forced-choice attributions), this measure was not used to form a composite index of social perception. Instead, free-response accuracy was used as an index of perceptual accuracy in subsequent analysis. Thus, two variables - perceptual accuracy and attributions - represented subjects' social perception in subsequent analyses.

Social knowledge and relationship goals. Associations between measures of quality of social knowledge and measures of relationship goals, including goals inferred from the subjects' hypothetical social strategies, are presented in Table 10. Measures of the quality of social strategies generated during the videotape-based, enactive, and line-drawing interviews were highly related to the social goals inferred from those strategies (for inferred goals (enactive), associations with social

knowledge measures from the enactive procedure ranged from r = .65, p < .01, to .86, p < .01, average = .74; for inferred goals (line drawing) associations with social knowledge measures from the line drawing procedure ranged from r = .65 p < .01 to .87 p < .01, average = .70; for

inferred goals (video) associations with social knowledge measures from the videotape based procedure ranged from r = .59, p < .01, to .83, p < .01, average = .63). These associations were stronger than the associations between inferred relationship goals and other measures of social goals (see Table 7; r s ranged from -.03, n.s., to .52, p<.01, average r=.25). Thus, measures of relationship goals inferred from the strategies suggested by subjects were more strongly related to measures of the quality of social knowledge than to other measures of relationship goals.

Because of the lack of discriminant validity for the inferred social goals, these goals were not used to form a composite index of relationship goals and were excluded from subsequent analyses. The remaining measures of relationship goals, peer-affiliation, rating of peers, and play with others, were modestly to moderately associated with measures of the quality of social knowledge (r s ranged from .01, n.s., to .49, p<.01; average value of r = .27), providing support for the discriminant validity of these relationship goal measures. These three measure were summed to from a single composite of relationship goals that was used in subsequent analysis (alpha for 25 items = .72).

Due to the conceptual distinction between relationship goals and relationship expectations, the single index of relationship expectations was not included in the relationship goal composite. Instead, relationship expectations was retained as a stand alone variable for use in further analyses.

Measures of social knowledge were highly correlated within each of the three rating scales: mean Pearson r s for associations within ratings of assertiveness, friendliness, and sophistication were .50, .26, and .50, respectively (see Table 3). Furthermore, these measures were relatively independent of measures of social perception and relationship goals that have been retained for further analysis. Due to the high degree of associations among the nine measures of quality of social knowledge, the scores from each of the measures were summed to form a single composite measure of the quality of social knowledge (Cronbach's alpha for the nine items = .82). The pattern of associations between the number of responses elicited during the line-drawing based interview and measures of the quality of social knowledge was inconsistent (see Table 3; r s ranged from .00, n.s. to .40, $p < .05$, average $r = .20$, $r = .36$, $p < .05$, for composite

Table 10

Associations Among Measures of Relationship Goals and Quality of Social Knowledge

	Peer-affiliation	Play with others	Rating of peers	Inferred goals (enactive)

Enasst	.42**	.22	.32*	.86**
Enfrnd	.17	.07	.19	.65**
Ensoph	.33*	.15	.29*	.72**
Ldassrt	.22	.25	.49**	.61**
Ldfrnd	.01	.42**	.43**	.39*
Ldsoph	.22	.25	.44**	.63**
Vasst	.15	.42**	.44**	.29*
Vfrnd	.14	.19	.09	.26*
Vsoph	.17	.29*	.28*	.43**

Table 10 continued.

	Inferred goals (line drawing)	Inferred goals (video)	Relationship expectations
Enasst	.48**	.38*	.15
Enfrnd	.33*	.06	-.10
Ensoph	.38*	.26*	.16
Ldassrt	.87**	.34*	.01
Ldfrnd	.65**	.45**	.23
Ldsoph	.58**	.41**	.06
Vasst	.41**	.83**	.23
Vfrnd	-.02	.48**	.04
Vsoph	.35*	.59**	.09

Note: N = 34; 1-tailed significance levels: * $p < .05$, ** $p < .01$

quality of knowledge), and so this measure was not included in the composite index of quality of social knowledge. Rather, the

number of strategies elicited during the line drawing procedure was retained as a stand alone index of number of strategies.

Six social cognitive variables were used in subsequent analysis: perceptual accuracy, attributions, relationship goals, relationship expectations, quality of social knowledge, and number of strategies. As presented in Table 11, these six social cognitive

variables were modestly to moderately inter-correlated (r s ranged from -.16, n. s., to .58, p < .01, average r = .19). Quality of social knowledge was significantly correlated with the number of strategies (.36, p < .36), perceptual accuracy (.57, p < .01), and relationship goals (.46, p < .01). Significant associations also were found between relationship goals and both perceptual accuracy (.57, p < .01) and relationship expectations (.58, p < .01). No other significant associations were found among the social cognitive variables.

Thus, six variables were used to represent social cognitive processes in subsequent analysis. Due to the lack of evidence of convergent validity between measures of the accuracy of social perception and hostile attributions, separate variables were used to represent each of these two constructs. Although convergent and discriminant validity analysis provided some support for the creation of a composite measure of the quality of social knowledge, there was little convergent evidence to support including the number of strategies in this composite; instead, the number of strategies was retained as a stand-alone variable for use in further analyses. Finally, although inter-associations among measures of relationship goals and expectations suggested some convergent validity among these measures, there was little evidence of discriminate validity among these measures. This was especially true for measures of social goals inferred from subjects' strategies, which were highly associated with ratings of the quality of children's social strategies. Due to the lack of discrimnant validity,

inferred social goal measures were not included in the composite measure of relationship goals. Also, although the measure of relationship expectations was strongly associated with the video play with others measure, the pattern of associations between relationship expectations and other measures of social goals was inconsistent. As such, relationship expectations was not included in the

Table 11

Associations Among Social Cognitive Variables and Measures of Maturity, Social Behavior, and Peer Acceptance

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Social Knowledge:										
1. Quality of social knowledge										
2. Number of strategies	.36*									
Social Perception:										
3. Perceptual accuracy	.57**	.20								
4. Attributions	-.04	.06	.14							
Relationship Goals and Expectations:										
5. Relationship goals	.46**	.08	.57**	-.03						
6. Relationship	.15	-.16	.15	-.06	.58**					

expectations

Table 11 continued.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Maturity:												
7. PPVT	.36*	-.05	.36*	-.05	.09	-.18						
8. Age		.47**	.25+	.64**		.17	.24+	-.16	-.27+			
Peer Acceptance:												
9. Teacher-rated peer competence	.55**	.02	.23+	-.38*	.36*	.09	.37*	.12				
10. Teacher-rated aggression		-.26*	-.09	.05	.28*	.02	.21	-.01	-.12	-.59**		
11. Peer rating	.30*	.08	.03	-.14	.20	.09	.26*	-.03	.60**		-.31*	
12. Social preference		.26*	-.05	-.12	-.06	.13	.09	.29*	-.25+	.55**	-.41**	.79**

Note: N = 34; 1-tailed significance level + p < .10; * p < .05; ** p < .01

composite index of social goals, but rather was retained as a stand-alone variable for use in subsequent analyses.

Associations among Measures of Social Cognition and Measures of Social Behavior and Peer Acceptance

Social cognition and distal variables. Associations among social cognition variables and PPVT scores, age, and measures of social behavior and peer acceptance are presented in Table 11. Both the quality of social strategies and accuracy of social perception were significantly related to both age and standardized scores on the PPVT. T-tests conducted for each of the social cognitive measures revealed that only relationship expectations differed according to the sex of the subject, with girls having significantly higher relationship expectations ($t = 2.06$, $p < .05$; the mean value on the 3-point scale of relationship expectations was 3.32 for girls and 1.97 for boys).

Significant associations were found between teacher ratings of peer competence and the quality of social knowledge, attributions, and relationship goals. In addition, perceptual

accuracy was marginally related to teacher rated competence. The patterns of associations between measures of social cognition and both teacher ratings of aggression and peer-based measures of acceptance were less convincing. Attributions were associated with teacher ratings of aggression, and the associations between the quality of social knowledge composite and the average peer rating (r = .30) and social preference (r = .26) were significant at the .05 level. PPVT scores were positively related to teacher-rated competence and to both peer acceptance measures. Neither the number of social strategies nor the measure of relationship expectations were significantly related to measures of social behavior or peer acceptance, and so these variables were dropped from further analyses. Because the pattern of associations is most consistent for teacher ratings of social competence, this variable was used as the dependent variable in subsequent analyses.

Social cognition and peer competence controlling for verbal ability. To test the hypothesis that measures of social cognition are related to peer acceptance when verbal ability is controlled for, a series of hierarchical regressions predicting teacher ratings of peer competence were conducted. In each of the regressions, standardized PPVT scores were entered first, followed by one of the composite measures of social cognition. Three of the social cognitive variables significantly contributed to the prediction of teacher rated peer acceptance beyond the standardized PPVT scores (R^2 change = .20, $p < .01$, for the quality of social knowledge; R^2 change = .12, $p < .05$, for

attributions; and R^2 change = .12, $p < .05$, for relationship goals). The measure of perceptual accuracy failed to add to the prediction of teacher rated peer acceptance beyond the standardized PPVT scores (R^2 change = .01, n.s.). Because perceptual accuracy failed to contribute to the prediction of teacher ratings of peer competence, this variable was not included in further analyses.

Independent prediction of social cognitive variables. To test the hypothesis that measures of the proposed domains of social cognition independently contribute to the prediction of peer competence, a hierarchical regression analysis predicting teacher ratings of peer acceptance was conducted in which the standardized PPVT scores were entered on the first step, and the quality of social knowledge, attributions, and relationship goals were entered simultaneously on the second step. Together, these variables accounted for 46% of the variance in teacher-rated competence ($p < .01$). Examination of the squared semi-partial correlations revealed that the PPVT scores failed to account for a significant portion of the variance in teacher-rated peer competence once the social cognitive variables were entered into the equation ($pr^2_1 = .03$, n. s.). Both the quality of social knowledge ($pr^2_2 = .12$, $p < .01$) and attributions ($pr^2_3 = .12$, $p < .01$) made significant contributions to the prediction of teacher ratings of peer competence. However, the squared semi-partial correlation between relationship goals and teacher-rated peer competence was non-significant ($pr^2_4 = .02$). Seventeen percent of

the variance in teacher-rated competence was shared in common among the independent variables.

Relationship goals as moderator. To test the hypothesis that associations between social perception and peer competence and between social knowledge and peer competence are moderated by relationship goals, two hierarchical regressions were computed predicting teacher ratings of peer competence. In the first of these regressions, social knowledge and relationship goals were entered on the first step, and the multiplicative interaction of social knowledge by relationship goals was entered on the second step. The interaction term failed to make a significant contribution to the prediction of teacher-rated peer competence (R^2 change = .001, n. s.). In the second regression, relationship goals and attributions were entered on the first step, and the multiplicative interaction of relationship goals by attributions was entered on the second step. Again, the interaction term failed to contribute to the predictive utility of the equation (R^2 change = .02, n. s.).

V. Discussion

The purpose of this study was to develop measures of three hypothesized domains of social cognition - social knowledge, social perception, and relationship goals and expectations - and to examine their interrelations and the extent to which they predict preschool children's peer competence. The data provide some support for the hypothesis that young children's cognitions relevant to peer interaction can be partitioned into discrete domains that are largely independent. Moreover, measures representing two of the domains - social knowledge and attributions about the intentions of peers - each made unique contributions to the prediction of children's social competence after controlling for verbal ability. The data also raise questions regarding the most accurate model for describing social cognitive processing in young children. The discussion will focus first upon associations among measures of social cognition and measures of social competence. Second, this discussion will examine both associations among measures of social cognition and between measures of social cognition and other variables, such as measures of verbal ability and social competence, in an attempt to evaluate the parsimony of the proposed model of social cognition. Finally, this discussion will evaluate the hypothesis that relationship goals moderate the associations between other social cognitive domains and children's social behavior.

Perhaps the most important contribution of this study was the assessment of multiple domains of social cognition and the extent to which they made independent contributions to young children's social competence after controlling for verbal ability. Measures representing two of the three proposed domains of social cognition, the quality of social knowledge and attributions about the intentions of others, made unique contributions to the prediction of teacher ratings of children's social competence after controlling for verbal ability. In fact, children's PPVT scores did not predict a significant portion of variance in teacher-rated competence after the social-cognitive variables were entered. Children's social competence, then, does not appear to be determined by general ability (at least as assessed by verbal intelligence) and there seem to be multiple, at least partially independent, cognitive processes guiding children's social behavior. An examination of the zero-order associations between measures of social cognition and measures of social competence further illuminates the role that social cognition may play in children's competence with peers.

The pattern of correlations among the social cognitive variables and indices of social competence suggests that each of the proposed domains is relevant in guiding children's behavior with peers. The strongest pattern of associations were obtained with teacher-rated peer competence as the outcome measure; the

quality of social knowledge, non-hostile attributions, and relationship goals all were significantly and positively related to teacher's judgements of competence. A similar (but inverse) pattern was seen for teacher judgements of aggressive behavior.

Only the quality of social knowledge was related significantly to peer-based measures of social acceptance. The failure to find more significant associations between social cognition and peer-based measures of social functioning may reflect the fact that both sets of measures were obtained from interviews with preschool children, thus maximizing error variance in both the dependent and independent variables. Another possible explanation is that the variables included in the current study are associated with behavior that is valued by adults, but are not pertinent to other preschoolers. Were this the case, young children's social cognition would be associated with socially competent behavior as reported by teachers, but not necessarily with behavior that is most attractive to the children's preschool classmates. Further studies with larger and more diverse samples of preschoolers may help to clarify the association between young children's social cognition and acceptance by their peers.

The significant associations between the quality of children's social knowledge and outcome measures of social success supports previous findings in this area (Asher & Renshaw, 1981; Dodge et al., 1986; Mize & Cox, 1989; Mize & Ladd, 1988; Pettit et al., 1988, Rubin, 1983; Rubin et al., 1982). Children rated as more competent by teachers suggested strategies to peer

dilemmas that were more outgoing and nonaggressive, as well as more elaborated and relevant than the strategies suggested by their less competent peers. Furthermore, although videotape-based assessments were conducted on different days, and presented different social problem situations, than the line-drawing and enactive assessments, measures of the quality of social knowledge were modestly to moderately correlated across all ratings. The pattern of intercorrelations, together with the high internal consistency of the composite index made up of all nine strategy ratings, suggests that young children may exhibit a tendency to generate similar strategies (at least in terms of their friendliness, sophistication, and assertiveness) over a fairly broad range of situations.

The number of social strategies children could generate during the line-drawing interview was moderately correlated with the composite index of social knowledge quality, suggesting that these measures tap social cognitive skills that are related, but not redundant. Although some research has found that children who can suggest more strategies to a social problem are more socially competent (Pettit et al., 1988; Spivack & Shure, 1974), this study joins several others in finding no association between the number of strategies and children's social competence (Butler, 1978; Krasnor & Rubin, 1978; Mize & Cox, 1989; Sharpe, 1978). Thus, as others have suggested, it may be that it is the quality of the first strategy that young children generate, rather than how many can be produced upon reflection, that is more significant in guiding their interactions with peers.

The accuracy of children's social perception - as measured by the quality of their descriptions of events portrayed in videotaped vignettes - also was not associated with their social competence (although the correlation with teacher rated-competence approached significance). This was surprising given the fact that previous research (Weiss et al., 1992) found that similar measures of the accuracy of social perception predicted lower rates of observed aggressive behavior among kindergartners. In the current study, the relatively low coefficient of variation for this measure (.29) suggests that there was little variability in the accuracy of children's descriptions. Further, the forced-choice accuracy measure, developed specifically for this study, was dropped from analysis due to low internal consistency. Although the multiple choice format of the forced-choice accuracy measure holds promise for future research with young children, further development and pilot testing will be needed to ensure that the items are of equivalent difficulty and are tapping equivalent perceptual abilities. Thus, failure to find associations between children's perceptual accuracy and peer competence may reflect measurement problems. Alternatively, perhaps the ability to fully and accurately perceive the behavior of others is not a particularly relevant skill for children as young as those in this study (four- and five-year-olds), or perhaps individual differences in this ability emerge later.

The second hypothesized dimension of social perception, children's attributions about the intentions of others, was significantly associated with teacher-rated peer competence.

Although previous research with a sample of low-income preschoolers found that young children consistently reported hostile attributions any time the protagonist experienced a negative outcome (Pettit et al., 1988), this was not the case for our sample. Children made spontaneous hostile attributions to only 9% of the provocation vignettes, and selected the hostile forced-choice attribution in only slightly over 6 out of 10 vignettes, on average. Future research, with a broader, more representative sample, may help to clarify whether this difference is a result of sample differences or perhaps disparities between the videotaped stimuli used in this and previous research..

Children's relationship expectations - as operationalized by ratings of how much others would want to play with them - were not associated with their social competence or peer acceptance. Speculations from attachment theorists that secure parent-child relationships provide the context in which children develop social competence and in which children come to presume that other relationships also will be positive, led to the prediction that children with more positive relationship expectations would be more socially competent. This prediction received no support. However, the data are consistent with previous findings indicating that more socially competent children do not necessarily have more positive views of the self, or of their peers' opinions of them, than do less competent or more aggressive children (Crick & Ladd, 1990). In fact, a characteristic of many school-age aggressive children is that

they fail to realize the extent to which their behavior is aversive to others and often over-estimate their peer acceptance (Perry, Perry, & Rasmussen, 1986). The positive (but non-significant) association between positive relationship expectations and teacher-rated aggressiveness suggests this might be a profitable hypothesis for research with preschoolers, as well.

An alternative explanation for why the number of strategies, accuracy of perception, and relationship expectations all failed to predict social competence may lie in their measurement. All of these constructs were indexed by a single measure. This was not the case for any composites that were significantly related to measures of children's competence. This pattern may indicate that in order to obtain reasonably reliable estimates of young children's social cognitive processes, it is necessary to use multiple assessment methods.

Although the zero-order correlation between the relationship goals composite
and teacher-rated peer competence was significant, social goals failed to independently predict teacher ratings when PPVT scores, the quality of social knowledge composite, and the attributions composite were entered into the equation. One potential explanation for the lack of independent contribution from the relationship goals composite concerns the procedures used to estimate young children's social cognitive skills. Whereas existing measures served as guides to the development of measures of social knowledge (Dodge et al., 1986; Mize & Ladd, 1988),

attributions (Pettit et al., 1988), and accuracy (Dodge et al., 1986), relationship goals, as conceptualized in the current study have not been assessed previously among a sample of preschoolers. Our data may indicate that an adequate procedure for assessing preschoolers' social goals has yet to be developed.

An alternative explanation for the non-significant contribution of relationship goals calls for a refinement of the hypothesis that the proposed domains of social cognition are distinct and independent. Post-hoc analysis revealed that the relationship goals composite predicts teacher ratings of peer competence beyond the prediction of PPVT scores and attributions, and only fails to provide a significant increment in the prediction when social knowledge is entered. Although some portion of the high associations between inferred social goals and social knowledge may be attributed to method variance, the relationship goals composite, which was made up of measures taken independently of social knowledge assessments, was positively related to the quality of social knowledge. Rather than domains of social cognition being independent, as originally proposed, it may be that social cognitive skills are inter-related. For instance, it is likely that children who possess peer-affiliative goals would offer more engaging (assertive) and less hostile (friendlier) strategies than would children who do not possess peer-affiliative goals. In fact, some prior conceptualizations of social knowledge considered goals to be an aspect of knowledge rather than a separate domain (Ladd & Mize, 1983). If this is the case, measures of social knowledge used in the present

investigation may subsume relationship goals, and so measures of relationship goals would not be expected to predict social outcomes beyond the contribution made by measures of social knowledge.

Significant associations between the accuracy of social perception and measures from other domains of social cognition supports the idea that domains of social cognition may be interrelated. Children who received higher perceptual accuracy scores also suggested friendlier, more outgoing strategies, and exhibited more peer-oriented goals. Perhaps children who are peer-oriented are more motivated to attend to the behavior of peers and can, therefore, pick up more details of others' behavior and the situation. Awareness of others' behavior and situational cues, as well as motivation to play with peers, in turn, may be prerequisites for the generation of sophisticated, prosocial strategies.

The data suggest that the social cognitive model proposed in the current investigation may not be the most parsimonious or accurate one for explaining these findings. Although three broad domains of social cognition (each of which was characterized by two conceptually related sub-processes) were proposed, the data suggest that a model consisting of two relatively independent domains may more accurately describe young children's processing of social information. The multiple regression analyses predicting teacher-rated peer competence, as well as the intercorrelations among the social cognitive measures and both age and verbal intelligence, suggest that one domain might

reflect children's general cognitive ability and development, whereas a second is relatively independent of maturation.

An examination of the intercorrelations among measures reveals that two social cognitive skills, quality of social knowledge and perceptual accuracy, are moderately intercorrelated, are correlated with teacher ratings of competence, and are significantly associated with both age and verbal ability. One explanation for these associations is that measures of the quality of social strategies and perceptual accuracy were associated with verbal ability because higher scores on each of these measures depend on children's ability to verbally describe what they saw and what they would do in each scenario. Alternatively, these measures may reflect, or be partly determined by, children's general processing efficiency; that is, both social knowledge and perceptual accuracy may be determined partially by a more basic aspect of intelligence, such as the speed or efficiency with which an individual encodes and can retain information. According to Kail (1986) processing efficiency is determined by an individual's ability to direct his or her attention and the speed with which he or she encodes information. These basic abilities, in turn, improve over childhood (Kail, 1991), but also show individual variation that may be a function of innate or environmental differences (Tamis-Lemonda & Bornstein, 1980).

Although perceptual accuracy and social knowledge were significantly associated with verbal ability and age, measures of young children's attributions and relationship goals were not.

The fact that hostile attributions were unrelated to accuracy may indicate that the attribution and accuracy measures are tapping into two unrelated cognitive processes. For instance, whereas perceptual accuracy may be closely associated with more general aspects of young children's information processing efficiency, the tendency to attribute hostility to peers may be more closely related to affective processes. Similarly, relationship goals, which were not associated with verbal ability or age, may be more closely aligned to children's affective orientation toward peer interaction. Thus, children's processing of social information may be governed by two relatively independent domains - one that is reflective and rational, and one that is more affectively charged and spontaneous. These findings call for a refinement of theory regarding the development of social cognitive skills and further research with larger and more diverse samples to understand the associations among maturity and young children's social cognitive processes.

Finally, results from the present investigation failed to support the hypothesis that relationship goals moderate associations between children's social competence and both social perception and social knowledge and children's social competence. Among this sample, measures of social knowledge were highly associated with measures of relationship goals, and both were significantly associated with teacher ratings of social competence. Mathematically, the interaction term of goals X knowledge would also be highly related to both relationship goals and social knowledge. As a result, a suppression effect may have

existed in the regression equation used to test the mediational hypothesis; once the variance held in common by relationship goals, social knowledge, and the interaction term were removed from the equation, it is probable that little variance was left to be associated with variance in the dependent variable. A similar condition may have existed in the regression equation used to test the role of relationship expectations as a moderator of the association between attributions and children's social competence.

Also, as suggested earlier, measures of the quality of social knowledge employed in the current investigation may have indirectly captured some of the variation that is most directly attributable to relationship goals. If this was indeed the case, statistical detection of a significant interaction between social knowledge and relationship goals would be both difficult and meaningless. At the present time, results failed to confirm the moderation hypothesis. The task of increasing our understanding of the role that relationship goals may play in children's peer relationships and of developing more accurate measures of relationship goals is left to future research.

Finally, it is important to note that the sample in this study was not an accurate reflection of the population of all preschoolers. This sample was not randomly selected, but rather was a convenience sample drawn from a university-sponsored preschool. Although this preschool attempts to admit children from a wide-range of cultural backgrounds and social ecologies, the classes tend to be predominantly composed of children from

white, middle-class households. As such, caution should be taken in the interpretation of the results reported here, and generalization of findings to wider populations of preschoolers is limited.

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