

ASSESSMENT OF THE CORRELATES OF SOCIOMETRIC STATUS
IN CHILDREN:
BEHAVIORAL, COGNITIVE, PEER PERCEPTION
AND AGE DIFFERENCES

by

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INTRODUCTION

Within the areas of clinical child and developmental psychology, the past decade has witnessed a resurgence of interest in the phenomenon of sociometric status in childhood. This interest was spawned, in part, by a substantial body of research which demonstrated a relationship between children's early popularity, as assessed by sociometric status, and later adjustment in adolescence and adulthood, as well as by studies relating early level of functioning to later functioning. The bulk of the research has been directed toward treatment programs aimed at enhancing children's interpersonal functioning with considerably less attention devoted to the identification of factors that correlate with sociometric status in childhood. The purpose of the present study was to attempt to identify some of the correlates of high and low sociometric status at different age levels (grades 1, 3, and 5).

Although recent literature on sociometric status emanates almost exclusively from a social learning model postulating that unpopular children lack certain skills that can be trained, this viewpoint is not without a history of controversy. Recently, Berndt (1983) raised the issue in reviewing some of the research on sociometric status. He pointed out that certain findings indicate that low sociometric status children can indeed

behave competently in certain social settings, therefore arguing against a deficit hypothesis. His analysis is reminiscent of the original debate between Northway (1944) and Jennings (1952) on the same issue, in which Northway argued that a child's sociometric status reflected stable characteristics of the child's behavior while Jennings contended that a child's sociometric status was highly dependent on the group in which the child was temporarily a member and, thus, subject to change as the group changed. Given the moderate stability of sociometric status that has been shown (e.g., Bush, Ford, & Schulman, 1973; Rubin & Daniels-Bierness, 1983), it is likely that characteristics of the child do, in fact, impact on sociometric status resulting in stability from year to year.

The theoretical stand of the present research lies somewhere toward the Northway end of this continuum. Based on the social skills deficit hypothesis of children's interpersonal behavior, it was hypothesized that children who display problems in peer relationships do so because they lack specific behavioral or cognitive social skills in their repertoires. However, sociometric status was proposed to be affected by a child's standing on a number of nonbehavioral dimensions deemed important within the child's current peer group as well. Finally, it was proposed that developmental level would play an important role in which factors predicted sociometric status.

Based on this theoretical basis, it was hypothesized that behavioral and cognitive deficits could be identified in unpopular children when compared to their popular peers. It was also expected that significant contributions to the prediction of sociometric status would be made by measures of personal attributes over and above similar measures of behavior. Further, the relative contributions of these behavioral, cognitive, and personal attribute variables were predicted to vary with age.

CHAPTER I

REVIEW OF LITERATURE

LONGITUDINAL LITERATURE

The major impetus for the recent plethora of social skills intervention studies with children was the body of research findings relating early maladjustment in childhood to later, more severe forms of pathology. The first group of these longitudinal studies related measures of interpersonal dysfunction in childhood to later maladjustment. For example, Robins (1966) conducted a longitudinal study and demonstrated that persons who were clinic referred as children showed significantly more maladjustment at a 30-year follow-up probe than demographically comparable non-clinic referred subjects. Specifically, the incidence of alcoholism, psychopathy, and psychosis was three times greater for experimental versus control subjects. Further, for a number of behavioral indices, collectively termed "sociopathy", the experimental group was found to be four times higher than controls.

These indices included antisocial behavior, arrest rates, occupational achievement, use of welfare services, and divorce rates. Hence, Robins (1966) established a relationship between one measure of social competence in childhood (mental health referral) and later indices of social functioning in adulthood (e.g., psychiatric disturbance, job achievement).

Similarly, Roff (1961) found a relationship between children's early social adjustment, as assessed by coding charts from a child guidance center, and misconduct in the military in later adulthood. Briefly, enlisted men who had been in mental health clinics during childhood were selected as subjects. Those servicemen who went AWOL repeatedly, who demonstrated poor conduct in the service (e.g., insubordination, physical fighting), or who had received bad conduct discharges were compared with servicemen who did not demonstrate these behaviors on a criterion termed "peer group adjustment." This criterion was assessed by coding earlier clinic records of each subject and extracting any relevant statement or rating from significant others in the child's environment regarding his functioning amongst peers. The results showed that "those subjects whose earlier peer adjustment was evaluated as poor showed significantly more bad conduct in the service than did subjects whose earlier peer group adjustment was appraised as good" (p. 335).

Another frequently cited research study demonstrating a relationship between early isolation in childhood and later psychiatric distress is that of Kohn and Clausen (1955). Numerous researchers in the area of children's social skills cite this study as evidence of the relationship between childhood unpopularity and schizophrenia. For example, Puttallaz and Gottman (1981) state, "Childhood unpopularity predicts the incidence of such behavior problems as . . . and psychoses (Kohn & Clausen, 1955; Roff, 1963)" (pp. 116-117). However, this study suffers from some methodological shortcomings. Specifically, Kohn and Clausen (1955) utilized the recollections of schizophrenic and manic depressive psychiatric patients and a control comparison group matched on age, sex, and occupation (or father's occupation) to assess degree of social isolation in childhood. The reliability of self report measures is questionable even when the behavior being recalled is relatively recent. However, having subjects recall behavior from 20 years previous (let alone the fact that subjects were suffering cognitive or affective disturbances) doubtless renders these data highly suspect with respect to reliability. Bearing these methodological problems in mind, their results showed that while none of the normal control subjects was categorized by retrospection as a social isolate at age 13-14 years, one-third of the experimental group fell within this category. The finding that two-thirds of their experimental sample fell within the non-isolate category led the authors to state that, "Our general conclusion must be, then, that for the group here studied the data do not support the hypothesis that social isolation in

adolescence is a predisposing factor in either schizophrenic or manic-depressive psychoses" (p. 272). While the relationship between childhood isolation and schizophrenic and manic depressive disorders was not robust, combined with other studies, the findings are suggestive of a relationship between earlier and later interpersonal functioning.

The second group of longitudinal studies, and the one most relevant to the present research, consists of those investigations that have correlated sociometric (peer popularity/unpopularity) rather than measures of social competence per se, to later functioning. Probably the most often cited study is that of Cowen, Pederson, Barbigian, Izzo, and Trost (1973). In this study, third grade students were administered the Anxiety and Lie scales of the Children's Manifest Anxiety Scale, the Thinking About Yourself test (a scale measuring self-ideal discrepancy), and a sociometric instrument (The Class Play) in which each student nominated peers for a number of positive and negative roles. In addition, teacher ratings of overall adjustment were obtained. Finally, school record measures were included, such as number of nurses' referrals, days absent, report card grades, achievement test scores, IQ test scores, and an achievement-aptitude discrepancy score. Eleven to 13 years later, the names of persons appearing in a local psychiatric register were compared to the names of the children who participated in the third grade assessment. Two groups of subjects were selected, one whose names appeared in the register and a control group matched on age and sex who participated

in the early assessment but whose names did not appear in the psychiatric register. The two groups were compared on all of the third grade measures and results revealed that the best predictors of later psychiatric referral were peer sociometric measures. Specifically, the negative nomination score discriminated the two groups significantly, total sociometric score discriminated the groups significantly at a lower statistical level, while the difference between groups on the positive nomination score was not significant.

Roff, Sells, and Golden (1972) similarly demonstrated a relationship between sociometric status in childhood and later adjustment. In this study, sociometric status (assessed via positive and negative nominations) was obtained for 2400 children in the third through sixth grades. Four years later, the names of those children who had come into contact with the juvenile court system were obtained. Approximately 11% of the sample had acquired a court record. An analysis of these children's sociometric status scores from four years earlier revealed that low peer status (peer rejection) was significantly correlated.

Ullman (1957) examined the relationship between two criterion measures of school performance (honor roll attainment in the eleventh grade and dropping out of school prior to graduation) and sociometric ratings obtained in the ninth grade. The results of this study indicated that peer ratings were predictive of honor roll attainment and school drop out in

a positive and negative fashion, respectively, for boys. However, with girls, peer ratings were predictive of academic achievement only and not of school withdrawal. Similarly, Barclay (1966) found that 64% of male high school dropouts and 54% of female dropouts were rejected by peers on sociometric measures obtained four years earlier.

Like the Ullman (1957) study, other researchers have related high sociometric status in childhood to superior academic achievement (e.g., Laughlin, 1954; Muma, 1965, 1968; Porterfield & Schlichting, 1961). For instance, Porterfield and Schlichting (1961) found that high reading achievement was correlated with peer acceptance among sixth grade students. Among all socioeconomic levels except the lowest, this was true whether peer acceptance was assessed by social acceptability nominations (i.e., "If you had to move to another classroom, which student in this classroom would you most like to take with you?"), by leadership nominations (i.e., "Which classmate would you like to be president of your class?"), by athletic ability nominations (i.e., "Which classmate do you most like to play outdoor games with?"), or by academic performance nominations (i.e., "Which classmate would you choose to help you with your school work?"). For low socioeconomic children, athletic and social acceptability nominations were uncorrelated with reading achievement. These authors also found a positive relationship between low reading achievement and peer rejection. Still others have related high peer

status to various indices of interpersonal adjustment in adulthood (e.g., Guinouard & Rychlak, 1962; Ullman, 1957).

In summary, adequate empirical evidence exists supporting the predictive validity of childhood sociometric status measures for adjustment in later adolescence and adulthood. Unpopularity in childhood (i.e., negative nominations, low peer ratings) is predictive of poor academic achievement and delinquent behavior patterns in adolescence and of seeking psychological or psychiatric services in adulthood. Conversely, high peer status is related to superior academic achievement and the absence of interpersonal maladjustment in adulthood.

REVIEW OF SOCIOMETRIC STATUS ASSESSMENT LITERATURE

In this section, empirical findings which relate various factors to sociometric status will be reviewed. Some of the findings are extracted from treatment studies and thus are of an indirect nature.

One of the earliest assessments of sociometric status was undertaken by Marshall and McCandless (1957). These investigators observed children and coded three types of positive participation (associative play, friendly approach, conversation) and one type of negative interaction (hostile interaction). All three positive social participation measures

were significantly correlated with peer acceptance (positive nominations). Hostile interaction was not significantly correlated.

One of the most often cited studies investigating the correlates of sociometric status is that of Hartup, Glazer, and Charlesworth (1967). These authors obtained sociometric status information from 32 preschool children via positive and negative nomination procedures. They then observed children in the classroom and coded behavior according to positive versus negative reinforcers dispensed or received. Positive interaction included attention and approval, affection and personal acceptance, submission, and tokens. Negative interaction was scored if the child was noncompliant (refused to cooperate, withheld positive reinforcement, or ignored overtures from others), interfered with ongoing activities, made derogatory statements or gestures, or physically attacked or verbally threatened another child. Their results showed that peer acceptance was related to the frequency of dispensing positive reinforcement but uncorrelated with the frequency of negative interactions. Peer rejection, conversely, was related to the frequency of dispensing negative behaviors but unrelated to the frequency of dispensing positive reinforcement. Further, while children received more positive reinforcement from other peers whom they rated as liked than from disliked, they, on the other hand, received no more negative overtures from disliked peers than from liked peers. Thus, it can be concluded that a child's acceptance among peers is related to the frequency with which he/she dispenses positive

reinforcement to peers. Peer rejection, however, is associated with the dispensing of negative interactions to the peer group but an individual child's rejection of a peer is not necessarily related to the personal receipt of negative interactions from the disliked peer.

Similarly, Masters and Furman (1981) concluded that the selection of a peer as liked was correlated with the frequency of receiving reinforcing and neutral acts from that peer. These authors also provided evidence to support the conclusion of Hartup et al. (1967) that peer rejection is related to the frequency of dispensing and receiving punishing acts within the peer group.

Gottman, Gonso, and Rasmussen (1975) replicated some of these earlier findings with third and fourth grade children. These researchers classified children as high versus low peer acceptance based on a median split of positive nomination scores and studied the relationship between acceptance and a number of variables including socioeconomic status, grade level, social skills knowledge, social perception, and behavior observations. The results of their study corroborated earlier findings of the positive association between the frequency of dispensing and receiving positive reinforcement (defined as giving approval or complying with a request, or giving a token or affection) and peer acceptance. For middle socioeconomic status children, verbal positive reinforcement accounted for the most variance of peer acceptance scores while for lower

socioeconomic children, nonverbal positive reinforcement was most predictive of peer acceptance. Further, for all children, peer popularity was correlated with knowledge on a referential communication task. Finally, peer status was negatively correlated with the amount of time spent off task.

Similar findings were reported by Gottman (1977) using positive and negative sociometric nominations. Peer rejection was related significantly to the frequency of negative interactions and with the amount of time spent "tuned out" (defined as alone and off task). In addition, children who received few positive or negative nominations ("ignored" children) were found to be "tuned out" more frequently than accepted or rejected children and to be high on a set of shy, anxious, fearful behaviors coded as "hovering".

Vaughn and Waters (1981) classified preschoolers as high or low peer status on the basis of frequency of receiving positive and negative nominations from peers. They found that, relative to low status children, high status children received more attention from peers (as measured by frequency of "looks" or "glances" received). In addition, they found a negative correlation between sociometric status and aggressive behaviors (e.g., object struggles, defined as physically or verbally fighting over possession of a desired object; displacements, defined as removal of one child by another from a position either by threat or physical force). A

positive relationship was found between peer status and three positive social behaviors (interactive play, talk, parallel play). Further, peer rejection was associated with the overall frequency of and initiation of "hazing" (teasing; verbal, physical, or gestural threats, often unprovoked, which seemed to occur to "get a rise" from peers), and with the overall frequency of and initiation of "specific hostile acts" (physical attacks leading to submission).

Utilizing a longitudinal design, Rubin and Daniels- Bierness (1983) found that positive social interaction during free play was positively correlated with sociometric status for children when they were both kindergarteners and as first graders. Solitary-dramatic play negatively correlated with sociometric status at both grade levels. In addition, negative peer interaction was negatively correlated with sociometric status for kindergarteners while parallel play and exploratory activity were negatively associated with peer status for first graders. The finding that parallel play correlated negatively with peer status at grade 1 but not in kindergarten is consistent with previous research which shows that parallel activity increases from preschool to kindergarten but declines thereafter (Rubin, 1982).

In addition to looking at the concurrent correlates of sociometric status at the kindergarten and grade 1 levels, these authors also looked at the predictive correlates of sociometric status in kindergarten and grade 1.

Sociometric status was found to be moderately stable from kindergarten to grade 1 ($r=.48$). Upon examining the kindergarten behaviors that predicted sociometric status at grade 1, they found a number of play behaviors which were predictive of low peer status in the first grade. These included rough-and-tumble play, solitary-exploratory play, solitary-functional play, and the proportion of negative peer exchanges. Parallel-constructive play positively predicted sociometric status in grade 1. From a slightly different angle, high sociometric status in kindergarten was associated with significantly more group play and game activities in the first grade. Low kindergarten status predicted solitary-functional play and solitary-exploratory play in the first grade.

Puttallaz and Gottman (1981) and Puttallaz (1982) examined the behavior of popular versus unpopular first graders upon attempting to gain entry into an ongoing peer activity. In the first of these two studies, unpopular children demonstrated entry behaviors that called attention to themselves. That is, they were more likely to disagree, ask informational questions, say something about themselves, and state their feelings and opinions than popular children. These behaviors had, as their result, rejection or ignoring by the group. In contrast, popular children appeared to attempt to integrate themselves by sharing the group's frame of reference. The latter study (Puttallaz, 1982) corroborated these findings. In addition, it was found that the number of relevant comments

made in entry situations predicted sociometric status assessed four months later. One criticism of the earlier Puttallaz and Gottman (1981) study was the use of familiar confederates for the entry task thus failing to control for a subject's past history with these peers. Therefore, the Puttallaz (1982) study utilized unfamiliar confederates to control for this. However, the confederates were one and two years older than the subjects, and, as the author points out, "it is possible that the socially skillful thing to do under these circumstances is to fit in with the group, but that some other norm would be more appropriate when interacting with same age peers" (p. 18). Nevertheless, the results are intriguing and warrant further investigation.

In a similar vein, Newcomb and Meister (1985) examined the play behavior of popular and unpopular (as assessed by positive and negative nominations) third and fourth grade children. Dyads of previously unacquainted high/high, high/low, and low/low sociometric status children were observed in an analogue free play setting. Results revealed that the dyads did not differ on the exchange of global play information. However, the low/low popularity status dyads exchanged significantly less personal information than high/high and high/low dyads who did not differ on this dimension. Compared to high/high dyads, both high/low and low/low dyads were less likely to display a sequence of initial behaviors in their social interactions which included greetings and introductions followed by an exchange of play information.

In an effort to further delineate the types of situations that prove problematic for rejected versus accepted children, Dodge, McClaskey, and Feldman (1985) developed a taxonomy of the situations and tasks most likely to lead unpopular children to experience social difficulties. The taxonomy, called the Taxonomy of Problematic Social Situations for Children (TOPS), was developed by interviewing elementary school teachers and clinical child psychologists as to social situations that they felt were likely to lead to peer relationship problems among school children. Popular and unpopular second, third, and fourth grade children were then identified using positive nomination and rating sociometric procedures. The teachers of these children were then asked to complete the TOPS for each identified child. Specifically, teachers rated on a scale of 1-5 how much of a problem this situation was for each target child and how likely the child would be to respond inappropriately in this situation. The results showed that teachers rated unpopular children as having more problems in each situation, but particularly in Response to Peer Provocation and Response to Teacher Expectation categories.

In Study 2 of this investigation, the authors found that, in analogue presentation of the TOPS, clinic-referred rejected, aggressive children responded significantly less competently than nonaggressive, accepted children. Again, this was especially true for peer provocation situations. The authors state that their research is a step in better understanding aggressive, rejected children's behavior and identifies

particular types of situations that distinguish popular from unpopular children for use in remediation programs. Although it is clearly important to identify the contexts, situations, and tasks that are problematic for rejected children, one shortcoming of this study is that the rejected children in Study 2 displayed aggressive behavior severe enough to warrant clinic referral and, thus, the findings may not be generalizable to unpopular (rejected) children in general. Furthermore, as the authors point out, the question of what makes these children behave differently in such situations remains unaddressed.

Ollendick (1980) performed multiple regression analyses to determine which of a number of variables (social interaction, role play behavior, teacher ratings, and self report measures of anxiety, assertion, and locus of control) best predicted sociometric status of 8 to 10 year old children. For girls, positive social behavior, role play behavior, and self report assertion were predictive of popularity. For boys, only positive social behavior and self report anxiety were significantly related. For girls, positive social interaction accounted for 26% of the peer popularity variance while it accounted for only 18% of the total variance for boys. While behavioral interaction measures were the most predictive of sociometric status for both girls and boys, it is evident that factors other than actual behavior with peers are related to peer status.

From a slightly different angle, this author also utilized multiple regression analyses to determine which of these measures (role play behavior, sociometric ratings, teacher ratings, and self report measures of anxiety, assertion, and locus of control) best predicted actual positive behavioral interactions of third and fourth grade children. The results of this analysis revealed that sociometric ratings accounted for the greatest amount of the social interaction variance followed by teacher ratings. Further, for girls, these two measures plus negative role play assertion and self report assertion accounted for 83% of the social interaction variance. For boys, positive role play assertion and self report anxiety coupled with peer and teacher ratings was found to predict 72% of the social interaction variance.

Carlson, Lahey, and Neeper (1984) identified accepted, rejected, and neglected second and fifth graders on the basis of positive and negative sociometric nominations. Classmates were then asked to evaluate these children by indicating which of 19 descriptions of social behavior characterized each child. Examples of the descriptions are "Those who complain alot," "Those who help others," and "Those who start a fight over nothing." Results showed that, for both second and fifth graders, rejected children were viewed by their peers as exhibiting more aggressive, acting-out behaviors than their accepted and neglected classmates. In addition, fifth grade rejected children were differentiated from their accepted and neglected peers in that they were described as more likely

to refuse overtures and change the subject of conversation, less knowledgeable about joining in group activities, less likely to share their things, and more dishonest. Both rejected and neglected fifth graders differed from accepted children on the dimensions of nonparticipation, inability to wait their turn, being helpful, and being less adept at explaining things to others. Of the 19 items, the only one that significantly discriminated neglected from rejected and accepted children at both grade levels was being less likely to say they can beat up everybody. Using the total sample in analyses, neglected children did not differ from accepted children on any other dimension suggesting substantial differences in peers' perceptions of rejected versus neglected children.

Gronlund and Anderson (1963) examined the personality characteristics of socially accepted, socially neglected, and socially rejected seventh and eighth graders. Positive and negative nominations were used to identify accepted, neglected, and rejected children. Subsequently, they had all of the students in the seventh and eighth grades nominate the student they felt best fit each of 36 given descriptions (e.g., "here is someone whom everybody likes," "here is someone who is thought not to be good looking as all"). They found that socially accepted children were characterized as good looking, tidy, friendly, likeable, enthusiastic, and cheerful. Further, accepted boys were described as active in games while accepted girls were described as quiet (not restless), interested in dating, and enjoying of humor. Rejected children were nominated for statements such

as "not good looking", "unlikeable", "restless", and "talkative". Neglected children were simply not nominated for any of these statements. Although these results provide some descriptive data regarding what characteristics relate to accepted, rejected, and neglected peer status, the similarity of initial selection and subsequent assessment procedures is problematic. Previous research has demonstrated moderate to high correlations between different forms of the same sociometric technique (e.g., "best friend", "play with", and "work with" positive nominations) thus suggesting that these results may be an artifact of the intercorrelations of the measures.

Hutton and Roberts (1982) found a significant relationship between the sociometric status of first, third, and fifth graders and teacher ratings of behavior as assessed by the Teacher Checklist of School Behavior. Their most robust correlation ($r=.718$) indicated that students who were rated by their teachers as exhibiting the highest frequency of aggressive behaviors were those nominated by peers as children by whom they would least like to sit.

Findings from several treatment studies provide indirect data on some of the behaviors that relate to a child's sociometric status. Gresham and Nagle (1980) identified socially isolated children on the basis of work and play sociometric ratings. Children in treatment conditions received training in participation, cooperation, communication, and

validation/support skills. Relative to controls, children in the treatment conditions increased on "play with" sociometric ratings, initiated more positive peer interactions, and initiated fewer negative interactions with peers. Although the selection of training tasks was based on common sensical ideas regarding what behaviors constitute peer popularity, the fact that there were posttreatment changes on sociometric ratings suggests that these behaviors are important in the determination of sociometric status at the third and fourth grade levels.

Gottman, Gonso, and Schuler (1976) found that training children in friendship making skills (e.g., showing interest, summarizing what another person says), and in other skills such as giving approval and tokens, complying with requests, and showing affection resulted in increases in sociometric measures.

Ladd (1981) selected third grade subjects on the basis of two criteria. First, unpopular children, as assessed by sociometric ratings, were identified. Next, these unpopular children were observed in the classroom and those who were lowest in manifesting targeted social skills (e.g., asking questions, giving verbal instructions or leads to peers, giving praise) were selected for the project. Treatment entailed training of the three specific verbal behaviors utilized in the subject selection process. Relative to control children, children in the skills training group demonstrated significant increases in the frequency of emitting two

of the three trained behaviors and were rated higher on sociometric measures following treatment. The author concluded:

training social skills found to be correlates of children's peer acceptance resulted in improved sociometric standing, a finding which supports the conclusion that development of peer acceptance is partly a function of skillful social behaviors among peers. (p. 177)

However, due to the subject selection criteria which resulted in a sample that was both low in peer status and manifested behavioral deficits, this conclusion is tenuous. This is analogous to selecting low academic achievers who also exhibit disruptive behaviors, reducing disruptive behavior via treatment and observing concomitant academic improvement, and concluding that academic achievement is, in part, a function of appropriate behavior. For this select subsample of children, this is, in fact, demonstrated by such results, but to conclude that these phenomena are causally related for the larger population of academic underachievers is not possible from the methodology. Similarly, the methodology employed by Ladd (1981) precludes unequivocal conclusions regarding the relationship of peer acceptance and socially skilled behavior by confounding the selection criteria, except for the particular subsample of unpopular children employed in this study. Nonetheless, this study provides evidence that, at least for a subsample of unpopular children, certain verbal

social skills such as asking questions and providing leads or instructions are related to peer acceptance.

Findings from several treatment studies are in contrast to those above which strongly suggest a relationship between positive peer interaction and peer acceptance. For example, Oden and Asher (1977) identified third and fourth grade socially isolated children on the basis of sociometric ratings and positive nominations. Following treatment, experimental children showed significant gains in "play with" ratings but the expected concomitant increase in positive interactions (defined as peer support such as smiling, helping, conversing) was not observed. Further, no differences on behavioral observation measures were detected between popular and unpopular children at pretreatment assessment. Hymel and Asher (1977) also failed to find behavioral differences between popular and unpopular children. Likewise, Green, Forehand, Beck, and Vosk (1980) found that while peer ratings were correlated with positive interaction measures, positive and negative nominations were uncorrelated with either positive or negative interaction.

Other investigators have also failed to demonstrate a direct relationship between peer interaction and sociometric status. La Greca and Santogrossi (1980) randomly assigned unpopular children selected on the basis of sociometric ratings to either a skills training, attention control, or waitlist control group. Children in the skills training condition were

taught such skills as smiling, greeting, joining, inviting, conversing, sharing and cooperating, complimenting, and grooming. Results indicated that, relative to children in the attention or waitlist control groups, children in the skills training group demonstrated increased skill in role play situations, a greater verbal knowledge of how to interact with peers, and more initiation of peer interactions in school. No differences were evidenced between groups on sociometric ratings at posttreatment. One problem with this study is that the rationale for the treatment program content was purely intuitive. The results suggest that these intuitively appealing skills may not be important in the determination of one's sociometric status.

Finally, Edelson and Rose (1982) identified socially withdrawn elementary school children on the basis of teacher referral and sociometric data. These children were assigned to a social skills training, attention control, or no treatment control condition. Children in the social skills training group received training in the development of effective responses to a set of specific problem situations. These researchers found no differences between groups at posttreatment assessment on a number of measures including sociometric and teacher ratings, and role play measures.

NONBEHAVIORAL CORRELATES OF SOCIOMETRIC STATUS

Other investigators have examined a number of variables other than peer interaction that are related to sociometric status. Green et al. (1980) examined the relationship of academic achievement to sociometric status. They found that peer acceptance (positive nominations), rejection (negative nominations), and peer ratings were all significantly correlated with academic achievement (achievement test scores). Hence, popular children had higher academic achievement scores and unpopular children had lower ones. Other investigators have shown similar relationships between academic achievement and sociometric status (e.g., Bower, 1960).

Sociometric status is related to other, nonbehavioral factors as well. Singleton and Asher (1977) demonstrated that sociometric status is affected by sex. Children rate same sexed peers consistently higher than peers of the opposite sex. Dion and Berscheid (1974) corroborated an earlier finding (Young & Cooper, 1944) relating peer acceptance to physical attractiveness. There was an interesting sex by age difference in this study whereby younger unattractive females (four years old) were rated as more popular than their attractive peers. By age six, however, attractive girls, like attractive boys, were more popular than their unattractive counterparts. Children with uncommon first names have been found to be less popular with peers (McDavid & Harari, 1966). In this study, the converse was also true in that there was a positive correlation

between the social desirability of one's first name (as rated by unfamiliar peers) and high peer acceptance (as measured by the number of positive nominations received). Busse and Seraydarian (1979) also found that social desirability of first names was related to peer acceptance but only for female raters. IQ appears to be positively but moderately correlated with sociometric status (e.g., Bonney, 1942; Johnson, 1950; Puttallaz, 1982; Roff et al., 1972). In addition, popularity is affected by environmental factors such as the size of one's school population (Gump & Friesen, 1964; Wicker, 1969) since children in smaller schools have greater opportunity for participation in school activities.

Roff et al. (1972), using a sample of some 40,000 children found a correlation between peer status and socioeconomic level of the family. Further, they found that the family relationships of high peer status children were described by school personnel as stable, harmonious, and cohesive, and the parents of these children were cooperative with schools and had a positive interest in their child. In contrast, families of low peer status children were described as unstable, tense, unhappy, uninterested in their children's school performance, and uncooperative with the school. From questionnaire information these investigators found a number of family background variables to be related to low peer status. These included psychiatric or peculiar behavior (true for middle and high socioeconomic children but not for low socioeconomic level children), welfare history, criminal record of one or both parents, divorce (not true

for high socioeconomic children), family mobility, and unusual occupational history of parents (e.g., extended periods of unemployment). Of course, many of these background variables are interrelated and the results may simply reflect a tendency to rate children from high versus low socioeconomic backgrounds as more popular.

The Roff et al. (1972) study reflects an interesting notion of looking beyond peer interactions into familial variables that influence sociometric status. This is an area that has received very little attention in the children's sociometric status literature. However, recently, MacDonald and Parke (1984) investigated the relationship between peer popularity and parent-child play interactions. They found that paternal directiveness was negatively associated with popularity for both male and female preschoolers. Maternal directiveness was positively related to popularity for girls. Although this was only one aspect of a study relating parent-child interactions to peer interactions, it reflects a worthy attempt to discover the links between the various social worlds of childhood (Hartup, 1979; Lewis & Fielding, 1981).

In summary, a number of static variables (e.g., socioeconomic status, sex, physical attractiveness) have been correlated with sociometric status as well as has social interaction. The inconsistency from study to study in what defines positive versus negative behavioral interactions as well as the idiosyncratic nature of each treatment program's content makes it

difficult to pinpoint the actual behaviors that are associated with sociometric status. Nonetheless, taken together, it appears clear that prosocial behavior is related to peer acceptance and that negative interpersonal behavior is associated with peer rejection.

COGNITIVE FACTORS RELATED TO SOCIOMETRIC STATUS

As indicated above, a number of investigators have demonstrated that popular and unpopular children behave differently when interacting with their peers. Behaviorally oriented psychologists have generally adopted a skills deficit model to account for the differences between these populations. According to this hypothesis, unpopular children are deficient in certain social skills--skills which are purportedly necessary for establishing and maintaining positive interpersonal relationships. More recently, researchers have debated the origins of these behavioral differences. The original notion was that certain populations, such as unpopular children, lacked the ability to perform certain skills; that is, the child had not the skill within his/her behavioral repertoire. Alternatively, several investigators have suggested that the overt behavioral deficit is not necessarily a function of an actual skill deficit but rather a failure to exhibit these skills due to some inhibitory mechanism such as anxiety, negative expectations, etc. Of course, one reason for the emergence of this alternative was the inconsistency of findings relating behavior differentially to sociometric status. For

instance, King and Young (1981) found no differences with respect to communicative content or quality on an analogue task between high sociometric status children and hyperactive children who were consistently rated low on peer sociometric measures. This alternative explanation suggests that the failure to perform socially skilled behavior is related to cognitive characteristics of the child. A number of studies have investigated the relationship of various cognitive factors with sociometric status. A selection of these studies follows.

Several investigators have examined children's abilities to accurately perceive social situations as they relate to sociometric status. For example, Puttallaz (1982) found that preschoolers' ability to accurately perceive the group's behavior and to adopt the group's frame of reference (as assessed by number of relevant comments minus irrelevant comments and interfering behaviors) significantly increased the variance accounted for in sociometric status.

Related to one's ability to accurately perceive others' behavior is the ability to take another's perspective. Experimentally, this ability has been most often assessed by using a referential communication task such as that developed by Glucksberg and Krauss (1967). In this task, the child is required to communicate which of six abstract figures has been selected so that the examiner, who cannot see the child's selection, can identify the correct figure. Gottman et al. (1975) examined the re-

relationship between performance on a similar task and peer popularity and found that popular third and fourth grade children did indeed perform better on this task than unpopular peers. Champion, Lowe, and Cavior (1981) found small but significant correlations between referential communication ability (as assessed by the Glucksberg and Krauss task) and sociometric status (as assessed by positive nominations) with kindergarten, second, fourth, and sixth graders. Rubin (1972) found that referential communication ability was related to sociometric status for kindergarten and second graders but not for fourth and sixth graders. Finally, Deutsch (1974) found no relationship between referential communication ability and peer acceptance with preschoolers. Taken together, these findings support the notion that perspective taking ability is perhaps related to sociometric status as a mediator of behavior.

Related to this notion, Spivack and Shure (1974) have suggested, and empirically demonstrated, that the ability to generate alternative solutions to interpersonal conflict situations is related to sociometric status. However, Ladd and Oden (1979) interviewed third and fifth graders and had them generate suggestions to hypothetical situations in which a peer was requesting help. They found that, for girls, the more suggestions made, the lower the sociometric status. For both girls and boys, unique suggestions offered also correlated with low peer status. They suggested that children with high uniqueness scores were less aware of peer norms for helpful social behavior and thus were not as well liked.

Rubin and Daniels-Bierness (1983) employed a modified version of Spivack and Shure's (1974) Preschool Interpersonal Problem-Solving Test to assess problem solving abilities in hypothetical situations for kindergarten and first graders and its relation to sociometric status. The rating scale sociometric instrument was utilized to assess the children's status amongst peers. They found a significant positive relationship between the use of prosocial problem solving strategies and sociometric status for both kindergarteners and first graders. Moreover, prosocial problem solving in kindergarten was predictive of high peer status in the first grade while agonistic social problem solving strategies in kindergarten negatively predicted sociometric status in the first grade. Low sociometric status in kindergarten also predicted agonistic and bribe social problem solving strategies in the first grade while high sociometric status in kindergarten predicted prosocial problem solving skills in grade 1.

Renshaw and Asher (1983) similarly found qualitative differences in the types of strategies generated by high versus low status third through sixth graders. When presented with hypothetical social situations in which no clear goal was stated, low status children provided significantly fewer positive-outgoing strategies to deal with the situations than high status children. Further, there was a significant age by sociometric status interaction whereby low status older children were especially discrepant in their generation of strategies from their high status peers.

When an explicit goal was presented with the hypothetical situations, the main effect for sociometric status was less robust; however, a significant difference between statuses was evident for conflict situations with no differences on entry, friendship, and new contact situations. The authors suggested that the lack of more robust findings with respect to sociometric status may have resulted from their procedure of identifying high and low status children based on a mean split of the distribution. These authors also reported a significant age effect in the no-goal condition with older children generating significantly more positive-accomodating strategies than younger children (younger=grades 3 and 4, older=grades 5 and 6).

In contrast to the Ladd and Oden (1979) and the Rubin and Daniels-Bierness (1983) studies which focused on popular and unpopular children's strategies for solving hypothetical interpersonal conflicts, Renshaw and Asher (1983) also looked at differences in the kinds of goals popular and unpopular children pursue in interpersonal situations. When presented with hypothetical social situations in which no clear goal was provided, low status children were found to suggest fewer positive-outgoing goals than high status children. However, there were no differences between these groups with respect to the frequency of production of avoidance goals and hostile goals. Thus, in this sample, low status children were not overtly unfriendly in their generation of interpersonal goals, but, rather, they were simply somewhat less positive and outgoing. When children were

presented with explicit goals and asked to rank order them according to which goal they would use most, sociometric status differences disappeared, suggesting no differences between high and low status children in social knowledge. Again, however, the authors point out that extreme groups were not used, and that differences on this variable may have therefore been obfuscated.

In a related line of inquiry, Asarnow and Callan (1985) investigated the hypothesis that unpopular children lack specific social cognitive skills. Using fourth and sixth grade popular and unpopular boys (as assessed by the Class Play measure which is similar to positive and negative peer nominations), they examined group differences along a number of cognitive dimensions including generating alternative solutions to hypothetical problems, evaluating possible solutions, using self-statements, and rating the likelihood of using possible self-statements. Results indicated that low peer status boys generated fewer solutions, and that the content of their solutions differed in that they proposed fewer assertive and mature solutions and generated more intense aggressive solutions. Further, when presented with possible solutions to rate according to their desirability as responses, low sociometric status boys rated physically aggressive responses more positively and prosocial responses more negatively than popular boys. With respect to self-statements, the results were somewhat unclear with a significant third order interaction (peer status by self statement type by order of presentation). However, con-

trary to expectations, there were no differences between groups on the frequency of endorsing positive self-statements (e.g., "My knee is okay, there is no point making a big deal out of this"). Further, though difficult to interpret due to the third order interaction, the data suggest that popular boys were more likely to endorse negative self-statements (e.g., "The other kids probably think I'm weak and afraid") than unpopular boys. The authors suggest that, if this is in fact a reliable finding, it may reflect less denial and more willingness on the part of popular boys to consider negative thoughts independent of behavior. In any event, the findings regarding self-statements varied across situation types and order condition and were not robust.

A study by Ames, Ames, and Garrison (1977) found differences between popular and unpopular fourth, fifth, and sixth grade children (as assessed by positive nominations) with regard to children's attributions of causality. These authors found that high peer status children attributed causes of positive outcomes internally and the causes of negative ones externally. The opposite was true for low status children: unpopular children attributed positive outcomes externally and tended to accept responsibility for negative outcomes. Ollendick (1981) reported similar findings using a self report measure of locus of control. Ollendick found a relationship between sociometric status and internal locus of control (feeling that one is in control of events in his/her life). Although they must be viewed tentatively, these findings suggest that behavior which

results in unpopularity amongst peers may be mediated by personal expectations and cognitive self statements regarding one's ability to succeed and to effect the environment.

Other self report measures have been related to peer popularity. Ollendick (1981) found that self report assertion, as measured by the Children's Assertiveness Inventory (Ollendick, 1979) was related to sociometric status in girls. Self report state anxiety, as measured by the State-Trait Inventory for Children, has been shown to correlate with boys' sociometric status (Ollendick, 1981). Unpopular children have also been found to be more depressed, as measured by the Children's Depression Inventory (Kovacs, 1973) than their popular peers (Vosk, Forehand, Parker, & Rickard, 1982).

Although there is very little research relating sociometric status to children's abilities to accurately identify affect, one study did address this issue as a corollary of a larger study focusing on production and discrimination of facial expressions (Field & Walden, 1982). Field and Walden (1982) found that with 3-5 year old preschoolers, sociometric status (as assessed by peer ratings) was positively related to the child's ability to accurately identify affects.

Although there has not been a great deal of research investigating the cognitive correlates of sociometric status, the data that do exist indi-

cate that differential cognitive abilities or styles may act as mediators of behavior and, in turn, affect one's status amongst peers. Specifically, children's role taking ability, social perception skills, attributions of causality, and affect recognition are areas that warrant further investigation.

HYPOTHESES

The hypotheses of the present study were as follows.

1) In Phase I, peer measures of social skill, athletic ability, physical attractiveness, and academic performance were all expected to significantly predict sociometric status as measured by sociometric ratings and positive nominations.

2) Method of assessment was expected to affect Phase I results such that predictor nomination measures would more highly predict positive nominations, and predictor rating measures would account for more variance in sociometric ratings.

3) Phase I predictor variables were expected to be differentially predictive at various grade levels. Due to the exploratory nature of this phase, more specific hypotheses regarding age differences were not made.

4) In Phase II, behavior observation measures were expected to significantly differentiate high and low sociometric status children. Specifically, high status children were expected to be engaged in significantly more peer positive interactions and to initiate and be recipient of more positive peer interactions. Low status children were expected to be engaged in more negative peer interactions, to initiate and receive more negative exchanges, and to be involved in more solitary behavior than their popular peers.

5) High status children were expected to perform significantly better on the social perception task than low status children reflecting differential cognitive social skills.

CHAPTER II

METHOD

SUBJECTS

Two hundred eighty-two first, third, and fifth graders from two local elementary schools served as subjects for the initial phase of this study. There were 102 first graders (58 boys, 44 girls), 80 third graders (52 boys, 28 girls), and 110 fifth graders (57 boys, 53 girls) in the initial assessment phase. Of these, 70 (28 first, 16 third, and 26 fifth graders) who were rated as highest and lowest on sociometric ratings served as subjects for the second phase of the study. One subject (third grade boy) suffering from a degenerative muscular disorder was omitted as a subject due to an extended period of absence from school. A third grade girl was also omitted as a subject because she had only moved to the school in the middle of the school year and her low sociometric status may well have been a function of not yet being well known by her classmates. This resulted in a final total of 68 subjects broken down by grade, sex, and sociometric status as shown in Table 1.

TABLE 1

Distribution of Phase II Subjects by
Grade, Sex, Status

Status	Grade					
	1		3		5	
	M	F	M	F	M	F
Popular	9	4	5	3	7	10
Unpopular	8	6	4	2	5	5

Informed consent was received from the parents of each of these subjects. An additional 18 students were targeted but did not receive parental permission to participate.

EXPERIMENTERS

Four experimenters were used in the collection of data for the present study. Two were undergraduate psychology research assistants, one was a graduate student in clinical psychology, and one was a Masters of Social Work student. The undergraduate research assistants helped in the collection of observation data with the remainder of the data being collected by the graduate students.

PHASE I: MEASURES

CRITERION MEASURES.

Sociometric measures. Sociometric instruments have been found to have excellent psychometric properties, including being highly reliable over a two or three year period (Bush, Ford, & Schulman, 1973; Roff et al., 1972). They have also been shown to possess external validity in that sociometric status correlates with later social adjustment (e.g., Cowen et al., 1973). In the present study, sociometric assessment included both

the peer rating and the positive peer nomination methods (cf., Hymel & Asher, 1977 or Van Hasselt et al., 1979).

The sociometric rating procedure entailed having children rate all other children from their classroom on a scale of 1-5 in response to the question, "How much do you like to play with this child?" (adapted from Hymel & Asher, 1977). A rating of 5 indicated that they liked to play with that child "a lot" while a rating of 1 indicated that they liked to play with that child "not at all." The picture sociometric method was used with first graders to control for their lower reading ability. Previous research has indicated that children in this age range (third and fourth graders) typically give low ratings to opposite sex peers (Hymel & Asher, 1977; Singleton & Asher, 1976). Therefore, a subject's sociometric rating was the average rating received from same-sex peers. Preliminary findings have shown the sociometric rating method to positively relate to the nomination method and to possess adequate reliability and validity (e.g., Hymel & Asher, 1977; Oden & Asher, 1977).

In addition, the peer nomination method was utilized. Briefly, this instrument required that children circle the names of their three best friends from a list of classmates. Again, pictures of classmates were used with first graders. A percentage score was calculated from this; thus, a subjects's score was the number of nominations received from

same-sexed peers divided by the number of same-sexed children in the classroom. (See Appendix A for sociometric measures.)

PREDICTOR VARIABLES

Peer ratings: Social skill. Similar to sociometric ratings, the social skill rating scale required that each child rate his/her classmates according to how socially skilled he/she considered the classmate to be. Specifically, children rated all other children in their classroom on a scale of 1-5 according to how well he/she "thinks the child gets along with other children in the classroom." No psychometric data exist for this scale. However, until proven otherwise, one might expect the reliability to be similar to other sociometric rating scales (e.g., "work with", "play with"). Other studies have relied on adult assessments of interpersonal skill (e.g., teacher or parent ratings). In the present study, peer assessment of a child's social skill was obtained in an effort to determine the relationship between sociometric status and peer perceptions of social skill. The rationale for including this measure was based on research findings demonstrating a relationship between one's behavior with his peer group and sociometric status.

Peer nomination measures: (1) Athletic ability. Children were provided with a list of all the other children in their classroom and asked to circle the names of the three children who were best at recess games.

First graders were provided with pictures of their classmates. This measure was included to determine the relationship between sociometric status and peer perceptions of athletic ability. As with all other measures in Phase I, only same-sex nominations were utilized in analyses.

(2) Physical attractiveness. Previous research has demonstrated a relationship between adult ratings of children's physical attractiveness and popularity (e.g., Dion & Berscheid, 1974). In the present study, peer assessments of physical attractiveness were obtained via peer nominations. Children were provided with a class list (class pictures for first graders) and asked to indicate the three classmates they thought looked the best. This measure was included to determine the relationship between peer popularity and peer perceptions of physical attractiveness.

(3) Academic performance. Numerous research findings point to a relationship between academic achievement (as assessed through standard achievement tests) and sociometric status. However, peer assessment of classmates' academic abilities has not been addressed. In the present study, children were asked to select, from a list of their classmates, the three who were best at schoolwork. This measure was included to assess the relationship between peers' perceptions of academic ability and sociometric status. (Peer measures can be found in Appendix B.)

Teacher ratings: Social skill. Teachers were also asked to rate children in the classroom on the basis of how socially skilled the teacher believed the child to be. Based on Rinn and Markle's (1979) global definition of socially skilled behavior (see Appendix C for teacher measures), teachers rated each child on a 5-point scale with higher scores reflecting higher social skill.

Teacher nominations: (1) Athletic ability. Teachers were asked to nominate the three boys and three girls in the classroom who demonstrated the most athletic ability at recess.

(2) Physical attractiveness. Each teacher nominated the three boys and three girls from the class who were, in her opinion, the most physically attractive.

(3) Academic performance. Teachers nominated three boys and three girls from the class who were the most outstanding pupils academically.

PHASE II: MEASURES

PREDICTOR VARIABLES

(1) Naturalistic observation. Behavioral observations were obtained in the school setting during unstructured activities (e.g., recess) for each

subject by independent trained observers. Each subject was observed for a three minute interval on three separate occasions resulting in each child being observed for a total of nine minutes. In general, for any given child, each three minute observation took place on separate days. For those instances in which more than one observation was taken on the same day, the observatrion periods were not consecutive.

A 5-second observe, 5-second record time sampling procedure was used. Observers rated children during each interval as engaged in positive or negative interaction with adults or peers or as engaged in solitary behavior. Positive and negative interaction have been found to be related to peer status (Gottman et al., 1975; Gottman et al., 1976; Oden & Asher, 1977). Positive peer interaction included such behaviors as sharing, conversing, playing appropriately, or attending to an ongoing activity. Examples of negative interaction included taking another's materials, physical or verbal fighting, and name calling. In addition, observers recorded whether the child initiated, was recipient of, or continued the interaction. Hence, observers recorded the type of interaction (positive or negative), with whom the interaction occurred (adult, peer, or solitary), and the origin of the interaction (initiation, recipient, or continuation) using a predetermined code. (See Appendix D for sample behavior observation coding form.)

Interrater reliability was obtained on approximately one-fourth of all observations. Interrater reliability was computed by dividing the total number of agreements by the total number of judgments (agreements plus disagreements) times 100. The average interrater reliability was 84.85% and ranged from 66.67% to 92.78% for the four observer pairs. For each observer pair, one person was designated as criterion observer and that person's scores were used in analysis in the event of disagreement.

(2) Social perception task. There have been two foci in the literature on social perspective-taking and these have generally been considered separately. The first emphasizes the logical operations required for perspective-taking, i.e., coordination between viewpoints and mastery of recursiveness in thinking about individuals' perspectives (e.g., Flavell, Botkin, Fry, Wright, & Jarvis, 1968; Selman & Byrne, 1974), while the second emphasizes understanding of affects and motives (Flapan, 1968; Rothenberg, 1970). The present study focused on affective perspective taking. In order to assess popular and unpopular children's accuracy in affective social perception, an assessment strategy similar to one used in other research evaluating children's social perception abilities was used (see Waterman, Sobesky, Silvern, Aoki, & McCaulay, 1981). This measure distinguished among levels of understanding of emotions and motives in social situations. Similar measures have been found to be reasonably stable over time (Silvern, Waterman, Sobesky, & Ryan, 1979). In addition, scores on these measures have been found to improve following

specific training in perspective-taking skills (Silvern et al., 1979) and to be correlated with other similar measures of cognitive perspective taking (e.g., Flavell et al., 1968).

Specifically, children in the present project watched 12 videotaped vignettes of same-sexed, unfamiliar peers involved in social interactions. In each vignette, each character initially presented a dominant emotion that could be characterized accurately in terms of simple, general, or complex mixed emotions. As the scene progressed, the characters' affects changed requiring the child to accurately perceive these affective shifts. The quality of the child's responses in identifying these emotions served as an index of his/her affect recognition/social perception ability. The complex emotions used were derived from Waterman et al. (1981) and included: 1) angry and frustrated; 2) relieved and grateful; 3) disappointed; 4) unhappy, worried and unsure; 5) feeling left out, lonely; 6) hurt and angry; 7) happy and excited; 8) content; 9) reluctant and annoyed; and 10) confused.

Two fourth grade girls and two third grade boys from different local elementary schools than those in which the project took place were enlisted as actresses/actors in making the videotapes. For illustration, one scene proceeded as follows. The two confederates are initially playing together with blocks. They build a tower, knock it over, and then laugh and pick the blocks up. Then one child says, "Let's build another one," and they

begin. The child then says, "I want to build this one by myself," and gathers all the blocks to his side of the table. The other child looks hurt and left out.

After viewing the scene, the child was asked to tell what happened in the skit and what each character was feeling. Standard prompts were used to ensure as complete an answer as possible. Responses were audiotaped for later scoring. The scoring system was based on developmental levels as described by Flapan (1968) and Rothenberg (1970) and reflected the child's perception of motives and complexity of affects. The scoring categories can be found in Appendix E. Briefly, the categories were as follows: (0) deletion or misinterpretation of main point of story; (1) captures main point but is unable to identify characters' affects or is blatantly inaccurate in identifying affect; (2) refers to character's simple obvious emotion, thought, or intention readily apparent from character's statements or expressive behavior; (3) explains behavior or feelings in terms of the factual situation; (4) refers to emotions or thoughts that are not obvious but can be reasonably inferred or describes the character's emotion in complex or especially precise terms; (5) explains or interprets character's actions, motives, or emotions in terms of the character's perception of the interpersonal situation. An average score was computed from all of the child's scorable responses and used in analyses. Interrater reliability was obtained on one-fourth of the tapes and averaged 85.03%.

PROCEDURE

Phase I. All first, third and fifth grade children from two local elementary schools were administered sociometric rating and nomination measures, peer rating measures of social skill, and peer nomination measures of athletic ability, physical attractiveness, and academic performance. Children were read the directions aloud in the classroom, and were instructed on how to fill out the rating forms by using the example "How much do you like ice cream?" Teacher ratings and nominations were also obtained at this time.

Phase II. Children who were one standard deviation above or below the mean on same-sex sociometric ratings were selected as subjects for Phase II. In addition, parental permission for participation in this portion of the project was secured via phone calls and written informed consent forms mailed to the parents of prospective subjects. Subjects in this phase participated in an individual assessment session in which the social perception task was administered by a graduate student in clinical psychology. In addition, subjects in this phase were observed during unstructured activities on the playground as they interacted with other children and adults.

CHAPTER III

RESULTS

PHASE I

Bivariate correlations of the various measures are presented in Table 2. All individual scores were based on same-sex calculations. As expected, all of the peer self-report measures were highly intercorrelated regardless of whether the assessment procedure involved peer ratings or peer nominations. For example, both sociometric ratings and positive sociometric nomination scores were positively related to all other peer measures at the $p < .0001$ level.

Results also revealed that grade was inversely related to sociometric ratings ($r = .17$), and peer nominations of physical attractiveness ($r = .16$) and academic performance ($r = .13$). Thus, children from higher grades received lower scores from peers than younger children. In an effort to further explore grade differences, t tests between grades 1 and 3, grades 1 and 5, and grades 3 and 5 were employed. Results revealed that means on all measures between grades 1 and 3 were similar with no statistically significant differences. Similarly, grade 3 scores did not differ significantly from grade 5 scores on any variable except for sociometric

TABLE 2

Bivariate Correlations of Phase I Variables:
Pearson Product Moment Correlation Coefficients

	Gra	Sex	Sta	Socrat	Socnom	PRSS	PNAA	PNAP	PNPA	TRBS	TNAP	TNAA	TNPA
Grade													
Sex ¹	-.053												
Status ²	.064**	.020											
Sociometric ratings	-.166	-.146*	.904***										
Sciometric nominations	-.055	-.114	.793***	.621***									
Peer ratings of social skill	.062	-.151*	.841***	.752***	.441***								
Peer nominations of athletic ability	-.118	-.123*	.684***	.447***	.532***	.291***							
Peer nominations of academic performance	-.132*	-.050	.594***	.391***	3.76***	.423***	.310***						
Peer nominations of physical attractiveness	-.163**	-.263***	.718***	.601***	.703***	.460***	.420***	.402***					
Teacher ratings of social skill	-.012	-.068	.754***	.468***	.408***	.587***	.310***	.453***	.402***				
Teacher nominations of academic performance	.070	-.047	.208	.137*	.151*	.185**	.053	.548***	.129*	.251***			
Teacher nominations of athletic ability	-.089	-.072	.308*	.208**	.138*	.140*	.338***	.063	.184**	.154*	.042		
Teacher nominations of physical attractiveness	-.080	-.102	.099	.123*	.118	.075	.065	.082	.201**	.200**	.143*	.051	

* p < .05
** p < .01
*** p < .0001

¹ Higher sex = male
² Higher status = popular

ratings. On this measure, children in grade 3 scored significantly higher than grade 5 subjects ($\underline{t}=3.01, p<.01$). When comparing grades 1 and 5, a number of significant differences were found. First-graders scored significantly higher on sociometric ratings ($\underline{t}=2.79, p<.01$), peer nominations of athletic ability ($\underline{t}=1.98, p<.05$), peer nominations of academic performance ($\underline{t}=2.17, p<.05$), and peer nominations of physical attractiveness ($\underline{t}=2.71, p<.01$). Thus, there appears to be a developmental trend whereby as children get older, they rate their peers significantly lower on sociometric ratings, and choose a wider range of peers on various nomination measures.

With regard to sex, bivariate correlations revealed that boys scored lower on sociometric ratings ($r=-.15$), peer ratings of social skill ($r=-.15$), and peer nominations of physical attractiveness ($r=-.26$) than girls. Boys were rated significantly higher ($p<.05$) on peer nominations of athletic ability ($r=.12$) than girls. Further analyses of sex differences utilizing t tests revealed that girls received significantly higher sociometric ratings ($\underline{t}=2.38, p<.05$), peer ratings of social skill ($\underline{t}=2.57, p<.05$), and higher scores on peer nominations of physical attractiveness ($\underline{t}=4.22, p<.0001$). Boys were rated significantly higher on peer nominations of athletic ability ($\underline{t}=2.10, p<.05$).

To control for the intercorrelations among measures, other statistical procedures were utilized to further examine the relationship of variables

to sociometric ratings and sociometric nominations. Separate multiple regression analyses using sociometric ratings and sociometric nominations as the criterion variables and grade, sex, peer and teacher ratings of social skill, and peer and teacher nominations of athletic ability, physical attractiveness, and academic performance as predictor variables were utilized to determine the relative contributions of these variables to the prediction of sociometric status in children. Initial analyses demonstrated that the data conformed to the assumptions of linearity and homogeneity of variance required to validly utilize multiple regression analyses.

Stepwise multiple regression analyses were performed to determine which of the variables of interest contributed significantly to the variance accounted for in both sociometric ratings and positive sociometric nominations. For sociometric ratings, 10 variables were entered into the regression equation (N=275). Table 3 presents the unique variance, sum of squares regression, and F value for each of the main effect sources of variance in predicting sociometric ratings. The stepwise procedure revealed that significant R square contributions and increases were yielded by peer ratings of social skill (R square=.56), peer nominations of physical attractiveness (R square=.65, R square change=.08), grade (a negative contribution; R square=.67, R square change=.02), and peer nominations of athletic ability (R square=.69, R square change=.02). Together, these four variables accounted for 69% of the variance in

TABLE 3

Unique Variance, Sum of Squares Regression, F Value for Sources of Variance:
Dependent Variable Sociometric Ratings

Source of Variance	Unique R ²	SS Regression	F Value
Poor rating of social skill	.564	87.325	349.27
Peer nominations of physical attractiveness	.083	100.210	246.75
Grade	.024	103.898	182.23
Peer Nominations of athletic ability	.020	106.919	148.95

sociometric ratings. Thus, the prediction of sociometric ratings was defined by the following equation: Sociometric rating' = 1.323 + .00539(peer nomination of athletic ability) - .063(grade) + .00946(peer nomination of physical attractiveness) + .5877(peer rating of social skill). In addition, using polynomial regression, a significant second order interaction was found for sex by peer nominations of physical attractiveness (R square=.70, R square change=.01), and a significant third order interaction for grade by sex by peer ratings of social skill (R square=.71, R square change=.01). There were no other significant interactions.

A test of simple effects for the second order interaction between sex and peer nominations of physical attractiveness revealed that the significant interaction was accounted for by the fact that, for girls, peer nominations of physical attractiveness were more predictive of sociometric ratings than for boys. This finding was corroborated by separate stepwise multiple regression analyses by sex, collapsed across grade. Due to the smaller N's and the fact that teacher measures were not significantly predictive in the overall analysis, only the four peer measures were entered into the equation for these analyses. Tables 4 and 5 present the unique variance, sum of squares regression, and F value for each source of variance in predicting sociometric ratings for girls and boys, respectively, using the .15 significance level for entry into the model. For girls, the prediction of sociometric ratings was accounted for by peer

TABLE 4

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance For Females:
Dependent Variable Sociometric Ratings

Source of Variance	Unique R ²	SS Regression	F Value
Poor ratings of social skill	.505	36.535	114.32
Peer nominations of physical attractiveness	.146	47.115	103.71
Peer nominations of athletic ability	.024	48.843	76.25

TABLE 5

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Males:
Dependent Variable Sociometric Ratings

Source of Variance	Unique R ²	SS Regression	F Value
Peer ratings of social skill	.610	48.569	248.21
Peer nominations of athletic ability	.056	52.605	153.48
Peer nominations of physical attractiveness	.009	53.278	105.60

ratings of social skill (R square=.51), peer nominations of physical attractiveness (R square=.65, R square change=.14), and peer nominations of athletic ability (R square=.68, R square change=.03). For boys, peer ratings of social skill (R square=.61), peer nominations of athletic ability (R square=.66, R square change=.05), and peer nominations of physical attractiveness (R square=.67, R square change=.01) contributed significantly to the prediction of sociometric ratings.

In order to look at the differential contributions of these variables to the prediction of sociometric ratings at different grade levels, separate stepwise multiple regression analyses were computed by grade collapsed across sex. Again, due to the smaller N's, only the four peer measures were entered into the model. Tables 6, 7, and 8 present the unique variance, sum of squares regression, and F value for each source of variance in predicting sociometric ratings at grades 1, 3, and 5, respectively. Results revealed that for grade 1, significant R square contributions and increases were yielded by peer ratings of social skill (R square=.62), peer nominations of physical attractiveness (R square=.69, R square change=.07), and peer nominations of athletic ability (R square=.70, R square change=.01). Similarly, sociometric ratings at grade 3 were predicted by peer ratings of social skill (R square=.63), peer nominations of physical attractiveness (R square=.71, R square change=.08), and peer nominations of athletic ability (R square=.75, R square change=.04). However, findings at the grade 3 level should be interpreted cautiously

TABLE 6

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Grade 1:
Dependent Variable Sociometric Ratings

Source of Variance	Unique R ²	SS Regression	F Value
Peer ratings of social skill	.625	36.470	164.90
Peer nominations of physical attractiveness	.069	40.515	111.21
Peer nominations of athletic ability	.007	40.928	75.89

TABLE 7

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Grade 3:
Dependent Variable Sociometric Ratings

Source of Variance	Unique R ²	SS Regression	F Value
Peer ratings of social skill	.631	24.261	106.00
Peer nominations of physical attractiveness	.083	27.449	76.09
Peer nominations of athletic ability	.034	28.772	59.45

TABLE 8

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Grade 5:
Dependent Variable Sociometric Ratings

Source of Variance	Unique R ²	SS Regression	F Value
Peer ratings of social skill	.538	27.974	125.93
Peer nominations of physical attractiveness	.048	30.481	75.90
Peer nominations of athletic ability	.032	32.137	57.27
Peer nominations of academic performance	.010	32.658	44.40

due to the small number of subjects (N=63). For grade 5, significant R contributions and increases were yielded by all four peer variables as follows: peer ratings of social skill (R square=.54), peer nominations of physical attractiveness (R square=.59, R square change=.05), peer nominations of athletic ability (R square=.62, R square change=.03), and peer nominations of academic performance (R square=.63, R square change=.01).

Identical procedures were utilized in determining which variables contributed significantly to the variance accounted for in positive nominations. As can be seen from Table 9, overall analyses, collapsed across grade and sex, revealed that significant R square contributions and increases were yielded by peer nominations of physical attractiveness (R square=.50), peer nominations of athletic ability (R square=.57, R square change=.07), peer ratings of social skill (R square=.58, R square change=.01), and teacher nominations of athletic ability (R square=.58, R square change=.007). Together, these four variables accounted for 58% of the variance in sociometric nominations. There were no significant interactions.

Tables 10, 11, and 12 present the unique variance, sum of squares regression, and F value for each source of variance in predicting sociometric nominations by grade level. Only the four peer variables were entered into the model due to reduced N's (lowest N=63 at grade 3). At

TABLE 9

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance:
Dependent Variable Sociometric Nominations

Source of Variance	Unique R ²	SS Regression	F Value
Peer nominations of physical attractiveness	.499	52524.887	269.27
Peer nominations of athletic ability	.068	59702.943	176.52
Peer ratings of social skill	.009	60647.480	121.63
Teacher nominations of athletic ability	.007	61391.637	93.56

TABLE 10

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Grade 1:
Dependent Variable Sociometric Nominations

Source of Variance	Unique R ²	SS Regression	F Value
Peer nominations of physical attractiveness	.595	28556.325	145.58
Peer nominations of athletic ability	.088	32757.698	105.48

TABLE 11

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Grade 3:
Dependent Variable Sociometric Nominations

Source of Variance	Unique R ²	SS Regression	F Value
Peer nominations of physical attractiveness	.510	13434.309	64.47
Peer nominations of academic performance	.064	15127.041	41.09

TABLE 12

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Grade 5:
Dependent Variable Sociometric Nominations

Source of Variance	Unique R ²	SS Regression	F Value
Peer nominations of physical attractiveness	.350	11088.110	58.13
Peer nominations of athletic ability	.096	14133.343	43.07
Peer ratings of social skill	.019	14742.966	30.74

grade 1, peer nominations of physical attractiveness ($R^2=.60$) and peer nominations of athletic ability ($R^2=.68$, R^2 change=.08) significantly contributed to the variance accounted for in sociometric nominations. At grade 3, peer nominations of physical attractiveness accounted for most of the variance in sociometric scores ($R^2=.51$). However, the only other variable that made a significant R^2 increase was peer nominations of academic performance ($R^2=.57$, R^2 change=.06). Due to the small number of subjects at this grade level, however, this finding must be interpreted cautiously since multiple regression analysis requires at least 20 subjects per independent variable to be considered valid. At grade 5, three variables yielded significant R^2 contributions and increases. Peer nominations of physical attractiveness accounted for the most variance in sociometric nominations ($R^2=.35$) followed by peer nominations of athletic ability ($R^2=.45$, R^2 change=.10) and peer ratings of social skill ($R^2=.47$, R^2 change=.02).

Separate stepwise multiple regression procedures were also carried out by sex collapsed across grade to determine any differential prediction patterns of sociometric nominations for girls and boys. Tables 13 and 14 present the results of these analyses for girls and boys, respectively. For girls, peer nominations of physical attractiveness accounted for most of the variance in sociometric nominations ($R^2=.65$), followed by peer nominations of athletic ability ($R^2=.69$, R^2 change=.04)

TABLE 13

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Females:
Dependent Variable Sociometric Nominations

Source of Variance	Unique R ²	SS Regression	F Value
Peer nominations of physical attractiveness	.651	37387.848	208.74
Peer nominations of athletic ability	.043	39881.327	126.00
Peer ratings of social skill	.007	40292.683	86.12

TABLE 14

Unique Variance, Sum of Squares Regression, F Value
for Sources of Variance for Males:
Dependent Variable Sociometric Nominations

Source of Variance	Unique R ²	SS Regression	F Value
Peer nominations of athletic ability	.322	15317.910	75.60
Peer nominations of physical attractiveness	.100	20073.617	57.75
Peer ratings of social skill	.020	21000.338	41.42

and peer ratings of social skill (R square=.70, R square change=.01). For boys, significant R square contributions and increases were yielded by peer nominations of athletic ability (R square=.32), peer nominations of physical attractiveness (R square=.42, R square change=.10), and peer ratings of social skill (R square=.44, R square change=.02). Although different variables entered into the model first for boys versus girls, there were no significant interactions of sex with other variables.

PHASE II

In Phase II, 68 subjects who were identified as extreme cases on sociometric status (one standard deviation above or below the mean on sociometric ratings) and who received parental permission to participate in the study were compared on a number of variables to determine which of these variables significantly differentiated high from low sociometric status children. There were 36 high status (popular) children and 32 low status (unpopular) children. Variables of interest in this phase included observation measures and an affective social perception measure. Observations obtained during free play were broken down into variables defining type of interaction, with whom the interaction occurred, and whether the subject initiated or was recipient of the interaction as follows: peer positive, peer negative, adult positive, adult negative, solitary, peer positive initiated, peer negative initiated, peer positive recipient, and peer negative recipient. The social perception variable was the total

score that the child received on the social perception task (see Method for description of this task).

Discriminant functions analyses using Wilks' lambda were utilized to determine which of these variables significantly differentiated popular from unpopular children. From previous research, it was predicted that the percentage of both positive and negative interactions with peers would distinguish popular from unpopular children. Specifically, popular children were expected to be engaged in significantly more positive peer interactions and significantly less negative peer interactions than unpopular children. Likewise, popular children were expected to initiate and be recipient of more positive interactions while unpopular children were expected to initiate and be recipient of more negative peer interactions. Finally, solitary behavior was expected to occur more frequently among unpopular children when compared to their popular counterparts. No differences were expected with respect to adult interactions. Popular children were also expected to perform better than their unpopular peers on the social perception task, reflecting differential abilities in accurately perceiving and labeling affects in social situations.

Table 15 presents the means and standard deviations for each variable by sociometric status. As can be seen, all of the means are in the predicted direction except for peer initiated positive and peer initiated negative interactions. Table 16 presents the Wilks' lambda value, univariate F

TABLE 15

Means and Standard Deviations for Phase II Variables
by Status

	Status			
	High		Low	
	\bar{X}	SD	\bar{X}	SD
Peer Positive	78.93	14.76	68.27	21.57
Peer Negative	4.05	4.79	7.86	11.29
Adult Positive	5.59	6.44	5.74	10.03
Adult Negative	0.51	1.36	1.11	2.71
Solitary	10.77	9.83	18.03	17.07
Peer Initiated Positive	11.46	4.78	13.15	9.82
Peer Initiated Negative	36.08	39.65	24.56	35.32
Peer Recipient Positive	9.13	16.42	7.40	5.97
Peer Recipient Negative	16.89	27.59	21.93	33.04
Social Perception	3.26	0.42	3.00	0.50

TABLE 16

Wilks' Lambda, F Ratio for Phase II Variables:
Dependent Variable Status

Variable	Wilks' Lambda	F
Peer Positive	.923	5.47*
Peer Negative	.954	3.22
Adult Positive	.999	0.003
Adult Negative	.980	1.34
Solitary	.935	4.62*
Peer Initiated Positive	.987	0.85
Peer Initiated Negative	.973	1.87
Peer Recipient Negative	.944	0.38
Social Perception	.927	5.18*

* P<.05

ratio, and significance level for each variable with sociometric status as the criterion. The results show that, when using univariate analyses, three variables significantly discriminated popular from unpopular children. These were positive peer interactions (Wilks' lambda=.923, $p<.05$), social perception (Wilks' lambda =.927, $p<.05$), and solitary behavior (Wilks' lambda=.935, $p<.05$).

A somewhat different pattern emerged when the discriminant analysis utilizing minimization of Wilks' lambda was employed. Positive peer interactions significantly discriminated popular from unpopular children (Wilks' lambda=.923, $F=5.47$, $p<.05$) as did peer initiated negative interactions (Wilks' lambda=.877, $F=4.56$, $p<.05$) and social perception (Wilks' lambda=.843, $F=3.96$, $p<.05$). Table 17 presents the classification results of this analysis which show the number of cases that were correctly classified into high or low status groups based on positive peer interaction, peer initiated negative interaction, and social perception scores. As can be seen, using these three scores, one is able to accurately predict the sociometric status of 66.18% of the cases. Thus, as predicted, positive peer interactions significantly differentiated high from low status children with popular children being involved in more positive exchanges with their peers. Likewise, popular children scored significantly higher on a task measuring cognitive social perception abilities than their unpopular counterparts. Contrary to expectations, however, popular children initiated significantly more negative peer

TABLE 17

Wilks' Lambda, F Ratio for Phase II Variables
Significant in Minimization of Wilks' Lambda Procedure

Variable	Wilks' Lambda	F
Peer Positive	.923	5.47
Peer Initiated Negative	.877	4.56
Social Perception	.843	3.96

interactions than low status children. Although the validity of separate analyses by grade was questionable due to cell sizes, preliminary analyses indicated a developmental trend with first grade popular children initiating significantly more negative interactions ($x=60.00\%$, $N=14$) than their unpopular peers ($x=27.96\%$, $N=14$). Fifth grade popular children also initiated more negative interactions ($x=20.00\%$, $N=15$) than unpopular fifth graders ($x=15.00\%$, $N=10$), but the difference between means was far less than at the first grade level. Third grade popular children, on the other hand, initiated fewer negative interactions ($x=27.86\%$, $N=7$) than unpopular peers ($x=32.56\%$, $N=7$).

A further discriminant analysis was performed (eliminating the minimization of Wilks' lambda method) to determine if the prediction of group (sociometric status) membership would be significantly enhanced using all Phase II variables. Classification results are presented in Table 18. Using all variables, 69.12% of cases were correctly classified, resulting in less than a 3% overall increase over the three variables identified in the minimization procedure. In fact, as can be seen, prediction of unpopular cases decreased by 6.2% using all variables while the accurate classification of high sociometric status children increased by 11.1%

TABLE 18

Classification Results from Minimization of Wilks'
Lambda Discriminant Functions

Actual Group	No. of Cases	Predicted Group	
		1	Membership 2
1	36	24 66.7%	12 33.3%
2	32	11 34.4%	21 65.6%

Percent of cases correctly classified: 66.18%

TABLE 19

Classification Results using all Phase II Variables

Actual Group	No. of Cases	Predicted Group	
		1	Membership 2
1	36	28 77.8%	8 22.2%
2	32	13 40.6%	19 59.4%

Percent of cases correctly classified: 69.12%

CHAPTER IV

DISCUSSION

Given the predictive validity of childhood sociometric status with respect to later academic, occupational, and interpersonal functioning, the purpose of the present study was to provide a better understanding of what factors constitute sociometric status in childhood. Phase I was largely exploratory and attempted to identify, through peer and teacher report, a number of variables hypothesized to relate to sociometric status. Phase II was designed to replicate previous findings of the relationship between sociometric status and interpersonal behavior, and, further, to explore cognitive social perception skills hypothesized to differentiate popular from unpopular children through their mediating function. For ease of presentation, the discussion of results is presented by experimental phase.

PHASE I

In Phase I, the relationship of peer and teacher perceptions of children's social skill, academic performance, athletic ability, and physical attractiveness to sociometric status was explored. Consistent with previous research (e.g., Dion & Berscheid, 1974; Green et al., 1980; Gronlund

& Anderson, 1963), both sociometric ratings and positive nominations were significantly correlated with peer and teacher measures of athletic ability, physical attractiveness, and academic performance.

Multiple regression findings revealed that predictor variables were differentially related to the two criterion measures of sociometric status, sociometric ratings and positive nominations. For sociometric ratings, peer ratings of social skill, peer nominations of physical attractiveness, grade, and peer nominations of athletic ability accounted for 69% of the variance in sociometric rating scores. For positive sociometric nominations, peer nominations of physical attractiveness and athletic ability, peer ratings of social skill, and teacher nominations of athletic ability accounted for 58% of the variance. Thus, sociometric ratings were more highly predicted from these variables than positive nominations. Academic performance, despite significant bivariate correlations, was nonsignificant in the prediction of sociometric status whether assessed by the rating or positive nomination procedure.

In separate stepwise multiple regression analyses by grade, the academic performance dimension contributed significantly to the prediction of sociometric ratings at the fifth grade level and to the prediction of sociometric nominations in grade 3. For fifth graders, all other peer variables entered into the regression model before academic performance, however. Nonetheless, this finding suggests that academic performance

becomes more important in the determination of sociometric status for children in late elementary school than in early grade school, at least as measured by sociometric ratings. The grade 3 finding, as indicated earlier, must be interpreted cautiously due to the small number of subjects at that grade level.

Although peer perceptions of academic performance did not predict sociometric status in overall analyses, it is possible that actual grades would be significantly predictive. Peer perceptions of other children's academic performance may be inaccurate and thus uncorrelated with actual academic functioning. Alternatively, children may well be aware of peers' academic ability but, relative to other dimensions, do not take this into consideration in their acceptance/unacceptance of peers. In order to ascertain which of these hypotheses is true, correlations between peer perceptions and actual academic performance would be necessary. This was beyond the scope of the present study. However, the failure of teacher nominations of academic performance to significantly predict sociometric status lends support to the hypothesis that academic success/failure is not an important determinant of sociometric status, relatively, since one would expect a high correlation between teacher perceptions of and actual academic performance.

Other variables did significantly predict sociometric status. Peer ratings of classmates' social skill were associated significantly and

positively to both sociometric ratings and positive nominations, accounting for 56% of the variance in sociometric ratings and contributing a significant R square increase to the prediction of positive nominations. The similarity of procedures likely accounts for the large amount of variance accounted for in sociometric ratings by peer ratings of social skill. However, the fact that peer ratings of how well classmates got along with other children also made a significant contribution to the variance accounted for in the prediction of positive sociometric nominations lends further support to the common-sensical notion that children's perceptions of their peers' behavior play a major role in their acceptance/unacceptance of them. An interesting empirical question of whether peer perceptions of classmates' social behavior accurately correlate with actual behavior is addressed indirectly in the second phase of the study.

Peer report measures of athletic ability and physical attractiveness were also found to account for significant variance in both criterion sociometric status measures. Peer nominations of physical attractiveness entered first into the regression equation for predicting positive nomination scores and was the second entry into the model for sociometric ratings. Peer nominations of athletic ability also entered significantly into the regression equations for the prediction of both sociometric status measures. Thus, peer perceptions of classmates' physical attractiveness and athletic ability are predictive of children's acceptance of

their peers, regardless of whether sociometric status is measured through positive nomination or rating methods.

The results show considerable consistency in which variables predict sociometric status as measured by either positive nomination or rating procedures. Peer perceptions of classmates' social skill, physical attractiveness, and athletic ability all proved to be significant predictors of sociometric status while peer perceptions of academic performance were not. The order of entry into the regression models varied according to whether sociometric status was assessed via ratings or positive nominations. The orders of entry indicated that similarity of procedures affected results, with peer ratings of social skill accounting for the largest portion of variance in sociometric ratings and the two peer nominations variables contributing the greatest variance to the prediction of positive nomination scores. However, that these variables predicted both sociometric status scores indicated that these variables did indeed contribute significantly to the prediction of sociometric status and that results were not merely artifacts of similar assessment procedures.

While there was considerable consistency in the variables that predicted sociometric rating and positive nomination scores, there were also several variables that made unique contributions to the prediction of one or the other sociometric status measure. Teacher nominations of athletic

ability contributed significantly to the prediction of positive nominations but not to sociometric ratings. This was, in fact, the only teacher measure to make a significant contribution to the prediction of sociometric status. Thus, children's perceptions of these various dimensions were more predictive of sociometric status than teacher perceptions. It is interesting to note that teacher ratings of children's social skill were not significantly predictive. This finding suggests that studies that rely solely on teacher identification of dysfunctional children may not be accurately targeting those children shown to be at risk for later adjustment problems.

Finally, grade (treated as a continuous variable) was shown to contribute to the prediction of sociometric ratings but not of positive nominations. This variable's negative contribution indicated that younger children received higher sociometric ratings than older children. More specifically, t test results (using grade as a discrete variable) revealed that grade 5 children scored significantly lower on sociometric ratings than either first or third graders who did not differ from one another. Fifth graders also received lower scores on peer nomination measures. Thus, there appears to be a developmental trend whereby as children get older, they rate their peers significantly lower on ratings, and choose a wider range of peers on various nomination measures, including selection of more opposite-sexed peers.

Other developmental trends were noted in separate stepwise regression analyses by grade. Although variables tended to enter into the model in the same order for each grade level, the prediction of fifth graders sociometric status was enhanced with the inclusion of more variables than at grades 1 or 3. This suggests that as children get older, their popularity amongst peers is related to a wider array of dimensions than with younger children. Since children tend to develop subgroups of friends as they grow older, this finding may reflect the fact that different dimensions and characteristics are important to different subgroups.

There were also significant sex differences in the prediction of sociometric status. For girls, peer perceptions of physical attractiveness were more important in predicting a girl's sociometric status among her same-sexed peers than peer perceptions of athletic ability. The converse was true for boys. These findings are consistent with societal norms which reinforce girls for being attractive and boys for their athletic prowess, and indicate that these stereotypical values are present at an early age. From the nature of the present data and data analyses, it is impossible to determine whether a child rated a peer high on a dimension, such as physical attractiveness, because he/she liked that peer or whether the converse was true in that a child was popular because he/she was attractive. Regardless of the causal direction, however, the presence of sex differences indicates that even very young boys and girls value different characteristics in their same-sexed peers.

The results of Phase I of this study provide preliminary evidence on a number of factors that predict sociometric status in childhood. Not only were peer perceptions of classmates' ability to get along with other children important, but other less behavioral dimensions also predicted sociometric status, including children's perceptions of peers' physical attractiveness and athletic ability. This indicates, consistent with previous research, that popularity in childhood is related to dimensions other than one's interpersonal behavior. Although one shortcoming of this phase of the present study is that measures of actual academic performance, athletic ability, and physical attractiveness were not utilized, the use of peer perceptions of these dimensions has its advantages. Studies have rarely looked at the correlates of sociometric status from the vantage point of the subjects whom are being studied. While it is important to know that certain objectively measurable variables correlate with sociometric status, it is equally important to understand how children's perceptions of these variables relate to their acceptance/unacceptance of peers. These objectively measurable variables can be related to sociometric status only insofar as children are both aware of their peers' standing along these dimensions and consider these variables important in accepting peers. Thus, while examining dimensions of sociometric status by using peer perceptions has its shortcomings, in that assessment procedures are limited to peer report and therefore intercorrelated, it also has the advantage of looking at peer popularity from the most valid angle--that of the peer himself. Nevertheless, the

procedure of correlating peer report measures utilized in the present study has the further shortcoming of confusing cause with effect, making it impossible to determine whether a child became popular because of these other dimensions or whether he/she was simply judged higher on dimensions deemed important within the peer group because he/she was popular.

PHASE II

Results of the second phase partially supported the hypotheses of a relationship between behavior and sociometric status. As predicted, the percentage of positive peer interactions significantly discriminated high from low status children. Consistent with previous findings (e.g., Gottman et al., 1975; Hartup et al., 1976), popular children were found to be engaged in significantly more positive exchanges with their peers than their unpopular counterparts. Another predicted finding was that low status children were engaged in significantly more solitary, non-interactive behavior during free time than popular children. This finding is also consistent with previous research (e.g., Gottman, 1977; Gottman et al., 1976) demonstrating a relationship between off-task behavior and low peer acceptance.

Contrary to prediction, the percentage of negative peer interactions did not distinguish high from low status children. Likewise, there was no relationship between sociometric status and the behavioral observation

categories of peer initiated positive, peer recipient positive, or peer recipient negative interactions.

Another unexpected finding was the relationship between sociometric status and peer initiated negative interactions. While unpopular children have been shown to initiate significantly more negative exchanges in previous research (e.g., Gottman, 1977; Hartup et al., 1976), the results of the present study demonstrated that popular children were distinguished from their unpopular peers in that they initiated significantly more negative interactions.

One explanation for this finding is that the procedure for identifying unpopular children resulted in a heterogeneous sample. Many authors have distinguished rejected from neglected children (e.g., Gottman, 1977; Lahey et al., 1984). Both of these groups of children have been shown to be unpopular (e.g., Gottman, 1977). However, rejected children have been defined as those children who are actively disliked as reflected on negative sociometric nominations ("those children who you really dislike, would not like to sit by," etc.), while neglected children have been defined as those who are simply ignored as reflected by an absence of either positive or negative nominations. Due to the ethical issues involved in having children name and identify classmates that they dislike, negative nomination procedures were not utilized in the present study. Instead, unpopular children were identified on the basis of low sociometric

ratings. It is possible that neglected children who do not interact often with peers would receive very low ratings from peers (on a scale of 1 to 5) by virtue of classmates' unfamiliarity with them as playmates. Thus, it is highly possible that the present sample of unpopular children included both rejected and neglected children. Therefore, the finding of a positive relationship between high sociometric status and percentage of peer initiated negative interaction may reflect the fact that the low status group was comprised of both rejected children, who initiated many negative interactions, plus neglected children, who were uninvolved in either positive or negative interactions. This would also account for the failure to discriminate between high and low status on the basis of percentage of both negative peer interactions and recipient of negative peer interactions. The finding that solitary, non-interactive behavior discriminated popular from unpopular children in the predicted direction lends further support to the notion that the present sample of unpopular children also included neglected peers who tended to remain uninvolved in interactions with their classmates.

An alternative explanation for the finding that high status children initiated significantly more negative interactions than their low status peers is that sociometric status is not solely a function of a child's behavior with peers, but rather related to other non-behavioral dimensions as well. Results from Phase I of this study, demonstrating a relationship between sociometric status and peer perceptions of athletic

ability and physical attractiveness, lend support to this hypothesis. Thus, it may be the case that some children attain popularity amongst peers through attributes other than prosocial behavior and, therefore, their negative behavior has little impact on their sociometric status. It is also possible that once a child attains high status with peers, his/her negative behavior is interpreted differently by peers than negative behavior initiated by an unpopular child. Although these hypotheses explaining the lack of a predicted inverse relationship between negative interpersonal behavior and sociometric status are intriguing and warrant further investigation, the plethora of findings demonstrating such a relationship (e.g., Gottman, 1977; Hartup et al., 1976) make it more likely that the present finding was an artifact of subject selection criteria.

A final explanation for this finding is suggested by grade differences on this variable. Examination of mean differences indicated that first grade popular children initiated significantly more negative interactions than their unpopular peers while high and low status children at grades 3 and 5 became virtually indistinguishable along this dimension. Thus, younger children may possess different norms for what constitutes acceptable behavior valuing both peer positive interaction as well as negative behaviors which reflect power among peers.

In addition to these behavioral interaction variables, there were small but significant differences between high and low status children on the

social perception task. As predicted, popular children were better able to identify affects of other children in social situations than were unpopular children. Thus, popular children described other children's affective reactions to situations with more complex, precise explanations that explained feelings in terms of the factual situation, required inferential ability, or that took into account the character's perceptions of the situation. Unpopular children, on the other hand, offered more explanations that were inaccurate with respect to the character's affect, identified obvious emotions, or explained affective responses in terms of the factual situation. Thus, results indicate that popular children were more accurate in identifying others' feelings and more sensitive to nuances in interpersonal exchanges. These findings are consistent with previous research demonstrating a relationship between peer sociometric nominations and social sensitivity measures (affect recognition and identification of motives) among third and fifth grade children (Rothenberg, 1970).

One criticism of the present finding might be that popular children had a higher level of general cognitive functioning than unpopular children. An effort was made to take into account limited vocabulary levels in scoring by accepting a range of equivalent alternative responses. Nevertheless, several authors have found a relationship between intelligence quotients or academic achievement and sociometric status, as well as between mental age and social sensitivity (Rothenberg, 1970). Futher,

Waterman et al. (1981) recently found that differences disappeared between fifth and sixth grade emotionally disturbed boys on an affective perspective-taking task (similar to the one in the present study) when IQ scores were covaried out in analyses.

In the present study, neither peer nor teacher nominations of academic performance significantly predicted sociometric status indicating that the prediction of sociometric status was not enhanced by the academic performance variable relative to other variables. However, there was a significant bivariate correlation between peer nominations of academic performance and status ($r=.59$, $p<.0001$), while teacher nominations of academic performance and status approached significance ($r=.21$, $p<.06$). Insofar as peer and teacher nominations reflect actual academic performance, and to the degree that academic performance reflects mental age, this criticism is valid. However, the practice of controlling for the effects of mental age among naturally occurring groups is debatable. Although academic performance per se appears, from present findings, to bear little relationship to the prediction of one's sociometric standing, it may bear a more indirect relationship in that it reflects a child's developmental cognitive level. Peers who are less sophisticated with respect to cognitive development may not be unpopular because they are less astute academically, but because their level of cognitive development affects social perception as well as academic functioning. Therefore, rather than statistically eliminating the impact of mental age (such

as increased verbal ability), one may treat it as an important determinant of group differences in its own right, and examine those cognitive abilities that appear to have an impact on interpersonal behavior.

Although the mean differences were small, the finding that social perception skills significantly discriminated sociometric statuses suggests that certain cognitive social skills may play a mediating function in the production of socially skilled behavior. Children who are unable to accurately identify affects of others within social situations would be expected to respond in a manner that may be incongruent with the affective quality of the situation. Hence, they may indeed possess the requisite behavioral skills but fail to demonstrate them due to their inaccurate perception of the situation.

Numerous authors have suggested that certain cognitive social abilities are necessary, but not sufficient, for the production of appropriate and acceptable interpersonal behavior. Referential communication ability (e.g., Champion et al., 1981; Gottman et al., 1975), ability to generate alternative solutions (Spivack & Shure, 1974), and types of cognitive strategies (e.g., Renshaw & Asher, 1983) are but a few that have been proposed. From the present results, accurate affect recognition within a social context may be added.

Although it was not possible to perform experimentally valid analyses by grade level due to the small number of subjects within each grade, preliminary analyses were performed. The results, which must be interpreted cautiously and viewed as tentative, indicated a developmental trend. Social perception skills bore a stronger direct relationship to sociometric status at grade 1, a lesser relationship at grade 3, and an even weaker relationship at the fifth grade level. This is consistent with previous findings showing a weaker relationship in later versus earlier elementary school (Deutsch, 1974; Rothenberg, 1970; Rubin, 1972). The developmental trend may reflect a ceiling effect with respect to this particular skill. As children grow older and develop cognitively, there may be little leeway for meaningful differences in affective perception skills (at least as measured by current instruments). At that point, the maintenance of low sociometric standing may be more a function of learned expectations of rejection and the absence of opportunity for reinforcement of prosocial behavior than of deficits in affective social perception.

This hypothesized developmental trend would also account for the small difference between groups in social perception since the initial analysis was collapsed across grade. Another explanation of the small mean differences may relate to the subject selection procedure of grouping together both rejected and neglected peers under the rubric of unpopular children. Several authors have found differences between acting-out and

withdrawn children on the dimension of perspective taking and interpersonal problem solving (Silvern, 1976; Spivack, Platt, & Shure, 1976; Waterman et al., 1981). In general, the results of previous research have shown that acting-out children manifest higher skills along these dimensions than withdrawn children. Further, Silvern (1976), examining cognitive perspective taking, and Waterman et al. (1981), utilizing affective perspective taking, demonstrated that higher skills were significantly associated with more severe antisocial behavior. Thus, contrary to hypotheses that antisocial behavior reflects perspective taking incompetence (Kohlberg, LaCrosse, & Ricks, 1972), these findings suggest that competency may be utilized in the service of antisocial goals. In any event, the mean social perception score of unpopular children in the present study may have been unduly inflated by combining both aggressive and withdrawn unpopular children.

SUMMARY

Sociometric status in childhood, despite its predictive validity, remains a relatively poorly understood construct with regard to its determinants. The aim of the present study was to attempt a better understanding. Like most research studies, for every question answered, several were raised.

Results of the present study indicated that, undoubtedly, an interaction of factors relate to sociometric standing. These include behavioral and cognitive skills as well as personal attributes such as athletic ability and physical attractiveness. The direction of these relationships remains unanswered. Exemplary of this causal confusion is the finding from this and other studies of a positive relationship between various cognitive social skills and popularity. This relationship has been demonstrated most reliably with withdrawn children. However, it is unclear whether cognitive skill deficits discourage interaction or whether reluctance to engage in social interaction impedes the development of social understanding. With this, as with other variables, it is likely best represented as a transactional model. Hence, acceptance by peers for whatever reason encourages, through social reinforcement, continued pursuit in that and other dimensions which, in turn, facilitate increased skill. Further, the importance of many of these dimensions varies with age and sex.

Results of the present study partially replicated previous findings of the importance of peer behavior to sociometric status. However, the finding of a positive relationship between popularity and peer initiated negative interactions underscored the importance of differentiating rejected and neglected subgroups of unpopular children. For treatment studies, the accurate identification of these subgroups as well as the development of different treatment programs for withdrawn versus aggres-

sive children is indicated. Although the results of the present study indicated that unpopular children, as a whole, demonstrated poorer skills in social perception, findings from previous studies, coupled with the small magnitude of difference in present findings, suggest that these skills may vary according to the type of unpopular child. Further, it appears that the importance of these cognitive skills is age dependent.

Future research in the area of sociometric status should continue to focus on the identification of behaviors, cognitive skills, and personal attributes associated with peer popularity. Rejected and neglected children should be considered as significantly different subgroups of unpopular children. Finally, it is recommended that future research focus on developing more refined and standardized procedures for measuring affective social perception skills since this appears to be a fruitful and relatively unexplored area in relation to sociometric status.

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APPENDIX A

Sociometric Measures

Friendship Rating Scale

Directions: For each of the students listed below, circle the number which best describes "How much you like to play with this person." Circle "1" if you don't like to play with this student at all, "2" if you like to a little, "3" if you like to some, "4" if quite a bit, and "5" if a lot.

	Not at all 1	A little 2	Some 3	Quite a bit 4	A lot 5
John Doe	1	2	3	4	5
Jane Doe	1	2	3	4	5

etc.

Friendship Nomination Form

Directions: Listed below are the names of all the children in your classroom. First, find your name and draw a line through it. Next, draw a circle around the names of the 3 classmates who are your best friends. Remember, circle only 3 names.

John Doe

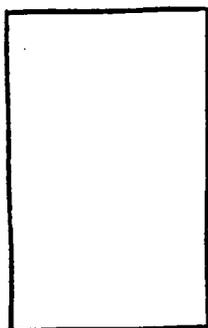
Jane Doe

etc.

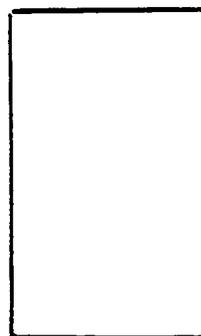
Sociometric Measures
for First Graders

Friendship Rating Scale

Directions: Below are the pictures of all the children in your class. Circle the happy face which best shows "how much you like to play with this person." Circle "☹" if you don't like to play with this student at all; circle "☺" if you like to play with this person a little; circle "😊" if you like to play with this student some; circle "☻" if you like to play with this student a bit; or circle "☼" if you like to play with this student a lot.



John Doe

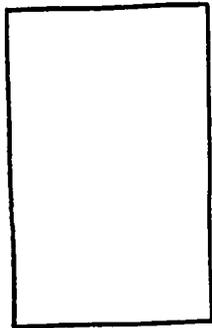


Jane Doe

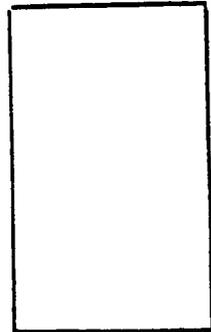


Friendship Nomination Form

Below are all the pictures of the children in your classroom. First, find your picture and put an X through it. Then put a ✓ below the pictures of the 3 classmates who are your best friends. Remember, put a ✓ below only 3 pictures.



John Doe _____



Jane Doe _____

APPENDIX B

Peer Measures

Peer Nominations of Athletic Ability

PNAA

Listed below are the names of all the children in your classroom. First, find your name and draw a line through it. Then draw a circle around the names of the three (3) classmates you think are the best at recess games. Remember, circle only three names.

John Doe

Jane Doe

etc.

Peer Nominations of Physical Attractiveness

PNPA

Listed below are the names of all the children in your classroom. First, find your name and draw a line through it. Then draw a circle around the names of the three classmates you think look the best. Remember, circle only three names.

John Doe

Jane Doe

etc.

Peer Nominations of Academic Performance

PNAP

Listed below are the names of all the children in your classroom. First, find your name and draw a line through it. Then draw a circle around the names of the three classmates you think are the best at school work. Remember, circle only three names.

John Doe

Jane Doe

etc.

Peer Social Skill Rating Scale

PRSS

Listed below are the names of all the children in your class. For each name, circle one number from 1-5 according to how well you think that child gets along with other children. Circle "1" if you think the child does not get along with others well at all; circle "2" if you think he or she gets along kind of badly; "3" if okay; "4" if pretty good; and "5" if you think the child gets along with other children real well. Be sure to rate every other child; rate yourself also according to how well you feel you get along with the other children in your class.

	Not at all	A little	Okay	Pretty well	Real well
	1	2	3	4	5
John Doe	1	2	3	4	5
Jane Doe	1	2	3	4	5

etc.

APPENDIX C

Teacher Measures

Teacher Social Skill Rating Scale

Directions: Listed below are the names of all the children in your classroom. Please rate each of the children according to how socially skilled you think the child is, using the 1-5 scale, with "1" being "not at all socially skilled" and "5" being "very socially skilled." Social skill is defined as "the ability to obtain desirable outcomes and avoid undesirable outcomes without infringing on others' rights." Circle one rating for each child in your class. If any child has been omitted, please add his or her name to the list and provide a rating. Thank you.

	not at all 1	2	3	4	very 5
John Doe	1	2	3	4	5
Jane Doe	1	2	3	4	5

etc.

Teacher Nomination Form

Directions: Listed below are the names of all the children in your classroom. First, please indicate the 3 boys and 3 girls you feel display the most athletic ability during recess at school by circling their names. Remember to nominate 6 children in all (3 boys, 3 girls). Second, indicate the 3 boys and 3 girls you feel are the most outstanding with respect to academic performance by placing a check beside their names. Finally, nominate the 3 boys and 3 girls you think are the most physically attractive in the classroom by underlining those names. Remember to nominate 6 children for each category and that we are interested in your impressions. Thank you.

John Doe

Jane Doe

etc.

APPENDIX D

Behavior Observation Form

	<u>RAW</u>	<u>Z</u>	<u>I</u>	<u>R</u>	<u>C</u>
+A	—	—	—	—	—
+P	—	—	—	—	—
-A	—	—	—	—	—
-P	—	—	—	—	—
0	—	—	—	—	—

Observer _____
 Date _____
 Activity _____
 Subject _____

Total Intervals

— — — — —

Code	Observation
------	-------------

1. A/P/O +/- I/R/C V/N _____
2. A/P/O +/- I/R/C V/N _____
3. A/P/O +/- I/R/C V/N _____
4. A/P/O +/- I/R/C V/N _____
5. A/P/O +/- I/R/C V/N _____
6. A/P/O +/- I/R/C V/N _____
7. A/P/O +/- I/R/C V/N _____
8. A/P/O +/- I/R/C V/N _____
9. A/P/O +/- I/R/C V/N _____
10. A/P/O +/- I/R/C V/N _____
11. A/P/O +/- I/R/C V/N _____
12. A/P/O +/- I/R/C V/N _____
13. A/P/O +/- I/R/C V/N _____
14. A/P/O +/- I/R/C V/N _____
15. A/P/O +/- I/R/C V/N _____
16. A/P/O +/- I/R/C V/N _____
17. A/P/O +/- I/R/C V/N _____
18. A/P/O +/- I/R/C V/N _____

* Any additional comments _____

APPENDIX E

Social Perception Measure

Scoring Criteria

Scoring Criteria

- Score 0 The story presentation is inaccurate. The child deletes or misrepresents the main point of the story. Minor inaccuracies are not scored 0.
- Score 1 Facts of the story line are presented in a way that captures the main point. Does not identify affects of characters or affect identified is blatantly inaccurate. It does not include any additional features described below.
- Score 2 Story is of "1" quality plus:
 a. Refers to simple obvious emotion; i.e., emotion apparent from the character's verbal statement or clear expressive behavior.
 b. Refers to obvious intention or thought.
- Score 3 Story is of "1" quality and explains behavior, feelings or thoughts in terms of factual situation. (Do not infer explanation from juxtaposition; must be a clear statement of causality.)
- Score 4 Story is of "1" quality plus:
 a. Refers to feeling, thoughts or motives which are not obvious but can be reasonably inferred.
 b. Explains an action or statement or feelings in terms of character's thoughts, emotions, or trait. (must involve a clear statement of causality)
 c. Expresses a complex emotion--more than one simple feeling each of which reasonable follows from the story, or an especially precise feeling description.
- Score 5 Story is of "1" quality and explains or interprets character's actions, thoughts, feelings, or motives in terms of the character's perception of the interpersonal situation. (obvious or inferred)

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