

Social Interaction, Social Competence, and Friendship in Children

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GOTTMAN, JOHN; GONSO, JONNI; and RASMUSSEN, BRIAN. *Social Interaction, Social Competence, and Friendship in Children*. *CHILD DEVELOPMENT*, 1975, 46, 709-718. The relationship between social skills, social interaction, and popularity was examined. The subjects were 198 children in third and fourth grades in middle- and low-income schools. The relationships between number of friends, socioeconomic status, and grade level were studied in a $2 \times 2 \times 2$ factorial design with 2 sets of dependent measures: (1) social skills were assessed by an experimenter testing each child individually on a set of tasks which included measures of the ability to label emotions in facial expressions, knowledge of how to make friends, giving help, and role-taking ability; and (2) social interaction in the classroom was assessed using a naturalistic observational system. Popular and unpopular children differed in their knowledge of how to make friends and on the referential-communication task. In the classroom, popular children distributed and received more positive reinforcement than unpopular children and spent less time daydreaming. Both grade and social class factors were significant. However, different patterns of results contributed to the main effect of friends and the grade-level main effect. The importance of assessing social skills which are first validated by reference to a criterion such as sociometric position was noted.

There is a growing body of research on the development of social-cognitive skills in children. Izard (1971) studied children's ability to recognize and label emotions. A number of researchers using a wide variety of tasks have examined children's ability to communicate accurately to a listener (Asher & Parke 1975; Flavell, Botkin, Fry, Wright, & Jarvis 1968; Glucksberg & Krauss 1967). Other investigators have assessed children's ability to take the role perspective of another person on perceptual (Piaget & Inhelder 1956) and social tasks (Feffer & Gourevitch 1960). One issue investigated in the present paper is the covariation among these different skills. Previous research has typically examined age trends on one type of task without assessing the relationships among performances on different tasks.

Another issue neglected in previous research is whether differences in social skill among children are predictive of social success with peers. This is an important issue since

peer popularity is itself related to indices of later mental health. Unpopular children are more likely to be disproportionately represented later in life in a community-wide psychiatric register (Cowen, Pederson, Babigan, Izzo, & Trost 1973); they are also more likely to receive bad-conduct discharges from the armed forces (Roff 1961). Kohn and Clausen (1955) reported that the proportion of social isolates in adult manic depressives and schizophrenics was close to one-third, while in normal control groups the proportion was close to zero. Manic depressives were as likely as schizophrenics to have been isolates. In a survey of research on suicide and attempted suicide, Stengel (1971) concluded that "social isolation is the common denominator of a number of factors correlated with a high suicide rate" (p. 28). Roff, Sells, and Golden (1972) recently studied a sample of 40,000 children in 21 cities. Except for the lowest socioeconomic class, the relationship was highly positive between percentage delinquent and low peer-acceptance scores taken 4 years earlier. It is

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therefore important to study which social skills relate to peer friendship ratings. Identification of critical skills could be a first step in interventions aimed at facilitating peer relations in children.

An early study which related social behavior to peer popularity was conducted by Hartup, Glazer, and Charlesworth (1967). They observed nursery school children in the classroom and categorized social behavior as positive or negative. The category of positive behavior included giving attention and approval, giving affection and personal acceptance, submitting to another's wishes, and giving things to another. Negative behaviors included noncompliance, interference, derogation, and attack. Using a sociometric instrument in two nursery school classes, these investigators found that positive behaviors dispensed to peers were related to acceptance scores in both classrooms. Negative behaviors dispensed were related to rejection scores in one classroom but not in the other. It is noteworthy that a number of research studies intervening with social isolates have used total frequency of interaction as the major criterion in defining the isolate and as the dependent variable for assessing interventions (O'Connor 1969, 1972; Walker and Hops 1973), with no reference to sociometric measures. Furthermore, these studies have taught social skills which were not tested empirically by studying the covariation of skills with peer ratings. To test the validity of the dependent measures used in these studies it would be necessary to study social interaction in conjunction with social skills and sociometric position.

In a more recent study Rubin (1973) examined the relationship between social skills and peer popularity. Kindergarten and second-, fourth-, and sixth-grade children were tested on a variety of communication tasks. Popularity was assessed by asking each child to specify his first, second, and third choices of a classmate he "would like to spend his free playtime with." Rubin found two factors in a varimax solution of nine of his 12 variables. The first factor, which accounted for 56.9% of the total variance in the nine variables, "was identified as a 'decentration factor'" (p. 108). Rubin used this term since three of his tasks were presumed to require shifting to the perspective of a listener and one task measured private self-speech on puzzle tasks. Popularity

loaded highly on the second factor but loaded less than .30 on the first factor. Therefore Rubin concluded that decentration skills form a unidimensional factor which is independent of popularity.

Rubin's conclusion about the independence of popularity from decentration is not warranted from his data. A varimax solution does not guarantee that factors will be uncorrelated. Therefore it may well be that popularity is in fact correlated with decentration. A principal-components solution will guarantee orthogonality of components. We reanalyzed Rubin's data by the method of principal components, using the correlation matrix of all 12 of Rubin's variables. Our first component was similar to Rubin's decentration factor, and on this factor a significant loading of popularity was found. Furthermore, another report by Rubin (1972) based on these data found that the partial correlation between performance on the Glucksberg and Krauss (1967) referential-communication task and popularity, holding IQ constant, was .58 ($p < .01$) for both kindergarten and second grade. These results are consistent with our principal-components reanalysis of Rubin's data. Thus, there is reason to believe that certain interpersonal skills may be related to how well a child is liked by peers.

The present investigation examined the covariation of (1) social skills assessed via a series of tasks and (2) social behaviors assessed in the classroom, with friendship choices assessed by a sociometric measure. Third- and fourth-grade children were studied, since this age level appears to be one of transition in the development of social abilities (Asher & Parke 1975; Elkind 1961; Feffer 1959; Feffer & Gourevitch 1960; Flavell et al. 1968; Glucksberg & Krauss 1967). Children came from two schools differing greatly in the economic and educational level of parents. This provided an assessment of possible social class correlates of the relationships between skills and peer popularity.

Method

SUBJECTS

Two schools were selected for this study, a Title I school in a lower-income section of a midwestern college town and a school in an upper-middle-income section of the town. All the children in two third- and two fourth-grade

classrooms in each school participated in the study;¹ there were 198 Ss.

PROCEDURE

Sociometric Measure

Children were asked to list their best friends (any number). This item was used because of findings of a pilot study in which a sociometric measure had been administered to a third-grade classroom ($N = 25$) in a large midwestern city. A number of possible phrasings were piloted. Children were asked to list (1) their best friends (any number), (2) three children they would like to work with, (3) three children they would go to for help, (4) three children who "really listen to you," (5) three children who "really like you," and (6) three people "you'd like to play with best." Variables 1-6 were the number of other children who chose the subject on items 1-6. A principal-components analysis found three components with eigenvalues greater than one. The first component accounted for 54.08% of the variance and related primarily to friendship (high-loading variables were 1, 4, 5, and 6); the second component accounted for 25.98% of the variance and was interpreted as related to perceived academic ability (high-loading variables were 2 and 3). This sociometric item was administered in the present experiment, and variable 1 (best friends) was used as the sociometric measure of friendship.

Social Skill Assessment

1. *Labeling emotions in facial expressions.*—Using a set of photographs from Izard (1971), children were assessed in a match-to-sample task in which each child was asked to match each picture with index cards which contained the words "sad," "scared," "surprised," "disgusted," and "happy." A total-correct score was computed for each child.

2. *Referential-communication accuracy.*—Children played a word game in which they had to communicate to a listener one of two words in a word pair (e.g., "house-car") by sending the listener an appropriate clue word (e.g., "home"). The italicized word in the

pair is called the "referent," and the other word is called the "nonreferent." The referent appeared with a nonreferent that was either dissimilar (e.g., "house-car") or similar (e.g., "house-home"). Word pairs and instructions were taken from Asher and Parke (1975), but the scoring procedures differed. An adult judge blind to hypotheses about developmental differences scored the children's clue words on related and unrelated word-pair lists, using three categories: good, bad, and not sure. The total of "goods" on related and unrelated word lists, respectively, became the child's two scores on this task.

3. *Perspective-taking tasks.*—(a) *Left-right perceptual decentering.* To assess this skill two objects were placed between the subject and the experimenter. The subject was asked which one was on his left, then which one was on his right. He was then asked which one was on the experimenter's right and which was on the experimenter's left. This was repeated with different objects for 12 pairs of objects (Elkind 1961). A total-correct score was calculated for each child.

b) *Two-mountain problem.* The E sat facing the child and set up two stacks of blocks, following a preset arrangement, to resemble mountain ranges. The child was asked to pick from a set the appropriate index card with the three-dimensional perspective drawing which correctly displayed the "mountain range" from the experimenter's perspective. Four cards were designed, each of the three incorrect choices reflecting a different transformation error following Gibson (1966): a perspectival transformation error; a right-left reversal error; and a picture of the blocks as the child actually saw them. The alternative chosen by the child was recorded. A child's score was either zero or one, depending on whether his choice was correct.

4. *Blindfolded-listener tasks.*—(a) *Obstacle course.* The child was asked to pretend that he had to instruct a blindfolded puppet² through a miniature display of an obstacle course so that the puppet did not bump into anything. The percentage of appropriate com-

¹ Because of the illness of one observer, observational data were not completed for one middle-income fourth-grade classroom, and the subjects for this classroom were dropped from the analysis.

² The usual procedure of blindfolding the child first was not followed. In a pilot study a $2 \times 2 \times 2$ ANOVA (blindfold/no blindfold; third grade/fourth grade; male E/female E) revealed no significant main or interaction effects with percentage of nonvisual cues as the dependent variable.

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munication "units," that is, nonvisual cues, was assessed (see Flavell et al. 1968, p. 88).

b) *Men-with-hats sequence*. Five plastic toy men were shown to S in a fixed sequence. The child was asked to give instructions to an imaginary blindfolded child about the proper sequence of the five plastic toy men. The men were of different colors and wore hats of different colors and different textures (i.e., black leather, blue corduroy, gold velvet, purple netting, black and white fur). The child received a score ranging from zero to five based on the number of texture cues.

5. *Making friends*.—The child was asked to pretend that the E was a new child in school with whom he wanted to make friends. Responses were scored as follows: greeting, one point; asking for information, two points; extending inclusion, three points; and giving information, four points. These categories were used since a pilot study found that they covered all behaviors exhibited by third- and fourth-grade children in a making-friends role play. Points were given differentially since the pilot study indicated that children tended to proceed in a fixed sequence. Giving information was less likely than extending inclusion, for example. Children in the pilot study followed the same sequence in the role play, though some children completed the sequence while others did not, and the sequence was the same as that listed above. An example of information sought is "Where do you live?" or "How much is two and two?" Inclusion was usually a general offer rather than a specific offer to do something together (e.g., "Wanna come over to my house sometime?"). Information given might be "I live near there" or "My favorite sport is basketball."

6. *Giving help*.—Subjects were asked to pretend that the E was another student in their class who needed help on three arithmetic problem sets. Each problem set required the child to switch teaching strategy. For the first set counting on the fingers would do, but for the second set it would not. For the third set, remainders had to be dealt with. The extent to which the child switched strategy was assessed. The child's response was scored zero if he simply gave the answer, one point if he supplied a strategy but not very clearly, and two points if a clear strategy was supplied; and an extra five points were given if the S shifted

strategy, since a shift in strategy was considered to indicate a high level of helping skill.

Classroom Behavior Assessment

Observers were assigned to classrooms. They spent a few days learning the names of the children in the classroom and then began observing by picking a child, observing him for 10 6-second intervals (using a clipboard with a 6-second light-emitting diode), and then moving to the next child on the list. Observation was sampled from four situations: (1) lecture or demonstration situations (approximately 90 observations per child); (2) seat work (approximately 90 observations per child); (3) small-group work, mixing, or classroom work which involved free access to other children (approximately 90 observations per child); and (4) gym, recess, or play periods outside the classroom which involved more vigorous physical interaction (approximately 40 observations per child). The following categories were used:³ (a) alone positive (not interacting with other children or teacher but listening to teacher when teacher is talking, or doing assigned work); (b) alone and off task (i.e., daydreaming or "tuned out"); (c) dispensing positive reinforcer verbally (e.g., giving approval or verbally complying with a request); (d) dispensing positive reinforcer nonverbally (e.g., giving something [a token], giving affection, nonverbally complying with a request); (e) dispensing negative reinforcer verbally; (f) dispensing negative reinforcer nonverbally; (g) receiving positive reinforcer verbally; (h) receiving negative reinforcer verbally; (i) receiving positive reinforcer nonverbally; (j) receiving negative reinforcer nonverbally; (k) entry behavior (asking for something, offering something); (l) peer interaction neutral (includes whispering); (m) teacher interaction: (1) teacher giving positive reinforcer; (2) teacher giving negative reinforcer; (3) teacher neutral; and (n) child initiating interaction with teacher. The relative frequency of each category was tallied for each child, summing over all four situations.

Observers were first trained in a pilot school until an acceptable interobserver agreement of 85% was reached. Interobserver agreement was calculated as the total number of intervals for which agreement occurred divided by the total number of intervals of observation. An interobserver agreement of

³ A copy of the training manual for classroom observers will be mailed on request.

85% was maintained throughout the study. Observers began observing in the Title I school and moved to the other school after approximately 350 observations (35 minutes) per subject, crossing grade level when switching schools. One observer was used throughout the study for weekly random spot reliability checks only, and another observer also functioned exclusively as a reliability checker, making reliability checks once a week at random unannounced times for each observer.

Results

To assess the relationships among social skill variables, classroom interaction variables, and friendship, two $2 \times 2 \times 2$ factorial multivariate analyses of variance were performed, with two levels of social class, two levels of grade (third and fourth), and a median split on the number of friendship choices received. The low-friends group received zero to five choices, with a mean of 2.82 friends, and the high-friends group received six or more choices, with a mean of 7.48 friends. Because some cells of the design had no variance on some dependent variables, variable scores were summed as follows. In the social skills tasks scores on the left-right and two-mountain problems were summed and called "perceptual decentering"; scores on the obstacle-course and men-with-hats tasks were summed and called "blindfolded listener." In the classroom observations entry and neutral interaction scores were summed and called "neutral interaction"; positive verbal and positive non-verbal reinforcements distributed were summed and called "distributes positive." Similarly, verbal and nonverbal behaviors were summed for "distributes negative," "receives positive," and "receives negative." Teacher-positive, teacher-negative, and teacher-neutral interactions were summed and called "receives atten-

tion from teacher." To control for differences in activity level among children, the proportion of positive to total reinforcement distributed was calculated.

SOCIAL SKILL VARIABLES

Using a multivariate analysis of variance of social skills with Wilks's λ criterion, a significant main effect was obtained for friends, $F(7,185) = 2.41, p < .022$. No significant interaction effects were obtained for grade level, social class, and the friends factor. Table 1 summarizes the univariate F tests for each social skill variable. High-friends children received significantly higher scores on the unrelated-word-pairs task and the knowledge-of-making-friends role play than did low-friends children.

There was a significant grade-level main effect, $F(7,185) = 2.96, p < .006$. However, the univariate F tests revealed a pattern different from that for the friends main effect. Grade-level differences were found, with fourth graders performing better than third graders on identifying affect in facial expressions, on the related-word-pair task, on perceptual decentering, on the blindfolded-listener task, and on knowledge of giving help.

As expected, there was a significant social class effect, $F(7,185) = 12.74, p < .001$. Children in the middle-income school performed better on all tasks than those in the lower-income school. There was also a significant social class \times grade level interaction, $F(7,185) = 2.70, p < .011$. There were two significant univariate social class \times grade level interactions. Lower-income children increased and middle-income children decreased in knowledge of making friends from third to fourth grade. Table 2 presents means and

TABLE 1

UNIVARIATE F TESTS FOR SOCIAL SKILL VARIABLES FOR EFFECTS SIGNIFICANT USING WILKS'S λ CRITERION

SKILL	FRIENDS		GRADE (G)		SES (S)		S \times G	
	F	p	F	p	F	p	F	p
Facial expressions	0.98	...	2.58	...	19.78	.001	4.93	.028
Related word pair	0.22	...	4.36	.038	15.16	.001	1.29	...
Unrelated word pair	10.20	.002	0.99	...	13.60	.001	2.46	.118
Perceptual decentering	2.26	...	3.81	.053	20.02	.001	0.87	...
Blindfolded listener	1.50	...	12.61	.001	44.19	.001	1.55	...
Friend making	5.33	.022	0.47	...	11.49	.001	6.41	.012
Help giving	0.02	...	2.89	.091	17.37	.001	0.35	...

NOTE.— $df = 1,191$. Empty cells indicate nonsignificance.

TABLE 2
MEANS AND STANDARD DEVIATIONS FOR SOCIAL SKILL VARIABLES

SOCIAL SKILL	LOWER-INCOME SCHOOL				MIDDLE-INCOME SCHOOL			
	Third Grade		Fourth Grade		Third Grade		Fourth Grade	
	Low Friends	High Friends	Low Friends	High Friends	Low Friends	High Friends	Low Friends	High Friends
Facial expressions:								
\bar{X}	14.69	15.32	14.78	14.92	15.86	15.74	17.25	17.00
SD	(2.09)	(2.04)	(2.92)	(1.62)	(1.70)	(2.00)	(1.92)	(1.16)
Related word pair:								
\bar{X}	1.81	2.48	2.38	2.17	2.90	2.46	3.50	3.71
SD	(1.09)	(1.24)	(1.67)	(1.40)	(1.56)	(0.80)	(1.88)	(2.56)
Unrelated word pair:								
\bar{X}	8.09	9.00	8.19	9.08	9.26	9.05	8.55	9.29
SD	(1.40)	(1.16)	(1.20)	(0.90)	(0.64)	(0.84)	(1.10)	(0.76)
Perceptual decentering:								
\bar{X}	6.97	8.55	8.43	8.92	9.40	9.77	10.35	8.86
SD	(2.66)	(2.39)	(2.90)	(1.62)	(2.50)	(2.99)	(2.43)	(3.13)
Blindfolded listener:								
\bar{X}	83.28	84.19	99.73	117.08	126.40	139.55	169.05	185.71
SD	(66.54)	(55.87)	(61.14)	(72.20)	(57.23)	(54.13)	(45.55)	(37.80)
Friend making:								
\bar{X}	3.16	3.77	4.00	4.67	4.50	5.86	4.15	4.14
SD	(1.53)	(2.14)	(1.76)	(2.96)	(2.33)	(3.20)	(0.67)	(0.90)
Help giving:								
\bar{X}	2.44	1.94	2.89	2.67	3.68	4.55	5.05	5.14
SD	(3.51)	(2.61)	(3.90)	(3.34)	(3.26)	(4.27)	(0.69)	(0.38)

standard deviations for the social skill variables.

CLASSROOM BEHAVIOR VARIABLES

Using multivariate analysis of variance of the classroom interaction variables, a marginally significant main effect was obtained for friends, $F(10,182) = 1.79$, $p < .066$. Table 3 presents the univariate F ratios for each

classroom interaction variable. High-friends children were off task (daydreaming instead of attending or working) less and distributed and received more positive reinforcement than low-friends children. There was also a significant friends \times grade level interaction for the classroom variables, $F(10,182) = 2.26$, $p < .016$. Although high-friends children were off task less and received more positive reinforce-

TABLE 3
UNIVARIATE F TESTS FOR CLASSROOM INTERACTION VARIABLES FOR EFFECTS SIGNIFICANT USING WILKS'S λ CRITERION

VARIABLE	FRIENDS (F)		GRADE (G)		SES (S)		S \times G		F \times G	
	F	p	F	p	F	p	F	p	F	p
Alone on task	0.52	...	5.20	.024	15.13	.001	104.54	.001	0.17	...
Alone off task	7.44	.007	0.49	...	2.21	...	3.56	.061	6.21	.014
Neutral interaction	2.26	...	2.33	...	2.02	...	130.51	.001	0.31	...
Distributes positive	2.87	.092	2.05	...	8.46	.004	40.20	.001	1.37	...
Distributes negative	0.17	...	21.13	.001	8.89	.003	50.57	.001	1.16	...
Receives positive	4.90	.028	10.39	.001	1.00	...	51.89	.001	3.89	.050
Receives negative	2.04	...	0.01	...	11.74	.001	0.46	...	0.01	...
Initiates to teacher	0.14	...	0.54	...	4.77	.030	0.52	...	0.02	...
Receives attention from teacher ...	0.60	...	0.32	...	6.62	.011	3.80	.053	0.36	...
Proportion positive of total	1.81	...	1.27	...	5.30	.022	1.52	...	1.17	...

NOTE.— $df = 1,191$. Empty cells indicate nonsignificance.

ment, the gap decreased for off-task behavior and widened for positive reinforcement received from third to fourth grade.

There was a significant grade-level main effect, $F(10,182) = 8.73$, $p < .001$, for the social interaction variables. Fourth graders were on task more, distributed more negative reinforcement, and received more positive reinforcement than third graders. There was a significant social class main effect, $F(10,182) = 5.71$, $p < .001$. Middle-income children were on task more, distributed more positive reinforcement, distributed and received less negative reinforcement, had a higher proportion of positive to total interaction, and interacted with the teacher (initiated and received) less than lower-income children.

There was a significant social class \times grade level interaction, $F(10,182) = 27.13$, $p < .001$; from third to fourth grade, low-income children increased the time they spent both on and off task and interacting with the teacher and distributing negative reinforcement, while middle-income children decreased on these variables from third to fourth grade. Middle-income children increased from third to fourth grade on neutral interaction and on distributing and receiving positive reinforcement, whereas low-income children decreased on these variables. Table 4 presents means and standard deviations for the classroom behavior variables.

To study differences in the relationship between verbal and nonverbal reinforcement

TABLE 4
MEANS AND STANDARD DEVIATIONS FOR CLASSROOM BEHAVIOR VARIABLES

VARIABLE	LOWER-INCOME SCHOOL				MIDDLE-INCOME SCHOOL			
	Third Grade		Fourth Grade		Third Grade		Fourth Grade	
	Low Friends	High Friends	Low Friends	High Friends	Low Friends	High Friends	Low Friends	High Friends
Alone on task:								
\bar{X}	48.11	46.41	74.83	70.75	73.40	78.48	49.32	38.00
SD	(21.99)	(20.62)	(14.41)	(14.84)	(14.13)	(14.00)	(9.10)	(7.99)
Alone off task:								
\bar{X}	7.83	4.06	6.84	8.64	7.58	3.92	4.09	3.49
SD	(6.28)	(3.96)	(6.56)	(7.76)	(5.97)	(5.27)	(4.02)	(2.21)
Neutral interaction:								
\bar{X}	28.07	32.21	10.22	11.14	13.19	12.08	34.55	32.71
SD	(12.58)	(13.09)	(13.64)	(8.75)	(9.69)	(9.34)	(9.03)	(9.39)
Distributes positive:								
\bar{X}	9.87	10.10	1.99	1.96	1.31	1.02	4.59	17.40
SD	(8.46)	(8.11)	(1.93)	(0.93)	(1.41)	(0.80)	(2.96)	(34.82)
Distributes negative:								
\bar{X}	0.08	0.13	0.69	0.77	0.22	0.27	0.03	0.02
SD	(0.17)	(0.24)	(0.73)	(0.58)	(0.27)	(0.24)	(0.02)	(0.01)
Receives positive:								
\bar{X}	2.09	3.00	1.46	1.68	1.07	1.10	4.46	5.76
SD	(2.10)	(3.18)	(1.25)	(0.96)	(1.03)	(0.98)	(2.80)	(4.63)
Receives negative:								
\bar{X}	0.46	0.24	0.44	0.43	0.16	0.10	0.10	0.01
SD	(1.17)	(0.31)	(0.44)	(0.35)	(0.25)	(0.19)	(0.45)	(0.01)
Initiates to teacher:								
\bar{X}	0.97	1.20	1.08	1.03	0.69	0.74	1.05	0.67
SD	(0.59)	(0.94)	(0.92)	(1.65)	(0.70)	(0.71)	(0.99)	(0.74)
Receives attention from teacher:								
\bar{X}	1.76	1.90	1.78	2.69	1.58	1.46	0.86	0.93
SD	(1.21)	(1.52)	(1.47)	(2.53)	(1.93)	(1.33)	(0.99)	(0.78)
Proportion positive of total:								
\bar{X}	0.75	0.74	0.68	0.92	0.79	0.86	0.95	0.97
SD	(0.44)	(0.45)	(0.48)	(0.29)	(0.41)	(0.35)	(0.22)	(0.10)

dispensed and friendship as a function of social class, regression equations were computed separately for each school, with friends as the dependent variable. Table 5 shows that verbal reinforcement accounts for the most variance in the relationship of reinforcement dispensed to friendship in the middle-income school and nonverbal reinforcement accounts for the most variance in this relationship in the lower-income school.

Discussion

The findings support the conclusion that popular children are more skillful than unpopular children and interact differently with their peers. The classroom interaction data are consistent with Hartup et al.'s (1967) finding of correlation between acceptance scores and distribution of positive reinforcement in two middle-income nursery school classes. Popular children were also more knowledgeable about how to make friends. The strongest finding was the relationship between performance on the unrelated-word-pairs task and the friendship main effect. This finding is consistent with Rubin's (1972) report of high positive partial correlations (with IQ held constant) between popularity and performance on the Glucksberg and Krauss (1967) referential-communication task. Asher and Parke (1975) reported that second graders made very few errors in referential communication on unrelated word pairs. However, a strong monotonic developmental effect was observed from second to sixth grade on the related-word-pairs list. This finding was replicated in the present investigation. Asher and Parke argued that changes in performance on the related-word-pairs list may be indicative of "comparison processes." In comparison processes the child must produce a good clue word by editing from a total list of possible associates to the referent that clue word which is also less an

associate to the nonreferent. The child presumably edits by taking the perspective of the listener. Differential effects on the related- and unrelated-word-pairs lists in the present investigation suggest that comparison processes may not be operative in having or making friends. Instead, a more primitive skill may be involved, in which the high-friends child is more able than the low-friends child to communicate to a listener what he is talking about in situations where the fine discrimination tapped by the related-word-pairs task is unnecessary. The unrelated-word-pair skill may be more related to Vygotsky's (1962) investigations of private or unedited inner speech as egocentric thought. Part of the function served by the familiar classroom activity of "show and tell" may be to train the child to bring his audience along with him in showing or telling about something, a skill which may be tapped by the unrelated-word-pair task.

The results also suggest that there are relationships among measures of friendship, social skills, and social interaction. However, the relationships obtained do not support the hypothesis that social skill variables which differ across age will also necessarily be related to a criterion variable of successful social interaction such as friendship. For example, the grade-level univariate F ratios for the related-word-pair, blindfolded-listener, and perceptual-decentering tasks were large. However, these effects were not significant at the .05 level for the friends main effect. There is therefore no reason to suspect that "skills" logically related to making friends (such as blindfolded-listener role-taking skills) are in fact related, without prior validation. It is therefore improper to label performance on a task a "social skill" simply because older children do better than younger children on the task. It may be necessary to validate the task by showing that performance on the task has

TABLE 5

MULTIPLE REGRESSION OF NUMBER OF FRIENDS ON POSITIVE VERBAL (D + V) AND POSITIVE NONVERBAL (D + N) REINFORCEMENT DISPENSED TO PEERS AS A FUNCTION OF SOCIAL CLASS AND GRADE LEVEL

SCHOOL	D + V		D + N		COVARIANCE (D + V, D + N)
	Proportion of Variance Accounted For	Direction of Weights	Proportion of Variance Accounted For	Direction of Weights	Proportion of Variance Accounted For
Lower income128	+	.780	+	.092
Middle income678	+	.259	-	.063

discriminant validity with reference to a criterion such as sociometric status, which itself has been shown to have predictive validity.

The finding that *nonverbal* reinforcement dispensed is related to friendship in the lower-income school whereas *verbal* reinforcement dispensed is related to friendship in the middle-income school may be an important result in designing interventions for socially isolated children. It may be necessary to design different interventions for children in different schools. While it could be argued that the effective number of subjects for analyzing sociometric position in this study is the number of classrooms, not the number of children, school-wide sociometric data correlate extremely highly with within-classroom sociometric data, and the consistency is even greater for the extremes of friendship choices received (Bell & French 1950; Gronlund & Whitney 1956).

Significant interactions between social class and grade level would seem to be parsimoniously explained by suggesting that middle-income-school children's orientation shifts more toward a peer-interaction mode whereas low-income-school children's orientation shifts more toward task behavior and interaction with the teacher. For example, from third to fourth grade the relative frequency of neutral interaction with peers moves from 30.14% to 10.68% in the lower-income school and from 12.64% to 33.63% in the middle-income school. It is unclear why such shifts would take place, but it is likely that lower-income-school fourth-grade teachers stress remediation of academic skills whereas middle-income-school fourth-grade teachers relax in this area. On-task behavior increases in the lower-income school from 47.26% to 72.79% from third to fourth grade and decreases in the middle-income school from 75.94% to 43.66% from third to fourth grade. However, it is interesting that the making-friends scores of middle-income children decrease while those of lower-income children increase; also, middle-income children catch up to lower-income children on the identification of affect in faces. Perhaps social skill development lags the shifts in emphasis in the two schools.

It is insufficient to study only the covariation among social skills, social interaction, and friendship. Subsequent research should be

designed to train low-friends children on those variables which were shown to be related to the friendship main effect. These intervention studies should use sociometric status as the dependent variable. In a recent review of interventions for socially isolated children, Asher, Oden, and Gottman (in press) found that all interventions in which sociometric position was the dependent measure resulted in small gains. In those few cases where interventions included a reasonably long term follow-up, these initial gains returned to baseline. The same conclusion was drawn in an earlier review by Bonney (1971). The present investigation may suggest one possible reason for this unfortunate return-to-baseline effect. McFall (1975, p. 7) discussed this issue for social skill training in the area of assertion: "Investigators have relied on little more than their clinical intuitions to decide what assertive responses to teach in their training programs. This is unfortunate, since there is an integral relationship between the validity of the responses selected for training—that is, the program's content—and the potential effectiveness of a training program's techniques."

The present investigation can function as a discriminant validity study for the design of intervention programs. A coaching study was subsequently performed, training low-friends children on those variables identified in the present investigation. There were two experimental and two control children. Long-term follow-up indicated that the experimental children changed significantly. Interrupted time-series analyses showed no significant increase in the total frequency of interaction for any child; however, experimental children redistributed their interaction to their new friends.⁴ This study is currently being repeated with a larger *N*. Previous intervention studies in this area have been focused on contingency management (Walker & Hops 1973) or modeling (O'Connor 1969, 1972). While coaching as a technique has been used successfully with adults in areas of assertion training (McFall & Twentyman 1973) and social skill training (Goldsmith & McFall 1975), there has been no systematic study of the effects of coaching children in social skill training.

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⁴ A more detailed report on the intervention study will be supplied on request.

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