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ABSTRACT

In order to explore relationships among social cognitive ability, peer status and interpersonal behavior, the frequency of 11 different social actions was recorded with the target child being the agent of the recipient of the behavior. Twenty-three children from 3 to 8 years of age enrolled in an 8-week university summer school program were observed for ten 5-minute periods during indoor free play. Each child was administered a test for referential communication ability and a test for solving interpersonal problems. In addition, peer status was evaluated using picture sociometric methods obtaining both peer nominations as well as peer rating scores. A positive and significant correlation indicated that children who suggested nonforceful strategies for solving interpersonal conflicts were most likely to be nominated as liked peers. A number of friends score based on the peer ratings correlated positively and significantly with referential communication ability. Referential communication skill correlated positively with refusing, while interpersonal problem solving ability correlated positively with asking, being asked, and helping, and correlated negatively with imitating, receiving, and receiving disapprovals from peers. Popular children tended to boss, teach and help, while being nominated as a disliked peer was inversely related with refusing behavior; peer ratings were positively and significantly correlated with being imitated. These findings provide some evidence in support of the concurrent validity of the social cognitive test and the peer status sociometric measures. (Author/RH)

Social Cognitive Ability, Interpersonal Behaviors, and Peer Status Within a Mixed Age Group

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Abstract

Twenty-three children from three to eight years of age enrolled in an 8-week university summer school program were observed for 10 five-minute periods during indoor free play. The frequency of 11 different social actions were recorded with the target child being the agent or the recipient of the behavior. During the same period of time, each child was administered a test for referential communication ability and a test for solving interpersonal problems. In addition, peer status was evaluated using picture sociometric methods obtaining both peer nominations as well as peer rating scores. Controlling for the effects of chronological age, being nominated as a liked peer correlated positively and significantly with suggesting nonforceful strategies for solving interpersonal conflicts, and a number of friends score based on the peer ratings correlated positively and significantly with referential communication ability. Controlling for the effects of chronological age and verbal intelligence, referential communication skill correlated positively with refusing, while interpersonal problem solving ability correlated positively with asking, being asked, and helping, and negatively with imitating, receiving, and receiving disapprovals from peers. Popular children based on peer nominations tended to boss, teach and help, while being nominated as a disliked peer was inversely related with refusing behavior; peer ratings were positively and significantly correlated with being imitated. These findings provide some evidence in support of the concurrent validity of the social cognitive test and the peer status sociometric measures.

Social Cognitive Ability, Interpersonal Behavior, and Peer Status Within A Mixed Age Group

The quality of peer relations is a sensitive predictor of both future and current adjustment. Negative peer relations are associated with numerous interpersonal and personal problems including school drop out (Ullman, 1957), juvenile delinquency (Roff, Sells, and Golden, 1972) and predicted psychiatric hospitalization in young adulthood (Cowen, Pederson, Babigian, Izzo, and Trost, 1973). Given its significance in human development, peer competence is studied a great deal even in very young children. For example, research has found that children from a very early age possess considerable interest in commerce with peers (Garvey and Hogan, 1974).

Social competence with peers is generally accepted as critical in human development. However, there is less agreement as to its definition and measurement. Various methods have been employed to evaluate the construct. Behavioral observations have been used in a number of studies. General indices such as rate of social interactions (O'Connor, 1969) as well as detailed measurements of specific social behavior are commonly employed (Hartup, Glazer, Charlesworth, 1967; White and Watts, 1973). A second method is the use of sociometric techniques to assess peer status or popularity (Greenwood, Walter, Todd, & Hops, 1977; Rubin, 1972) or teacher ratings of classroom behaviors or overall adjustment (Kohn & Rosman, 1972; Shure & Spivack, 1974). A third approach has been to administer tests that are believed to tap important cognitive skills underlying one's ability to

engage in social commerce within the peer group. Such tests usually are designed to assess social cognitive skills related to role taking ability or decentration (Flavell 1968).

Few researchers have examined relations among measures of peer status, social behaviors, and social cognitive ability. Gottman, Gouso, & Rasmussen (1975) investigated the relationships between number of friends, ability to label facial emotions, knowledge of how to make friends, giving help, role-taking ability, and the frequency of a number of classroom behaviors. They found that 9- and 10-year-olds who had more friends showed greater knowledge about how to make friends and scored higher on a referential communication task. In addition, popular children distributed and received more positive reinforcement than unpopular children. More research on social competence with peers has been done examining the relationships between data sets representing two of the three methodological approaches referred to above. For example, Hartup, Glazer, & Charlesworth (1967) found that preschool children who scored high on sociometric measures of peer status tended to dispense more positive behaviors (i.e. acceptance, approval, affection, attention, giving, submitting to others' wishes) toward peers, while preschoolers with lower sociometric scores tended to engage in more negative social behaviors (i.e. noncompliance, interference, derogation, and attack).

Examples of research relating social cognitive ability with interpersonal behaviors include Shure and Spivack (1972) and Enright and Sutherfield (1979). Shure and Spivack (1972) reported that inner city preschool-age children's ability to think of different solutions to hypothetical social problem situations contained in the Preschool Interpersonal Problem Solving (PIPS) test was associated with teachers'

ratings of children's social adjustment in the classroom. Enright and Sutterfield (1979), studying middle class first graders, reported that when controlling for verbal intelligence the PIPS did not relate to behavioral measures of classroom social adjustment (successful resolutions of interactions, amount of derogation, and number of times a child was approached by a peer), but that a measure of distributive justice reasoning from Damon's (1975) moral judgment measure was positively and significantly related to indices of social adjustment (children's proportion of successful interactions and the amount of time a child was approached by peers). Further, a negative relationship was obtained between the moral variable and the proportion of unsuccessful outcomes.

Examples of research comparing measures of social cognitive ability and sociometric measures of social competence with peers include Rubin (1972), Cohen and Gruen (1979), and Asher, Renshaw, Geraci, and Dor (1979). Rubin (1972) reported a partial correlation between peer popularity (based on the nominations method) and scores on a referential communication test holding IQ constant for both kindergarten and second grade children. Cohen and Gruen (1979) reported that a "number of friends" sociometric index was related to perspective-taking ability in preschool children. Number of friends was defined as pairs of children who had selected each other as the preferred playmate at least 55% of the time on the children's picture paired-comparisons sociometric test (Cohen & Van Tassel, 1978). Asher et al. (1979) assessed social skillfulness in over a range of hypothetical situations involving the initiation and maintenance of social relationships and the resolution of interpersonal conflicts. Comparing the ideas of popular and unpopular kindergarten

children as assessed by sociometric methods, it was found that unpopular children gave more aggressive responses to conflict situations and gave more general, vague and unresourceful responses to the friendship initiation and maintenance hypothetical situations. In a recent multivariate factor study, Connolly & Doyle (1979) found peer popularity to be the fourth factor after factors for maturity (age), class compliance, and teacher evaluations of the child's social skill with peers as factors defining social competence in preschool children. Although recently Cohen & Van Tassel (1978) have developed a more reliable paired-comparison sociometric test of peer popularity and Asher, Singleton, Tinsley, & Hymel (1979) have developed a more reliable rating system method, the lack of a reliable sociometric procedure for young children has hindered research on the relationships among peer status, social behavior and social cognitive ability during the early years.

There are a number of important problems facing researchers relating to the definition and measurement of peer competence. Convergence among measurement techniques and behavioral identification of peer competence are two issues in need of further clarification (O'Malley, 1976). Validity questions that persist include the predictive or concurrent validity of test indicators of peer competence as well as the relationships among different tests assessing person characteristics presumed to be related (convergent) and not related (discriminant validity) to peer competence. The present research was conducted as a preliminary study exploring three questions: (1) What is the relation of social cognitive ability with peer status? (2) What is the relation of peer status with interpersonal behavior? (3) What is the relation of social cognitive ability and interpersonal behavior?

In order to examine the research questions, behavioral, sociometric, and social cognitive test data were collected on 23 children attending a university summer school program.

The behavioral data collected included observational measures of 11 different interpersonal behaviors with the target child scored as being either the agent or the recipient of the social act. The sociometric data included measurements of peer status, obtaining for each child a nomination score for being a liked peer and for being a disliked peer, an average peer rating score, and finally a score for the number of mutual friends each child had. Children were given two social cognitive tests, one measuring referential communication skill and a second assessing preschool interpersonal problem-solving ability, the latter scored in several different ways.

The two social cognitive tests can be viewed as measuring abilities underlying social and behavioral adjustment of children within a peer group setting. For example, the ability to formulate accurate communications and to recognize inadequate ones would appear to be important for coordinated social interaction (Asher, 1976). In addition, as Shure and Spivack (1974) discuss, being able to generate a variety of different solutions to a given social problem would appear to increase the probability of working out mutually satisfying outcomes in conflict situations with peers. However, tests of social cognitive skills such as these need to be validated by reference to criteria such as interpersonal behavior measures or sociometric indicators of peer status.

Method

Subjects

Twenty-three middle class children enrolled in a 8 week summer program participated in this study. The over-all mean age was 62.65 months (S.D. =

16.14), with a range from 37 to 103 months. Girls as a group (N=9) were older than boys (N=14) ($\bar{X}_G$ = 63.7 months, $\bar{X}_B$ = 58.36 months), with the four oldest children in the sample all girls. Five children (3 boys and 2 girls) were from 3 to 4 years of age, 8 children (3 girls and 5 boys) were from 4-1/2 to 5 years of age, 5 children (all boys) were from 5 to 6 years of age, and 5 children (1 boy and 4 girls) were 6 to 8 years of age. Since there is evidence that cross-age peer relations are quite common outside of regular classrooms (Ellis, Cromer & Rogoff, 1979), the diversity of ages was deemed a desirable characteristic of our sample.

Setting

Children participating in this study were enrolled in a university-affiliated mixed-age summer program. The program had an educational as well as recreational focus, which involved both indoor and outdoor activities. Indoors facilities included two classrooms equipped with standard preschool- and school-related educational materials and several other rooms for testing and observations. Adult-to-child ratio in the classroom was one-to-five. Children meet from 9:00 a.m. to 1:00 p.m. four days a week for 8 weeks. The behavioral observations of the children did not begin until the children had been together for four weeks.

Procedure

Behavioral observations. Within a four week period of time, each child was observed for 10 five-minute periods during free play. Observations were made using a 20-second observe and 10-second record cycle. Children were observed individually in a randomly predetermined order by one of four observers stationed within the classrooms. Observations were distributed over the four-week period with a maximum of one 5-minute observation per child per day.

Behavioral coding. Frequency scores were computed on observational measures for eleven different social behaviors. (Play type and context were also observed but these data are not reported here.) The social behaviors were scored both in terms of the target child giving as well as receiving the different social acts (See Table 1).

Interobserver agreement. Initially all observers were trained by the first author until a minimum of .75 agreement was reached on each observational category. Thereafter independent pairs of coders scored 25% of the observations performed intermittently over the course of the observation period. The mean coefficient of agreement for play types was .79 (range from .62 to .93), for play context .83 (range from .71 to .95), and for social behaviors .66 (range .49 to .78).

Sociometric measures. During the final two weeks of the study, children were individually administered two picture sociometric measures with order of test administration couterbalanced. A peer nomination method used was based on Marshall and McCandless (1957) which involved having children point to the pictures of the three most liked and the three least liked peers. The peer status method used was based on Asher, Singleton, Tinsley, and Hymel (1979) which involved having children rate each peer on a Likert-type scale according to how much they like to play with each peer. Picture cards of happy, neutral, and sad faces were used to designate "liking to play with a whole bunch", "a little bit," and "not at all", respectively. Each child's score on this sociometric measure is the average rating received from peers (3 points = happy face, 2 points = neutral face, and 1 point = sad face). A "number of friends" score also was computed based upon the number of times a child and a peer mutually gave each other the happy

face card. From the peer nominations sociometric measure each child received a score for the number of times he or she was selected by a peer as one of the three favorite children with whom to play (Liked Peer Score) and as one of the three least favorite children in the group with whom to play (Disliked Peer Score).

Social cognitive measures. During a six week period which overlapped with the observation period, children were administered individually first a test of communication ability (Dickson, Miyake, Hess, & Azuma, 1979), and second a test of abiljty to generate different strategies for solving interpersonal problems (Shure & Spivack, 1974). In the Communication Note Book Game (Dickson et al., 1979), two parallel notebooks with sets of four pictures were placed across a table from the child and the tester. The referent sets were designed to require communication of various dimensions such as size, quantity, and spatial relationship. The child described one of a set of four pictures and the tester, as a standard listener, responded differently according to whether the message sent by the child involved necessary information in terms of relevant dimensions. If the message was adequate, the tester pushed the button under the right picture and continued the game. If it is not, the tester pushed a button under any other picture and said, "I am not sure. Is it this one?", and then went on to the next set of pictures.

Each of the children's descriptions was scored from 0 to 2: two for providing fully adequate information, one for providing partial information, and zero for providing no information. Fifteen sets of pictures were presented to the children. Hence, total communication game scores could range from 0 to 30. (Before testing, another four simple sets of pictures were used as a practice of being both the message deliverer and the listener,

so that the children could have a better understanding of the role of both sides).

The Preschool Interpersonal Problem Solving (PIPS) Test (Shure & Spivack, 1974) has separate parts for peer problems and authority problems. In this study, peer problems were administered to the children due to the limitation of time and the interest in this research in young children's behaviors among peers. The peer problems were basically based on one theme; that is, one child wants to play with a toy while the other child is playing with it:

> Johnny has been playing with this truck for a long time and Jimmy wants a chance to play with it. But Johnny keeps on playing with it-----. What can Jimmy do so he can have a chance to play with the truck? (Shure & Spivack, 1974, pp. 21-22).

In the peer problem test, a minimum of seven similar peer-toy stories were presented with 5" by 8" colored character cards and 3" by 5" colored toy cards. The toy used and the names of the character were different from story to story in order to maintain interest and variety. The PIPS Test Manual was followed to elicit as many different solutions as possible from the children. The questions "What can A do" or "What can A say" were used alternatively when asking the children for a solution. When the child offered a solution which was basically similar to the previous ones, a maximum of three probes were used to encourage a new solution. If seven different relevant solutions were given, testing continued with the extra three stories. With the remaining stories, same probing was used. However, testing stopped at the story in which no solution was given.

The PIPS Test Manual was followed in scoring children's responses for the peer problems. In the manual, different solution categories and the solving problem is explained. Scores used in the analyses were the total

number of nonforceful solution responses and the total number of different solution responses as well as a ratio score for the number of different solution responses divided by the number of probes + 1 (for the initial test question) asked by the experimenter (cf. Enright & Sutterfield, 1979).

Test scoring interrater reliability was evaluated by having children's responses on each test scored by two independent judges. The percent of agreements between the two judges was 86 percent on the PIPS and .96 on the Communication Note Book Game. An estimate of mental age was obtained by administering the Peabody Picture Vocabulary Test (PPVT).

Results

Partial correlations performed on frequency scores for observational, sociometric, and test measures for the total sample of children provided data pertinent to our three research questions. The mean and standard deviation scores on the measures are given in Table 2.

Insert Tables 1, 2, and 3 about here

Peer Status and Social Cognition

Correlations of sociometric scores and social cognitive test scores are given in Table 3. As can be seen, there was some support for the convergent validity of these measures. That is, holding age constant, the scores on the measures of peer status that were expected to go together (peer rating, nominations for being liked peer, and number of friends), did in fact correlate ($\bar{r}$ = 44); they also were inversely related, as expected, with the score for being nominated as a disliked peer. Secondly, controlling for age and the PPVT, the PIPS and the Referential Communication Task were

positively and significantly correlated (r = .52, $p < .01$). Although the PIPS did not significantly correlate with the PPVT, (r = .21), the Referential Communication Tasks did (r = .38). However, the magnitude of these correlations were not significantly different from each other ($p > .10$).

The first research question concerns the relationship between peer status and social cognitive ability. As the upper righthand portion of Table 3 shows, positive and significant correlations between measures of peer status and social cognitive ability were obtained controlling for age. There was a significant and positive relationship between being nominated as a liked peer and PIPS total score (r = .42, $p < .05$), and a significant and positive relationship between number of friends and referential communication accuracy (r = .39, $p < .05$). Peer ratings did not significantly correlate with the social cognitive test scores. The PPVT did not correlate significantly with any of the indices of peer status with age partialled out.

Social Cognition and Interpersonal Behaviors

The second research question concerns the relationship between social cognitive ability and social behavior. Correlations between measures of social cognitive ability and social behaviors are given in Table 4. Effects due to age and the PPVT are partialled-out in order to assess the test-behavior relations independed of the influence of these factors.

Insert Table 3 about here

Little evidence was found suggesting a relationship between test-assessed referential communication accuracy and observed social behaviors

by the children. Only one behavioral measure correlated with referential communication accuracy. Children observed refusing peers tended to score higher on referential communication accuracy (r = .376).

Three PIPS scores were examined in relation to social behaviors: Total PIPS solutions, total nonforceful PIPS solutions, and the PIPS ratio score. Partialling out age and PPVT, PIPS total solutions positively and significantly correlated with being asked (r = .379) and negatively with imitating (r = .362); total nonforceful PIPS solutions were inversely related with being disapproved (r = -.478) and receiving (r = -.381). The PIPS ratio score was positively and significantly correlated with asking and being asked (r = .404 and r = .460, respectively) and helping (r = .396).

Peer Status and Interpersonal Behavior

The third research question concerns the relationship of peer status with observational measures of social behaviors. As can be seen in Table 4, several significant correlations were obtained partialling out the effects of age and PPVT. Peer ratings correlated positively with being imitated (r = .574); nominations for a liked peer correlated positively with bossing (r = .506), teaching (r = .508), and helping (r = .494); nominations for a disliked peer correlated negatively with refusing (r = -.363); number of friends did not relate significantly with any social behavior measure used in this study.

Discussion

We found some evidence in support of the convergent and discriminant validity of the social cognitive test measures. The correlation of the PIPS with referential communication was higher than either the PIPS or referential communication with the PPVT. Secondly, some evidence for the

concurrent or predictive validity of the social cognitive measures was found in the correlation of the PIPS with the nomination score for being a liked peer, and in the correlation of referential communication with the number of friends sociometric index.

Interpersonal problem solving skill and being selected as a favorite playmate in a mixed age group are associated variables. Our finding that referential communication ability and number of friends are related is consistent with Gottman et al. (1975). However, rather than suggesting that peer status or popularity indexes the level of peer group interaction for a child (cf. Rubin, 1972), which in turn affects decentration skill as evaluated by social cognitive tests, we believe that it is equally possible that social cognitive skill can enhance one's reputation in a peer group via social behaviors.

We found that referential communication performance in the test situation was associated with higher incidences of refusing behavior in free play. Perhaps children better adept at generating accurate messages and recognizing inaccurate ones are more capable of drawing a line and saying no in commerce with peers. This finding seems consistent with our result that number of friends was correlated with referential communication skill. Number of friends is a mutually defined sociometric index unlike either peer rating or nominations.

There was even clearer evidence for the concurrent validity for the PIPS. A child's total score for giving different solutions to interpersonal problem situations was associated with being asked and being imitated. Furthermore, the greater number of nonforceful solutions a child gave, the more likely that child was seen being approached by other children in the

classroom as well as seen being the recipient of toys and other objects from other children. In addition, the PIPS ratio score related to being asked and helping behavior, providing further support for the concurrent validity of the PIPS.

The somewhat stronger evidence for the concurrent validity of the PIPS compared to the Referential Communication Task suggests that perhaps the former test entails content tapping underlying cognitive processes more relevant to actual social behavior than the cognitive processes tapped by the latter test. Although both tests can be said to measure the cognitive ability to decenter, the PIPS measures the ability to generate as many different cognitive solutions to interpersonal problem situations as one can think of. This would appear to involve an important characteristic of the social cognition system. What is measured by the referential communication task appears less social in its test content. Comparing the different measures of performance on the PIPS, it is noteworthy that the ratio score and the score for nonforceful solutions related to prosocial behaviors when the total PIPS solutions score did not. The ratio score attempts to index how readily available solutions are to a child with minimum adult prodding; and, the nonforceful solution score excludes from the tally ideas given by children that would not likely serve to enhance peer rating should they be carried out in actual behavior. This may underlie why these measures appear to be better performance predictors than the total solutions score (cf. Enright and Sutterfield, 1979). However, it is to be noted that even the best correlation of social behavior with the PIPS accounts for only 16% of the variance. Although an interpersonal problem-solving ability as estimated by the PIPS may be a cognitive prerequisite for certain social behaviors, clearly other

factors are involved in defining what processes underlie social competence with peers.

The final research question of this study concerns the relationship between peer status and social behaviors. We found that peer ratings and being imitated were highly correlated. More popular children tend to be imitated more than unpopular ones. Secondly, we found that well-liked children engaged in more teaching, helping, and bossing or leading behaviors. In addition, the more a child was observed refusing, the less likely the child was nominated a disliked peer. These findings suggest that prosocial behavior such as helping and teaching are valued in a mixed age peer group, as well as a certain amount of assertive behavior such as bossing and refusing. It is noteworthy that number of friends did not correlate with any social behavior. As Asher, Renshaw, Geraci & Dor (1979) suggest, perhaps friendship relations are very difficult to define using behavioral descriptions entailing a limited number of observational categories. Behaviors that define friendship may escape the observation because important behaviors may be low frequency ones or because important behaviors are not included in the observational system; the important behavior may be ones that are more symbolic or private in nature. In general, the lack of correlations of sociometric and test scores with behaviors may have been due to inadequate observational categories. For example, the success or adaptiveness of social behaviors may not have been adequately indexed.

Social competence within the peer group is a difficult concept to define and measure. The ability to function socially in a diversified age-group would appear to be an even more difficult concept to define and measure. The present descriptive study has sought to shed some light

on this exceedingly complex question by examining the interrelations among social cognitive skill, interpersonal behavior, and peer status for a mixed age group of children. Our study suggests that the construct of social competence with peers is a multidimensional one entailing both cognitive and behavioral components. In the future it is recommended that the correlations among social cognitive ability, peer status, and social behavior as suggested in this study be factor analyzed using a larger sample of children in order to ascertain the relationships among the variables at different levels of chronological and mental age. It would seem that the behavioral and cognitive determinants of successful social functioning in a peer group will vary depending on these factors. Furthermore, the composite of factors that define competence in same-age or same-sex relations may not generalize to cross-age or cross-sex relations. Research is needed examining how some children are popular and capable playmates with both sexes or with both younger and older children, while others relate well with only one sex or with only agemates or with only older children or with only younger children. Future research defining the behavioral and cognitive components related to diverse social competences will contribute theoretically to our knowledge of child development and should yield information worthwhile for designing educational programs to enhance children's interpersonal skills for functioning in varied social contexts.

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Table 1

Social Behavior Categories

bosses - ordering or commanding; asserting leadership

disapproves - negatively reinforcing another's behavior or action.

gives - proffering; offer objects to others

helps - conjointly or mutually aiding in activity

imitates - attempt to replicate the other's activity

invites - verbally or gesturally making bids for other child(ren) to participate in mutual activity or to see one's work.

asking - verbal comment to peer expressing desire to engage in activity or to obtain a toy or information.

rejects - refusing to accept invitation. Verbal comment expressing disapproval of child's activity. Includes request that child desist.

teaches - demonstrating or showing how to do something; giving information.

takes - physically taking object(s) from other child by grabbing, pulling or other forceful means.

accepts - receiving objects from others during voluntary social bids made by others. Objects must be offered.

Table 2

Mean and Standard Deviation Scores for Peer Status, Test, and Social Behavior Measures

	$\bar{X}$	S.D.
Peer Rating	2.183	.228
Nominations for Liked Peer	2.869	1.766
Nominations for Disliked Peer	2.609	1.469
Number of Friends	3.956	1.331
PPVT	63.869	15.074
Referential Communication	19.130	8.220
Nonforceful Solutions on PIPS	4.609	2.291
Ratio Total Solutions to Probes on PIPS	.338	.175
Total Solutions on PIPS	5.652	2.534
Accepting	.826	.937
Being Accepted	.434	.788
Bossing	1.739	2.339
Being Bossed	1.913	2.193
Disapproving	2.217	2.215
Being Disapproved	1.391	1.499
Giving	2.26	2.359
Being Given to	.609	.838

Table 2 (cont)

Mean and Standard Deviation Scores for Peer Status, Test, and Social Behavior Measures

	$\bar{X}$	S.D.
Helping	1.00	1.567
Being Helped	1.043	1.580
Inviting	2.00	1.679
Being Invited	.52	.846
Imitating	1.00	1.00
Being Imitated	.478	.947
Refusing	1.087	1.345
Being Refused	.826	1.072
Takes	.913	1.535
Being Taken From	.435	.945
Teaching	1.609	1.901
Being Taught	1.087	1.535
Asking	.609	1.118
Being Asked	.261	.619

Table 3

Correlation and Partial Correlation Matrix

for Peer Status and Test Measures

Measure	Measure Number 1	2	3	4	5	6	7
1. Peer Ratings		.58**	-.16	.33	.35	.11	.24
2. Nomination for Liked Peer	.55**		-.20	.42*	.27	.13	.42*
3. Nominations for Disliked Peer	-.23	-.23		-.22	.20	-.25	.05
4. Number of Friends	.23	.40*	-.17		.19	.39*	.24
5. PPVT	.51**	.20	-.09	-.04		.38*	.21
6. Referential Communication	.35	.14	-.33	.17	.72**		.52**
7. PIPS[a]	.43*	.36*	-.11	.07	.65**	.74**	

* $p < .05$

** $p < .01$

Note. Zero-order correlations are below the diagonal. Correlations partialling out age are above the diagonal.

[a] Total nonforceful solution scores.

Table 4

Correlations of Social Behaviors With

Peer Status and Social Cognition Tests

Adjusting for PPVT and Age

	Social Behaviors							
Peer Status and Test Measures	Accepting	Being Accepted	Bossing	Being Bossed	Dis-Approving	Being Dis-Approved	Giving	Being Given to
Peer Ratings	.338	.085	.354	-.020	-.120	-.122	.077	.233
Nomination for Liked Peer	.033	.230	.506**	.075	.179	-.186	-.032	-.100
Nomination for Disliked Peer	-.230	.032	-.223	-.166	-.215	.022	-.094	-.175
Number of Friends	-.067	-.080	-.103	-.245	-.058	-.318	-.165	.049
PPVT[a]	.346*	.250	.221	-.104	-.050	-.571*	.290	.158
Referential Communication	.061	-.104	.084	-.159	.246	-.334	-.19	-.123
PIPS Total Solutions	-.085	.031	.278	-.083	.20	-.215	-.001	-.167
PIPS Nonforceful Solutions	-.199	.027	.257	-.215	.128	-.478**	-.106	-.381*
PIPS Ratio	-.024	-.031	.171	-.071	.263	-.293	.001	-.169
Age[b]	.146	.080	.032	-.206	-.101	-.452*	.223	-.017

Table 4 (cont)

Correlation of Social Relations With Peer Status

and Social Cognitive Tests Adjusting for PPVT and Age

Peer Status and Test Measures	Social Behaviors							
	Refusing	Being Refused	Takes	Being Taken From	Teaching	Being Taught	Asking	Being Asked
Peer Ratings	-.124	-.286	.017	-.157	.013	-.189	.010	.112
Nominations for Liked Peer	.130	-.157	.256	-.046	.508**	-.332	.120	.182
Nominations for Disliked Peer	-.363*	-.129	-.053	-.209	-.051	.256	-.315	-.213
Number of Friends	-.208	-.174	-.172	-.109	.293	.002	.105	.334
PPVT[a]	.153	-.249	.174	-.168	.197	-.025	-.022	.204
Referential Communication	.376*	.011	-.081	-.088	-.135	.014	.344	.180
PIPS Total Solutions	.203	-.060	-.112	-.280	.161	-.266	.266	.379*
PIPS Nonforceful Solutions	.131	-.207	.003	-.212	.171	-.332	.182	.159
PIPS Ratio	.141	.054	.136	-.310	.188	-.131	.404*	.460*
Age[b]	.119	.253	-.055	-.228	.182	.130	.156	.310