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THE RELATIVE CONTRIBUTION
OF SOCIAL/COGNITIVE PROCESSES
TO SOCIAL COMPETENCE

BY

DIANE MARQUES

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN
PSYCHOLOGY

UNIVERSITY OF RHODE ISLAND

1986

Abstract

In the present study, the relationship of linguistic achievement, social problem-solving and empathy to social competence as validated by teachers, peers and self was explored. It was hypothesized that these three developmental processes would be significant predictors of social competence, and that their relative orders of contribution would differ across competence indicators.

The subjects in this study were 102 third grade students. After parental consents were obtained, five pencil and paper measures were administered to the students using a group testing format in two sessions. These measures examined language achievement, social problem-solving, empathy, a peer rating of other classmates and a self-rating. Teachers filled out a brief social competence rating for each student participant. The data were analyzed using stepwise multiple regression analyses.

The results indicated that language achievement and social problem-solving were significant predictors of teacher ratings of social competence; that socioeconomic status was the only significant predictor of peer ratings, and that self ratings could not be predicted by any of the included variables. This study replicated previous findings of low correlations between teacher, peer and self ratings, and found that specific items on the teacher rating could significantly predict positive peer ratings.

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Although almost unanimous agreement exists that the ability to successfully engage in social interaction during childhood is a critical factor related to both academic adjustment and later adult adaptation, operational and conceptual definitions of social interaction have varied widely both within and across fields of psychological study (Hops & Greenwood, 1981). Additional disagreement exists within the literature on how one defines a socially-skilled or adept interactor. Even the term "socially-skilled" is not without controversy. Disagreement continues on whether discrete behaviors, response clusters or more global cognitive abilities are more appropriately included in the domain of social skills (McFall, 1982).

Literature in both developmental and behavioral psychology have paid enormous attention to the question of social interaction in childhood. Developmental psychology is defined as the psychological study of human development and the changes in cognitive and social processes that occur as a result of growth. It has traditionally examined social interaction in terms of psychological processes such as social problem-solving which are assumed to underlie the quality and nature of the social interactions (Flavell, 1963). Behavioral psychology, on the other hand, is the psychological study of the prediction and control of human learning and behavior. It has traditionally examined social interaction in terms of defining which sorts of discrete, molecular actions are

reinforced by peers in social settings and thus constitute successful social interactions. It does not assume that general psychological processes account for socially skilled behavior, but does assume that the appearance and frequency of social behavior is controlled by the positive and negative outcomes such behavior receives (Michelson & Wood, 1980).

This difference in assumptions regarding the importance of underlying psychological or cognitive processes in the developmental and behavioral literatures have made the two areas difficult to integrate in formulating a comprehensive model of social interaction that identifies skills which are important for a successful interactor to master. An increasing awareness has been expressed in both areas that attention to both situation specific variables and the impact of developmental processes will be necessary to account for such interaction. Research continues to be necessary in examining whether the socially skilled or competent child's interactions are a function of a behavioral repertoire of optimal social responses, a function of traits which facilitate behavior, or a function of some combination of traits and responses (Hartup, 1983; McFall, 1982).

In the following review of the literature, the construct of social competence will be defined, and current conceptualizations from the developmental and behavioral literatures respectively will be explored. An exploratory model of social interaction will then be proposed,

and examined scientifically.

Social Competence

As a natural outgrowth of the examination and quantification of children's social interactions, differences in the quality of peer relations between children became evident. Some children were clearly more liked or accepted than other children, who seemed ignored or rejected. It was found that children who were viewed more positively by social agents such as teachers or peers seemed more likely to succeed in a variety of contexts (Hartup, 1983). It became important from a clinical perspective to identify what specific skills formed the basis of socially competent behavior, so that children with skills deficits could be helped. However, defining and measuring social competence became a complicated issue in and of itself.

Social competence has been defined as "a summary term which reflects a judgement about the general quality of individuals' performances in given social situations" (Hops, 1983, p. 3). The present study has adopted that definition of social competence and used several of the validation agents to be discussed. In all measures of social competence, someone is making a judgement about the quality of social response. Almost all measures of social competence, including those that rank the frequency of certain behaviors, reveal a trait-oriented

perspective in that a single competence score is usually obtained from a pool of items representative of a common domain of interpersonal situations. However, some measures do look more specifically at situational behaviors than others (McFall, 1982). The most frequently used validation measures of social competence with children include teacher ratings, peer ratings and to a lesser extent, self ratings. Use of role playing tests with confederates and observation in pre-structured situations seem to be used less with children than with adults (Hartup, 1983).

Ratings of social competence by teachers are most frequently compilations of items describing social behaviors to which a teacher rates how frequently a child emits a behavior or how well the item describes a child. Peer ratings use a variety of formats in which children nominate popular, neglected and/or rejected peers (Gresham, 1981). A third validation agent in children is self-evaluation of competence. Both peer and teacher ratings have been found to have long-term predictive validity in discriminating subjects at risk for psychological difficulties. However, peer and teacher ratings do not always agree and measure independent dimensions of social competence. Peer ratings have been factor analyzed and seem to measure likeability and acceptance by the peer group. Teacher judgements seem to correlate most highly with the total amount of positive social behavior as measured by direct observation in natural

settings (Hartup, 1983; Greenwood, Todd, Hops & Walker, 1982). Although research suggests that self-perceptions of social competence influence inter-personal behavior in conflict and non-conflict situations, little information is known about the accuracy of self-perception in relation to the assessments of other social validation agents (Wheeler & Ladd, 1982). Researchers conclude that multiple measures of competence are necessary in social skills studies because of the unique variation contributed by the assessments of each validation agent (Hartup, 1983).

Developmental Conceptualizations of Social Interaction

Using systematic observation and descriptive techniques, the developmental study of children's social interactions has delineated a loose set of "norms" regarding the emergence of social behavior in childhood. The beginnings of peer relationships manifest in infancy. During the first three months of life, the infant attends to mostly his or her mother. By the age of two or three months, babies orient to the movements of other infants, and orient to other babies' cries by five months. Peer exposure has been shown to result in gradual increases in the quantity, complexity, and degree of social engagement in infants of less than one year. Although much infant play is object centered, infants are interested in mimicking and taking turns with each other (Hartup, 1978). Interactive components emerge in a systematic sequence marked by a

progression of looking, touching, reaching, and eventually coordinated social actions (Hartup, 1983).

Studies of the social interactions of 1½ and 2 year olds document the emergence of more complex social interchanges. Reciprocal and complimentary actions in play emerge late in the second year of life as children commence playing roles such as the chaser and chased, or giver and receiver (Hartup, 1978). Social interaction at this age is primarily dyadic, with increases in play initiations and terminations centering around play materials. Smiling, touching, and vocalizing can be seen in peer interactions at this age, but are more commonly seen between the mother and the child (Hartup, 1978, 1983).

Between the ages of three and four, social interaction significantly increases in complexity. Four year olds are more adept at giving positive attention, affection, personal acceptance, compliance and sharing than are three year olds (Charlesworth & Hartup, 1967). With increasing age, children participate more readily in cooperative activities and less often in solitary play (Smith & Connolly, 1972). By the age of four, sex differences become more pronounced in choice of partners and play materials (Charlesworth & Hartup, 1967; Hartup, 1978). Preschool children's interactions begin to resemble adult social interactions during this period as evidenced by increased visual attention and speaker listener accommodation. Collaborations in social problem-solving also appear around

four years old, in which children faced with a play or social obstacle will work together to find solutions (Cooper, 1977; Shatz & Gelman, 1973).

Qualitative changes in peer interactions continue to develop with entry into elementary school. Communication skills increase during middle childhood, manifested by increased visual attention during interchanges (Levine & Sutton-Smith, 1977), increased referential communication abilities on role-taking tasks (Kraus & Glucksberg, 1969), and increased use of feedback in problem-solving with other children (Cooper, 1977). Adult mediated rewards differentially affect cooperation, with shared rewards increasing cooperation (Brownell & Hartup, 1981). Between the ages of four and 21, social interaction becomes increasingly complex. However, the developmental acquisition of skills into adolescence and adulthood is less documented. It is known that with increasing age, less frequent simultaneous verbalizations or interruptions occur, and the use of acknowledgments such as signaling that one understands, asking for opinions, and exchanging questions increases (Smith, 1973).

Regarding the ever present impact of development on social interaction, Hartup (1983) emphasizes that the connections between cognitive and social development are not well documented. Although several cognitive/developmental processes have been explored independently, no empirically based models integrating these constructs have been

adequately explored. The following sections will examine research on several independently explored cognitive constructs related to social development, and existing models of social cognition.

Empathy

The first developmental theorist to hypothesize about the relationship of cognitive development to social development was Piaget, who put forth the early conceptualization of empathy as related to perspective-taking abilities (Borke, 1978). Piaget paralleled social development to the cognitive development of the sensorimotor, pre-operational, and operational phases.

In linking these phases to social development, Piaget stated that the child first evolves from an egocentric position in which he or she is unaware of other people's perspectives to a reciprocal social perspective, in which equal value is placed on another individual's point of view. Secondly, as children make the intellectual transition from absolutism to relativism, the child's thinking changes from accepting each cognition as a separate identity to thinking of all concepts relationally. One would then expect the child would be able to formulate sets of ideas about friendships or group norms. Piaget viewed the third stage of intellectual development as harking the beginning of real social relatedness in which a person is capable of empathy.

As one grows from a subjective to an objective perspective, one is then hypothesized to be able to take on the perspective of another and behave in accordance with the consciousness of how others feel.

Piaget's conception of social role-taking has greatly influenced current conceptualizations of empathy. Many social psychologists believe that the capacity to empathize with another person is central to the development of the social self, and is the basis of all social exchange (Cotrell & Dymond, 1949). Thus, the role of empathy as a potential mediating variable in social interaction and subsequent social competence will now be examined.

Piaget suggested through his observations of children that they are primarily egocentric and incapable of empathy. He felt that socially-oriented cognitions appear only after the age of seven or eight when the child begins to realize that each person perceives reality from a different perspective (Borke, 1978, Flavell, 1963). The most frequently cited study used to prove that children were incapable of role perspective-taking behavior or empathy was that of Piaget and Inhelder's mountain experiment (1956). A model representing three mountains was shown to children between the ages of 4 and 12, who were then required to predict how a doll would view these mountains from different perspectives. They found that four and five year olds responded egocentrically by giving their own perceptual perspective. Although the seven year olds were aware of

their own mistakes, they still could not reproduce the doll's view. From 7 to 12 years of age the children could progressively vary the perspective and orient the figure correctly. Piaget and Inhelder concluded that younger children regarded their viewpoint as the only one possible and therefore were egocentric.

A number of researchers attempting to replicate these original findings of perspective role-taking modified the mountain task along several dimensions of complexity. For the purposes of brevity, the combined results demonstrated that the errors Piaget labeled egocentric seemed to be more a function of task complexity and lack of experience with vague perceptual tasks than the ability to take another's perspective (Flavell, Botkin & Fry, 1968; Hoy, 1974; Elliot & Dayton, 1976).

Borke (1978) reviewed a number of studies in which she examined both perspective role-taking and empathic abilities. Using a number of age appropriate tasks, she and her colleagues found that children as young as three or four could display empathic responses and take the role of another's perspective using simple pictures and stories. The current developmental perspective on children's ability to empathize holds that empathy can be seen in simple immediate situations during early childhood, and increases during middle years and adolescence. During these later childhood years, the individual grows increasingly capable of reciprocity, relativity and objectivity in relationships (Borke, 1978).

Because empathy has been seen to correlate with adjustment, its role in pro-social behavior has been hypothesized to be significant. A number of theories predict that higher levels of affective or emotional perspective-taking ability should lead to higher levels of prosocial behavior (Feshbach, 1979; Shantz, 1975). However, evidence of the relationship between perspective-taking abilities and social interaction has been at times contradictory and sparse (Underwood & Moore, 1982). Eisenberg and Lennon (1980) studied children's recognition of appropriate affect and found low correlations with several measures of prosocial behaviors. Kurdek (1978) found a non-significant relationship between perspective-taking and teacher ratings of pro-social behavior.

In a study well-controlled for measurement issues, Denham (1986) used structured social cognitive measures, structured assessments of response to emotions, and observational coding of responses to emotional displays with 27 two and three year olds to measure their relationship between social cognitive abilities, expression of emotion, and prosocial responses to others' emotions. Affective knowledge was significantly related to prosocial behavior in semi-structured situations, and happier affects were also related to the expression of pro-social behaviors. However, affective knowledge was not significantly related to actual behavioral ratings of prosocial behavior or adjustment, which cannot be easily explained.

Social Problem-Solving

A second type of social cognitive ability which has been hypothesized to have a significant relationship to successful social interaction is social problem-solving. Social problem-solving has been defined as a cognitive process which makes available a repertoire of potentially effective response alternatives for dealing with socially problematic situations (D'Zurilla & Goldfried, 1971; Pilchman, 1981). Stages of social problem-solving are hypothesized to include 1) recognition of social situations as requiring relevant action, 2) identifying the potential social consequence of relevant actions and choosing a solution, and 3) assessing the actual outcome of the chosen solution (D'Zurilla & Goldfried, 1971).

Spivack, Platt and Shure (1976) originally developed the concept of interpersonal cognitive problem-solving. They described five skills as crucial to behavioral adjustment, being 1) sensitivity to interpersonal problems, 2) ability to generate alternative solutions to problems, 3) articulating a step by step means necessary to carry out the solution, 4) considering the possible consequence's of one social acts, and 5) appreciating the causes of one's own and others' behaviors, feelings, and motivations (c.f. Kendall & Fishler, 1984). The present investigator notes that skills 1 and 5 appear conceptually quite close to the previously

examined operational definitions of empathy or affective perspective-taking. From a developmental perspective, social problem-solving skills are hypothesized to play a significant role in adjustment in that if one is unable to solve interpersonal problems, one will experience failure in mediating important interpersonal tasks (Kendall & Fischler, 1984).

The role of social problem-solving skills in predicting or mediating adjustment has received some experimental validation. Social problem-solving skills have been found to differentiate between average, acting out, and withdrawn children (Spivack, Platt & Shure, 1976). Social problem-solving skills have also been found to differentiate between normal and "aberrant" school aged children (Richard & Dodge, 1982; Shure & Spivack, 1972), and have differentiated between a number of normal and psychiatrically disturbed populations (Platt & Spivack, 1974; Platt, Siegal & Spivack, 1975). In all of these results, the particular component of means-ends problem solving ability and ability to generate alternative solutions appear to be a moderately predictive factor in adjustment (Kendall & Fischler, 1984).

A criticism of the concept of social problem-solving has been that while social problem-solving skills may play a role in adjustment, there is little evidence to suggest that this relationship is actually present or evident in interpersonal problem-solving behavior. Treatment studies of

socially withdrawn children which attempt to teach or increase social problem-solving skills are often cited as proof of the relationship between cognition and behavior. These studies usually incorporate structured activities and discussion focused on mean-ends problem-solving, generating behavioral alternatives and understanding the consequences of one's social actions. These treatment studies have generally displayed increases in adaptive social behaviors in withdrawn subjects (Spivack & Shure, 1974; Shure, Spivack & Jaeger, 1971). However, a major criticism of these studies continues to be the lack of empirical evidence linking social problem-solving in specific situations to generalized judgements of social competence (Conger & Keane, 1981).

Two studies have recently appeared which have attempted to examine the relationship between social problem-solving and social competence. Kendall and Fischler (1984) assessed the interpersonal cognitive problem-solving skills (ICPS) of 150 two-parent families with children aged six through eleven. Neither parents' nor children's written ICPS scores nor observed problem-solving behaviors were systematically related to either teacher or parent judgements of child adjustment. However, the degree to which parents could help facilitate their children's problem-solving in actual behavior was significantly related to written measures of means-ends problem-solving. The authors conclude that although the role of ICPS skills in

adjustment needs further examination, there is some ecological validity of these measures in production of actual problem-solving behavior.

In addition, Pellegrini (1985) evaluated interpersonal understanding and means-ends problem-solving in fourth to seventh grade children and related these factors to sex, age, I.Q., social class, and multiple dimensions of competence. He hypothesized that changes in interpersonal understanding or social perspective-taking ability and means-ends problem-solving abilities would be significantly related to social adjustment, and that the more mature one's interpersonal understanding, the more effective one's social problem-solving would be. Results indicated that both social cognitive components were significantly related to I.Q., and that interpersonal understanding was significantly related to age and social class. After these status variables were taken into account, the two social cognitive factors still made significant contributions to several competence variables. Interpersonal understanding and means-ends problem-solving were found to be most predictive of positive peer reputation, accounting for 19% of the variance in a multiple regression analyses. The two factors accounted for 8% of the variance in peer rated isolated reputation, 7% in teacher-rated disruptiveness, 8% in poor comprehension, and 6% in performance anxiety. The two factors could not account for significant amounts of variance in peer rated disruptive reputation and

teacher-rated cooperativeness. The author concludes that the links between these factors needs further exploration, particularly with attention to the mutual reciprocity of problem-solving skills and social competence. He notes that although mature social cognitive functioning may underlie the development of social and behavioral competence, it is also possible that positive interaction with teachers and peers facilitates the development of social cognition.

Language Ability

Just as problem-solving abilities relate to peer relationships, children's competence with language also is related to their social relationships. As children develop, their capacity with language is increased, and the impact of I.Q. is a significant factor both in linguistic and social competence. There is no clear theory regarding the interrelationship of these factors, but certain associations have been found. The extent of children's vocabulary and prepositional knowledge affects interchange with peers (Hops, 1983). Field (1981) reported that the selection of playmates across ages or sex appears to be related to the equivalence of language skills. Children match the complexity of verbalizations to their listener using both more and less complicated syntax structures. Four year olds have been shown to use longer and more complex sentences with adults than with other four year olds and less complex utterances with two year olds (Schantz & Gelman, 1973).

The relationship between language skills and social interaction may or may not be significant. Children who score higher on listener vocabulary and knowledge of linguistic concepts also score higher on measures of peer popularity (Hops, 1983). Hops (Personal Communication) also reported that the linguistic development of children appears less significant than the extent to which they spontaneously verbalize in determining social competence. One hypothesis about the interrelationship of linguistic and social competence is that if a child's attempts to communicate with peers are thwarted due to poor linguistic skills, impaired social relationships will result. Alternatively, as noted previously, because children match verbal complexity to the listener, peers may compensate with children who have below average language skills. Clearly, more information is needed about the relationship of these two factors.

Several potentially confounding variables need to be addressed when examining the impact of language on social competence. The impact of intelligence and social class are difficult to tease out in the literature. Academic performance, intelligence and socioeconomic status have all been positively correlated with peer sociometric status (Hartup, 1983). In one study controlled for social class, popular children were significantly brighter than less popular children within each of the four socioeconomic levels tested (Roff, Sells, & Golden, 1972). In another study controlled for intelligence using sixth graders, the higher the socioeconomic status of the father, the more

popular the child was at each level of I.Q. (Grossman & Wrighter, 1948). One can conclude from these findings that intelligence and socioeconomic status are powerful variables in their relationship with measures of social and academic competence.

In summary, the developmental literature has described the emergence of various patterns of social interaction at progressive ages in children, and has put forth several hypotheses regarding the underlying mechanisms which account for this progression. The most salient of these hypothetical processes are social perspective-taking, social problem-solving and overall linguistic or cognitive abilities. As previously noted, these theories often have not been empirically validated in the determination of causality in actual behavior, or their relationship to adjustment or behavior produced has been at times contradictory. An alternative model to the theories put forth by developmental psychology has been the behavioral perspective on social skillfulness and interaction.

Behavioral Conceptualizations of Social Interaction

Within the behavioral literature, social interaction is discussed within the context of social skillfulness. Social skills are specific, observable units of behavior which are the building blocks of the individual's overall performance in each interpersonal situation. In certain research

paradigms, social skills are assumed to be a general response pattern which will be performed at the same level in a number of social situations (Greenwood, Todd, Hops & Walker, 1982). In other research paradigms, social skills are viewed as situation specific. No assumptions are made that these skills will generally be used across situations, nor that any one behavior is a "social skill" in a particular given interchange (D'Zurilla & Goldfried, 1971). Each of these paradigms retains particular limitations and methodological problems (McFall, 1982), but for the purposes of this dissertation, social skills will be viewed as the specific abilities that enable a person to perform competently at particular social tasks.

The social skills literature has not advanced a comprehensive model of what social skills are necessary at any point in childhood to be socially competent. It has examined ways to increase peer popularity, acceptance and social competence through remediation of particular skills deficits which have been correlated with social difficulties. Prosocial behaviors which have been positively correlated with acceptance among young children include the frequency in which children initiate play contacts (Abromovitch, 1976; Hartup, Glazer, & Charlesworth, 1967; receiving attention from others (Vaughn & Waters, 1980), engaging in neutral interactions (Masters & Furman, 1981), and complying with group norms (Moore, 1967). Peer acceptance within elementary school age children has also

been found to correlate with outgoing behavior (Bonney & Powell, 1953), expressing kindness to peers (Smith, 1950), use of help-giving (Ladd & Oden, 1979), and acceptance of others (Reese, 1961).

Social skills treatment packages usually identify socially isolated children and engage them in treatments using modeling, coaching, and rehearsal of social behaviors, problem-solving and role playing with trained confederates, or group reinforcement procedures. The target behaviors for intervention are typically the behaviors which have been previously correlated with social competence. Three social skills treatment studies will now be cited which are illustrative of the behavioral conceptualization of social skills.

Greenwood, Todd, Walker and Hops (1982) compared the behaviors of low rate to middle and high rate interactors. Low rate children were deficient in behaviors such as initiating contact with peers, responding to peer initiations, and overall verbal output. Increases in overall interaction rate in low responsive children were facilitated using modeling, coaching and rehearsal. Bornstein, Bellack and Hersen (1977) used instructions, feedback and rehearsal to increase assertive behaviors in eight children. Behaviors which typified inadequate performance included insufficient eye contact, inaudible speech, short or quick verbalizations, and an inability to make requests. As a function of treatment, children

increased in appropriate behaviors and decreased in inappropriate behaviors. Ladd (1981) noted increases in sociometric status and social interaction rate with children using instructions, rehearsal and feedback. He trained children in three verbal skills, asking questions, leading play initiations, and offering support to peers.

The advantage of the behavioral perspective is the relative success it has experienced in increasing the social relatedness of children previously socially isolated or rejected. With its focus on specific behaviors, it has not required extensive hypotheses about underlying processes which may or may not be modifiable. It has been able to identify specific behaviors which account for social interaction rate and judgements of competence in particular social settings. Limitations of this model have been noted to be that although judgements of social competence cannot be made without behavior, behavior alone does not lead to these judgements without some social cognition of when and how to use them (McFall, 1982). Neither does the behavioral model account for inevitable increases in the quality of behavior. For instance, a pro-social action produced by a first grader will not be viewed in the same way if produced by a sixth grader. Additionally, although many discrete play behaviors have been taught and increased in particular situations, simply training these behaviors has not always resulted in the expected long term social gains (Hartup, 1983). Several behavioral researchers have suggested that these findings may reflect the inadequate integration of

developmental data into formulations of social skillfulness (McFall, 1982; Morrison & Bellack, 1983). Specifically, they suggest that both the social perception abilities and emotional state of the person at the time of interaction have been largely ignored in the behavioral literature, which may account for the only moderate long-term treatment gains frequently documented in treatment studies. Although several models have been proposed to integrate the situation specificity of social skills and trait factors, these models have not been empirically validated. These models will now be reviewed, and parallels to empirical data will be drawn when possible.

Models Attempting to Integrate Cognitive/ Developmental and Behavioral Factors

Several models have been proposed which attempt to address the multi-level contributions of cognitive/developmental processes and situation-specific variables such as varying contingencies in different social settings. These models are inherently difficult to validate, given the current methodological limitations in quantifying both cognitive processes and social interchanges as they occur in vivo. However, each model receives some support from prior research, and will now be explored.

One of the earliest models proposed to address the multi-level contributions of individual and situational

variables was by Mischel (1973). He suggested that the study of individual behavior in social situations use five basic units. These units are:

1. cognitive and behavioral construction competencies; meaning repertoires of organized behaviors and cognitive abilities.

2. encoding strategies and personal constructs; referring to the ability to perceive social cues and organize experience.

3. behavior outcome and stimulus outcome expectancies; pertaining to one's beliefs or anticipation of the consequences of a given social action.

4. subjective stimulus values; referring to the perceived value of an action for a particular individual.

5. self regulatory systems and plans; pertaining to the adoption of contingency rules which guide behavior.

In comparing the current literature to this framework, repertoires of social competencies would include social problem-solving, verbal skills and other behavioral repertoires. Encoding strategies have been explored under the labels of intention cue detection skills, empathy and interpersonal understanding. Expectancy of behavior outcome is similar to the anticipation of success or failure in social situations and its impact on behavior. Subjective stimulus values might be congruent with current data noting that the meaning or value of certain social behaviors might vary across cultures, class or even intra-psychically.

Finally, Mischel's description of self-regulatory mechanisms seems to parallel the large body of research done on social decision making, knowledge of and adherence to social convention and level of morality. These comparisons are made in order to highlight ways in which heretofore non-integrated areas of research may be compiled to form more unified theories.

Several other newly-proposed models also integrate multiple levels of behavior and cognitive processes, and are conceptually similar enough to past research that various pieces of the literature provide support on different levels. Selman (1980) and his colleagues have explored social knowledge in terms of people's conceptions of others, close friendships, and peer group relationships. It is hypothesized in Selman's model of social cognition that developmental gains in social perspective-taking ability provide the basis of advances in the understanding of interaction between people, friendships and groups.

Recently, Selman and his colleagues (Selman, Beardslee, Schultz, Krupa, & Poderefsky, 1986) proposed a new model and measurement which integrates functional components with perspective-taking. The model is described as follows:

1. Definition of the problem: This level examines the relationship context in which a subject places a specific problem, or how the subject frames problems between people. A functional analysis would measure the range of responses from a self-referenced awareness to a realization of the mutuality of interpersonal problems.

2. Action taken. This issue focuses on the action to be taken once a problem is defined. A functional analysis would measure the form of strategies that the subject suggests to deal with another person in the particular context of the dilemma. Again, responses might range from impulsive individual action to collaboration with a significant other.

3. Justification and consequences of the strategy. This level refers to how a subject considers the consequences of the solution proposed, including whether these consequences would affect only oneself or the interrelationship between two people.

4. Complexity of feelings expressed. This aspect focuses on the effect of the action taken on feelings. It would examine the level of concern ranging from a lack of feeling for others to the expression of concern of complex, multiple, or changing feelings in both interactors.

Selman et al. (1986) suggest the use of the Interpersonal Negotiation Strategies Interview (INS) in examining the current model. In addition to integrating previous work done on levels of interpersonal understanding, this model attempts to quantify the sequence in which social decisions are made.

Oden, Herzberger, Mangione, and Wheeler (1984) propose a model of levels of social interactive process that seem amenable to path analysis methodologies, and themselves suggest that observational and sociometric observations be

used in the context of meaningful play activities. Levels at which peer interaction must be examined are hypothesized to be the peer interactional context, the structure or organization of interactions, and social behavioral context. Each level will now be examined more specifically.

1. Peer interactional context. Oden and his colleagues note that children's ideas of what constitutes a relevant response differ according to their perception of the purpose of a given peer interactional situation or context. Factors that members additionally bring to a group context include status and role characteristics such as age, gender, race social class and appearance. Definitions and expectations of the interactional context would then be expected to affect the nature and course of interactions in this model.

2. Structure or organization. Oden and his colleagues posit that a necessary and sufficient condition for relationships among friends is a structure that allows each member of the relationship to participate. They note that concepts previously used to examine the organization of actions of members have been complementarity-reciprocity, direct reciprocity and mutuality, and developmental processes. Within the factor of structure or organization, these three constructs may be thought of as levels. In interactional situations in which each member is acting to facilitate, support or not contrain the different interests or goals of the peer, the successful exchange process focuses on the difference between individuals.

Complementarity-reciprocity refers to the pattern of developing a cooperative relationship in which children share interest. In direct reciprocity and mutuality, partners have a common goal and find ways in which to act together to facilitate that goal. The exchange process and coordination between partners is the pattern in this situation. The third construct included in this level includes developmental processes, not of the individual capabilities of the child, but of the factors pertaining to the development and longevity of the relationship.

Briefly, Oden and his colleagues suggest that the developmental factors of a relationship which must be considered are five-fold. The first development and maintenance factor to be considered is proximity, in that arrangements must be made to interact. For children's relationships, this dimension would bring in important information about parents' support of friendships and social skills frequently ignored in the literature, since parents do control access to peers at young ages. Secondly, the frequency of interaction is an important dimension to be considered, in that interaction must be frequent enough to construct and maintain a relationship. Thirdly, sufficient attraction, likeability, or positive affect must be maintained in the relationship, and strategies to minimize negative affect must be mutually developed. Fourthly, an adequate communication system must be developed between partners in order to maintain a relationship. One is

reminded here of studies of listener accomodation in children. Perhaps an individual's communication abilities are less important than the process by which both peers can strike a mutual communication pattern. Fifthly, Oden and his colleagues suggest that necessary and appropriate social cognition abilities such as role taking, social problem-solving and information processing are necessary to gain knowledge of one another and coordinate actions. Again, it may be that no absolute levels of these abilities determine a successful relationship, but the matching in the relationship is most important.

The third factor that Oden and his colleagues include in the model of social developmental processes is the social behavioral content. Given that relationships retain a social interactional context and structure, behavioral content would include observable behavioral actions and response clusters found in a variety of social interactions and relationships.

This model seems to integrate a number of salient points made in the current review. One can see that on each level, data exist to support its relationship to social interaction. Findings regarding the reciprocity of peer exchanges, perspective-taking, demographic factors, parental influences, social problem-solving, adherence to social convention and production of actual behavior can be plugged in at various levels and have all been explored and individually connected to social competence or successful

interaction. This model also makes important points that not only do children develop intra-psychically, but that relationships have a mutuality and developmental course.

Statement of the Problem

In an attempt to integrate previously independently-studied areas of developmental and behavioral research, this dissertation explores the relative contribution of traditional developmental constructs to behaviorally based aspects of social competence. Each of the developmental constructs examined had been previously documented to have a significant relationship with social adjustment, but had not been explored as factors in combination contributing to several independent dimensions of social competence.

After careful review of the literature, three cognitive or developmental processes emerged as most salient. Empathy or social perspective-taking, social problem-solving, and linguistic ability each were separately demonstrated to have a significant relationship to some aspect of social competence. In addition, the relationship between interpersonal understanding and means-ends problem-solving in combination was demonstrated to be somewhat predictive of social competence. Thus, it is hypothesized that these constructs in addition to linguistic achievement will contribute a significant amount of variance to social competence.

In relation to the models previously reviewed, this study adopts a trait model of social cognition, with the underlying assumption that the cognitive/developmental processes of social perspective-taking, empathy, and

linguistic achievement mediate success in the social situation. It is hypothesized that the greater capacity a child has in each of these areas, the more positively viewed he or she will be by peers, teachers and self. Although this study can not infer causality, it does examine the predictive value of these previously non-integrated constructs in relation to social competence. It also includes a measure of socioeconomic status as a predictor variable to control for the previously documented impact of SES on social and academic measures (Hartup, 1983)

This dissertation therefore hypothesizes that the socially successful or competent child is able to:

- distinguish emotions accurately in others and respond to others' social perspective (empathy);
- generate a flexible set of behaviors relevant to the interpersonal situation encountered (social problem-solving); and
- accurately communicate with peers (linguistic achievement) at higher levels than less competent peers.

It is assumed that these three cognitive developmental processes bear a significant relationship to all aspects of social competence across specific situations, and will account for significant amounts of variance across dimensions as measured by teacher, peer and self ratings. It is further hypothesized that the three factors differentially contribute to various dimensions of

social competence, in that the order of contribution differs across teacher, self and peer ratings.

Based on the previously reviewed data regarding the independence of judgements by teachers and peers, it is predicted that the differences in order of contribution to social competence among developmental variables will be as follows:

- teacher ratings will respectively receive significant contributions from linguistic achievement, social problem-solving and empathy;
- peer ratings will respectively receive significant contributions from social problem-solving, empathy and linguistic achievement;
- self ratings will respectively receive significant contributions from empathy, social problem-solving and linguistic achievement.

Given the independence of teacher, peer and possibly even self judgements, it is reasoned that teachers, peers and oneself would have different criteria for making social judgements. Based on the data that teacher judgements are most predictive of actual social interaction rate (Greenwood, Todd, Walker & Hops, 1982), it is reasoned that their basis of judgement would be related to verbal skills and observed problem-solving, and that a child's empathic skills might not be as salient in their position of observation.

Based on the data regarding increasing popularity by increasing specific skills (Hartup, 1983), it is

reasoned that peer judgements would be positively related to one's social problem-solving abilities. Given the data on the importance of mutuality in the play relationship (Hartup, 1983), it is reasoned that empathic capabilities would next be related to positive social judgements. Given the data on the listener accomodation which occurs between peers (Hops,1983), it is not expected that linguistic skills would be the primary relational factor to positive peer reports.

Little data are available on the relationship of self-efficacy to the developmental constructs being examined, but it is reasoned that one's increased sense of self-efficacy might relate to one's accuracy of perceptions in social situations of feedback from others, one's actual social problem-solving abilities and one's capacity to communicate effectively.

Method

Subjects

Subjects in this study were 102 third-graders whose parents permitted their participation from schools volunteering their pupils. Ninety-two subjects were obtained from public schools in Rhode Island and Southern Massachusetts, and 10 subjects were obtained from an inner-city parochial school in Rhode Island. Third grade students were chosen for the study because of the greater stability of cognitive and sociometric measures at this age (Wheeler & Ladd, 1982) and the presence of more developed or delineated cognitive processes than at younger ages (Hartup, 1983). Subjects ranged in age between nine and ten years old.

Students with known physical or medical diagnoses were not excluded from the testing sessions if their parents consented to participation. However, their protocols were excluded from the data analysis. Only two protocols were excluded from the original pool of 104 children tested.

According to U.S. Census data (1981), approximately 66% of the Rhode Island population lives in urban and urban-extended areas and 34% live in rural areas. In this sample, 60% of the children attended schools located in urban or urban-extended areas, and 40% attended schools located in rural areas.

Socioeconomic status was judged by parental occupation using the guidelines by Hollingshead and was compared to U.S. Census data (1981) (See Tables 1 and 2). Sample employment characteristics were similar to U.S. Census breakdowns for heads of households, with the greatest percentage of parents occupying either blue or white collar jobs.

Table 1

Sample Characteristics using Hollingshead Two Factor Index of Social Position

Occupation	Sample Percentage	N
1	2%	2
2	8%	8
3	11%	11
4	18%	18
5	23%	23
6	18%	18
7	20%	22
		N=102

Occupational Categories:

- 1) Executives and managers of large concerns, major professionals.
- 2) Managers and proprietors of medium concerns, minor professionals.
- 3) Administrative personnel of large concerns, owners of small businesses, semi-professionals.
- 4) Owners of little businesses, clerical and sales workers, technicians.
- 5) Skilled workers.
- 6) Semi-skilled workers.
- 7) Unskilled workers.

Table 2

Sample Comparison to U.S. Census Data

	% Distribution U.S. Census	% Distribution Sample	N
Not in labor force	28.8	17.6	18
Unemployed	5.0	2.0	2
White Collar	33.8	36.3	37
Blue Collar	23.2	36.3	37
Farm Workers	1.9	0.0	0
Service Workers	6.5	7.8	8

Assessment Measures

Linguistic Competence. The Cognitive Abilities Test (Thorndike, Hagen & Lorge, 1978) is a revision of the Lorge Thorndike Intelligence Tests, and has three forms: Primary I for kindergarten through Grade One, Primary II for Grades Two and Three, and a Multi-level edition for Grades Three through Twelve. It is designed for small group administration, and consists of verbal and quantitative subtests.

The present study used the Verbal scale of the Multi-level form of the Cogat . The Verbal Scale included portions measuring vocabulary, sentence completion, verbal classification, and verbal analogies, and yielded one overall Verbal achievement score. The items contained in this scale are similar to other measures of verbal ability in both form and content.

The Cogat was administered according to standardized instructions using paced oral subtest by subtest directions. Practice sample items were administered according to standardized format, and took approximately 35 minutes to administer.

According to information provided by the test authors, internal consistency estimates for this instrument are all around .90 (N=300) at each grade level. Parallel forms test-retest reliabilities over 13 months were .81 for students tested in the first grade (N=300). Concurrent validity was established with the Iowa Test of Basic Skills for Grades 3-8, yielding correlations of .80 to .85 for the verbal battery (N=500 per grade level). Median correlations with the Stanford Binet Verbal Scales were .77 (N=300). The normative sample of Forms I and II included 5000 subjects in each of Grades 1, 2, 3, and 4, and were drawn from a stratified sample. The Multi-level edition was standardized in 180,000 students in 40 states.

Empathy. The Index of Empathy (Bryant, 1982) was used to assess social sensitivity. The purpose of this scale is to measure empathy according to the structural framework provided by Mehrabian and Epstein (1972). Specifically, empathy or social responsiveness is conceptualized as a vicarious emotional response to the perceived emotional experience of others. Since the present investigator sought to examine the relationship between responses to the

perceived emotional states of others and social competence, the concepts being explored are congruent. This measure was developed as a downward extension of the already standardized Adult Empathy Scale (Mehrabian & Epstein, 1972).

The Index of Empathy is administered using pencil and paper format, and consists of 22 items to which the child answers yes or no. For instance, a child would respond yes or no to an item like "Seeing a girl who is crying makes me feel like crying." To compute the total empathy score, the point value of each yes/no item is tabulated, and a sum of the 22 items is obtained (one point per empathic response). (See Appendix I).

Information provided by the author indicates that test-retest reliability at two week intervals using Spearman rho correlations was .74 for first graders (N=53), .81 for fourth graders (N=108), and .83 for adolescents (N=80). No internal consistency data are available.

This scale was developed on 56 first graders, 115 fourth graders, and 87 seventh graders. Convergent validity has been established with the Adult Empathy Scale (Mehrabian & Epstein, 1972) ($r=.76$; $N=85$) by administering both measures to the seventh grade sample.

Non-significant correlations were found between the Index of Empathy and measures of reading achievement for fourth graders ($r=.17$, n.s. $N=84$) and social desirability ($r=.08$, n.s. $N=113$), providing evidence that the measure is

not confounded by these elements. Additional evidence of construct validity is provided by this measure's significantly negative correlations with aggression in male subjects ($r = -.45$, $p \leq .05$, $N = 52$). A factor analysis completed by the author reported ambiguous findings (Bryant, Personal Communication). A principal components analysis completed by this investigator yielded similar results (See Appendix II). Six principal components with eigenvectors greater than .30 were identified, accounting for 62% of the variance in the measure. However, in perusing the items grouped together in the analysis, no clear identification or interpretation of the groupings seemed obvious.

Social Problem-Solving. The Means-Ends Problem-Solving Procedure (MEPS) by Platt and Spivack (1975) measures the extent to which a child is capable of conceptualizing appropriate and effective means to solve interpersonal problems. This conceptualization is congruent with the present study's goals of assessing to what degree a child can generate solutions to social events. The MEPS is a research instrument which has consistently differentiated between groups of adjusted and disturbed pre-adolescents and teenagers (See Appendix III).

The MEPS includes three stories with a beginning and an end to each. The student is asked to provide a middle to each story. The stories are then scored for the number of instrumental acts which enable the hero/heroine to reach the stated goal. Scores are then summed.

Internal consistency estimates of the MEPS range from .80 to .89 (N=144). Test-retest reliability estimates range from .59 to .64 (N=83) over a four month period.

Within the present study, stories were scored for the number of instrumental acts and obstacles overcome according to the authors' guidelines. As recommended by the authors, each protocol was independently scored by the present investigator and a trained graduate student, Inter-rater reliability was .81.

Teacher Ratings of Social Competence. The Program for Establishing Effective Relationships (PEERS) is a comprehensive assessment and treatment system designed to identify children with deficient social skills (Hops, Fleischman, Guild, Payne, Street, Walker & Greenwood, 1978). The package includes a teacher rating scale called the Social Interaction Rating Scale (SIRS). The SIRS is a seven point Likert-type scale which rates positive social actions found to be significantly related to children's actual rate of social interaction (Hops & Greenwood, 1981). A typical item is "Spontaneously works with peers on projects in class" to which the teacher rates how descriptive the statement is of a particular child. The ratings are then summed (See Appendix IV).

The SIRS was developed on approximately 1000 elementary school children. A score of 28 or less on the 8 item

ratings scale indicates serious social skill deficits. Items chosen for inclusion on the SIRS discriminated between socially unskilled and normal children at better than 90% as validated by observational indices (Hops & Greenwood, 1981). Each item correlates significantly with actual observed time spent in social interaction for the normative population (Hops & Greenwood, 1981). Hops and Greenwood (1981) also report that the SIRS is significantly correlated with sociometric and other teacher ratings of popularity and acceptance. Reliability information is not available from the authors. An estimate of internal consistency was calculated for the present sample using Cronbach's Alpha and was found to be .87.

Sociometric Judgements of Social Competence. Sociometric indices provide estimates of children's popularity and acceptance within their own peer group, and are generally viewed as measuring a different aspect of social competence than teacher ratings (Hartup, 1983). Sociometric measures are limited somewhat by their low reliability in pre-schoolers and moderate reliability in elementary school children (Hops & Greenwood, 1981). However, scales which have circumvented these problems are ranking and roster procedures. The Ranking and Roster procedure used by Asher and Oden (1977) seemed especially suited for use in the present study. This procedure uses a rating scale in which the name of each child in a given classroom is listed. The

student then rates on a five point Likert-type scale how much he or she would like to play with each listed student. The play rating for each child is thus based on the average ratings a child receives from all classmates. In order to place equal emphasis on same sex and cross-sex ratings, a scoring system which placed equal weight on the same-sex and cross-sex ratings which was previously used in the literature was again used. Thus, the total sociometric rating equalled:

$$\frac{\text{Mean Rating (Same Sex)} + \text{Mean Rating (Cross Sex)}}{2}$$

2

Roster and ranking procedures have been highly correlated with best friends' nominations, $r(110) = .63, p \leq .01$ (Oden & Asher, 1977). Test-retest reliability was .82 ($N=110$) for this particular measure and is congruent with reported reliabilities for similar rating and roster sociometrics (Lorber, 1970) (See Appendix V).

Self Judgements of Social Competence. The Children's Self-Efficacy for Peer Interaction Scale (CSPI) was developed by Wheeler and Ladd (1982) to measure third through fifth graders perceptions of their own social abilities. It is a 22 item questionnaire using a four point Likert-type scale on which the child rates an item from very hard to very easy. Higher ratings indicate increased self-efficacy. A sample item is "A kid cuts in front of you in line. Telling the kid not to cut in is _____ for you."

Self-efficacy is defined in this measure as the belief that one can successfully perform behavior required to produce desired outcome. There is little data on the relationship between self, peer and teacher judgements, which the present study will also address using this measure (See Appendix VI).

Internal consistency using Cronbach's Alpha indicated a value of .85 (N=120) for the total scale. Test-retest reliability at two weeks was .86 for third, fourth and fifth graders (N=86).

The CSPI received a significant rating with teacher ratings of self-efficacy ($r=.67$, $N=107$). As expected, there was no correlation between the CSPI and academic self-esteem. The CSPI was factor-analyzed by the authors (Wheeler & Ladd, 1982), and found to contain two discrete factors related to conflict and non-conflict situations. Thus, two separate scores, self-efficacy in conflict situations and self efficacy in non-conflict situations, can be obtained by tabulating the items corresponding to each factor. An analysis of results was included in this dissertation using these scores.

Procedure

Commencement of this study was approved by the University of Rhode Island's Institutional Review Board which protects the rights of human subjects. After approval

from the IRB was obtained, schools in Providence, Kent, and Washington counties in Rhode Island and in Southeastern Massachusetts were contacted to solicit participation. Schools received a cover letter, brief abstract of the study, and sample informed consent forms. In schools volunteering to participate, approval was obtained from the school principal, School Board , and teachers. After this approval was obtained, teachers sent home an introductory letter and informed consent form with the children (See Appendix VII).

After informed consents were obtained, children with parental permission to participate were tested in two 45 minute sessions. At the start of testing, children were informed by the administrators that participation was entirely voluntary and that they could stop their participation and return to their regular activities at any time. All subjects who began testing went on to complete testing.

Five brief pencil and paper measures were then administered in a group format by a trained graduate student or by the investigator. On the first day of testing, a linguistic achievement test was administered (Cogat). On the second day of testing, four brief pencil and paper surveys were administered in the following order: social self-efficacy (CSPI); social sensitivity (Index of Empathy); sociometric status (peer rating); and social problem-solving (MEPS). After administration of the assessment instruments was completed on the second session, children were allowed

to ask questions about what had occurred and the purpose of the study was briefly explained to them.

Only one testing session occurred per day per classroom, and testing sessions for each classroom occurred no more than two days apart. Testing was administered at three schools in the Fall, at two schools in the Winter, and at one school in the Spring. This time span could not be avoided due to the difficulty in locating schools which would consent to participate.

Classroom teachers completed an informed consent form (See Appendix VIII) and the brief teacher rating of social competence for each student participant. Both teacher and student test packets had a cover sheet on which the student's name appeared. After completion of the measures, a numerical code was substituted on all test materials and the cover sheets were destroyed. A parent information sheet was completed for each child by the investigator or trained graduate students on the basis of information available on school records or data cards, as previously noted in all informed consent forms to school systems and parents (See Appendix IX).

After scoring of the measures was completed, a summary and thank you letter was sent to parents. A feedback session was conducted at each school with the teacher and principal (See Appendix X).

Results

Multiple Regression Analyses

The hypotheses being tested in the present study are that the cognitive developmental processes of linguistic achievement, social problem-solving, and social perspective-taking significantly contribute to social competence as judged by teachers, peers and self. It was predicted that:

- teacher ratings would respectively receive significant contributions from linguistic achievement, social problem-solving and empathy;
- peer ratings would respectively receive significant contributions from social problem-solving, empathy and linguistic achievement;
- self ratings would respectively receive significant contributions from empathy, social problem-solving and linguistic achievement.

In order to test these hypotheses, a series of stepwise multiple regression analyses were undertaken in order to examine the extent to which variability in three measures of social competence could be accounted for by measures of language ability, social problem-solving, and empathy. Predictor variables were the Cogat, a measure of linguistic achievement; the MEPS, a measure of social problem-solving; and the Index of Empathy, a measure of social perspective-taking. Socioeconomic status was included as a predictor variable

in order to control for its contribution to academic achievement and other cognitive data. Criterion variables were the SIRS, a teacher rating of social competence; a sociometric peer rating measuring popularity (referred to as PEER); and the CSPI, a measure of self-efficacy in social situations. Because a Fall, Winter and Spring administration of tests occurred across schools at approximately two month intervals, dummy variables indicating time of administration were forced into the analyses at extremely low F levels. This procedure was used to correct for the possible non-linear rate of child development which is a frequent cause of experimental error (Campbell & Stanley, 1963).

Step-wise multiple regression was chosen to analyze the data on the basis of several advantages. Multiple regression is a statistical technique through which one can analyze the relationship between a dependent or criterion variable and a set of independent or predictor variables. It is used to summarize and decompose the linear relationship between variables, or to examine relationships in the population from the examination of sample data. Its advantages as a statistical technique are its usefulness in finding the best linear prediction equation and evaluating its prediction accuracy, controlling for other confounding variables in order to evaluate the contribution of specific variables, and to find structural relations between complex sets of

variables (Nie, Hull, Jenkins, Steinbrenner & Bent, 1970). Its advantage over other multivariate techniques such as canonical correlation is its robustness in tolerating violations of normal distribution and in analyzing data with limited ranges of scores. Although it cannot simultaneously examine the interrelationships between sets of predictor and criterion variables, it has been suggested that such interrelationships can be checked by regressing multiple criterion variables on each predictor variable when several criterion variables are present (Cohen & Cohen, 1983). This "reverse" analysis was actually conducted in this study (See Appendix XI).

There are several ways available to conduct a multiple regression analysis. In the standard stepwise regression method, each variable is treated as if it had been added to the regression equation as a separate step after all other variables had been included. In the hierarchical method, variables are added into the regression equation as separate steps, in an order predetermined by the investigator. These two methods will yield different increments in variance attributable to the independent variables, largely as a function of which variables are entered into the analyses first. Step-wise multiple regression, on the other hand, examines the contribution of each variable at every step, and eliminates redundant variables. By identifying the prediction equation which accounts for the largest percentage of total variance, step-wise multiple regression circumvents the problems

inherent in other decomposition methods (Lindemann, Merenda, & Gold, 1980). RSQ (R Squared) values are obtained and note the amount of variance for which factors account. An F ratio is then calculated to test if the value is significantly different than zero.

Multiple regression analysis assumes that the sample scores for all variables are normally distributed, and that intercorrelations between predictor variables are minimal. When some or all of the predictor variables are highly intercorrelated, an MRA is unreliable or impossible to calculate (a condition called multicollinearity). Additionally, information about the interrelationship of predictor variables is necessary in interpreting variance estimates obtained from the MRA.

Several preliminary statistics were examined prior to interpretation of the multiple regression analyses conducted to ascertain that the data was normally distributed. Means, standard deviations, and ranges for all measures are included in Table 3. Skewness is a statistic that determines the degree to which a distribution of cases approximates the normal curve, and has a value of zero when a distribution is perfectly symmetrical or bell-curved. In the present sample, all skewness values hovered around zero. Kurtosis is a measure of the relative peakedness or flatness of the bell curve defined by the distribution of cases. Values greater than zero indicate a distribution with heavier tails than the normal distribution. In the

present study, all measures received values hovering around zero with the exception of the Cogat. This test received a kurtosis value of 1.01. It was noted that the sample mean equalled 45, although the Cogat is standardized to have a population mean of 50. Thus, the sample mean was five points lower than the standardized mean, perhaps contributing to some flatness in the data. However, MRA is generally viewed as robust enough to tolerate kurtosis values less than 4.0 (Cohen & Cohen, 1983).

Table 3

Means, Standard Deviations, Skew, Kurtosis and Ranges for Four Predictor and Three Criterion Regression Variables

Variable Name	Mean	Standard Deviation	Skewness	Kurtosis	Range
Cogat	44.34	25.12	0.19	-1.01	1.0 - 95.0
IEmp	13.72	3.27	-0.17	-0.38	5.0 - 21.0
MEPS	3.39	1.44	0.73	0.15	1.0 - 7.0
SES	3.12	1.62	0.37	-0.76	1.0 - 7.0
SIRS	39.56	11.43	-0.27	-0.65	12.0 - 63.0
Peer	2.75	0.73	0.56	0.04	1.4 - 5.1
CSPI	30.33	5.4	0.07	-0.44	19.0 - 44.0

Intercorrelations between predictor variables were also examined, and are included in Table 4. Intercorrelations were minimal between all predictor variables (range = $-.017$ - $.271$), with the exception of the correlation between the Cogat and MEPS. These measures received a correlation of $.360$, indicating some degree of shared variance. This intercorrelation is congruent with prior reports of some

shared variance between measures of social problem-solving and intelligence/academic achievement (Pellegrini, 1985). No intercorrelations achieved statistical significance. On the basis of these preliminary findings, it was determined that the basic assumptions of multiple regression techniques had been sufficiently met, and the step-wise multiple regression analyses will now be summarized.

Table 4

Intercorrelations of Five Predictor and Three Criterion Regression Variables

	1.	2.	3.	4.	5.	6.	7.	8.
1.Time	-	.244	.277	.202	.083	.132	-.078	.068
2.SES		-	.254	.131	-.017	.262	.226	-.017
3.Cogat			-	.271	.360	.351	-.112	.052
4.IEmp				-	.060	.232	-.015	-.042
5.MEPS					-	-.088	-.143	.086
6.SIRS						-	-.062	.082
7.Peer							-	-.002
8.CSPI								-

As previously noted, the first step introduced into the regression equations was a time of administration value using reparameterization techniques to create a dummy variable matrix. Dummy variables are used in multiple regression analysis to code a nominal variable and allow one to control for interaction effects such as time of administration. Orthogonal coding was used in the present analyses to create the full rank matrix necessary in running step-wise programs. In orthogonal coding numbers are assigned to represent the categories of the nominal

variables in such a way that subsequent variables are independent of each other. For example, in the present study, a subject would receive three codes; Fall, not Fall (Winter) and not Winter (Spring). The coding for subjects would appear as follows:

	Fall	Winter	Spring
Subject A	1	0	0
(Fall Administration)			
Subject B	0	1	0
(Winter Administration)			
Subject C	0	0	1
(Spring Administration)			

(Ferguson, 1976). Time of administration proved to be a non-significant variable in all analyses.

After time of administration was forced in, the program continued with a stepwise regression format in which optimal step solutions were obtained. Thus, the step-wise order of other variables was not predetermined or hierarchically imposed (BMDP2R, 1985) (See Table 5).

In examining the relationship of the independent variables to teacher ratings of social competence, the Cogat received a significant RSQ value of .147, accounting for approximately 15% of the variance, $F(3,98)=12.94$; $p \leq .05$. The Cogat and MEPS together were found to make a significant contribution to perceptions by teachers of social competence; MEPS: $F(4,97)=7.27$; $p \leq .05$. RSQ values equalled .207, accounting for approximately 21% of the variance. The addition of the Index of Empathy and SES

Table 5

Step-wise Multiple Regression Analyses
of Competence Variables

Step: Independent Variable	R	Multiple RSQ	Change in RSQ	F	df
<u>Teacher Ratings:</u>					
1. Winter	.126	.016	.016	1.63	1,100
2. Spring	.187	.035	.019	1.95	2, 99
3. Cogat	.384	.147	.112	12.94*	3, 98
4. MEPS	.455	.207	.059	7.27*	4, 97
5. Empathy	.470	.221	.014	1.81	5, 96
6. SES	.481	.231	.009	1.20	6, 95
<u>Peer Ratings:</u>					
1. Spring	.080	.006	.006	0.65	1,100
2. Winter	.081	.006	.000	0.02	2, 99
3. SES	.269	.072	.066	6.99*	3, 98
4. Cogat	.311	.096	.024	2.58	4, 97
5. MEPS	.319	.101	.005	0.54	5, 96
<u>Self-Ratings:</u>					
1. Winter	.114	.013	.013	1.34	1,100
2. Spring	.131	.017	.004	0.41	2, 99
3. MEPS	.158	.025	.007	0.78	3, 98
4. Empathy	.168	.028	.003	0.33	4, 97

* $p \leq .05$

in the next two steps resulted in a final RSQ of .231, but were non-significant.

In examining the relationship of the independent variables to peer ratings of social competence, socioeconomic status was the only variable found to contribute a modest but significant amount of variance to the judgements of peers, $F(3,98)=6.99$; $p \leq .05$. Socioeconomic status alone received an RSQ value of .072, accounting for 7% of the variance. The Cogat appeared in the next step, with an RSQ of .096, and was followed by the MEPS, with an RSQ of .101. However, these two factors did not receive significant F ratio values.

In examining the relationship of the independent variables to self-ratings of competence, no significant amount of variance could be accounted for by any factor. Although the MEPS entered in the first iterative step, it only received an RSQ value of .025, accounting for 2% of the variance with a non-significant F ratio value. Empathy entered in the next step, with an RSQ of .028, again with a non-significant F ratio value. Given that the CSPI had been found to factor out a conflict and non-conflict score, the independent variables were then regressed on these two factor scores. Similar non-significant relationships were found between the independent measures and a CSPI conflict score and CSPI non-conflict score. (See Appendix XII) for a summary of findings).

In brief summary of the basic series of MRA's conducted, it was found that:

1. The order of contribution to teacher ratings by the independent variables was the Cogat, MEPS, Index of Empathy, and SES. Of these variables, only the Cogat and MEPS proved to make significant contributions.

2. The order of contribution to peer ratings by the independent variables was SES, the Cogat, and the MEPS. Of these variables, only SES proved to make a mildly significant contribution.

3. The order of contributions to self-ratings by the independent variables was the MEPS and Index of Empathy. Of these variables, none made a significant contribution.

4. Time of administration did not make a significant contribution to any of the present regression analyses, and at no time contributed more than 3% of the total variance.

5. Although the Index of Empathy at times contributed a 1-2% increase in variance in the stepwise regressions, its contribution did not reach significance in any of the analyses.

Intercorrelation of the Dependent Variables

In order to examine the interrelationships between teacher, peer and self-ratings, Pearson correlation coefficients were calculated. Interrelationships between measures were unexpectedly low, and no intercorrelations achieved significance. Inverse correlations between peer ratings and the other two measures were expected because a

low score on the peer rating indicates a greater level of competence, whereas a high score on both the teacher and self-ratings indicates greater levels of competence. Teacher ratings correlated with peer ratings at $-.062$, and with self-ratings at $.082$. Peer ratings and self ratings correlated at $-.002$. Thus, minimal levels of mutual variance were shared between dependent variables. (See Table 4).

Teacher Rating Item Scores as Predictors of Peer Ratings

A post-hoc analysis of the relationship between individual item scores on the teacher rating scale and peer ratings was completed after reviewing the original series of MRA's conducted. It was noted in reviewing these MRA's that the cognitive/developmental variables measured could only account for a significant amount of variance in measures of social competence completed by teachers. In addition, developers of the teacher rating scale state that each item represents a separate and discrete aspect of social behavior highly correlated with actual social interaction rate (Hops, Fleischman, Guild, Payne, Street & Walker, 1978). Given that the independent variable constructs included in this study could not account for a significant amount of variance in determining peer ratings, it was wondered if the behaviorally based items in the teacher rating could. Albeit post-hoc, a stepwise multiple regression analysis was

conducted regressing the eight item scores from the teacher rating on the peer rating (See Table 6).

Individual item scores representing ratings of specific behaviors were found to account for 25% of the variance in determining ratings of peer popularity in the full model ($RSQ=.255$). Entering in the first step was the item "spontaneously works with a peer(s) on projects in class", $RSQ=.116$; $F(1,90)=11.86$; $p \leq .05$. Entering in the second step was the item "spontaneously contributes during a group discussion", $RSQ=.147$; $F(2,89)=3.26$; $p \leq .05$. Entering in the third step was the item "freely takes a leadership role", $RSQ=.190$; $F(3,87)=4.67$; $p \leq .05$. Entering in the fourth step was the item "verbally responds to a child's initiation", $RSQ=.207$; $F(4,86)=2.88$; $p \leq .05$. Entering in the fifth step was the item "engages in long conversations with peers", $RSQ=.246$; $F(5,85)=4.46$; $p \leq .05$. Entering in the sixth and last step was the item "verbally initiates to a peer", $RSQ=.255$; $F(6,84)=1.0$; n.s.. RSQ values for steps one through five achieved significance at the .05 level, and the RSQ value at the sixth step did not. The two items dropping out of the regression equation were "shares laughter with classmates" and "volunteers for show and tell."

It is noteworthy that although individual item scores could account for 25% of the overall variance in determining peer ratings, the intercorrelation of composite scores between measures was only $-.06$, a finding which will be further detailed in the Discussion section.

Table 6

Stepwise Multiple Regression of SIRS Items on Peer Ratings

Step:Independent Variable	R	Multiple RSQ	Change in RSQ	F	df
1. Item 7	.341	.116	.116	11.86*	1,90
2. Item 4	.384	.147	.031	3.26*	2,89
3..Item 6	.436	.190	.042	4.67*	3,88
4. Item 1	.455	.207	.017	2.88*	4,87
5. Item 2	.496	.246	.039	4.46*	5,86
6. Item 8	.505	.255	.008	1.00	6,85

p $\leq$.05

Discussion

The primary purpose of the present study was to examine the relative contribution of empathy, linguistic skills, and social problem-solving to measures of social competence. A secondary goal of the study was to examine the interrelationships between different aspects of social competence as measured by teachers, peer and self, and to explore whether the developmental constructs included in the study made similar or dissimilar contributions to each measure of competence, either in order of significance or magnitude. Certain findings in this study regarding the significance of social problem-solving and linguistic competence were expected. Some anticipated relationships were not obtained. The following discussion of the results will examine information gathered about each developmental construct, the interrelationships of the predictor variables, the interrelationships of competence indicators, and a summary of current conceptualizations of trait models of social skills.

Empathy

As previously noted, the Index of Empathy only contributed 1-2% of the variance in all analyses, and did not make a significant contribution to any of the competence indicators. It was predicted in this study that this measure

of empathy would make a significant contribution to all measures of competence. These null findings add to the already existing conflictual pool of data regarding the relationship of empathy to social adjustment. Although significant results have been found in some prior studies, a lack of relationship has also been reported (Underwood & Moore, 1982).

Studies which heretofore have emphasized the importance of empathy in social adjustment have varied widely in terms of age of the children studied, type of experimental design and analyses conducted, and assessment measures used. These differences make it difficult to interpret across studies. Studies which have concluded that social perception or empathy skills are significantly related to adjustment have typically used between groups designs, where children are divided into groups of normal or average children and some other classification of maladjustment. Significant differences between the social perception skills have then been found between groups (Rothenberg, 1967,1970; Dil, 1972; Emery, 1975).

Another difficulty in interpreting the conflicting findings regarding the significance of empathy relate to the variety of operational definitions of the concept. In response to Piaget's postulation that children in the pre-operational stages of development were not capable of empathic responding, much of the literature has focused on proving that young children were capable of empathic

responding in simple, immediate situations (Borke,1978). In such studies, a distinction was made between affective role-taking, in which one identifies with the emotional perspective of another, and cognitive role-taking, in which one identifies with the conceptual perspective of another (Denham, 1986). In studying the relationship between affective role-taking and observed pro-social behavior in pre-schoolers, Denham (1986) found a correlation of .29 (not significant). However, Denham did find a significant relationship between this measure and measures of affective knowledge in structured role plays and percentage of happy affect displayed. Although on the basis of other data within the study, Denham concludes that affective knowledge is significantly related to expression of pro-social behavior in semi-structured situations, the findings regarding actual behavior emitted are more similar to the lack of relationship between empathy and judgements of competence found in the present study.

The distinction between cognitive and affective perspective-taking ability continues in research with older children and adults, and becomes even more complex as an element of vicarious emotional experience becomes a requisite characteristic of an empathic response. For instance, studies with preschoolers typically define the empathic response as one in which the child can accurately identify sad, happy or angry affects on pictures or models. The measure used in the present study was based on a

conceptualization of empathy as a vicarious emotional response to the perceived emotional experience of others (Bryant, 1982; Mehrabian & Epstein, 1972), which is congruent with conceptualization of empathy as affective role-taking. Although Bryant (1982) was not examining the relationship of empathy to pro-social behavior, she did note that fourth graders in her study appeared to be at an "all-time empathic low" (p.423) compared to both first and seventh graders. In the present study, empathy as defined by Bryant appeared to be an irrelevant factor in peer relations, and may be age related.

Studies with other third and fourth grade populations which have used a conceptualization of empathy as a cognitive social insight skill with no emphasis on emotionality have reported significant relationships. Selman (1980) defines interpersonal understanding as the level of maturity of insights children display in characterizing conceptions of the social world. This definition reflects a conceptualization of empathy which is closer to the Piagetian conception of cognitive role taking abilities. Using this framework, Pellegrini (1985) found that interpersonal understanding provided a significant contribution to one measure of social competence. However, Pellegrini's data tended to examine the joint contribution of means-ends problem-solving and interpersonal understanding together, and he concluded that means-ends problem-solving seemed to make a consistently larger contribution to several measures of competence.

Another study which could be classified as examining the relationship of cognitive social insight skills in children assessed "intention cue detection skills" in kindergarten, second and fourth graders (Dodge, Murphy & Buchsbaum, 1984, p. 163). It was found that children were increasingly able to accurately identify the intentions of other children as they became older, and that popular and average children were more accurate in identifying the intentions of others than socially rejected or neglected children. These unpopular children tended to incorrectly label pro-social actions by other peers as hostile. The tasks included in this study seem most developmentally congruent with studies of preschool children, in which they are requested to label the feelings of others. It may be that the most parsimonious conceptualization of empathy which accounts for the most variance may be one in which decoding skills or accuracy of perception of affect is highlighted.

It may be that in the present study, the conceptualization of empathy used placed too much emphasis on affective role-taking or emotionality. It may also be that conceptualizations of empathy which place increasing emphasis on the vicarious experience of emotion with increasing age may be confounding the model with other constructs. Evidence for complex nature of such conceptualizations is found in the principal components analysis completed on the Index of Empathy which suggested a multi-factor structure (See Appendix II). As such, it

appears that affective role-taking of a highly emotional nature may have less relevance in the social situation than accurate perception of affect. Further examination and clarification of differences between models seems warranted. Future research seems necessary to clarify the developmental progression of accuracy of social perceptions and the developmental progression of vicarious emotional identification with others, and their significance in interpersonal relationships.

Language Achievement

Language achievement proved to be a significant contributor to teacher ratings of social competence, entering as the first predictor accounting for 14% of the variance. It did not make a significant contribution to either sociometric status or self-ratings of social competence. The actual content of the Cogat administered included four portions. On Vocabulary, children were given a word and asked to choose another word which meant the same thing. On Sentence Completion, the children were given sentences with a word missing and asked to choose a word that best completed the sentence. On Verbal Classification, the children were given three words such as verbs and asked to choose the word which goes with them. On Analogies, the children were given two words, and had to find a word that goes with the third word in the same way as the first word goes with the second word.

The current results support the general finding in the literature that the relationship between language skills and social interaction is significant. However, this study did not replicate Hops' (1983) finding that the extent of children's vocabulary and prepositional knowledge correlates with increased peer popularity. A question then remains as to why this study found a relationship between linguistic skills and teacher rated social competence, but not peer popularity.

One hypothesis is that the teacher rating scale used in this study has been found to be most highly correlated with actual rate of social interaction (Hartup, 1983). Hops (Personal Communication) noted that in his studies the extent to which children spontaneously verbalize is more significant in determining social competence than actual linguistic development. It may be that the teachers as observers of behaviors are cueing into the actual amount verbalized which is related to linguistic skill. An alternative hypothesis is that teachers respond more positively to children perceived as brighter, and that the Cogat is measuring more global cognitive abilities.

Intelligence and socioeconomic status have been found to be powerful variables in relationship to measures of competence. In this study, effects of socioeconomic status were controlled. It was also assumed that the Cogat was indeed measuring linguistic achievement rather than an overall intelligence factor to the greatest extent that

these two constructs are currently able to be measured independently. As previously noted, its correlations with other language achievement tests are high, and the verbal factor was found to be significant in analyses of the subtests. However, some correlation is shared with intelligence tests (Thorndike, Hagen, & Lorge, 1978).

One may then question what exactly are the teachers rating on the SIRS. Are they measuring a general, overall competence or specifically social competence? In addition to the developers own validity findings previously reviewed in the Methods section, further content validity is provided by the regression analyses included in this study of the relationship between individual item scores on the SIRS and measure of peer popularity. Although the composite SIRS score did not correlate highly with the peer ratings, behaviorally based item scores accounted for 25% of the variance in the actual peer popularity ratings.

Thus, assuming the the measures used actually represent the constructs discussed, the current findings support that language achievement makes a significant contribution to teacher based ratings of socially competent behavior.

Social Problem-Solving

The present study found a significant relationship between social problem-solving and judgements of social competence by teachers. The Cogat and MEPS together

accounted for approximately 17% of the variance in predicting social competence. Appearing as the second step or contributor to the SIRS, the MEPS provided a 7% increment in variance accounted for independent of the Cogat. These results support the contention that social problem-solving represents a separate entity from more general cognitive ability. However, it did not appear as a significant predictor in peer or self ratings.

The present findings partially support previous findings about the importance of social problem-solving skills. Pellegrini (1985) found that means-ends problem-solving was a significant predictor of positive peer reputation, peer rated isolated reputation, teacher rated disruptiveness, poor comprehension and performance anxiety. Variance estimates for like measures were similar to the present results. Pellegrini also found that MEPS was not predictive of academic competence or peer rated disruptive reputation. The present study replicated findings about teacher rated competence, but did not find a relationship with peer judgements. It is hypothesized that this difference is due to the more finely differentiated analysis used in the Pellegrini study in which separate ratings were given on acceptance, rejection, and disruptiveness dimensions. The present study used one rating system in which higher scores reflected rejection, and lower scores reflected popularity. Although Pellegrini found a relationship between anxiety and the MEPS, the present study

found no such relationship between the MEPS and a measure of self-efficacy. Since none of the predictor variables used in the study could account for any of the variance in the CSPI, it must be concluded that further evaluation of what the CSPI measures is warranted.

Socioeconomic Status

It has been previously documented that social class can be a powerful predictor of acceptance and likeability (Hartup, 1983). Although socioeconomic status did not contribute significantly to teacher or self ratings in the present study, and received a low correlation with the other predictor variables, it was a significant predictor of peer ratings. It is not clear why socioeconomic status would be a significant predictor of social acceptance or likeability. A variety of explanations can be intuitively suggested. Children of higher socioeconomic status may be more attractive to playmates in appearance, clothing or possessions, may be more available to playmates if parents promote proximity or frequency of contact with peers, may be less stressed by environmental factors, or may have a greater fund of knowledge, including social knowledge, available to them. These speculations are only several possible explanations. A significant contribution to the literature would be made by systematically documenting and operationalizing what children of higher socioeconomic status bring to the social situation that places them at

greater advantage.

Interrelationships of the Predictor Variables

As noted in the results section, the relationships between language ability, social problem-solving, empathy and SES were generally low. Socioeconomic status was minimally correlated with cognitive/developmental measures. A more clear interpretation of the Cogat scores was then possible, given the frequent confounding of SES with measures of intelligence or achievement. Empathy was minimally correlated to social problem-solving or language achievement. Social problem-solving was mildly correlated with language achievement, but the intercorrelation did not reach significance. It was concluded that although some shared variance exists between social problem-solving and linguistic achievement, the concepts were adequately independent to be analyzed using multiple regression analysis.

Interrelationships of the Criterion Variables

The current results regarding the minimal correlations between measures of social competence completed by teachers, peers and self supports previous findings which suggest that these are independent dimensions. In fact, the only measure of competence in which the currently examined developmental

constructs could account for any variance were teacher ratings. SES proved to be the only significant predictor of peer ratings and none of the variables could account for self ratings of social efficacy. It was expected that the three cognitive processes detailed would significantly contribute to all ratings, and that the order of contribution might have varied.

In examining the differential contributions of the predictor variables to peer ratings, prior evidence relating acceptance and social class was supported. However, the relationships seen in previous studies between cognitive factors and peer ratings were not found presently. Other studies using separate nomination procedures for categories of social acceptance, rejection, and isolation have found significant relationships with cognitive variables such as means-ends problem-solving (Hartup, 1983; Pellegrini, 1985). The ranking and roster procedure used in this study was chosen to circumvent low reliabilities associated with nomination procedures in which classmates may forget to rank other peers. Some evidence exists that nomination techniques measure a child's choice of high priority playmates or best friends, and that rating scales measure overall acceptability or likeability in the peer group (Hymel & Asher, 1977; Gresham, 1981). It is not clear why cognitive processes such as social problem-solving would affect choices of best friends, but not ratings of likeability. It appears in perusing the data that the most

comprehensive information is obtained using separate nomination procedures for best friends, isolated, rejected and disruptive peers, and that these indeed are independent dimensions not necessarily mediated by common cognitive or developmental processes.

Teacher ratings provided an ample source of data both in relation to developmental constructs and in relation to peer ratings. It is interesting to note at this point that the individual items included on the SIRS teacher rating could account for 25% of the variance in the peer rating, although the correlation between the overall test scores was minimal. This finding has implications for both the use of teacher and peer ratings. First, it supports McFall's (1982) contention that instruments which measure situation-specific responses and then use a compilation score may be undermining their own validity by lumping items into a "trait" model. Although the compilation score of the SIRS bore little correlation to the peer rating, its item scores retained important implications for understanding peer ratings. It also validates the developers' contention that each item represents a different factor or social skill.

Given that each item overwhelmingly appeared to measure a different social skill, one may then tentatively examine what social skills as rated by teachers impacted on peer ratings of likability in this instance. As previously noted in the results section, the three items first entering into

a stepwise regression analysis which did not predetermine order of variables were "spontaneously works with a peer(s) on projects in class; spontaneously contributes during a group discussion; and freely takes a leadership role." It is difficult to imagine that these three items which accounted for 19% of the variance in predicting peer likeability do not reflect some underlying cognitive processes. However, no relationship was found between composite measures of the cognitive developmental variables and the peer rating. Accounting for the next 6% of the variance were the items "verbally responds to a child's initiation; engages in long conversations with peers; and verbally initiates to peers." These items do seem to be more discrete, observable units of behavior congruent with the skills taught in most behavior therapies of social skills deficits. Again, this analysis was completed post-hoc and does not demonstrate causality in any way. It simply highlights the contradictions inherent in both attempting to form a strictly trait-like model of social competence or a purely situation-specific, behavioral model of social competence.

Finally, the issue of self-ratings of social competence must be examined. Neither time of administration, SES, language skills, social problem-solving nor empathy could account for any variance in the prediction of self-judgements of competence. No conclusions can thus be made about the relationship of self-perceptions to social behavior. This sample did not replicate even the modest correlations reported previously between the CSPI and

several peer sociometric and teacher measures of competence (Wheeler & Ladd, 1982). Although it may be upon further study that little relationship exists between self-efficacy and other competence measures, it may also be that the use of composite scores is resulting in a loss of important information. As noted previously, the usage of conflict and non-conflict scores did not result in any further increments in experimental information. Perhaps a more bimodal process is reflected in the data in which "under-estimators" and "overestimators" of their own social competence do not become differentiated in the current regression format used. For instance, one can easily remember peers who always thought that they flunked a test but actually got high grades, or conversely, peers who bragged about their performance but received poor grades. The low correlation found in this study between judgements by several agents may reflect an averaging or cancelling out of these two types of self-efficacy errors. Further examination of these ideas is warranted before any conclusions about the impact of self-efficacy on social behavior is made.

In conclusion, the use of social validation agents to define social competence brings both new sources of information and methodological problems to the research on social interaction. Although teacher and peer ratings appear to measure different dimensions of social competence, their dual inclusion seems a necessary step in current

research. More standardized and conceptually parsimonious measures of both teacher and peer ratings seem vital to resolving the lack of consistent findings regarding what skills contribute to social competence. However, the use of social validation agents seems warranted from several aspects. Social behavior is not a static entity; it is a process between a "giver" and "receiver." The recipient of a particular social response will both judge whether that response is valuable to his or herself, and will either reinforce the response or exit. It has been seen in this study that it is difficult to quantify what contributes to success in the social situation, but ultimately success lies in the interaction between persons. Therefore, the present investigator supports the continued conceptualization of social competence as "a summary term which reflects a judgement about the general quality of individuals' performances in given social situations" (Hops, 1983).

Return to the Original Hypothesis

What can then be said about the impact of cognitive/developmental processes on social competence in summary of the present findings? Given the methodology and analyses used, no statements regarding causality can be made. However, certain relationships between variables seem salient. First, the cognitive/developmental constructs of language achievement and social problem-solving were significant predictors of teacher ratings of social

competence, which in themselves are highly correlated with actual social interaction rate. These constructs appear to measure separate aspects of ability which are important for successful performance in the social situation.

Secondly, one may conclude from this study and other cited studies that the relationship between emotionally laden concepts of affective role-taking or empathy and multiple measures of competence is difficult to document in the middle childhood years. Studies using simpler concepts of empathy in which only the accurate perception of others' emotions is measured find more significant relationships in the peer setting. Thirdly, this study's failure to replicate previously documented relationships between social problem-solving and peer ratings is thought to be a reflection of the peer ranking system used. The particular weakness of this system appeared to be its measurement of a general acceptance factor rather than actual friendships or peer status. Multiple measures of sociometric status including nomination categories for accepted, neglected and rejected children may yield more differentiated results in future studies. Fourthly, this study's failure to find a relationship between all independent variables and a rating of self-efficacy speaks to the inherent and as of yet unresolved difficulties in examining the relationship between one's ideas about performance and actual production of behavior as perceived by others. Although it may be that there is little

correlation between self-perception and both behavior emitted and others' perceptions, it does not make intuitive sense and methodological issues need further clarification.

Lastly, it was noted that individual competence items on the SIRS contributed a great deal of variance to the peer rating used. These results both support cautions about using composite scores when rating behavior and add another dimension to the understanding of peer-rated competence. In this study, evidence supporting the contribution of both developmental and situation-specific factors to attributions of social competence was found in the predictive relationship between SIRS items and peer ratings. These results flow with a current trend seen throughout contemporary psychological literature attempting to formulate more integrated theories of trait and behavior, or person and situation variables.

The data reported in the present study contribute to several of the previously reviewed interactive models of social interaction on various levels. Mischel (1973) suggested that the study of individual social behavior begin with the study of cognitive and behavioral construction competencies. The current data support the inclusion of linguistic and social problem-solving abilities as necessary construction competencies which the successful interactor must master. However, given the high level of unexplained variance in the present competence indicators, these construction capacities seem necessary but not sufficient predictors.

Oden, Herzberger, Mangione, and Wheeler (1984) hypothesized that successful social interaction is a function of the peer interactional context, the structure of interactions, and the social behavioral context. Oden et al. (1984) include status and role characteristics in the level of the peer interactional context. In the present study, the importance of socioeconomic status was highlighted in predicting positive peer relations. Although how socioeconomic status affects peer judgements is not clear, its presence seems potent in the peer interactional context. Regarding the structure of interactions, Oden and colleagues posit that exchange and coordination between peers is the partial basis of successful interaction, and that adequate social cognition abilities must be present to sustain relationships. Again, linguistic and social problem-solving abilities were related to social competence in the present study, and support the importance of the inclusion of developmental factors in multi-level models.

Implications for Future Research

The present study derived a model of social cognition from the existing empirical literature in which it was suggested that successful social interaction is a function of linguistic ability, social problem-solving and empathy. Using correlational techniques, it examined the extent to which these constructs could predict various dimensions of

social competence. Linguistic ability and social problem-solving accounted for a significant amount of variance in teacher judgements of social competence, highlighting the importance of these cognitive variables in the social setting. However, these cognitive factors were not significant predictors of peer or self judgements. In contrast, teacher-completed ratings of the frequency of which children emitted several discrete behaviors did predict a significant amount of variance in peer ratings. While the contribution of social cognition abilities were not discounted in the present study, significant amounts of variance in the social situation were left unexplained. Because certain anticipated relationships between predictor and criterion variables were not found in the present study, their interactive and differential relationships with various aspects of social competence could not be explored as originally proposed.

The major limitations of the present study are typical of both the conceptual and methodological inadequacies which exist in current social interaction research. Chandler (1982) states that the outcome of children's transactions with various aspects of the social environment seems best understood as the interactional products of the current level of the child's cognitive organization and the independently but comparably structured character of social events. Bearison (1982) has termed this interaction as "social knowledge in action." The present study did not

examine "social knowledge in action," but rather, examined a trait model in which it was assumed that such abilities are relatively fixed and could be measured through pencil and paper assessment instruments. Although the instruments used were adequately standardized, one may question both the validity of both the assumptions behind such techniques and the instruments themselves (McFall, 1982).

Additionally, causality cannot be determined from correlational techniques, and more direct manipulation of the experimental factors may lead to a more definitive understanding of the relationships between variables.

Based on comprehensive study of social judgement in children, Turiel (1983) concludes several points related to trait versus situation-specific research of social development. He notes that social cognitive development should not be analyzed in a global fashion, and that individuals' social judgements (akin to social problem-solving) rarely form a unified system. He states that there seem to be domains of social knowledge upon which judgements are made, which may be non-age or development related. Finally, he suggests that structural-age related changes are most likely to be found within very delimited domains of social knowledge. Clearly, comprehensive models of "social knowledge in action" must receive further exploration. McFall (1982) similarly has suggested that the identification of socially competent task performance is a prerequisite step in each social setting to a meaningful

analysis of task performance. He states that the component cognitive, motor and physiological processes necessary for competent task performance can be conducted only in relation to the particular overt behavior that already has been designated as competent. It is thus suggested that factors idiosyncratic to each social situation and more general aspects of social cognition need dual examination as they occur in the natural process of interaction.

Such comprehensive models should integrate the study of cognitive/developmental factors with more situation-specific skills. Future research should examine the interactive nature of cognitive/developmental processes, contextual factors in the social setting, and the production and consequences of actual social behavior in naturalistic settings. Assessment methods should include quantification of abilities, self-report and observational techniques using causal modeling techniques such as path analysis.

Additional research should also focus on the development of better operational definitions of the basic social cognition constructs included in most trait models of social interaction such as empathy and other related concepts. Both paper and pencil assessment instruments and behavioral observation systems need further development of internal and external validity and reliability estimates. Further research is necessary to clarify the sources and significance of differences between judgements made by various external validation agents of social competence such as peers and teachers.

In conclusion, future research must include improved operational definitions of concepts, better standardized assessment techniques, and more fluid methods of examining the interaction of intra- and inter-personal characteristics of social interaction. The combinations of individual characteristics and situation-specific factors must be integrated, as well as the processes of development both within the individual and within the relationship. One may conclude that no one set of cognitive abilities will be found as the perfect predictors of social competence or success. Additionally, the limitations of current assessment measures in examining descriptive characteristics of subjects, emitted behaviors and process variables remain a major stumbling block in formulating definitive models of social interaction. As in most fields of psychological study, every increment in knowledge seems to lead to the realization of the knowledge still to be gained. Perhaps that realization is the most significant finding in the present dissertation.

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Appendix I

Index of Empathy
(Bryant, 1982)

Circle Yes or No.

Yes	No	1.	It makes me mad to see a girl who can't find anyone to play with.
Yes	No	2.	People who hug and kiss in public are silly.
Yes	No	3.	Boys who cry because they are happy are silly.
Yes	No	4.	I really like to watch people open presents, even when I don't get a present myself.
Yes	No	5.	Seeing a boy who is crying makes me feel like crying.
Yes	No	6.	I get upset when I see a girl being hurt.
Yes	No	7.	Even when I don't know why someone else is laughing, I laugh too.
Yes	No	8.	Sometimes I cry when I watch T.V.
Yes	No	9.	Girls who cry because they are happy are silly.
Yes	No	10.	It's hard for me to see why someone else gets upset.
Yes	No	11.	I get upset when I see an animal being hurt.
Yes	No	12.	It makes me mad to see a boy who can't find anyone else to play with.
Yes	No	13.	Some songs make me feel so sad I feel like crying.
Yes	No	14.	I get upset when I see a boy being hurt.
Yes	No	15.	Grownups sometimes cry even when they have nothing to be sad about.
Yes	No	16.	It's silly to treat dogs and cats as though they have feelings like people.
Yes	No	17.	I get mad when I see a classmate pretending to need help from the teacher all the time.
Yes	No	18.	Kids who have no friends probably don't want any.

- Yes No 19. Seeing a girl who is crying makes me feel like crying.
- Yes No 20. I think it is funny that some people cry during a sad movie or while reading a sad book.
- Yes No 21. I am able to eat all of my cookies even when I see someone looking at me wanting some.
- Yes No 22. I don't feel upset when I see a classmate being punished by a teacher for breaking the rules.

Appendix II

Principal Components Analysis of the Index
of Empathy

FACTOR I

6	0.33	I get upset when I see a girl being hurt.
19	0.33	Seeing a girl who is crying makes me feel like crying.

FACTOR II

3	0.36	Boys who cry because they are happy are silly.
5	0.33	Seeing a boy who is crying makes me feel like crying.
22	0.34	I don't feel upset when I see a classmate being punished by a teacher for breaking the rules.

FACTOR III

11	0.42	I get upset when I see an animal being hurt.
14	0.31	I get upset when I see a boy being hurt.

FACTOR IV

2	-0.40	People who hug and kiss in public are silly.
8	0.50	Sometimes I cry when I watch T.V.
13	0.34	Some songs make me feel so sad I feel like crying.
15	0.36	Grownups sometimes cry even when they have nothing to be sad about.

FACTOR V

4	0.42	I really like to watch people open presents, even when I don't get a present myself.
18	0.46	Kids who don't have any friends probably don't want any.
21	0.42	I am able to eat all of my cookies even when I see someone looking at me wanting some.

FACTOR VI

1	0.34	It makes me sad to see a girl who can't find anyone to play with.
7	-0.39	Even when I don't know why someone else is laughing, I laugh too.

FACTOR VII

17	0.46	I get mad when I see a classmate pretending to need help from the teacher all the time.
20	-0.37	I think it is funny that some people cry during a sad movie or while reading a sad book.

FACTOR VIII

10	0.65	It's hard for me to see why someone else gets upset.
12	-0.34	It makes me sad to see a boy who can't find anyone else to play with.

Appendix III

Means-Ends Problem Solving Procedure
(Platt and Spivack, 1975)

1. One day George/Amy was standing around with some other kids when one of the kids said something real nasty to George/Amy. He/she got so mad he/she decided to get even with the other boy/girl.

The story ends with George/Amy happy because he/ she got even. Why is he/she happy? Because_____.

Make up a real good story. Try to fill up the whole page. The story begins when George/Amy gets mad and decides to get even. Now, what happens? Start your story.

2. Al/Joyce has just moved into the neighborhood. He/she didn't know anyone and felt very lonely. He/she wanted to have friends.

The story ends with Al/Joyce having many good friends and feeling at home in the neighborhood. How does the story end? With his/her having many good _____.

Make up a real good story. Try to fill up the whole page. The story begins with Al/Joyce in a new neighborhood wanting to make new friends. Now what happens? Start your story.

3. This year the school decided that every class was going to choose a class leader. Jim/Jane wanted the class to choose him/her.

The story ends with Jim/Jane being chosen class leader by the kids in his/her class. The story ends with the kids choosing him/her to be _____. Who chooses him/her? _____.

Make up a real good story. Try to fill up the whole page. The story begins with Jim/Jane wanting the class to choose him/her as class leader. What happens now? Start your story.

Appendix IV

Social Interaction Rating Scale for Teachers.
 (from the PEERS program)
 (Hops, Fleischman, Guild, Payne, Street, Walker,
 and Greenwood, 1978)

Child's Name _____ Teacher _____
 School _____ Grade _____
 Date _____ Consultant _____

	not descriptive or true			moderately descriptive or true			very descriptive or true
1. Verbally responds to a child's initiation.	1	2	3	4	5	6	7
2. Engages in long conversations (more than 30 seconds).	1	2	3	4	5	6	7
3. Shares laughter with classmates.	1	2	3	4	5	6	7
4. Spontaneously contributes during a group discussion.	1	2	3	4	5	6	7
5. Volunteers for "show and tell."	1	2	3	4	5	6	7
6. Freely takes a leadership role.	1	2	3	4	5	6	7
7. Spontaneously works with a peer(s) on projects in class.	1	2	3	4	5	6	7
8. Verbally initiates to a peer(s).	1	2	3	4	5	6	7

Appendix V

Ranking and Roster Procedure
(Oden and Asher, 1977)

Directions: First of all, circle your name on the list below. Then circle the number that best fits how you feel about each of your classmates next to their name. NOBODY in the room will see what you write!

NAME	Very, Very Best Friend		Other Friend		O.K.		Don't Know		Don't Care for Them		Dislike Them
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6
_____	1	...	2	...	3	...	4	...	5	...	6

(Class roster listed under Name column.)

Appendix VI

Children's Self-Efficacy for Peer Interaction Scale
(Wheeler and Ladd, 1982)

VERY HARD! HARD! EASY! VERY EASY!

	1	2	3	4
1. Some kids want to play a game. Asking them if you can play is ____ for you.				
2. Some kids are arguing about how to play a game. Telling them the rules is ____ for you.				
3. Some kids are teasing your friend. Telling them to stop is ____ for you.				
4. You want to start a game. Asking other kids to play the game is ____ for you.				
5. A kid tries to take your turn during a game. Telling the kid it's your turn is ____ for you.				
6. Some kids are going to lunch. Asking if you can sit with them is ____ for you.				
7. A kid cuts in front of you in line. Telling the kid not to cut is ____ for you.				
8. Some kids are making fun of someone in your classroom. Telling them to stop is ____ for you.				
9. You are working on a project. Asking another kid for help is ____ for you.				

10. Some kids are using 1 2 3 4
your play area. Asking
them to move is _____
for you.

11. A kid is yelling at you. 1 2 3 4
Telling the kid to stop is
_____ for you.

Appendix VII

Informed Consent for Parents

Dear Parent,

I am a psychology doctoral candidate at the University of Rhode Island, and am completing my Ph.D. dissertation in the area of children's social skills.

Your child's school has consented to allow me to administer several pencil and paper surveys of language and social skills in the classroom. I am asking your permission to include your child in two 45 minute group administration sessions and to look at your child's school record. A teacher survey will also be completed for participating students.

The benefits to all children who participate are the screening of their social and language skills. The purpose of the study is to identify what social skills are most important for children to have in order to be successful friends and students.

Many steps have been instituted to protect both your child's and your own confidentiality. The results of testing will not enter your child's school record. When the testing materials are collected, your child's name will be removed from the surveys and a numerical code substituted. Neither your child's name nor the name of the school will be used in any written reports of the data. Parents will receive a letter summarizing the findings of the study approximately two months after the testing dates.

This study is being completed in partial fulfillment of Ph.D. requirements under the direct supervision of Dr. Janet Kulberg and Dr. Allan Berman. Voluntary cooperation and participation may be withdrawn at any time by the parent or the child by notifying the teacher, tester or myself. This study has been approved by the U.R.I. Research Review Board which protects the rights of subjects.

Please fill out the attached form and return it to your child's teacher if your child may be included in testing. If you have any questions, I may be reached through the Department of Psychology, 792-2193, and I will return your phone call, or at (617) 623-5143 (evenings).

Sincerely,
Diane Marques

I have read the above informed consent sheet and will permit my child to complete the described pencil and paper measures and for the test administrator to view my child's school record. I understand that his/her confidentiality will be protected at all times, and that participation is voluntary and may be withdrawn at any time.

I hereby consent for _____ to participate
(Child's Name)
in this project.

Signature of Parent

Date

Appendix VIII

Informed Consent for Teachers

Dear Teacher,

I am a doctoral candidate the University of Rhode Island and am completing my Ph.D. dissertation in the area of children's social skills.

I am asking your cooperation in completing an eight item survey of social skills for each child who participates in the study. This survey will take approximately five minutes per child to complete and may be completed during the group administration of the measures described in the enclosed proposal. This proposal is included for your information. In summary, I am requesting approximately ninety minutes of classroom time to administer five pencil and paper measures to your students as a group, in two 45 minute sessions.

Your participation in this study is entirely voluntary and may be withdrawn at any time. No references will be made to any individual teacher, student or school in any written reports of the data, and your confidentiality will be preserved at all times.

Sincerely,
Diane Marques

I have read the above information and consent to participate in the study.

Teacher's Name

Date

Appendix IX

Student Information Sheet

Tester Name:

Date:

Child's Name _____ Code # _____
Date of Birth _____ Informed Consent _____
School: _____
Teacher _____

Parent Information:

Address: _____

	Father	Mother
Name	_____	_____
Educational	_____	_____
Degree	_____	_____
Occupation	_____	_____

Medical/Psychological History: Circle Yes or No.

Medical Condition: Yes No
Diagnosis: _____
Date of Dx _____

Psychological Condition: Yes No
Diagnosis: _____
Date of Dx _____

Appendix X

Feedback Letter for Parents

Dear Parents,

This letter is to thank you for allowing your child to participate in two 45 minute testing session which occurred this winter (spring) and to inform you of the results of those sessions. If you recall, the project was designed to study which social skills seem most important to the healthy development of children in group situations. Some of the measures the children completed also assessed their language development.

As a group, all participants scored within the average or above average range in your child's classroom on a standardized measure of language achievement. Completion of this test also seems to have prepared them for future administrations of achievement tests which are routine in most school systems. A measure designed to assess peer acceptance also indicated that your child's classroom is marked by most children liking and accepting each other. Other measures showed that the children generally feel effective in social situations and are sensitive to the feelings of other children.

Although all of the data analysis for the whole project is not completed, preliminary results seem to indicate that a child's effectiveness in a social situation seems most determined by his or her abilities to accurately sense other people's feelings and to form strategies to enter and negotiate with groups of other children. In other words, the children who experience the most success with peers seem to know how to engage in "the right behavior at the right time." These results show us that programs designed to help children have friends must teach a variety of social and thinking skills.

After the testing sessions were completed, the children were given a few minutes to ask us questions about the project. They responded enthusiastically to the information and were quite cooperative. These results have been discussed with your child's teacher, as well as ways teachers can help children further their social skills in school. Any further concerns or questions may be addressed by calling me at my home phone number or by dropping me a note to the above address with your name and phone number. I will then return your call. Thank you again for the opportunity to gather important information with your child.

Sincerely,
Diane Marques, M.A.

Appendix XI

Multiple Regression Analyses of Competence Variables on Cognitive Predictor Variables

In the present study, stepwise multiple regression analysis was used to evaluate the relationship between the predictor variables of language achievement, social problem solving and empathy to the criterion variables of teacher, peer and self ratings of social competence. As previously noted, the following three multiple regression analyses were completed:

- the Cogat, IEMP, and MEPS regressed on the SIRS
- the Cogat, IEMP, and MEPS regressed on the PEER
- the Cogat, IEMP, and MEPS regressed on the CSPI.

When serial multiple regression analyses are being conducted, it has been suggested that the multiple criterion variables (in this case being the competence ratings) be regressed on each predictor variable (in this case being the cognitive/developmental variables) as a methodological check (Cohen & Cohen, 1976). This procedure is included to examine the multiple relationships of the criterion variables to each predictor variable in the event that criterion variables are highly intercorrelated.

In the present study, criterion variables were minimally correlated (See Results). However, a series of

multiple regression analyses regressing the criterion variables on the predictor variables were completed to check the stability of the observed relationships. The following three stepwise multiple regression analyses were completed and are reported in this section:

- the SIRS, PEER and CSPI regressed on the Cogat
- the SIRS, PEER and CSPI regressed on the MEPS
- the SIRS, PEER and CSPI regressed on the IEMP.

Results of the three MRA's are summarized in Table 7. It was found that teacher ratings (the SIRS) were a significant predictor of the Cogat, or language achievement test, accounting for 12% of the observed variance, $F(1,100)=14.11$; $p=.05$. This relationship is congruent with the present study's findings that the Cogat was a significant predictor of teacher ratings. The observed predictive relationship between the Cogat and the SIRS is stable in both directions.

It was found that MEPS scores could not be predicted by teacher, peer or self ratings. Although peer ratings accounted for 2% of the variance in the MEPS, this relationship did not achieve significance, $F(1,100)=2.11$; n.s. The MEPS was found to be a significant predictor of the teacher ratings (SIRS), but teacher ratings were not found to be a significant predictor of the MEPS. In the series of multiple regression analyses reported in the Results section, time of administration and socioeconomic

status are included as predictor variables to control for interaction effects. It may be that these relationships are not replicated in the reverse direction due to the uncontrolled contributions of these variables in the present analyses.

It was also found that the the teacher ratings or SIRS predicted 5% of the variance in the Index of Empathy, attaining statistical significance, $F(1,100)=5.70$; $p \leq .05$. As noted in the Results section, the Index of Empathy was not a significant predictor of any competence variables. However, the Index of Empathy did contribute .5 to 2% of the variance in the competence measures at non-significant levels. The amount of shared variance between the Index of Empathy and teacher ratings is thus similar in the current analyses.

In summary, the series of reverse MRA's conducted appear to partially replicate the relationships found between the predictor and criterion variables. However, the inclusion of time of administration and SES also appear to have controlled sources of variance in the present results.

Table 7

Stepwise Multiple Regression Analyses
of Teacher, Peer and Self Ratings
on Predictor Variables

Step:Variable Name	Multiple R	RSQ	Change in RSQ	F	df
Cogat:					
1. SIRS	.351	.123	.1237	14.11*	1,100
MEPS					
1. PEER	.143	.020	.020	2.11	1,100
Index of Empathy					
1. SIRS	.232	.053	.053	5.70*	1,100

* $p \leq .05$

Appendix XII

Conflict and Non-Conflict Analyses of the CSPI

As previously noted in the Results and Discussion sections, separate multiple regression analyses for the independent variables on the CSPI composite scores, conflict and non-conflict scores were conducted. CSPI conflict and non-conflict scores were obtained by computing the total for items noted by authors to contain the conflict or non-conflict factor (Wheeler & Ladd, 1982). The conflict and non-conflict analyses were conducted to see if the independent variables differentially contributed to these scores, or if self-efficacy estimates varied when related to competence along the dimensions of assertion in a positive and negative situation.

In brief summary of the results, relationships between the independent measures and both the conflict and non-conflict scores were not significant. The independent measures in combination could account for only 2% of the variance in conflict situations and 4% in non-conflict situations (See Table 8).

The present findings are congruent with the relationship found between the independent variables and the overall CSPI score, and support the use of the composite score. As stated in the Discussion section, further evaluation of the relationships between self-efficacy, social cognition, and social competence is warranted.

Table 8

Step-wise Multiple Regression Analyses of
CSPI Conflict and Non-conflict Scores

Step:Variable		Multiple	Change	F	df
Name	R	RSQ	in RSQ		
CSPI Conflict:					
1. Winter	.145	.021	.021	2.15	1,100
2. Spring	.145	.021	.000	0.00	2, 99
3. MEPS	.154	.023	.002	0.27	3, 98
4. Cogat	.159	.025	.001	0.14	4, 97
CSPI Non-conflict:					
1. Spring	.071	.005	.005	0.52	1,100
2. Winter	.081	.006	.001	0.15	2, 99
3. MEPS	.180	.032	.026	2.63	3, 98
4. Empathy	.208	.043	.011	1.11	4, 97
5. Cogat	.215	.046	.003	0.30	5, 96