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The Ohio State University

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WITH AND WITHOUT LEARNING DISABILITIES: SOCIAL
STATUS, SOCIAL NETWORKS, PERCEIVED SOCIAL COMPETENCE,
SOCIAL COGNITION, BEHAVIOR PROBLEMS, AND ECOLOGICAL FACTORS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of the Ohio State University

By
Sally G. Hoyle, B.A., M.A.

* * * * *

The Ohio State University
1986

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CHAPTER I

Introduction

The major purpose of the present study was to examine longitudinally and cross-sectionally, the following aspects of social competence in children with and without learning disabilities (LD): social status, social networks outside of school, perceived social status and perceived social self-competence. Previous research suggested that children with LD suffer from a myriad of problems in social relations including low social status (Bryan, 1974, 1976) and inaccuracy in perceptions of their social status (Bruininks 1978a, b). Yet, other studies do not replicate these findings. In one study, LD children were less often chosen as best friends, but they were not more rejected and did not perceive themselves as socially less competent than their normal learning peers (Hoyle & Serafica, 1984). Therefore, a major goal of the study was to examine longitudinal stability and change in the nature of social relations of LD and nonLD children. In addition, the study sought to replicate previous findings of Hoyle and Serafica (1984).

A second major goal of the study was to examine, longitudinally and cross-sectionally, determinants of LD and nonLD children's social status. Studies have repeatedly
described social relations of children with special educational needs but few have focused on the determinants of LD children's social status. A review of the theoretical, empirical, and clinical literature lead to consideration of the following determinants of peer status: social cognitive factors (i.e. conceptions of friendship and social inferences about liking), teacher ratings of social competence and behavior problems in the classroom, and ecological factors (i.e. aspects of the social environment). Multiple determinants of peer status were examined because the literature suggests that many variables are associated with low social status in children with learning problems.

There are several major reasons for exploring the nature and determinants of social competency in LD children. First, there is a split in the literature between studies indicating that all LD children are deficient in social skills (Odom, Jenkins, Speltz, & Deklyen, 1982; Kronick, 1981) and those suggesting more subtle individual differences (Hoyle & Serafica, 1984; Weiner, 1980). Reconciling these different views could contribute to our understanding of the social development of LD children. Second, there is a demand for social skills training programs in schools and mental health settings; information on strengths and weaknesses in social functioning for LD children could facilitate program development. Third, longitudinal studies are rare. LD children may display uneveness in social development such that they lag behind or accelerate in social
In a review of longitudinal studies using LD subjects since 1968, Horn, O'Donnell & Vitulano (1983) report that only six of 24 studies examined aspects of socioemotional development. Fourth, research employing reliable and valid measures of social relations is needed because it is tenuous to base remediation efforts on methodologically flawed findings. Finally, prevalence of LD is relatively high. Current estimates range from one to 15% of the elementary school population in the United States (Smith, 1983). In light of research suggesting LD children are at risk for later mental health problems due to their difficulties in social relations, there is a potentially large group of children in need of preventative mental health efforts on the part of psychologists and educators.

Significance of the Study

At a theoretical level, the importance of social relations for psychological development has been discussed by a number of writers. James Mark Baldwin was one of the first theorists to emphasize the importance of social relations in child development. The hypothesized relationship between self and other occupies a central position in his theoretical writings on social development. Baldwin (1906) describes social interaction as instinctual. Those who are not socially oriented are said to lack the social judgment acquired through social interaction; a 'socially unfit' individual lacks the ability to use social standards in appropriate context. Socialization, the task of
integrating oneself into the social context, interacts with development of the self which, according to Baldwin, is a progressive process of differentiating the self from other. Thus, knowledge of the self is acquired by knowing ourselves through others, such as parents and peers, coupled with knowledge of others gained from self-knowledge. Contemporary formulations based on Baldwin's theory (i.e. Damon, 1983) describe a greater dichotomy between socialization and individuation but in other respects retain Baldwin's original views.

Another theorist, whose writings support the importance of social relations in social and personality development, George Herbert Mead, wrote that the self develops through interaction with others and knowledge of the self is a reflection of these interactions. Mead (1934) describes social interaction as essential to the development of self-concept and personality.

Harry Stack Sullivan (1953) is perhaps the most celebrated theorist on childhood social relations because he articulated the relationship between social relations and overall adjustment by describing the functions of peer relations at different ages. The infant is not yet ready to engage in social relations because social experiences are not yet sufficiently differentiated and organized. Social contact is essential in order to satisfy the infant's needs and to provide the context for subsequent organization and differentiation. As the frequency of parental interaction increases in late infancy, the
socialization process is fully launched. The child is prepared to interpret and respond to more complex patterns of social behavior. This transition is followed by a period of self-oriented social interest. In preadolescence, the need for intimacy in a close same-sex relationship reflects a shift from self- to other-social interest. Sullivan (1953) suggests that the validation of personal worth and understanding of the close friends' needs which are learned in the 'chumship' provide the foundation for later intimate interpersonal relationships in adolescence and adulthood. Sullivan's (1953) writings emphasize the need for success in all stages, as they are building blocks for subsequent stages. He cautioned that persons who fail in early stages of interpersonal development will need to excel in subsequent stages in order to achieve satisfying interpersonal relations and life satisfaction.

Further theoretical support for the critical role of social relations in childhood is found in the writings of Alfred Adler. Like Baldwin, Adler (1959) believed that social feelings were innate. He described social development as an important developmental task which is learned through peer friendship. Adler (1959) details the benefits of friendship as learning empathy, perspective-taking, self-esteem, and thoughtfulness. Along these lines, contemporary writers have assigned social development a crucial role in positive overall adjustment. Hartup (1980) summarizes the current view as follows: "it is difficult to conceive of normal human development in the absence
of peer interaction...without an opportunity to encounter individuals who are co-equals, children do not learn effective communication skills, do not acquire the competencies needed to modulate their aggressive actions, have difficulties with sexual socialization, and are disadvantaged with respect to formation of moral values. Peer relations are not luxuries in human development but necessities" (p. 252). The broad theoretical framework suggested by Baldwin (1906), Mead (1934), Sullivan (1953), and Adler (1959) describes normative social relations. It is not clear whether the nature and determinants of social relations in children with special educational needs can be interpreted within this framework. Therefore, the present study examined the applicability of this theory to stability and change in social relations of LD children.

Empirical Significance for the Study of Peer Relations

The strongest empirical support for the importance of peer relations in later psychological development comes from studies reporting positive effects of these relationships. Social competence and peer popularity have been associated with positive interpersonal relations in studies with preschoolers (Vaughn & Waters, 1981), elementary school children (Gottman, Gosso, & Rasmussen, 1975) and adolescents (Douvan & Adelson, 1966). Positive peer relationships have been associated with the socialization of aggression (Patterson & Cobb, 1971) and the promotion of children's social effectance (Baumrind, 1972). Epidemiological studies have indicated that children who report
having a close friend were less depressed after stressful life events in adulthood (Brown & Bhrodrain, 1975). Positive correlates of peer relations have been emphasized less than negative consequences of poor peer relations, which will now be discussed.

Theoretical notions concerning the importance of peer relations in childhood have been supported in retrospective studies. Unpopular children are more highly represented in community mental health registers (Cowen, Pederson, Babigian, Izzo, & Trost, 1973) and are more likely to become juvenile delinquents (Roff, Sells, & Golden, 1972) or to exhibit adult psychopathology (Kohn & Clausen, 1955; Straine, Cooke, & Appolloni, 1976). Although Kohlberg, LaCross, & Ricks (1972) described retrospective studies as methodologically flawed, collaborative evidence is provided by comparison studies. In one study comparing children referred to a mental health clinic versus demographically-matched peers, referred children were found to have lower peer acceptance than controls (De Apodaca & Cowen, 1982). In studies of loneliness, operationally defined as an emotional state brought about by poor peer relations, Asher, Hymel & Renshaw (1984) found that less popular children reported less social satisfaction than more accepted peers on several self-report measures.

Empirical support for the significance of peer relations is provided indirectly through studies of children's perceptions of and reactions to psychological problems. Roberts, Beidlema &
Wurtek (1981) found that children viewed as 'acting out' by peers were rated as more severely disturbed than children with severe psychological disorders (i.e. psychosis). The results suggest that children with problems in peer relations are not tolerated by peers.

In addition to a lack of toleration for behavior problems, children seem to be highly aware of mental health problems. When asked what sorts of problems would result in a visit to a clinical psychologist, fifth through twelfth grade children were most likely to respond with social problems (Dollinger, Thelen, & Walsh, 1980). The consequences of children's high awareness of social problems concomitant with negative views about these problems are yet unknown. More information on the nature of peer relations in children who have problems in this area could lead to a better understanding of the role of peer sensitivity to social status. Determinants of social status were examined in order to generate solutions to poor social relations. The applied literature also contributes to the rationale for the study.

**Applied Significance of Studying Social Relations**

Many school-aged children experience social isolation or rejection. Although prevalence estimates vary with methodology, it is generally agreed that children diagnosed as emotionally disturbed, mentally retarded, and learning disabled comprise the bulk of those children at risk for poor peer relations (Bryan, 1974).
LD children experience more emotional problems than nonLD peers including feelings of insecurity (Owen, Adams, Forrest, Stolz & Fisher, 1971), depression (Klein & Seligman, 1976; Seligman, 1974) and anxiety (Margalit & Herman, 1986; Margalit & Shulman, 1986). LD children are also found to be less adaptive and flexible (Perlin, 1977; Pihl & McLarnon, 1984). LD has also been associated with later delinquency (Morgan, 1979) and has been described as a predisposing factor to delinquency (Bryan, 1978; Zinkus, Gottlieb, & Zinkus, 1979). Adolescent LD students exhibited lower levels of autonomy when pressured by situational or personal (i.e. parents & peers) stress (Margalit & Shulman, 1986). This data suggests that longitudinal study of LD children's social relations may show increasing problems for LD students with age.

There has been much research on identification, prevention and remediation of social relations problems (See Michaelson, Sugai, Wood & Kazdin, 1983, for a review). With respect to LD children, teachers and parents tend to notice problems when they become serious. Consequently, many children with deficits in social relations may not be identified. In order to prevent serious social development problems which may result from prolonged social rejection, research enabling identification of problems in social relations is needed. Janes, Heselbrock, and Schechtman (1980) found that schools do not tend to refer children for psychological intervention based on peer problems alone. These findings suggest that children with problems in
peer relations would not be referred unless there were other problems requiring clinical intervention.

After children with social relations problems have been properly identified, specific goals of intervention need to be carefully considered (Michaelson, et al., 1983). The inability of many social skills training programs to significantly enhance social competence and social acceptance suggests the need for further study of the determinants of poor peer relations in the child clinical population (i.e. Coie & Krehbiel, 1984). The present study examined longitudinal stability and change in the nature and determinants of social relations in one clinical child group, children with learning disabilities, in order to suggest specific criteria for remediation of social skills problems and treatment strategies. The importance of longitudinal study of social relations in children with learning disabilities will now be discussed.

The Significance of Longitudinally Studying Social Relations in Children with Learning Disabilities.

Three major approaches to conceptualizing social relations in LD children speak to the significance of longitudinal study. The first view suggests that all LD individuals have significant deficits in social relations (Odom et al., 1982; Kronick, 1981). The second view suggests that there is a type of learning disability which is confined to social problems (Bader, 1975, Weintraub & Mesulam, 1983). Weintraub & Mesulam (1983) describe this subtype of socio-emotionally disabled LD children as
follows, "...a behavioral syndrome that begins in early life and is characterized by emotional and interpersonal difficulties, shyness, visuospatial disturbance and inadequate paralinguistic communicative abilities" (p. 463). Although they mention cognitive skills in their definition, there is an emphasis on a neurologically-based subtype of LD.

A third view links specific types of LD to different social skills deficits which in turn relate to the cognitive limitations of that individual (Wienar, 1980). Piaget (1962) provides the theoretical basis for the hypothesized relationship between social skills and cognition. He noted that social interactions promote cognitive development through their interaction; the child learns about the world through adaption to and interaction with the environment which includes social interaction. This theoretical position has been supported in studies indicating relationships between poor peer relations and poor school performance (Bonney, 1971; Green, Forehand, Beck & Vosk, 1980; Rardin & Moan, 1971). Meichenbaum's (1976) cognitive-functional approach towards learning disabilities is often used; LD is viewed as deficiency in cognitive strategies. In this view, social skills are simply another cognitive-functional area to be mastered. This approach is strongly supported by the burgeoning neurological and neuropsychological literature on subtyping of LD (e.g. Fiske & Rourke, 1979; Petrauskas & Rourke, 1979; Saltz & Morris, 1981). Strang & Rourke (1983) looked at three subtypes repeatedly
identified by Rourke's research group and found that one particular group, children deficient in concept-formation and non-verbal reasoning showed more problems in peer relations than other groups of LD children. Reportedly, these children had difficulty interpreting social information but also had difficulty learning from experience on certain tasks.

All three views imply that problems in social relations are stable for LD individuals. A study examining stability and change in social relationships could suggest whether Sullivan's (1953) developmental theory applies to children with special educational needs. At about age nine, Sullivan describes a dramatic increase in children's sensitivity towards a particular same age peer, which he labels "chumship". It is assumed in the present study, that children learn other's needs and desires through the chumship (Sullivan, 1953). Sullivan's view is extended to indicate that establishment of a chumship could lead to increased social acceptance because children learn to empathize and to take anothers' perspective in these relationships (Baldwin, 1906; Mead, 1934; Adler, 1959).

Furthermore, the present study examined stability and change in latency-aged children (i.e. 9-to-11 years of age) because normative and ecological changes occur in this age range. The normative literature, which will be reviewed in a later section, indicates an increase in stability of peer status with increasing age (e.g., Epstein, 1985), especially for
socially rejected children (Newcomb & Bukowski, 1984). Changes in the social context, such as the transition from elementary to junior high school, affect peer relations (Newcomb & Bukowski, 1984). A restricted age range was studied in order to obtain a fine-grained assessment of developmental change and stability in LD children's social relations. Developmental change was also examined in a narrow age range because certain variables included in the study had not been used with LD subjects. The significance of studying stability and change in the nature and determinants of LD children's social relations will now be discussed by consideration of each measure used in the longitudinal study.

Research on the stability of low social status has shown that social rejection is highly stable over time (Coie & Dodge, 1983). Moreover, children with problems in peer relations continue to have problems when given opportunities to become acquainted and form friendships with unfamiliar children (Coie & Kupersmidt, 1983). Consistent with this research, there is evidence that poor peer relations in LD persons emerge early in life and increase in adolescence, reaching a level of difficulty which places them in the clinical range on a parent questionnaire (McConaughy, 1986). Older children use more stringent criteria in making friends (Beck, Collins, Overholser, & Terry, 1985), suggesting that the mental health consequences of poor peer relations could be severe.

For children who are socially neglected (i.e. not rejected
but rarely named as best friends or favored playmates) the prognosis for later peer relations is more promising (Coie & Dodge, 1983). One study suggests that LD children may be among those children considered to be socially neglected rather than rejected since they were not highly disliked by peers (Hoyle & Serafica, 1984). If LD children are socially neglected, and their social status is stable over time, very different consequences for later social development are suggested (Asher, 1983; Coie & Dodge, 1983).

The literature does not report on stability and change in the accuracy with which children perceive their peer relations. However, this line of inquiry could reveal whether LD children increase, decrease, or remain stable over time in the accuracy with which they assess their peer relations.

Longitudinal data on children's social networks is needed because changes in LD children's social status or perceived social status could be accompanied by changes in the social network. A stable social network, in the presence of unstable peer relations could result in higher levels of perceived competence in LD children because they are able to use the social network as a substitute for peer relations. In view of recent research that the parent-child relationship and other social network relationships do not lose their importance in adolescence (i.e. Marcoen & Brumagne, 1985; Hill, 1980) it may be important to examine the degree to which social relationships retain important psychosocial functions over time.
Examining children's perceived competence longitudinally will reveal whether LD children see themselves as more, less, or equally socially competent as their LD peers over time. Previous research has suggested that children with limited success in peer relations begin to view themselves negatively thereby rendering low social status a self-fulfilling prophecy (Asher, 1983).

Longitudinal data on LD children's conceptions of friendship will suggest whether their social reasoning skills develop at the same rate or fluctuate more than normal learning peers. Since older children's conceptions of friendship are more psychologically-based (Selman, 1980) it is possible that LD children could lag further behind nonLD peers two years later.

Finally, examining stability and change in behavior problems will enhance interpretability of other findings; if a child is more or less accepted by peers, it is necessary to first rule out decreases or increases in problem behavior in the classroom as the basis for these changes.

In sum, longitudinal research on social relations in LD children is needed in order to address the issues of the effects of peers increasing sensitivity to social problems with age, the stability of social rejection and concurrent changes in social status, social cognition, and behavior problems. Because longitudinal research introduces problems of practice due to repeated measurements, sampling bias, and cohort effects (Achenbach, 1978) any longitudinal follow-up should also include
a comparison group.
CHAPTER II
Review of the Literature

Stability and Change: Normative Data

While a comprehensive review of the literature on social relations is outside the focus of the present study, a review of longitudinal studies of social status, social networks, perceived social status, perceived social competence, conceptions of friendship and behavior problems of nonLD children from which the aims and hypotheses of the present study were derived is presented.

Research on the stability of peer acceptance and rejection has been summarized by Hartup (1983) as follows: (1) stability estimates vary according to the type of sociometric measure used; (2) stability is highest when the interval between sociometric administrations is short; (3) stability increases with age; (4) high stability is found in more established social groups; (5) stability is affected by sample size, number of test items, and other characteristics which influence psychometric instruments. Problems in measuring stability will be discussed in a later section.

Age changes in stability and change of social status are of special interest in the present study. Earlier research (i.e
Horrocks & Thompson, 1946) found that social relations became highly stable by adolescence. More recent research has shown that best friend nominations by fourth graders to eighth graders remain stable over several months, particularly if the nominations are reciprocal (Busk, Ford & Shulman, 1973; Tuma & Hallinan, 1973; Berndt & Hoyle, 1985; Bukowski & Newcomb, 1985). No studies of stability and change in perceived social status in normative groups was found; the literature on perceived social status appears to focus on children who have difficulty in social relations.

Research on stability and change in children's social networks is scarce, in part, because change in social networks over time is expected due to changes in environment and stages of the life cycle (Blyth, 1982). However, social networks in middle childhood are viewed as stable given minimal changes in the social environment. When the child begins the transition to adolescence, changes in the size and functions of social networks can be expected (Blyth, 1982; Garbarino & Gilliam, 1980).

Stability and change in perceived social competence has been studied by Harter (1982) who found no significant developmental changes between grades three through six in scores for perceived social, cognitive, or physical competence or general self-esteem.

With respect to stability and change in friendship conceptions, Selman (1980) reported that one-and two-year
follow-up studies of social understanding generally demonstrate higher interpersonal reasoning scores with age. These data are viewed as supporting the invariant stage sequence model proposed by Selman (1980). In follow-up assessments two and three years apart, Selman (1980) found that over the first two years about 15% of the sample remained at the same stage of social reasoning while the remaining 85% increased from one-third to one full stage. According to Selman (1980), it takes about four to five years to advance one full stage, suggesting that changes in social reasoning are gradual.

Stability and change in behavior problems has been reviewed by Quay (1977, 1979) who reports that stability in teachers' ratings from two weeks to two years has been found. However, stability of ratings may be a function of intervening events (i.e. day-to-day variations in students' behavior).

In addition, there is little research on stability and change of the nature and determinants of social status in LD children. The present study seeks to fill this gap.

Social Relations in LD Children

In this section, the rationale for the cross-sectional sample will be presented. Studies of social status in LD children will be reviewed as well as methodological issues in measuring social status.

Social status. LD children have, with few exceptions, been rated lower on measures of social acceptance and higher on peer rejection than normal learning peers. The research of Tanis
Bryan and her research group has most often been cited in support of this tenet (i.e. Bryan, 1974, 1976). In both studies third through fifth grade LD children were less often chosen as a friend, classroom neighbor, or party guest than nonLD peers and were more rejected by them (Bryan, 1974, 1976). In three later studies using different measures of social status, the findings were replicated with first through sixth grade children (Bruininks, 1978a, b; Scranton & Rykman, 1979). In addition to the finding that LD children had lower social acceptance than nonLD children, Siperstein, Bopp, & Bak (1978) noted that LD children were not highly represented among the most or least liked groups. Siperstein et al's (1978) findings suggest that LD children may be viewed neutrally by peers.

Findings of social rejection of LD children were not replicated in five studies. Prilliman (1981) found that first through sixth grade LD children were accepted by peers about as often as nonLD children. LD children were more highly represented among the group of children who were not chosen as classroom helpers, those viewed neutrally, or disliked by peers. In a study with third grade students, Hoyle & Serafica (1984) found that LD children received fewer friendship nominations but there were no differences between groups on nominations of liking, disliking, neutrality or unfamiliarity. LD children received similar ratings as nonLD peers in three other studies: Bursuck, 1983; Sainato, Zigmond, & Strain, 1983; Stanek, 1983.
More recent research has begun to shed doubt on the hypothesis of the socially inept LD student. Breen & Barkley (1981) found that LD children did not score in the clinically deviant range on the social skills or social withdrawal scales of the Personality Inventory for Children. Markowski (1983) did not replicate previous findings of LD children performing poorly on communicative and persuasive tasks compared to their nonLD peers. They did not have significantly higher scores on statements of rejection and competition as previous research has indicated.

Two studies have examined peer popularity in LD children longitudinally. Bryan (1976) assessed the 1974 sample one year later when children were in fourth and fifth grades. LD children remained less socially accepted and more socially rejected. Moreover, children's scores of social standing remained stable over time as judged by correlations between scores at Times 1 and 2. Bryan (1976) concluded that LD children are rejected across time and speculated that results were due to labeling children 'LD' or LD students' negative personality characteristics. The hypothesis regarding labeling was later discounted in research showing no relationship between labeling a child LD and social rejection (Bryan, 1978; Siperstein et al., 1978). In addition, conclusions based on a single sociometric measure may not be highly reliable (Asher, 1983; Rubin, 1983). In the second study with third through fifth grade children, Sheare (1978) found that both LD and nonLD children were more
accepted seven months after the initial interview, but LD children received lower overall scores. Although LD children did not make sufficient gains in social status so as to obtain social status commensurate with nonLD peers, they did maintain stability in social status over time. The contradictory findings could be due to different sociometric measures, amount of time between data collection, or statistical analyses. Longitudinal research with LD children could be more fruitful if multiple sociometric measures and other indices of social competence are used.

Another aspect of social relations in LD children, peer preferences, examines whether LD children prefer to interact with others with special educational needs, nonLD students, or both. Hutton & Polo (1976) examined social status of LD and nonLD children and found that LD children tended to prefer nonLD playmates rather than LD children. By contrast, nonLD children did not indicate a preference for LD over nonLD peers. In the Hoyle & Serafica (1984) study, significant differences in peer preferences were not found; LD and nonLD children chose each other as friends with about the same frequency.

Methodological Issues in Measuring Social Status. The sociometric technique, in which children are asked to name persons with whom they prefer to play, work, sit next to in class, or have as friends, is the most widely used measure of social status in LD children. Measurement characteristics of the sociometric have been endorsed and criticized in the literature
on normative and clinical populations. In regard to the present study, there are methodological limitations specific to use with LD children. Bryan (1974, 1976) used two sociometric nomination measures: Moreno's (1960) task in which children name positive and negative preferences for each of three activities and Garry's (1963) "Guess Who", a checklist with 32 descriptions for which children select a peer fitting that description. Thus, children had a total of 41 nomination opportunities, which may have biased results against those children with poor verbal skills such as LD children. A fixed number of nominations and forced choices were elicited, a practice which may distort children's responses because they may name more or fewer friends than they actually have. In addition, because these studies use only nomination measures, information on children's relationships with all classmates was not obtained.

Bruininks (1978 a, b) used a peer acceptance measure which did not depend heavily on verbal skills but in presenting only a forced choice nomination of classmates (rate each child 'as a friend', 'all right' or 'wouldn't like'), omitted a spontaneous friendship nomination. In both the Bryan and Bruininks studies, children were not given opportunities to express whether or not they were sufficiently familiar with classmates in order to nominate and rate them accordingly. In several studies (Bryan, 1974, 1976; Hutton & Polo, 1976; Prilliman, 1981; Scranton & Ryckman, 1979) children are asked to nominate work partners in the classroom as part of sociometric procedures, an instruction
which introduces negative bias against peers with low academic achievement such as LD children.

Many of these methodological limitations were alleviated in one study using a multimethod approach including friendship nominations, ratings of liking, and other indices of social competence in LD subjects (Hoyle & Serafica, 1984). In that study, children were not limited in the number of nominations. Also reciprocal friendship nominations were examined. The use of both a spontaneous friendship nomination and multipoint ratings of liking for classmates lessened bias against children with poor verbal skills. In addition, positive, negative, neutral and unfamiliarity ratings of classmates were obtained. The use of multiple measures of social relations has been highly endorsed (Asher, 1983; Rubin, 1983) in part because the goal of sociometry is broader than the examination of the like-dislike dimension (Cairns, 1983).

**Social Networks.** In order to provide a more comprehensive description of social status, the social network method can be used. This technique differs from the sociometric in that nominations are not restricted to one population, such as peers (Blyth, 1982). Although much of the current research suggests that social support networks are age-graded, confining observations to same-age peers in a single setting may not provide an accurate view of the child's social world (Asher, 1983; Hartup, 1983; Ladd, 1983; Rubin, 1983). If LD children are not considered attractive playmates, information on their social
networks can suggest whether problems in social relations are limited to certain contexts. With LD children, the social network method can reveal social relations outside of the school setting which might serve as sources of psychological support and friendship. It can describe the nature and context of children's interactions with those who are considered important to them. The social network technique has been used with LD children in only one cross-sectional study (Hoyle & Serafica, 1984) which revealed no differences in the size, but some differences in functions of social network members. Longitudinal follow-up is needed in order to examine the stability of social networks.

**Perceived Social Status.** How accurately do LD children perceive their social status with peers? Bruininks (1978 a, b) examined perceived social status by comparing ratings children thought peers would give them (i.e. as a friend, neutrally, or dislike them) and the actual nominations they received. While LD children perceived their status as higher than peer nominations indicated, nonLD children's perceived status corresponded closely to their actual status. In fact, LD children viewed themselves as having about as many friends as their nonLD peers. Garrett & Crump (1980) point out that LD children may be less modest in appraising their social status because they do not follow societal norms dictating modesty in self-evaluation. However, LD children have not been shown deficient in their understanding of other social norms and there is no empirical
evidence to support this hypothesis. Alternatively, Horowitz (1981) found that LD children were not less accurate at predicting others' ratings of liking for them than nonLD controls. In a more recent study which supports Bruininks' findings, Hoyle & Serafica (1984) found that nonLD children more often expressed liking for those who nominated them than did LD respondents, suggesting that LD children were less accurate in assessing their peers' feelings towards them. In this study, perceived peer status was examined by comparing the actual child and peer ratings rather than the number perceived by and given to the child. Since the LD children were also less accepted by peers, the findings suggest that inaccuracy in assessing peer relations could account for low social acceptance. This hypothesis is supported by findings that children referred to psychological clinics have been shown to be less accurate in assessing their peer relations (De Apodaca & Cowen, 1982). In other words, ignorance may not be bliss when self-evaluating peer relations. Although perceptions of higher peer status or denial of low peer status might lead LD children to initiate more social interaction, the increasing importance with age of intimacy in interpersonal relations may make frequent, unsolicited social approach a source of lower peer status. In the long run, naivete regarding actual peer status may not facilitate positive peer relations because older children tend to be aware of their social status and that of peers (Beck et al., 1984). Realistic self-appraisal might also
help children to improve their peer status because they realize that peers do not view them favorably. In light of these findings, a combination of the Bruininks and Hoyle & Serafica approaches in which perceived peer status is defined as agreement between the child's peer nomination, and actual nominations received might be optimal.

**Perceived Social Competence.** Social status is often equated with social competence in the research literature. This synonymity is consistent with definitions of social competence emphasizing social skills (Kohn, 1977) or the ability to obtain social goals (White & Watts, 1973). The present study adopts the operational definition in which social status is considered to be an index of social competence. Using Bruner's (1974) definition of social competence, initiating social interaction and responding to social gestures in ways that optimize social exchanges, the present study examined LD children's perceptions of their social competence. Inaccuracy in self-assessment of social competence could lead to low social status because self-perceptions of social competence tend to be associated with positive social relations (Putallaz & Gottman, 1981; Harter, 1982).

Children's perceptions of their social competence and self-esteem can be evaluated with Harter's (1979) Perceived Competence Scale, a measure based on the effectance motivation model. Effectance motivation model posits that children may feel differentially competent in various skill domains and levels of
intrinsic motivation are associated with feelings of competence. Harter (1979) chose three skill areas—cognitive, social, and physical—to represent salient competence areas for children as well as a general assessment of self-esteem. Children's perceived competence can be compared with teacher's ratings of their competence. Such a comparison can reveal congruence between teacher and student ratings which could have clinical implications since the goal of intervention may be to promote realistic views of self-competence.

A number of studies using the Perceived Competence Scale have shown that LD children in comparison with nonLD control groups, have lower levels of perceived cognitive competence (Baarstad, 1978; Evans, 1982; Lincoln & Chazan, 1979; Waller, 1982). However, these studies do not examine children's social status. No differences in perceived social competence and self-esteem were found by Hoyle & Serafica (1984) between LD and nonLD children. Furthermore, LD children's perceived social competence did not correspond to their actual social competence as indicated by peers on a sociometric questionnaire. These conflicting results suggest the need for further examination of perceived competence in LD children, how it relates to perceived social status, and social networks.

Determinants of Social Status

Repeated demonstration of poor peer relations in LD versus nonLD children, the limited effects of social skills training programs, and evidence that poor peer relations are associated
with later mental health problems has lead to research on determinants of low social status. A brief discussion of a variety of factors which have been considered as determinants of LD children's social standing will preface a detailed presentation of three major potential determinants—social cognitive factors (i.e., friendship conceptions and social inferences about liking), behavior problems, and ecological factors—which will be considered in the proposed study.

Two explanations for low social status of LD children were described by Serafica & Harway (1979). The first explanation suggests that low social status is a consequence of academic difficulties and accompanying frustrations the child experiences. The second posits that low social status is the result of psychological processing disorders specific to social skills.

Children with learning disabilities differ from their peers in their cognitive difficulties and the label assigned to them. Research has suggested that the label "LD" cannot account for low peer status, because LD children are not highly rejected (Siperstein et al., 1978). LD children also differ from their peers in levels of academic achievement. Significant relationships between IQ and achievement and social status have been found in some studies (i.e., Bryan, 1974), but not in others (i.e. Hoyle & Serafica, 1984). A related factor, communication skills, has been identified as a potential determinant of LD children's low peer status. Research has generally supported the
notion that LD children have less sophisticated communications skills which contribute to poor peer relations (Bryan, 1976, 1977; Bryan, Wheeler, Felcan, & Henek, 1976).

**Social Cognition: Friendship Conceptions.** Do LD children have the social cognitive skills needed for positive peer relations? In order to explore this question, it is first necessary to consider the theoretical underpinnings of the notion that conceptions of friendship are essential to positive social relations. The study of friendship conceptions is largely based on the theoretical writings of Baldwin and Mead. As mentioned earlier, Baldwin (1906) views the relationship between the development of self and knowledge of others as closely related.

Mead (1934) was among the first to link social behavior and cognition in a developmental framework. Because later formulations of friendship conceptions were based on Mead's writings, his stages of social role-taking are described. In the play stage, the child plays different roles without taking another person's perspective. The next, game stage, involves the child's coordination of various roles. In order to play a succession of roles, the child must be able to mentally anticipate another's actions. As Mead expressed it, the child must "have the attitudes of all others in the game" (p. 154). This perspective-taking ability is tied to specific social acts rather than abstract generalizations of societal situations. In the third stage, the generalized other stage, an organized
system of interaction is possible. Because this stage involves incorporation of societal perspectives, the ability to think abstractly is needed.

Both Baldwin and Mead identify social perspective taking as a key milestone in childhood. More information on conceptions of friendship in LD children could suggest whether it is more difficult for them to make the developmental transitions described by Mead and the extent to which this affects peer relations. An empirical instrument which has been based on this theoretical framework is Selman's (1976) Interpersonal Understanding Interview. This measure is particularly applicable to clinical child populations because it is not entirely open-ended, resulting in a dependency on verbal fluency (Bigelow & LaGaipa, 1975) nor close-ended. Selman and his colleagues (Selman, 1980; Selman & Jacquette, 1979) have devised a semi-structured measure which applies a developmental framework in order to identify levels of children's friendship conceptions. Stage construction is based on the assumption that social perspective taking (the ability to understand another person's point of view in relation to the self) underlies children's knowledge of interpersonal relations.

Levels of understanding of friendship have been identified by presenting children with story dilemmas followed by standard probe questions. The stages, which represent qualitatively different understanding of friendship on the part of the child, are as follows: Stage "0", the child views friendship as a
momentary physical interaction; Stage "1", friendship is thought of as one-way assistance; Stage "2", friendship is viewed as fair-weather cooperation; Stage "3", friendship is seen as a mutual relationship characterized by shared intimacy; Stage "4", friendship is defined as autonomous interdependence. The stages are described in more detail in Appendix D.

The measure has been used in several studies with clinical child groups. Selman (1976) used the story-dilemma's with 21 matched pairs of emotionally disturbed boys whose major referral complaint was poor interpersonal relationships (those with psychotic symptoms were excluded from the sample). A longitudinal study indicated that the clinical sample developed through the same sequence of stages as the normative group but that they lagged behind the normative group in level of interpersonal understanding. Selman reported some variance in the friendship conceptions within the clinical sample; a few children were at the same developmental level as the control group while others ranged from 1/3 of a stage behind and upward. In other words, the interpersonally disturbed LD children did not have uniformly low scores. However, negative sociometric ratings were associated with lower levels of interpersonal understanding, suggesting friendship conceptions contribute to positive peer relations. This has been supported in normative studies showing correlations between interpersonal understanding and peer acceptance (Kurdek & Krile, 1982). These findings, as well as those of other investigators using similar measures
(Reisman & Shorr, 1978; LaGaipa & Wood, 1981) suggest that deficits in conceptions of friendship can range from mild to severe in a clinical child group.

In a study using the technique with LD children, Hoyle & Serafica (1984) found that LD students had lower overall levels of conceptions of friendship and conceptions of formation and conflict resolution than matched controls. The findings of lower levels of social reasoning about friendship formation are consistent with findings on entry behavior in socially isolated or rejected children (Puttalaz, 1983). Although the range of developmental levels of friendship conceptions did not differ significantly for LD and nonLD children, there were individual differences which suggest the need for replication and follow-up. Friendship conceptions, involving social perspective taking, may be related to another aspect of social cognition, social inferences.

Social Cognition: Social Inferences About Liking. LD children may not reciprocate peer liking as often as nonLD children due to difficulty in making social inferences about liking. A theoretical framework for the study of social inferences about liking is provided by Dodge's (1985) Social Information Processing Theory, in which he describes five stages of social information processing: encoding, representation, response search (i.e. problem solving), response decision process (i.e. consider consequences or alternatives) and enactment process (i.e. carrying out social actions). In the
present study it is assumed, following Dodge's model, that LD children make errors in encoding and representation, leading to incorrect social inferences. Research support for this hypothesis will be presented later in this section.

Across the life-span, liking serves as a strong basis for friendship. In fact, research on social isolation and rejection indicates that ratings of 'like most' or 'like least' are often used to identify these children (See Asher, Markel & Hymel, 1981 for a review). Yet, the ways in which children make decisions about liking are not well understood. Although it has been assumed that liking and friendship overlap substantially, there is no empirical documentation of the nature and degree of overlap. One theory of the basis of liking which can be applied here, is reward theory, which states we like those whose actions result in positive consequences for us (Kelley, 1979; Homans, 1961). Assuming that LD children bring as much into a relationship as their nonLD peers, it is possible that the bases for liking differ in the two groups. An alternative theory, cognitive consistency theory, emphasizes the degree to which other persons in a relationship perceive the others' level of attraction or liking as consistent with their own (Newcomb, 1961). It hypothesizes that an imbalance in attitudes of persons towards each other or an imbalance in the relationship results in conflict.

Regarding specific bases for liking, adults usually identify the following factors: proximity, physical attractiveness,
similarity or complementary, skills or abilities, and positive personal attributes (Aronson, 1976; Myers, 1983). In addition, people generally believe that those that they like also like them (Curry & Emerson, 1970; Kenny & Nasby, 1981). Reciprocity of liking has also been emphasized as an important basis for friendship in the child literature.

Specific bases for liking have been described in the normative literature only at the preschool level. Cognitive bases for liking include propinquity, common activities, enjoyable play, prosocial behavior, physical appearance and possessions, lack of aggression, and following rules (Hayes, 1978). However, the weighing of these criteria differ in decisions about liking versus disliking. Categories also differ with respect to reciprocal versus nonreciprocal relationships (Hayes, Gershman & Bolin, 1980). Generalization of preschool research to school-aged populations is limited by the influence of egocentrism on peer relations at the younger age; preschool children believe that every child reciprocates their liking due to egocentric thinking (Piaget, 1962).

In childhood, friendship is usually defined as a relationship of strong and mutual liking, attraction, or esteem (Berndt, 1984; Hallinan, 1978). The basis for liking, is, however, elusive in this age group at the present time. The research on children's conceptions of friendship has confused developmental levels of thinking about friendship generated through stories about hypothetical friends (i.e. a type of social reasoning).
with the basis for liking. Research on the basis for liking is particularly critical to the understanding of poor social relations in children such as those with learning problems. According to the theories described and popular notions of interpersonal relations, before a friendship can be mutual, liking must be reciprocated. Although a high degree of liking is not sufficient to define a friendship (Shantz, 1981), uncertainty about the degree to which one is liked by peers may impede positive peer relations. Peer liking must also be distinguished from peer acceptance. In studying the basis for liking in school-aged children, it is important to consider differences in bases for liking versus disliking as suggested in the preschool literature. The basis for liking may also vary from friendship to friendship as well as developmentally (Damon, 1983). These distinctions may be particularly important in LD children's social relations. LD children may underestimate the number of children who like them thereby forfeiting social interactions in which they might engage. On the other hand, they may accurately estimate overall peer acceptance, or the number of children who dislike them.

Hoyle & Serafica (1984) found that LD children less often reciprocated peer liking than nonLD children. Other research comparing social inferential skills of LD and nonLD children corroborates this finding. Several studies have shown that LD children do not accurately describe or identify pictorially presented facial expressions (Bryan, 1977; Budreck, 1975; Emery,
1975; Wiig & Harris, 1974). Bryan (1979) found that LD children have short attention spans for monitoring facial expressions, suggesting that they may miss subtle social cues. In a more naturalistic task, Bruno (1981) found that LD children made more errors in social inferences about pictures of interpersonal situations (i.e. identifying antecedents and consequences) and attended to more irrelevant details. In another study designed to present complex, realistic social interactions, Pearl & Cozden (1982) found that LD children were significantly less accurate in sizing up a televised emotional display.

In sum, this review suggests that there is a need to better understand social inferences about liking in both LD and nonLD children and its relations to peer status. Their peer status could be influenced, too, by the behavior they exhibit in the classroom.

**Classroom Behavior.** The findings of low social status in LD children have been attributed to disruptive classroom behavior. Numerous studies have shown that LD children are more easily distracted in the classroom than nonLD children (Cullinan, Epstein, & Dembinski, 1979; Cullinan, Epstein, & Lloyd, 1981; Tarver & Hallinan, 1974). A child who is disruptive in the classroom may not be viewed as a desirable companion by other children (Weiner, 1980). Thus, any study of LD children's social relations should also examine their classroom behavior. Classroom behavior and other social interactions are also influenced by the context in which they take place.
Ecological Factors. The effects of ecological variables, or aspects of the school social environment, on social relations of LD children have generally not been considered in the social relations literature. This is surprising given the emphasis on social integration in mainstreaming special education students (Kaufman et al., 1975; Gresham, 1982). Early research (Jennings, 1952) alluded to the importance of social context in determining social status. However, a bias towards personal rather than environmental explanations for social status has become a research trend (Berndt, 1983).

In a study where ecological variables relevant to social status were assessed, Hoyle & Serafica (1984) examined the relationship between amount of time mainstreamed during the school day and length of time the child had been in an LD program and social status. No significant effects were found.

The only systematic attempt to control for ecological variables is the LD Marker Variable Project (Keogh, Major, Reid, Gandara & Omori, 1978; Keogh, Major, Omori, Gandara, & Reid, 1980). The marker variables, a set of core subject variables like those examined by Hoyle & Serafica (1984), are used in order to enhance generalizability of research with LD children in the fields of education, psychology, medicine and other disciplines. A complete list of LD marker variables as delineated by Keogh et al. (1978, 1980) is shown in Appendix G. Variables also include the number, demographic characteristics and source of subjects, and their symptoms or diagnostic
classification, inclusionary or exclusionary criteria for subject selection, measures administered and design of the study. Thus, marker variables serve both as a guide to the researcher and as a means of achieving commonality in reporting research with LD children. The variables included in the LD marker system have generally been unexplored as potential determinants of low social status in LD children and will be considered in the present study.

Statement of the Problem

A review of the theoretical and empirical literature on social relations suggests that positive social relations in childhood are necessary for later psychological adjustment, particularly in children with LD. Because these children are less accepted by peers and less accurate in assessing their peer status than their normal learning peers, yet not highly rejected by peers, more information is needed on the nature of LD children's social relations in order to generate intervention strategies. In addition, longitudinal data on social relations in LD children is critical to achieving this goal. Sociometric and social network measures should be included in such a longitudinal study because they provide complementary information about children's social relations. Measures of social competence are needed because the ways in which children view their social competence can affect their peer relations. Determinants of LD children's peer status may be identified by exploring several aspects of social cognition and behavior.
suggested by the literature; conceptions of friendship, social inferences about liking, problem behavior in the classroom, and ecological variables. Longitudinal examination of potential determinants of peer status may suggest intervention strategies appropriate for LD children of different chronological ages.
The hypotheses of the study stated in null form are:

$H_{o_1}$: There are no significant changes over time in the number of friendship nominations given or received, ratings of liking given or received, reciprocal nominations, the accuracy with which they perceive their status (i.e. reciprocated liking and congruence of self-ratings to perceived peer ratings) for LD and nonLD children.

$H_{o_2}$: There are no significant changes over time in the size or functions of social networks of LD and nonLD children.

$H_{o_3}$: There are no significant changes over time on either of the four dimensions of perceived competence of LD and nonLD children.

$H_{o_4}$: There are no significant differences over time between LD and nonLD children in the highest level of conceptions of friendship or the six interpersonal issues: Formation, Closeness and Intimacy, Trust and reciprocity, Jealously and exclusion, Conflict resolution, and Termination.

$H_{o_5}$: There are no significant differences over time in the number of behavior problems exhibited as reported by teachers for LD and nonLD children.

$H_{o_6}$: There are no significant differences between LD and nonLD children in the number of friendship nominations given and received or ratings of liking given and
received.

Ho7: There are no significant differences between LD and nonLD children in the size or functions of their social networks.

Ho8: There are no significant differences between LD and nonLD children on either of the four dimensions of perceived competence (i.e. cognitive, social, physical, and general self-esteem).

Ho9: There are no significant differences between LD and nonLD children in their highest level of conceptions of friendship or the six interpersonal issues: Formation, Closeness and Intimacy, Trust and reciprocity, Jealousy and exclusion, Conflict resolution, and Termination.

Ho10: There are no significant differences between LD and nonLD children in the number of behavior problems exhibited as reported by teachers on each of the five dimensions (i.e. conduct-problem, inadequacy-immaturity, personality problems, socialized delinquency, psychotic behavior) or the total number of problems.

Ho11: There are no significant differences between LD and nonLD on the four dimensions of actual competence as reported by teachers.

Ho12: There are no significant differences between LD and nonLD children's accuracy of liking ratings.

Ho13: There are no significant differences between LD and nonLD children in their social inferences about liking.
CHAPTER III
Method

Subjects
The study included two samples of fifth grade subjects: a longitudinal sample of 21 LD and nonLD children seen two years prior to the present study (Hoyle & Serafica, 1984); a cross-sectional sample of 40 LD and nonLD students. The total sample consisted of 61 subjects.

The longitudinal sample included students who were seen in April through June, 1983 and 1985. There were two longitudinal groups. The first, Experimental Longitudinal Group included 10 caucasian male LD children (M age = 11 years 7 months). They received special services through a resource room (N=6), tutoring (N=3) or private full-time special education school (N=1). The Wechsler Intelligence Scale for Children-Revised (WISC-R) was administered to eight subjects and the Stanford Binet to two children. Table 1 presents the means and standard deviations for test scores and educational experience for the experimental longitudinal group. Children were given the Wide Range Achievement Test (WRAT) when their learning disability was initially diagnosed. Two children were administered the Woodcock Johnson, and one the Metropolitan Achievement test since
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<th>TIME 1</th>
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<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
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<tr>
<td><strong>IQ (Stanford-Binet or WISC-R, N=10)</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Verbal Scale IQ, WISC-R (N=8)</td>
<td>100.0</td>
<td>4.96</td>
<td>84.62</td>
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<td>Performance Scale IQ, WISC-R (N=8)</td>
<td>94.0</td>
<td>3.23</td>
<td>80.50</td>
<td>36.34</td>
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<tr>
<td>Total Battery Score on California Achievement Test (CAT) (Time 1 Grade level=3.8)</td>
<td>2.42</td>
<td>.61</td>
<td>4.07</td>
<td>.81</td>
</tr>
<tr>
<td>Total Reading, CAT</td>
<td>2.32</td>
<td>.65</td>
<td>3.70</td>
<td>.95</td>
</tr>
<tr>
<td>Total Language,</td>
<td>2.40</td>
<td>.81</td>
<td>4.08</td>
<td>1.10</td>
</tr>
<tr>
<td>Total Math, CAT</td>
<td>2.90</td>
<td>.51</td>
<td>4.25</td>
<td>.93</td>
</tr>
<tr>
<td>Amount of Time Mainstreamed</td>
<td>3.35</td>
<td>1.82</td>
<td>2.12</td>
<td>2.57</td>
</tr>
<tr>
<td>Duration of Time in LD Program</td>
<td>20.75</td>
<td>14.11</td>
<td>42.50</td>
<td>14.44</td>
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</table>
identification. All LD students were administered two group tests yearly, the California Achievement Test (CAT) and Comprehensive Test of Basic Skills (CTBS). LD students' most recent CAT scores were used in the study, with the exception of one student who was administered the Metropolitan most recently. The second, control longitudinal group, included 11 Caucasian male nonLD boys (M age= 11 years 6 months). These students were administered the CTBS which yields an IQ equivalency score. A comparison of experimental subjects' Wechsler or Stanford Binet IQ (M= 93.8) and control subjects' CTBS IQ equivalency score (M= 105.3) was not significant. In addition, 141 third grade children participated in the study in 1983 and 200 fourth and fifth grade students in 1985 in order to establish peer status of children in longitudinal groups.

The cross-sectional sample included two groups of subjects. The first, experimental cross-sectional group, included 20 LD boys and girls (M age= 11 years 6 months). They received special educational services through a resources room (N=10), or individual tutoring (N=10). These students were administered the WISC-R (N=16) or Stanford-Binet (N=4) IQ tests. They were administered an individual achievement test when they were diagnosed LD; eighteen students were administered the WRAT and two the Woodcock-Johnson. As with the longitudinal experimental group, they were given group achievement tests annually, including the CAT and CTBS. Table 2 shows the means and standard deviations for test scores and educational
Table 2

Means and Standard Deviations for Test Scores and Educational Experience for the Experimental Cross-Sectional Group

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
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<tbody>
<tr>
<td>IQ (Stanford-Binet or WISC-R, N = 20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal Scale IQ, WISC-R (N = 14)</td>
<td>92.29</td>
<td>10.42</td>
</tr>
<tr>
<td>Performance Scale IQ, WISC-R (N = 14)</td>
<td>98.00</td>
<td>11.82</td>
</tr>
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<td>Total-Battery Score on California Achievement (Time 2 Grade level = 5.8)</td>
<td>4.11</td>
<td>1.15</td>
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<td>Total Reading, CAT</td>
<td>3.67</td>
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<td>Total Language, CAT</td>
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<td>1.26</td>
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<td>Total Math, CAT</td>
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<td>Duration of Time in LD Program</td>
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experience for the experimental cross-sectional group. The second, control cross-sectional group consisted of 20 nonLD boys and girls (M age= 11 years 6 months). These students had been administered the CTBS. There were no significant differences between IQ scores of the experimental (M=95.5) and control (M=108.1) groups. As mentioned above, participation of 200 fourth (N=18) and fifth (N=182) grade children allowed identification of peer status of those children in longitudinal and cross-sectional groups. There were five combined fourth/fifth classrooms.

For both samples, LD and nonLD students were matched for age, sex, race, homeroom, IQ and SES (Teachers were asked to recommend students with average intelligence among those participating. When matchings were completed they were consulted regarding comparability of SES, and if partners were seen as similar, the matching was complete).

Subjects attended six public schools in one predominantly white, middle-class suburban and semi-rural community. They were recruited from a total of 610 children in 22 classrooms. Permission to conduct the study in the schools was obtained by writing to school superintendents who submitted the research proposal for approval of a research committee. After the study was approved, school principals were contacted and asked to provide lists of classrooms attended by LD children. Because children attended middle schools in which classes changed during the school day, the entire fifth grade including fourth/fifth
classrooms was invited to participate. The experimenter described the study to homeroom classes and asked them to take home letters to their parents which explained the purpose of the study and the consent forms. There were two versions of the parent consent letter. For parents of children who would serve as the control group, the following statement was added: your child, if allowed to participate, will be in a comparison group of children without learning disabilities. This statement ensured that parents would not mistakenly assume that their child was considered to be learning disabled. (See Appendix A for a copy of the script for presentation, parent letters and consent forms). Because children misplaced letters or were absent on the day of the presentation, several visits were made to every classroom in order to describe the study and the need for written parental permission before participation. The percentage of favorable responses by school for both longitudinal and control groups ranged from 25% to 75% with a mean for 58% for LD children and 44% nonLD children participating. For the longitudinal sample, 43% of LD and 48% of nonLD children in the original study could be located and consented to participate. Attrition was high because at least six families had moved, four declined participation, and fifteen did not respond. Attempts to contact families who had moved resulted in recruitment of two follow-up subjects who attended private schools. In both longitudinal and cross-sectional samples, some children declined participation, according to
their teachers, because they did not want to miss class time, preferred not to be observed by a colleague conducting behavioral observations for another part of the study, did not want to talk about their friends or thought the interview might be boring.

**Diagnosis of LD.** All children in the experimental group had been determined to qualify for special educational services by a multidisciplinary team including a school psychologist. The diagnosis was made in accordance with Federal, State and local guidelines (Ohio Department of Education, 1982) which stipulate that a discrepancy in tested intellectual ability and potential versus actual performance exists. The standard score method involves computing a discrepancy score by obtaining the child's IQ score, achievement test score, and means and standard deviations obtained in standardizing these tests for children of the same age. A discrepancy score of zero indicates that a child is at grade level. Typically, if the discrepancy score is greater than two (i.e., two standard deviations above the mean for agemates) the child is diagnosed LD. In the present study, LD students' discrepancy scores obtained at the time of diagnosis generally fell above two standard deviations. At the time this study was conducted, LD students had received remediation and generally had decreased their discrepancy scores. In the longitudinal sample, two children fell within 1-to-2 standard deviation discrepancy range, two fell above two standard deviations (M = 1.0). For the cross-sectional sample, 11
children fell within the 1-to-2 standard deviation range and two fell above two standard deviations (M = 1.09). Remaining students fell in the 0-to-1 range.

Procedures

For children in both samples, data collection took place during the spring of the school year to allow children who were held back a grade or new to the school to become familiar with their classmates. Data collection took three months. Children were administered all measures individually so that group administration would not place LD children at a disadvantage due to possible differences in their verbal comprehension, writing, or verbal ability. The sociometric was administered first, followed by the social network. The remaining measures were administered in counterbalanced order in two 30-35 minute sessions (i.e. Perceived Competence Scale, Interpersonal Understanding Interview, Social Inferences about Liking Measure). There were no significant differences in children's responses due to order of presentation. Teachers completed the Behavior Problem Checklist (Quay & Peterson, 1975) and the Teacher's Rating Scale of Child's Actual Competence (Harter, 1979) for each child.

Testing conditions and procedures for the first data collection for the longitudinal sample were similar to those followed for the cross-sectional sample and longitudinal sample at Time 2. A detailed description of procedures is contained in Hoyle & Serafica (1984).
Sociometric questionnaire. Children were asked to name people they know best in school and were allowed to say as many names as they wished. Their responses were recorded on forms shown in Appendix B. They were also asked to name their best friend. Then they were asked to indicate for each child of the same sex in their grade, whether they like, dislike, feel neutrally, or do not know that child by pointing to a smiling face (borah- =like), a frowning face (borah- =don't like), a neutral face (borah- =neutral), or a neutral face with a question mark beside it (borah- ?=don't know). A copy of visual scales is contained in Appendix B. If they liked a particular child, they were then asked to indicate how much they liked that child by pointing to one of five squares increasing in size (see Appendix B). The smallest square was labeled, like a little, and the largest square, like very much. The labels were read aloud to the children and they were given practice in using the scale before they rated their classmates. Next, children were asked to review the list of same-sex peers a second time, indicating how they think each child may have rated them (i.e., like, dislike, feel neutrally, or don't know) using the same procedure and identical visual rating scales.

The reliability, and predictive and concurrent validity of peer nomination and rating scale measures has been repeatedly demonstrated. High test-retest reliability has been documented (Asher & Hymel, 1981). The predictive validity of the sociometric has been established in studies linking low
sociometric status to mental health problems later in life (Cowen, Pederson, Babigan, Izzo, & Trost, 1973; Hartup, 1970). Convergent validity has been demonstrated in studies showing relationships between popularity and prosocial behavior, and conversely, social rejection and negative social behavior (Cairns, 1983). Reliability and validity of perceived peer status has not been examined. However, Ledingham, Younger, Schwartzman, and Bergeron (1982) found that peer and self-ratings were more congruent than teacher's and children's ratings.

Social network questionnaire. Children in longitudinal and cross-sectional groups and their classmates were asked to name people they knew best outside of school. Children in the experimental and control groups were also asked to answer additional questions regarding the age and frequency of contact with nominee and the nature of the relationship (i.e. do you ever talk with this person about school or sports?). A list of questions is contained in Appendix B.

Perceived Competence Scale. This measure was administered to experimental and control group children using instructions from the scale manual (Harter, 1979) which are shown in Appendix C. (There is a revised version of the scale which was available for the second phase of longitudinal data collection but it was not used in order that comparisons could be made to the previous study). The scale consists of 28 statements read aloud to children reflecting cognitive, social and physical competence.
For each item, two alternative statements are provided: one reflecting competence (e.g. some kids remember things easier), the other a less competent alternative (e.g. other kids often forget what they learn). The child is first asked to indicate which alternative is most like him or her, then to say whether that statement is sort of true or really true for him or her. The format is devised to discourage socially desirable responses.

Children's choices of statements reflecting high competence receive a score of four, whereas those indicating low competence are assigned scores of one. Mean scores are obtained by averaging scores for items on each scale. Each child therefore received four scale scores. For two children in the cross-sectional group, data was missing and group means were inserted. A composite competence score was not created as the author states that such a practice defies the theoretical basis for the scales (Harter, 1979).

The statistical properties of the scale are described in Harter (1982) and in the scale manual (Harter, 1979). A factor-analytic investigation revealed that elementary school children from four states discriminated significantly between the three competence domains and self-esteem. Subscale reliability assessed using coefficient alpha, a measure of internal consistency, was .76, .78, .83, and .73 for cognitive, social, physical, and general self-esteem, respectively. Test-retest reliability has also been established for the four
sub scales. Convergent validity was demonstrated in correlations between school achievement and the cognitive scale, and sociometric status and the social scale. Evidence for construct validity was provided by correlations between the PCS and Harter's (1981) measure of intrinsic versus extrinsic orientation in the classroom, which is consistent with her theory of competence motivation.

Friendship Conceptions Interview. A component of Selman & Jaquette's (1977) Interpersonal Understanding Interview was administered using instructions from the scale manual. First, children heard a pre-recorded story dilemma about two friends (see Appendix D for a copy of the story). Then they were asked 21 probe questions regarding their thinking on six interpersonal issues: Formation, Closeness & Intimacy, Trust & Reciprocity, Jealousy & Exclusion, Conflict Resolution, and Termination. A list of probe questions is contained in Appendix D.

Children's responses were tape-recorded and later transcribed verbatim. Scoring followed procedures detailed in the scale manual (Selman & Jacquette, 1977). Initially, a single stage score was assigned to each response to a standard question or probe. Then a stage score is assigned for each of the six interpersonal issues using a procedure which determines the major level at which the child responded. Last the scores for the six interpersonal issues are averaged, using numerical equivalents provided in the scoring manual.
Several studies of reliability and validity have demonstrated that the stage sequence described by Selman & Jacquette (1977) represents a viable view of children's social understanding, that the levels are distinct from one another, and are age-related (see Selman & Byrne, 1974; Byrne, 1973). Construct validity of the stages as reflective of interpersonal understanding has also been established (Selman, 1980).

**Interrater Reliability.** Interrater agreement was established by comparing ratings of two independent coders (The primary coder being a trained graduate student and the author as second coder). Coders were blind to children's class placement. It was difficult to distinguish codable versus noncodable responses despite interviewers efforts to probe unclear responses. For the scorable responses, a maximum of 31 scores per child were compared. Only codable responses were included in reliability estimates. On the basis of 17 protocols or 27% of the sample, interrater agreement was established in 87% of the cases with a range of 74% to 100%. Interrater agreement varied little with respect to class placement (90% and 85% for LD and nonLD students, respectively) or the six issue-concepts.

**Social inferences about liking.** A measure of Social inferences about liking was generated from a pilot study summarized in Appendix E. The measure included two tasks each of which includes the following categories which are described in detail in Appendix E: (1) **Positive:** Companionability, sociability, availability, prosociality, willingness to
communicate, willingness to be honest and open, sensitive to feelings or willingness to understand; (2) Negative: Not companionable, unsociability, unavailability, not prosocial/not aggressive, unwilling to communicate, unwilling to be honest/open, insensitive to feelings, not understanding, deliberate indifference/ignoring; (3) Neutral: Moderate companionability, moderate sociability, moderate availability, not prosocial/not aggressive, moderate willingness to communicate, moderate willingness to be honest/open, not sensitive or insensitive to feelings.

The first task presented a vignette about two children accompanied by an illustrative cartoon. Two items per category, for a total of 44 items, were prepared. Children were read the vignette aloud and shown the corresponding cartoon. (e.g. Bob calls Jim to see if he can come over. Jim had plans to watch a TV show but he decides to go over to Bob's instead). They were asked to rate whether the two characters might like, dislike or feel neutrally about one another by using the visual scales showing positive, negative or neutral faces. (i.e., How does Jim feel about Bob?). If the child indicated that the two characters liked one another, they were asked to rate how much they like each other on the 5-point likert-type visual scale used for the sociometric measure. Cartoons were drawn by an experienced cartoonist. Some of the cartoons were used for more than one story-item because actors had neutral expressions and were shown in everyday scenes (e.g. walking in the school corridor, sitting
at their desks). To maintain children's interest, items use a variety of everyday experiences (e.g. children talking in class, sitting next to each other in a school assembly, talking by telephone) and assigned boys and girls names to actors. Children were presented same-sex stimuli. A total of 19 cartoons were used. Vignettes and sample cartoons are shown in Appendix E. Cartoons were presented in random order; they were printed on 8 1/2 x 5 1/2 cards and were shuffled before each administration.

For the second measure, children were read 22 statements describing something that might happen to the child (e.g. This kid is fun to hang around with). They were asked to judge liking, disliking, or neutrality relative to themselves by checking one of three statements: Likes me, dislikes me, neither likes or dislikes me. Items were presented in random order.

On both measures, children's answers were considered correct if their answers matched the appropriate category (i.e. positive, negative, or neutral) for the vignette. For example, children's responses were coded as correct Positive Social Inferences if they said characters in positive vignettes liked each other. Thus, six social inferences variables were created: Number of correct responses to positive, negative, and neutral items for cartoon and questionnaire formats, respectively. Two additional summary variables were created by summing the three categories for each measure, yielding a total correct inference score for cartoon and questionnaire measures.
Reliability and validity of these measures has not been studied.

The Behavior Problem Checklist. The Behavior Problem checklist (BPC), a teacher checklist for problem behaviors in the classroom, was completed by homeroom teachers for children in the experimental and control groups. A copy is contained in Appendix F. Teachers rated the children on 55 items after receiving verbal and written instructions of both the scale and the study. Checklists were scored according to instructions in the scale manual (Quay & Peterson, 1975), which identifies five primary subscales: Conduct-problem, personality-problem, inadequacy-immaturity, psychotic behavior, and socialized delinquency. In both longitudinal and cross-sectional groups, a total of 13 questionnaires were not returned by teachers; group means were inserted for these data.

Quay (1977) describes studies of reliability and concurrent and construct validity. Concurrent validity has been established in studies showing a strong relationship between BPC scores and ratings of behavior problems by teachers and clinicians. Construct validity of the BPC has been demonstrated in studies linking individual BPC subscales with psychologically relevant variables (e.g., conduct problem scale with delinquent recidivism). Internal consistency, interrater reliability and test-retest reliability are high.

Teacher's Ratings of Actual Competence. The teacher's version of the Perceived Competence Scale (Harter, 1979) was
administered to homeroom teachers of children in experimental and control groups (See Appendix F). It uses the same scoring system described earlier for the child version, and yields four scores for the teacher's view of each child's cognitive, social and physical competence and general self-esteem. As with the BPC, 13 questionnaires were not returned and group means were inserted for these data.

Harter (1979) reports that the factor pattern on the Child Scale and Teacher's is virtually identical, that is, teachers discriminate significantly between the four subscales. Internal consistency reliability was also established for cognitive (.96), social (.93), physical (.94) and general (.93) subscales.

Ecological Variables. Information on amount of time for which the child was mainstreamed and has been placed in a special education program was obtained from school files. Reliability and validity of these measures has not been established.
The design of the longitudinal study is a one within (repeated measures factor, Time 1 versus Time 2) and one between (experimental versus control) multivariate design. With respect to the cross-sectional portion of the study, it is a randomized blocks design with experimental and control groups measured on dependent variables at Time 2 only. For longitudinal groups, Time 1 will refer to scores obtained in the first data collection in Spring 1983 (Hoyle & Serafica, 1984) and Time 2 to scores obtained in the Spring 1985 data collection.

For the longitudinal groups, independent variables were group (i.e. LD vs. nonLD) and Time (Time 1 vs. Time 2). Group was the only independent variable for the cross-sectional group. The following dependent variables, grouped topically, were used in data analysis:

1. **Sociometric**: Unilateral nominations received and given, liking ratings received and given, disliking ratings received and given, perceived ratings of liking, congruence of self-ratings to peer ratings and number of friendship nominations reciprocated by a liking rating given and received.

2. **Social network**: Number of peer and adult network members, total number of network members, characteristics of the relationship (22 nominal variables).

3. **Perceived Competence**: Cognitive, social, physical and general self-esteem subscale scores.

4. **Friendship Conceptions**: Highest stage score, Average stage
score, and scores on each of the six interpersonal issues.

5. **Social inferences about liking**: Number of correct positive, negative, and neutral inferences on two different measures.

6. **Behavior Problems**: Scores on each of the five subscales and their composite, total number of behavior problems.

7. **Teacher's ratings of Competence**: Scores for teacher's ratings on the cognitive, social, physical, and general scales.

The Statistical Analysis System (SAS Institute, 1982) programs Analysis of Variance (ANOVA), General Linear Models program for Analysis of Variance with unequal sample size (GLM) and Multivariate Analysis of Variance (GLM-MANOVA), Pearson Product Moment correlation coefficient, Canonical Correlation and Chi Square tests of association were used to analyse the data. Sets of related dependent variables were analyzed using multivariate analysis of variance (MANOVA). This approach was used when sample size was adequate instead of the univariate approach due to the number of dependent variables. When the null hypothesis is correct, that is there are no differences between different conditions, the use of univariate statistical tests increase the probability that a significant difference will be found (Type I error). Only if the MANOVA is significant, can the univariate statistics be interpreted (Harris, 1975).
CHAPTER IV

Results

The presentation of results is organized into several major sections: preliminary, longitudinal, and cross-sectional analyses. Within each section, results address hypotheses delineated earlier in the order in which they appeared. A .01 alpha level was adopted for ANOVAs and MANOVAs due to the number of analyses performed. Due to low power, marginally significant findings (i.e. .05 alpha level) are reported.

Preliminary Analyses.

Differences between the longitudinal and cross-sectional samples within LD and within nonLD groups were examined in order to rule out effects due to repeated measurement, sampling bias, and cohort effects (Achenbach, 1978). Differences between scores on sets of major dependent variables in the longitudinal versus cross-sectional samples were examined using sample (longitudinal vs. cross-sectional) and group (LD vs nonLD) as independent variables in a MANOVA using the following dependent variables: (1) Sociometric variables: unilateral nominations received and given, reciprocal nominations, liking ratings received and given, disliking ratings received and given, and number of friendship nominations not reciprocated by a liking rating, both
given and received. (2) Social network variables: number of peer and adult network members. (3) Perceived Competence: Cognitive, social and physical competence, general self-esteem. (4) Friendship conceptions: Closeness/intimacy, trust/reciprocity, jealousy/exclusion, conflict resolution, termination. (5) Behavior problem checklist: conduct problem, personality problem, inadequacy-immaturity, socialized delinquency, psychotic behavior. Furthermore, ANOVAs were performed on scores for the following composite variables: total number of social network members, Interpersonal Understanding Maturity Score (i.e. the numerical average of the six issue-concepts), and total number of problems on the BPC. ANOVAs were also performed on IQ, total battery score on the CAT, age, amount of time in an LD program and amount of time mainstreamed. None of these ANOVAs produced significant effects. Based on these findings, LD and nonLD students in each of the samples did not appear to differ from one another on major variables.

In order to rule out sex differences (i.e. girls were included in the cross-sectional sample only), the same sets of dependent variables described above were entered into MANOVAs with sex and group (i.e. experimental vs. control) as factors. There were no significant effects. ANOVAs performed on the composite variables described above, with sex and group as factors, did not yield significant differences.

In analyses designed to explore order of administration, the following dependent variables were entered into separate
ANOVAs with Order of Presentation as a factor: Cognitive, social, physical, and general scales on the PCS, average friendship conceptions score, total number of positive inferences on cartoon and questionnaire measures. There were no significant effects.

Two separate one-way ANOVAs were performed in order to examine interviewer effects. The number of nominations given and number of social network members elicited by interviewers were entered into separate ANOVAs with Interviewer as a factor. No significant effects were found.

In sum, preliminary analyses revealed no significant differences between LD students in each group, nonLD children in each group, or boys and girls in the cross-sectional group. There were no order or interviewer effects.

Longitudinal Analyses

Sociometric Measures. To test the null hypothesis that there are no significant changes over time in the number of friendship nominations given or received, ratings of liking given or received, disliking ratings given or received, reciprocal nominations or the accuracy with which LD and nonLD children perceive their status, a series of separate repeated measures ANOVAs were performed with Group (experimental versus control) as between subject factor and Time (Time 1 versus Time 2) as a within subject factor on the following dependent variables: unilateral nominations received and given, unilateral liking ratings received and given, reciprocal nominations,
nominations reciprocated with liking received and given, and
congruence between peer ratings of liking and perceived peer
ratings. A significant group (i.e. experimental vs. control)
main effect was found for the number of liking ratings received
($F(1,22)= 9.85, p < .01$). LD children received fewer ratings
of liking than nonLD children. There was also a significant main
effect for Time ($F(1,38)=19.52, p < .001$) for liking
ratings received. Both LD and nonLD children had significantly
more liking ratings at Time 2 than at Time 1. Table 3 summarizes
the ANOVA results. There was a significant Time effect for
liking ratings given ($F(1,22)= 22.78, p < .001$). Both LD
and nonLD students gave more liking ratings with time. These
results are shown in Table 4. There was a significant Time
effect for disliking ratings given with both groups giving more
disliking ratings at Time 2 than Time 1 ($F(1,22)= 10.68, p$
$< .01$). These ANOVA results are shown in Table 5. No significant
main effects or interactions were found for remaining variables.
The means and standard deviations for sociometric variables for
the longitudinal sample are presented in Table 6. These findings
are consistent with trends in the Hoyle and Serafica (1984)
study in which LD children received fewer friendship
nominations. The hypothesis that there is no difference between
groups on ratings of liking received, nominations given, and
reciprocal nominations from classmates can be rejected. Within
this sample, LD children did not differ significantly from nonLD
peers in the number of liking ratings given, disliking ratings
given or received, or the accuracy with which they made their choices, which is consistent with the previous study (Hoyle & Serafica, 1984). The hypothesis that there is no difference between groups over time on sociometric measures is partially supported.
Table 3

Repeated Measures ANOVA for Time and Group for Liking Ratings Received

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
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</tr>
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<td>4.51</td>
<td>.59</td>
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Table 4

Repeated Measures ANOVA for Time and Group for Liking Ratings Given

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<td>.00</td>
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<td>2.69</td>
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Table 5

Repeated Measures ANOVA for Time and Group for Disliking Given

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Table 6
Means and Standard Deviations for Sociometric and Social Network Variables for the Longitudinal Sample

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</table>
Social Networks. It was hypothesized that there are no significant changes over time in the size of LD and nonLD children's social networks. The results of a repeated measures ANOVA with group and time as independent variables and the number of social network members as dependent variable showed no main effect for group, time or their interaction. In two years' time there was no significant change in the size of LD or nonLD children's social networks. The absence of significant group main effects replicates the Hoyle & Serafica (1984) finding of no significant differences between LD and nonLD children's social networks. In order to examine more closely the changes in social network over time, two additional repeated measures ANOVAs were performed on the number of peers and adults in each child's social network by group and time. A marginal Time effect was found for number in peer social network ($F(1,22) = 6.54, p < .05$). Both LD and nonLD students made marginally more peer network nominations with time. There were no other significant main or interaction effects for these analyses. When adult social networks were examined separately, there was no significant change over time and no significant differences between the groups. The means and standard deviations for these variables are shown in Table 6. Thus, the hypothesis of no difference between groups in size of social network over time, is supported.

It was also hypothesized that there are no significant differences over time between groups in the functions of their
social networks. Frequency tables were prepared separately for in school and out of school nominees for the following social network questionnaire items in order to describe characteristics of social network members by group: age of nominee, nominee's grade in school, and frequency of interaction. Two by two tables (experimental vs. control X response) were prepared and Chi Squares performed on the following dependent variables: Location of interaction (five tables: child's home, nominee's home, school, a club, in the neighborhood), type of interaction (six tables: play, study, sports, watch television, talk, go places), and for eight questions on the nature of the relationship (e.g. Would you talk with this person about things you would not tell anyone else? See Appendix B). Altogether 19 tables were prepared.

LD and nonLD children's social networks were highly similar with a few exceptions. Group effects were significant for two location of interaction variables. LD children less often report going to school friends' homes ($X^2 = 7.7, p < .01$). LD children's school nominees were seen marginally less often in their own homes ($X^2 = 5.54, p < .05$). These effects did not occur for nominees outside of school. These findings suggest that LD children either spend more time alone, or with their social network members outside of school.

One marginal group difference in the functions of social network members outside of school emerged; LD children marginally more often report studying or doing homework with
nominees ($X^2 = 4.98, p < .05$). These results are consistent with those of Hoyle & Serafica (1984).

There were no significant differences on other characteristics of the social network for in school or out of school nominees. The hypothesis of no differences between groups on functions of the social network is largely supported.

**Perceived Competence.** To test the hypothesis that there are no significant differences over time between LD and nonLD children on either of the four subscales of the Perceived Competence Scale, separate repeated measures ANOVAs were performed for each of the four subscales (i.e. cognitive, social, physical competence and general self-esteem) with group and time as factors. There were no significant main effects for group, time or their interaction. The means and standard deviations for these variables are shown in Table 7. When surveyed two years later, these children's perceptions of competence had not changed significantly and differences between LD and nonLD children did not emerge. These results are consistent with Hoyle & Serafica (1984) which showed no differences between LD and nonLD children's scores on the four subscales. The hypothesis that there is no difference between LD and nonLD children on the four subscales of the Perceived Competence Scale over time can be supported.

**Friendship Conceptions.** In order to examine the hypothesis that there are no significant differences over time between LD and nonLD children's conceptions of friendship as measured by
their highest and average level of conceptions, and their thinking on six interpersonal issues (i.e., formation, closeness and intimacy, trust and reciprocity, jealousy & exclusion, conflict resolution, and termination) the following analyses were conducted. Because the highest level of interpersonal understanding is an ordinal, nominal variable, the Bowker Extension of the McNemar Test (Marascuilo, 1971) was used. No significant group, time or group by time effects were found. Table 8 shows the highest stage score for the longitudinal groups. Separate repeated measures ANOVAs were performed for the average level of friendship conceptions and the six interpersonal issues. On the friendship formation, there was a marginally significant group main effect ($F(1,22) = 5.23, \ p < .05$), and a significant main effect for time ($F(1,41) = 12.96, \ p < .01$). LD children received marginally lower scores than nonLD children on conceptions of formation, but both groups increased their scores significantly over time. These results are shown in Table 9. There was a significant main effect for conceptions of closeness and intimacy for time ($F(1,22) = 19.25, \ p < .001$). Both LD and nonLD children increased their scores on developmental levels of understanding of closeness and intimacy over time. Table 10 shows these results. On the average friendship conceptions score, there were marginal main effects for group ($F(1,41) = 4.74, \ p < .05$), and time ($F(1,41) = 4.74, \ p < .05$). LD children achieved marginally lower average scores than their nonLD peers; over time, both LD and nonLD
children increase their average levels of interpersonal understanding. There were no other significant main effects for group or time, nor their interaction. The means and standard deviations for these variables are shown in Table 11. The hypothesis that there are no significant differences over time in LD and nonLD children's conceptions of friendship can be partially supported.
Table 7

Means and Standard Deviations for Perceived Competence for the Longitudinal Sample

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>Cognitive Competence</td>
<td>2.80 .64</td>
<td>2.32 .65</td>
</tr>
<tr>
<td>Social Competence</td>
<td>2.70 .75</td>
<td>3.05 .90</td>
</tr>
<tr>
<td>Physical Competence</td>
<td>2.70 .80</td>
<td>2.44 .71</td>
</tr>
<tr>
<td>General Self-esteem</td>
<td>2.70 .72</td>
<td>2.68 .80</td>
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</table>

Table 8

Highest Stage Score on Friendship Conceptions for the Longitudinal Sample

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td>Level 0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Level 1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Level 2</td>
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<td>7</td>
</tr>
<tr>
<td>Level 3</td>
<td>0</td>
<td>2</td>
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### Table 9

<table>
<thead>
<tr>
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<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects/Group</td>
<td>19</td>
<td>28.72</td>
<td>1.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>1</td>
<td>7.90</td>
<td>7.90</td>
<td>5.25</td>
<td>&lt; .05</td>
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<tr>
<td>Time</td>
<td>1</td>
<td>11.52</td>
<td>11.95</td>
<td>12.96</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Group X Time</td>
<td>1</td>
<td>1.95</td>
<td>1.95</td>
<td>2.12</td>
<td>ns</td>
</tr>
</tbody>
</table>

### Table 10

<table>
<thead>
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<th>MS</th>
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<th>ns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects/Group</td>
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<td>56.08</td>
<td>2.95</td>
<td></td>
<td></td>
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<tr>
<td>Group</td>
<td>1</td>
<td>11.97</td>
<td>12.53</td>
<td>4.32</td>
<td>&lt; .06</td>
</tr>
<tr>
<td>Time</td>
<td>1</td>
<td>15.63</td>
<td>16.68</td>
<td>19.25</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Group X Time</td>
<td>1</td>
<td>2.28</td>
<td>2.28</td>
<td>2.63</td>
<td>ns</td>
</tr>
</tbody>
</table>
### Table 11

**Means and Standard Deviations for Friendships Conceptions for the Longitudinal Sample.**

<table>
<thead>
<tr>
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<th>Control</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>Formation</td>
<td>.57</td>
<td>.38</td>
</tr>
<tr>
<td>Closeness and Intimacy</td>
<td>.70</td>
<td>.51</td>
</tr>
<tr>
<td>Trust and Reciprocity</td>
<td>1.47</td>
<td>.42</td>
</tr>
<tr>
<td>Jealousy and Exclusion</td>
<td>1.33</td>
<td>.52</td>
</tr>
<tr>
<td>Conflict Resolution</td>
<td>.56</td>
<td>.69</td>
</tr>
<tr>
<td>Termination</td>
<td>1.04</td>
<td>.63</td>
</tr>
<tr>
<td>Interpersonal Understanding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maturity Score</td>
<td>1.00</td>
<td>.20</td>
</tr>
</tbody>
</table>
Behavior Problems. To test the hypothesis that there are no significant differences over time between LD and nonLD children in the number of behavior problems reported by teachers on each of the five subscales of the BPC, or the total number of problems, scores on the five subscales and the composite score were subjected to repeated measures ANOVA. There were no significant group, time, or interaction effects on remaining variables. The means and standard deviations for the five factors and total number of problems are shown in Table 12. Over time, there was no significant change in LD or nonLD children's behavior problems as reported by teachers on the five subscales or total problems. Thus, the hypothesis that there is no difference over time in behavior problems reported by teachers is supported.
Table 12

Means and Standard Deviations for Behavior Problems for the Longitudinal Sample

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 1</td>
<td>Time 2</td>
</tr>
<tr>
<td>Conduct-Problem</td>
<td>4.20</td>
<td>3.19</td>
</tr>
<tr>
<td>Personality Problem</td>
<td>1.10</td>
<td>1.28</td>
</tr>
<tr>
<td>Innadequacy Immaturity</td>
<td>1.70</td>
<td>1.15</td>
</tr>
<tr>
<td>Socialized Delinquency</td>
<td>.30</td>
<td>.67</td>
</tr>
<tr>
<td>Psychotic Behavior</td>
<td>.20</td>
<td>.42</td>
</tr>
<tr>
<td>Total Problems</td>
<td>7.50</td>
<td>4.90</td>
</tr>
</tbody>
</table>
Cross-Sectional Analyses

Sociometric Measures. In order to test the hypothesis that there are no significant differences between LD and nonLD children in sociometric status, four separate MANOVAs with group as independent variable were performed on the following sets of dependent variables: (1) Number of unilateral nominations received, number of unilateral nominations given, number of reciprocal nominations. (2) Number of liking ratings received, number of liking ratings given. (3) Number of disliking ratings received, number of disliking ratings given. (4) Number of friendship nominations given which were reciprocated by a rating of liking, number of friendship nominations received which were reciprocated by a rating of liking. (5) Number of matches between each child's actual rating and their estimated peer rating (Perceived Congruence of Liking Ratings). None of the overall tests for group differences on the MANOVAs reached statistical significance. However, there was a marginally significant overall test for group effect for nominations given and received which were reciprocated by a rating of liking (Wilks Lambda = $F(2,37)=3.71, p < .05$). Univariate analysis showed that there was a significant main effect for group for nominations received which were reciprocated by a rating of liking ($F(1,39)=6.78, p < .01$). LD children less often gave ratings of liking to those children who nominated them as best friends, which replicates the Hoyle and Serafica findings. In addition, the pattern of results largely replicates the previous
study in which LD children received fewer friendship nominations but did not differ significantly on other sociometric variables. The means for these variables are shown in Table 13. Because the test for group effect was marginal, the hypothesis of no differences in sociometric status of LD and nonLD children can be rejected.

Social networks. It was hypothesized that there are no significant differences in the size of LD and nonLD children's social networks. To test this, an ANOVA was performed on the total number in the social network by group. No statistically significant differences emerged. The number in each child's peer and adult network were entered into a MANOVA with group as independent variable. The results of this analysis did not reach statistical significance. The means and standard deviations for these variables are shown in Table 13. In the cross-sectional sample, there were no significant differences in size of social networks of LD or nonLD children which replicates Hoyle & Serafica (1984). The hypothesis that there is no difference in size of social networks of LD and nonLD children is supported.

To examine the functions of their social networks, frequency tables were prepared separately for in school and out of school nominees for the social network variables described earlier (i.e., characteristics of the nominee, frequency, location, type and nature of interaction). For both in school and out of school nominees, marginal group differences in one variable describing type of interaction was found. LD students reported that they
study and do homework more so than nonLD children with in school \( (X^2 = 5.85, p < .05) \) and out of school \( (X^2 = 4.15, p < .05) \) nominees.

For nominees in school, significant group differences emerged for one variable describing the nature of the relationship. LD children, more so than nonLD children, said they would ask a school friend to go somewhere with them or do something. LD children may be more impulsive in their choices in an interview; in reality they may become inhibited to carry out social overtures. LD children may also have to make more requests before one is accepted. There were no other significant differences. The hypothesis of no differences between groups on functions of the social networks is generally supported.
Table 13

Means and Standard Deviations for Sociometric and Social Network Variables for the Cross-sectional Sample

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>Unilateral Nominations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>received</td>
<td>.35</td>
<td>.58</td>
</tr>
<tr>
<td>Unilateral Nominations Given</td>
<td>2.65</td>
<td>1.92</td>
</tr>
<tr>
<td>Reciprocal Nominations</td>
<td>.35</td>
<td>.59</td>
</tr>
<tr>
<td>Unilateral liking ratings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>received</td>
<td>8.55</td>
<td>4.74</td>
</tr>
<tr>
<td>given</td>
<td>10.60</td>
<td>6.41</td>
</tr>
<tr>
<td>Disliking ratings received</td>
<td>3.85</td>
<td>4.45</td>
</tr>
<tr>
<td>Disliking ratings given</td>
<td>3.75</td>
<td>5.58</td>
</tr>
<tr>
<td>Neutral ratings received</td>
<td>4.45</td>
<td>4.44</td>
</tr>
<tr>
<td>Neutral ratings given</td>
<td>5.10</td>
<td>3.25</td>
</tr>
<tr>
<td>Unfamiliarity ratings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>received</td>
<td>4.75</td>
<td>5.56</td>
</tr>
<tr>
<td>Unfamiliarity ratings given</td>
<td>6.00</td>
<td>6.07</td>
</tr>
<tr>
<td>Social Network Nominations</td>
<td>3.45</td>
<td>2.26</td>
</tr>
<tr>
<td>Peer Network</td>
<td>1.85</td>
<td>1.30</td>
</tr>
<tr>
<td>Adult Network</td>
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<td>1.49</td>
</tr>
</tbody>
</table>
Perceived Competence. To test the hypothesis of no differences in LD and nonLD children's perceptions of their social, cognitive, or physical competence or self-esteem, these variables were entered into a MANOVA with group as a factor. The analysis yielded a significant overall test of group effect (Wilks Lambda = $F(4,35) = 3.98$ $p < .01$). Further univariate analyses revealed a significant group effect for cognitive competence ($F(1,39) = 17.20$ $p < .01$), social competence ($F(1,39) = 7.06$ $p < .05$) and general self-esteem ($F(1,39) = 5.44$ $p < .05$). These results are shown in Table 14. LD children rated themselves lower on cognitive, social and general scales than nonLD peers. The hypothesis of no differences between LD and nonLD children in their levels of perceived competence can be rejected. The means and standard deviations for Perceived Competence are shown in Table 15.

Friendship Conceptions. It was hypothesized that there are no significant differences between LD and nonLD children in their highest level of conceptions of friendship or the six interpersonal issues. A Chi-square performed on scores for the highest level of friendship conceptions by group yielded no significant effect. LD and nonLD children both achieved similar levels of thinking about friendship when their highest score was examined. In a MANOVA performed on the six issue concepts, no significant differences were found. The means for these variables are shown in Table 16. A final analysis, an ANOVA performed on the average stage score, also did not reveal
### Table 14

MANOVA for Perceived Competence by Group for the Cross-sectional Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>Group</td>
<td>1</td>
<td>5.52</td>
<td>5.52</td>
<td>17.20</td>
<td>.01</td>
</tr>
<tr>
<td>Competence</td>
<td>Error</td>
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<td>12.19</td>
<td>.32</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>39</td>
<td>17.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Group</td>
<td>1</td>
<td>3.53</td>
<td>3.53</td>
<td>7.06</td>
<td>.05</td>
</tr>
<tr>
<td>Competence</td>
<td>Error</td>
<td>38</td>
<td>18.98</td>
<td>.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
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<td>22.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>Group</td>
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<td>.92</td>
<td>.92</td>
<td>1.70</td>
<td>ns</td>
</tr>
<tr>
<td>Competence</td>
<td>Error</td>
<td>38</td>
<td>20.70</td>
<td>.54</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
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<td></td>
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<td>General</td>
<td>Group</td>
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<td>2.57</td>
<td>2.57</td>
<td>5.44</td>
<td>ns</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>Error</td>
<td>38</td>
<td>17.92</td>
<td>.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>39</td>
<td>20.49</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Wilks Criterion $F (4,35) = 3.98, p < .01$
### Table 15
**Means and Standard Deviations for Perceived Competence for the Cross-sectional Sample**

<table>
<thead>
<tr>
<th>Competence</th>
<th>Experimental Mean</th>
<th>Experimental SD</th>
<th>Control Mean</th>
<th>Control SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Competence</td>
<td>2.19 .58</td>
<td>2.93 .58</td>
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<td></td>
</tr>
<tr>
<td>Social Competence</td>
<td>2.54 .76</td>
<td>3.14 .63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Competence</td>
<td>2.51 .71</td>
<td>2.81 .76</td>
<td></td>
<td></td>
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<tr>
<td>General Self-esteem</td>
<td>2.48 .68</td>
<td>2.99 .68</td>
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### Table 16
**Means and Standard Deviations for Friendship Conceptions for the Cross-sectional Sample**

<table>
<thead>
<tr>
<th>Friendship Concept</th>
<th>Experimental Mean</th>
<th>Experimental SD</th>
<th>Control Mean</th>
<th>Control SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation</td>
<td>1.11 .57</td>
<td>1.25 .52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closeness and Intimacy</td>
<td>1.44 .56</td>
<td>1.65 .57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust and Reciprocity</td>
<td>1.54 .49</td>
<td>1.63 .50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jealousy and Exclusion</td>
<td>1.33 .40</td>
<td>1.26 .55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict Resolution</td>
<td>1.25 .60</td>
<td>1.63 .44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Termination</td>
<td>1.42 .37</td>
<td>1.42 .51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal Understanding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maturity Score</td>
<td>1.34 .32</td>
<td>1.46 .32</td>
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<td></td>
</tr>
</tbody>
</table>
significant differences between groups. Trends tended to replicate the Hoyle & Serafica (1984) study with LD children showing slightly lower scores on average levels of friendship conceptions and several of the subscales and similar scores on remaining subscales. The hypothesis of no differences on friendship conceptions between LD and nonLD children is supported.

**Behavior Problems.** In order to test the hypothesis that there are no significant differences between LD and nonLD children in the number of behavior problems exhibited as reported by teachers on each of the five dimensions of the BPC, a MANOVA was performed on the five dimensions by group. Although this analysis did not reach conventional levels of significance, an ANOVA on the total number of problems by group did. LD children were rated by their teachers as having more problems overall than nonLD peers ($F(1,31)=10.35, p < .01$). The means for these variables are shown in Table 17. These findings are consistent with the previous study in which LD children exhibited significantly more personality problems and higher scores on reported behavior problems overall. The hypothesis with respect to the five dimensions can be supported. However, the hypothesis that total problems do not differ for the groups can be rejected.

In addition to the above measures, the cross-sectional sample also received the teachers ratings of actual competence and social inferences about liking. Because this measure was used
only at Time 2, for this analysis only, score for both longitudinal and cross-sectional subjects were combined in order to get increased statistical power.

**Teacher's Ratings of Competence.** It was hypothesized that there are no significant differences between LD and nonLD children on the four dimensions of competence as reported by teachers. The four subscales were entered into a MANOVA with group as a factor. The highly significant MANOVA, Wilks Lambda ($\lambda(4,55) = 6.12, p < .001$) indicates a significant overall test of group. Univariate analyses further revealed significant main effects for cognitive ($F(1,59) = 23.92, p < .001$), social ($F(1,59) = 14.19, p < .001$), physical ($F(1,59) = 12.86, p < .001$) and general ($F(1,59) = 9.94, p < .01$) scales, indicating that teachers rated LD children as less competent in all areas, in comparison with nonLD peers. The MANOVA results are shown in Table 18; the means and standard deviations are in Table 19. Students' and teachers' ratings of competence were highly correlated for cognitive, social, and physical competence ($r_s = .62, .43, \text{ and } .49$, respectively with $p's < .001$) but not for general self-esteem ($r = .32, p < .05$). Thus, the hypothesis is rejected.

**Social Inferences about Liking.** In order to test the hypothesis that there are no differences between LD and nonLD children in their social inferences about liking, the following analyses were performed. The dependent variables, correct positive, negative and neutral inferences in response to cartoon
stimuli were entered into an ANOVA by group. This analysis yielded a marginally significant effect (Wilks Lambda = \(F(3,40)=3.29, p < .05\)). Univariate analysis revealed significant group main effects for positive inferences (\(F(1,43)=7.78, p < .01\)) and negative inferences (\(F(1,43)=5.58, p < .05\)). A second analysis of positive, negative and neutral inferences in response to the questionnaire measure by group did not yield significant results. These means are shown in Table 20. For the total number of correct inferences on the cartoon and questionnaire measures, two separate ANOVAs were carried out, with group as factor. Neither showed significant group main effects. The hypothesis of no differences between LD and nonLD children in their social inferences about liking is supported. Cannonical correlations on the three cartoon variables (positive, negative, and neutral inferences) and corresponding questionnaire variables yielded no significant results.

Correlations.

The first group of correlations examined the relationship between social relations and ecological variables. Children who mainstreamed for more time during the school day were less disliked by peers (\(r = .42, p < .01\)). When relations between ecological variables and other determinants of social status were examined, children who were mainstreamed more time during the school day displayed fewer behavior problems as judged by teachers (\(r = .49, p < .01\)).
A second group of correlations explored relationships between social status and IQ and school achievement. Children who received more ratings of liking tended to have higher IQs ($r = .43, p < .01$). When the relationship between determinants of social relations and IQ and achievement was examined, higher average conceptions of friendship were marginally related to higher IQ ($r = .38, p < .05$) and significantly related to more correct positive social inferences on the Cartoon measure ($r = .41, p < .01$).

Next, correlations between sociometric variables—nominations given and received, liking ratings given and received, and reciprocal nominations—were examined. This analysis yielded a significant correlation for unilateral nominations received and liking ratings received ($r = .55, p < .001$). Those children who were more often named as a best friend were also highly liked. This correlation was also found in the previous study.

Then the five sociometric variables were correlated with major summary variables for the other measures including: number in social network, four subscales of the PCS, friendship conceptions average score, positive social inferences, total problems on the BPC, and four teacher-ratings from the PCS. A marginally significant correlation was found between number of nominations received and number of correct positive social inferences on the cartoon measure ($r = .38, p < .05$). There was a significant correlation between reciprocal nominations and
the general self-esteem subscale on the PCS; children with more reciprocal nominations has higher levels of general self-esteem.
Table 17

Means and Standard Deviations for Behavior Problems for the Cross-sectional Sample

<table>
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<tr>
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</tr>
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<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>Conduct-Problem</td>
<td>2.06</td>
<td>3.33</td>
</tr>
<tr>
<td>Personality Problem</td>
<td>2.25</td>
<td>1.69</td>
</tr>
<tr>
<td>Inadequacy-Immaturity</td>
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<td>1.20</td>
</tr>
<tr>
<td>Socialized Delinquency</td>
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<td>.54</td>
</tr>
<tr>
<td>Psychotic Behavior</td>
<td>.19</td>
<td>.40</td>
</tr>
<tr>
<td>Total Problems</td>
<td>5.31</td>
<td>4.36</td>
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Table 18

MANOVA on Teacher Ratings of Actual Competence for Longitudinal and Cross-sectional Samples Combined

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<tr>
<th>Variable</th>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
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<tr>
<td>Cognitive</td>
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<td>11.37</td>
<td>11.37</td>
<td>23.92</td>
<td>.001</td>
</tr>
<tr>
<td>Competence</td>
<td>Error</td>
<td>58</td>
<td>27.57</td>
<td>.48</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>59</td>
<td>38.95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Group</td>
<td>1</td>
<td>4.24</td>
<td>4.24</td>
<td>14.19</td>
<td>.001</td>
</tr>
<tr>
<td>Competence</td>
<td>Error</td>
<td>58</td>
<td>17.35</td>
<td>.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>59</td>
<td>21.59</td>
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<td></td>
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<tr>
<td>Physical</td>
<td>Group</td>
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<td>4.23</td>
<td>4.23</td>
<td>12.86</td>
<td>.001</td>
</tr>
<tr>
<td>Competence</td>
<td>Error</td>
<td>58</td>
<td>19.00</td>
<td>.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>59</td>
<td>23.32</td>
<td></td>
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</tr>
<tr>
<td>General</td>
<td>Group</td>
<td>1</td>
<td>2.82</td>
<td>2.82</td>
<td>9.94</td>
<td>.01</td>
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<tr>
<td>Self-esteem</td>
<td>Error</td>
<td>58</td>
<td>16.46</td>
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<tr>
<td></td>
<td>Total</td>
<td>59</td>
<td>19.28</td>
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</table>

Wilks Lambda = F (4,55) = 6.12, p < .001
Table 19
Means and Standard Deviations for Teachers Ratings of Actual
Competence for Longitudinal and Cross-sectional Samples
Combined

<table>
<thead>
<tr>
<th></th>
<th>Experimental</th>
<th></th>
<th>Control</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>Cognitive Competence</td>
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<td>2.43</td>
<td>.63</td>
<td>2.96</td>
<td>.51</td>
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<tr>
<td>General Self-esteem</td>
<td>2.71</td>
<td>.44</td>
<td>3.15</td>
<td>.61</td>
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Table 20
Means and Standard Deviations for Social Inferences about Liking
for Longitudinal and Cross-sectional Samples Combined

<table>
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</tr>
</thead>
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<tr>
<td></td>
<td>X</td>
<td>SD</td>
<td>X</td>
<td>SD</td>
</tr>
<tr>
<td>Cartoon Measure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>10.18</td>
<td>2.86</td>
<td>12.27</td>
<td>2.05</td>
</tr>
<tr>
<td>Negative</td>
<td>8.91</td>
<td>2.88</td>
<td>7.18</td>
<td>2.46</td>
</tr>
<tr>
<td>Neutral</td>
<td>5.09</td>
<td>2.41</td>
<td>4.64</td>
<td>2.90</td>
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<tr>
<td>Questionnaire Measure</td>
<td></td>
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<tr>
<td>Positive</td>
<td>1.18</td>
<td>.96</td>
<td>1.18</td>
<td>1.34</td>
</tr>
<tr>
<td>Negative</td>
<td>3.32</td>
<td>1.13</td>
<td>3.77</td>
<td>.87</td>
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<tr>
<td>Neutral</td>
<td>3.73</td>
<td>1.60</td>
<td>2.90</td>
<td>1.41</td>
</tr>
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</table>
CHAPTER V

Discussion

The major purpose of the study was to investigate longitudinal stability and change in the nature of social relations in LD and nonLD children. Determinants of children's social status were also studied longitudinally. A second major goal of the study was to replicate findings in an independent cross-sectional group.

The discussion is organized as follows. Results of the longitudinal sample will be discussed first. Evidence for stability and change in aspects of social relations and their determinants will be discussed with respect to group similarities and differences. Discussion of the cross-sectional sample will focus on nature and determinants of social relations in both groups. This will be followed by a general discussion, limitations of the study and implications for future research.

Longitudinal Sample

Social status. Stable characteristics of social relations for both groups included liking ratings given and disliking ratings given and received, consistent with Hoyle & Serafica
(1984). The absence of developmental change is consistent with theoretical and empirical evidence that friendship choices remain stable until adolescence (Sullivan, 1953) and stability increases with age (Hartup, 1983). Feelings of liking and disliking towards peers may be more stable than other indices of social status.

With respect to longitudinal change in social status for both groups, LD and nonLD children received and gave more ratings of liking and gave more disliking ratings with time. There are a number of possible explanations for the longitudinal change in these variables. First, the number of available peers increased from a self-contained classroom to changing classes many times during the school day, a change in the social environment which increased the pool of potential friends. Second, there could be an increased interest in peer contact at this age, resulting in students' interaction with a larger number of peers. The latter explanation may reflect the shift in social interest from self to others described by Sullivan (1953).

In addition to changes over time, there were also group differences which were present regardless of time of assessment. LD children received significantly fewer ratings of liking than nonLD peers. In the Hoyle & Serafica (1984) study, results were similar but did not reach statistical significance. LD children's social status did not improve with time (Sheare, 1978). The fact that differences between groups persisted
regardless of time on these variables but not on others suggests that LD children are socially neglected. Consistent with Coie & Dodge (1983), their status did not decrease with time.

With respect to longitudinal change which differed for the groups, there were a number of trends. Trends are reported when they are in the expected direction due to the .01 alpha level and sample size. A marginally significant group effect for number of nominations given, showed that LD children in this sample gave more nominations than nonLD peers. LD children may name more friends because they do not accurately perceive who likes them and considers them a friend. One explanation for inflated nominations on the part of LD children is that they may seek social approval (Asher, Hymel, & Renshaw, 1984). Another is that LD children are less modest because they do not understand social norms related to modesty in self-evaluation (Garrett & Crump, 1980). When reciprocal nominations were examined, LD children had significantly fewer reciprocal friendships at both times than nonLD students. Since reciprocal nominations are viewed as an index of very close friendships, it could be speculated that some LD students lacked a 'chum'(Sullivan, 1953). However, relationships outside of school could also fill that role.

Social Networks. Stability in social networks emerged with both groups, with children retaining similar numbers of social network members over time, a finding consistent with Hoyle & Serafica (1984). When peer and adult social networks were
examined separately, there was no significant change over time. While there was no significant change, the trend for peer networks was in the direction of change predicted in the literature: social networks increased in size with time. Consistent with Sullivan's (1953) emphasis on the importance of peer relations, these findings suggest that peers play a crucial role in social development at this age. They also suggest that developmental change in which children place an emphasis on peer over parent-child relations begins in preadolescence (Hill, 1980; Marcoen & Brumagne, 1985).

The lack of group differences in numbers and functions of the social network suggests that LD children perceive themselves as having a social support network of friends, family, and community members which is comparable to nonLD peers. Consistent with the theoretical frameworks of Baldwin and Adler, social networks may provide opportunities for the development of self-esteem and empathy. The social network may also compensate for short-comings of the school peer network (Serafica & Hoyle, 1984). This result might also contribute to stability in social status because LD students find relationships outside of school to meet psychological needs. Consequently, they may invest less effort in school friendships in lieu of social networks.

Perceived Social Status. There was stability for the groups in that there was no significant change in perceived peer status. Despite the absence of normative literature, these findings suggest that perceptions of peer status may be stable
in this age range.

With respect to group differences, the findings that LD children do not reciprocate peer liking which emerged in Hoyle & Serafica (1984) were not found. Apparently, LD children increased their understanding of others feelings towards them or the effect was washed out due to low power.

Perceived Competence. Stability in levels of perceived competence was suggested by the absence of group differences on scores for the four subscales of The Perceived Competence Scale. These results, while consistent with Harter (1982), suggest that both LD and nonLD children have similar perceptions of competence. They also support the view that both LD and nonLD children progress through stages of self-other differentiation which Baldwin (1906) describes at this age. Following the effectance motivation model on which the scale was based, both groups of children display age appropriate levels of intrinsic motivation and associated feelings of competence.

Regarding the lack of group differences, the findings are consistent with one study (Hoyle & Serafica, 1984) but not others demonstrating differences between LD and nonLD children on the cognitive scale (i.e. Lincoln & Chazan, 1979). The results suggest that at both times LD children in the sample viewed themselves as comparable to nonLD peers in the various competence domains. There are several possible explanations for the discrepant findings. This particular school system may in some way promote positive self-esteem in special education
students. An alternative explanation, the early identification of LD (i.e. in the first grade) is suggested by evidence that experiencing chronic school failure leads to low self-esteem (Serafica & Harway, 1979). The similarity of the current findings to the Hoyle and Serafica (1984) may be attributed to administration of multiple measures of social relations; previous research administered the Perceived Competence Scale alone. It is possible that children's feelings of competence are affected by answering questions and being interviewed about other aspects of social relations.

Friendship conceptions. There was stability in the highest level of friendship conceptions or conceptions of jealousy and exclusion, reciprocity and trust, and termination. These results are similar to those reported by Hoyle & Serafica (1984). On the highest stage scores for friendship conceptions, students generally obtained scores at Level 2, Fairweather Cooperation, and advanced fractions of a stage score over time. This stability is consistent with developmental trends described by Selman (1978) wherein children aged 9 to 12 tended to remain at Stage 2. (One student was uncooperative in completing the interview and obtained a lower score at Time 2 (Stage 0) than at Time 1 (Stage 1). However, his responses were sufficient to be coded and included in data analysis). The results support Selman's (1980) invariant stage sequence in both LD and nonLD children. They also suggest that both groups of children are acquiring age-appropriate skills in social perspective-taking.
Over time in both groups, there was a significant increase in scores for conceptions of formation and closeness and intimacy. Developmental change in interpersonal understanding took place in some skill domains for both groups. As mentioned earlier, the amount of change is less than one full stage and is consistent with the literature.

With respect to group differences which occurred irrespective of time of testing, LD students displayed marginally lower average levels of friendship conceptions and conceptions of formation, than nonLD peers which is consistent with Hoyle & Serafica (1984). LD children apparently possess social perspective-taking skills but they do not have a good understanding of how children make friends. This difficulty appears to persist over time. LD children may have specific deficits in friendship conceptions suggesting that they make the same developmental transitions described by Mead (1934), but lag behind in some key areas.

Behavior problems. There was stability in the low incidence of psychotic behavior and socialized delinquency which is consistent with the Hoyle and Serafica (1984) study.

There were marginally significant group differences which persisted over time in behavior problems as reported by teachers for total problems. LD children were rated as exhibiting marginally more total behavior problems than nonLD counterparts. These results are consistent with the literature suggesting that
LD students exhibit more behavior problems than nonLD peers (i.e. Tarver & Hallahan, 1974)

**Cross-sectional Sample**

There were no differences between longitudinal and cross-sectional samples on major variables, suggesting that each sample can serve as an independent test of major hypotheses. The absence of differences suggests that there were no cohort or test-retest effects.

**Social Status.** There were no differences between groups on friendship nominations given or received, liking nominations given or received, reciprocal nominations, and accuracy of peer status. However, LD children less often than nonLD children, gave ratings of liking to those children who nominated them as best friends, a measure of accuracy in self-perceptions. The results are consistent with the longitudinal sample in which LD children received marginally fewer friendship nominations but were not significantly rejected by peers. With respect to the split in the research literature towards viewing LD children as socially handicapped versus selectively socially dysfunctional, the results of the present investigation strongly suggest that LD children have a number of minor difficulties in peer relations but are not rejected by peers (Prilliman, 1981; Bursuck, 1983; Saintano, Zigmond, & Strain, 1983; Staneck, 1983). Clearly on a variety of indices of social relations—peer ratings, self-ratings, congruence between peer and self ratings—LD children do as well as nonLD peers. LD children appear to
be socially neglected (Coie, Dodge, & Coppetelli, 1982; Coie & Kupersmidt, 1984) rather than rejected.

**Social networks.** In the cross-sectional sample, there were no significant group differences in size and few differences in functions of social networks which replicates the longitudinal sample. There were similarities between LD and nonLD children's school peer network and number of peers, family members, and community members who provide psychological support and guidance outside of school. In light of research on the role of social support in mediating later psychopathology (Kessler, Price & Wortman, 1985), emotional support from family, friends, and community members may indicate diminishing risk for later mental health problems. Although no studies have examined children's social networks and later psychopathology, it may be important to consider children's social networks before designing remediation programs. If an LD child is unpopular at school, he may view a parent, sibling, neighbor, clergy, or community member as a social support. A close relationship outside of school could facilitate social development such that those lacking school peer relations can use social networks to facilitate their progression through the developmental stages described by Sullivan (1953) and Mead (1934).

**Perceived Competence.** There were significant group differences on the Perceived Competence Scale in this sample. LD children rated themselves significantly lower on cognitive, social and general scales than nonLD peers. As mentioned early,
much of the research literature indicates that LD children see themselves as less cognitively competent (Lincoln & Chazan, 1979). It is puzzling that children in the same school system would differ markedly from their colleagues in the longitudinal sample. This difference might be due to the later identification of students in the second sampling; At Time 2, children in the longitudinal sample had been in an LD program for an average of 42.5 months compared to 27.85 months for the cross-sectional sample. Although these differences were not significant, LD children in the cross-sectional sample may have experienced more school failure than the first group of earlier-identified children, resulting in lower self-esteem (Serafica & Harway, 1979).

To summarize, the nature of LD children's peer relations thusfar, LD children did not differ on nominations given or received, liking ratings given or received, reciprocal nominations or social networks. LD children were less accurate in their perceptions of their peer status. Compared to non-LD students, LD children rated their social competence lower.

Friendship Conceptions. Although there were no statistically significant findings, trends tended to replicate the longitudinal sample in which there were marginal group differences on average levels of friendship conceptions. There was no group difference for the highest level of friendship conceptions. It is possible that the low power resulted in diminishing of effects. Specific types of social role-taking may
be difficult for LD individuals. On tasks of cognitive role taking, LD children perform as well as nonLD peers in some studies (i.e. Ackerman, Elardo, & Dykman, 1979), but not in others (i.e. Dickstein & Warren, 1980).

**Social Inferences about Liking.** On the cartoon measure, significant group differences were found for correct positive social inferences. The positive, negative and neutral responses to the questionnaire did not yield significant results. LD children were less accurate in positive social inferences than nonLD peers. The findings are roughly consistent with previous research suggesting that LD children have problems with various nonverbal social reasoning tasks (i.e. Bryan, 1979; Pearl & Cozden, 1982). LD children may perform poorly on the positive aspects of these tasks (i.e. LD children have more difficulty distinguishing positive emotions, positive facial expressions), but combined positive, negative and neutral responses are reported in the literature. These results are consistent with LD students' tendency to receive fewer liking ratings and not reciprocating friendship nominations with ratings of liking. LD children appear to have difficulty in interpreting feelings. The results of the present study must be interpreted cautiously because the reliability and validity of the measure has not been established. Based on the findings it appears that the cartoon measure provides a better measure of social inferences about liking, perhaps due to its visual format or presentation before the questionnaire.
Applying cognitive consistency theory (Newcomb, 1961), which states that people perceive others' level of liking as consistent with their own, an imbalance may be created by LD children not always knowing how others feel about them. Alternatively, LD children's difficulty in judging feelings could be viewed as an information processing problem (Dodge, 1985) focusing on encoding social messages. Since liking serves as a strong basis for friendship throughout the life-span, more research on social inferences about liking is needed before definitive conclusions can be made.

Behavior Problems. LD children were rated by their teachers as having more problems overall than nonLD peers. Although this finding is consistent with trends in the longitudinal sample. Although results are consistent with previous research (Cullinan et al., 1979, 1981), they do not fit well with other findings. If the LD children in the sample were significantly lower on all areas of competence, research suggests that peers would not tolerate problem behavior, signifying these feelings with ratings of disliking. On the other hand, the results suggest that children do not base decisions about friendship and liking on behavior problems identified by teachers. This leads to speculation that teachers may have a negative attitude towards special education students and expect them to exhibit behavior problems. It has been speculated that teacher attitudes towards special education students can create a self-fulfilling prophecy (Bryan, 1981).
Teacher's Ratings of Actual Competence. Teacher's rated LD children as less competent in all areas in comparison with nonLD peers. These results replicate some previous research showing various psychological dimensions in which teachers rate LD students as lower than normal learning peers (See Bryan & Bryan, 1981 for a review). The research overwhelmingly indicates that regular classroom teachers tend to view special education students as inferior in many areas of development; less is known about the reasons for these views and what can be done to change them. Results of the present study suggest that teachers are responding to differences in social and cognitive functioning in LD students. However, it seems that the students' difficulties are magnified in teacher assessments or some LD children have difficulties which are generalized to all LD students. This relationship needs to be better understood. One hypothesis is that teachers identify the unevenness in social (and other) functioning and assume that the student could do better if he or she tried.

Interrelations. Children who were mainstreamed for more time during the school day were less disliked by peers and displayed fewer behavior problems as judged by their teachers. These results suggest that LD students who are mainstreamed have fewer problems or mainstreaming can have a beneficial effect on LD children's peer relations. Theoretical writings would suggest that interaction with peers serves as the context for social development; perhaps spending large amounts of time in a
classroom with other students who have minor difficulties in social skills does not provide the best social teacher.

Children with higher IQs tended to receive more ratings of liking which replicates findings of previous research (i.e., Pelligrini, 1985). It is possible that the greater the intellectual handicap, the more difficult it is to grasp social cognitive skills needed in peer relations. There were no relationships of IQ with other determinants, suggesting that this may not be the case.

Children who were more often named as a best friend were also highly liked which is consistent with previous research (See Berndt, 1984, for a review). This finding supports the typical definition of friendship, a relationship of strong liking, and suggests that in this age group, liking is an important basis for friendship.

Children with more reciprocal nominations had higher levels of general self-esteem. This relationship suggests that children who have more close friendships feel better about themselves; it also provides evidence that positive social relations are essential to child development and mental health. Sullivan's (1953) notion of a chumship as a means to achieve validation of self-worth is also consistent with these results.

Selman (1980) and Kurdek & Krile (1982) have reported correlations between friendship conceptions and social status which were not replicated in the present study. This suggests that friendship conceptions may not be a strong determinant of
social status. However, the average friendship conceptions score was correlated with positive social inferences on the cartoon measure. Apparently, there is some commonality between the two measures. Children who received more friendship nominations had more correct positive social inferences about liking. Skills involved in making and keeping friends are somehow intertwined with the ability to tell if someone likes you or not. LD students may miss social nuances involved in social cognitive information processing.

Implications

Theoretical Implications. Based on the present study, eleven-year-old LD boy might typically have one or two friends in school, about four people outside of school with whom he can talk or do activities, and may display some inaccuracy in knowing how others feel about him. Further, he may feel that he does poorly in making and keeping friends and his schoolwork. Despite some difficulties in social relations, LD children in many ways mirror the normative group. Taken together, the results of the study provide strong support for the Sullivanian view of social development as applicable to LD children. LD children's social development appears to follow the same developmental course as that of nonLD children although the LD children lag behind in a few key areas.

The study provides new information on stability and change in social status of LD children; the assessment of social relations is conceptualized in a multimethod framework which provides a
more complete view of the LD child's social world. In addition, a number of determinants which contribute to LD students' moderate social status were identified. There does not appear to be a single determinant. Moreover, it is possible that the pattern of contribution of determinants to each child's social status is different.

With respect to reconciling various theoretical models, there was no evidence for the view that all LD children are rejected by peers, nor the idea of a specific type of LD confined to the social realm. There was support for the cognitive-functional view of the LD child as cognitively handicapped in one or more specific area (Meichenbaum, 1976). Specific cognitive strategies which LD children appear to have difficulty with were identified. This evidence lends support to Piaget's (1962) discussion on the relationship between cognition and social skills. However, the relationship between specific learning disabilities and specific social skills was not fully explored due to sample size. It is important to note that ecological factors may contribute to difficulty in LD children's social status. Consistent with Piaget's (1962) view that children learn skills through interacting in the environment, LD children seem to suffer from decreased contact with peers in school.

Research Implications

The findings of the present study suggest directions for future research. The multimethod approach to the study of LD children's peer relations provides a more comprehensive view of
their social world. Future use of this method might include larger sample sizes to enable testing of structural models of social relations which could provide a test of the relationship between nature and determinants of LD children's social relations. Within a multimethod framework, the measures used must be adapted for use with the LD groups. In the present study, for example, differences in social inferences were found when stimuli were presented visually rather than auditorily. The study differed from previous research in that individual interviews were used and the sociometric questionnaire was adapted to include visual rating scales. All instructions and items were read aloud. These measures ensured that individuals with reading, auditory, or visual processing problems could understand the presentation. Future research needs to include similar safeguards for reliable and valid administration of tasks.

Future research might examine the nature and determinants of social relations over a broader age range in order to assess whether Sullivan's predictions regarding changes in social relations at adolescence can be confirmed. A broader age range in LD and nonLD subjects would also reveal whether LD children continue to be at risk for poor peer relations in adolescence, and the effects of earlier low social status on later socioemotioonal development. It would be interesting to examine aspects of social cognition, such as friendship conceptions and social inferences about liking, in adolescence given cognitive
development between latency and adolescence.

The study suggests that more research on the social networks of LD children is needed. The extent to which social network members can serve as compensatory for children with problems in peer relations is not well understood. In addition, the degree to which social network members function as promoters of positive mental health, and agents of prevention of later psychopathology needs to be studied. Given evidence that LD children may be socially neglected by peers in school, it could be speculated that the same subtle difficulties which they experience in school are manifested in their social networks. This needs further study.

The role of ecologial variables in social relations of LD children needs to be further studied. Using the LD marker variables, future research could examine whether aspects of the social context mediate social relations.

Finally, further research on the social inferences about liking measure is indicated. In preliminary findings, LD children show some difficulties in this area which may be linked to problems in distinguishing feelings. This measure needs to be validated and reliability established.

**Applied Implications.** Is quality or quantity more important in children's peer relations? Will more friends or better friends stave off mental health problems associated with prolonged social failure? The present study shows that LD children may lack quantity (i.e. number of friends in school),
but not quality. The quality of LD children's social relationships is similar to that of nonLD peers as judged by indices of likeability, neutrality, and unfamiliarity ratings. LD children appear to be equipped with social-cognitive equipment which is commensurate with that of nonLD peers. Overall, the findings suggest that LD children experience what Sullivan called a chumship relationship, thus reaping the developmental benefits. LD children also experience relationships in the context of perspective-taking and self-knowledge—described by Adler and Baldwin—despite their social-cognitive limitations and negative perceptions by their teachers. As Baldwin would predict, LD children have opportunities to learn about themselves through relationships with others both in the school social environment and in social networks outside of school. It is important to note, however, that LD students were generally not as discrepant in academic achievement as they had been at the time they were identified. It is possible that findings were influenced by LD students' academic improvement relative to nonLD students. Since previous research does not report educational characteristics, this is left to speculation.

The results suggest directions for remediation. A focus on teaching skills involved in friendship formation, and making correct social inferences of liking is needed. This could be taught using role play, modeling or other techniques popularized in the literature. Since LD students may more easily use social
skills with social network members, their strengths in social interaction with social network members should be drawn upon.

Further research on teacher's perceptions of LD students is needed. In particular, ways to educate teachers about the specific difficulties of LD students and appropriate expectations for social development could improve both day-to-day interaction and awareness of when to refer children with problems in social relations for treatment. This issue may relate to another area which needs further exploration, the effects of ecological variables on social status. The results suggest that closer attention needs to be given to variables describing the LD students' social environment, such as the amount of time spent in a mainstream classroom.

Limitations of the study.

The major limitation of the present study was the sample size. Despite recruiting efforts, participation for LD and nonLD students was about 50%. Higher participation is needed for higher statistical power, and greater reliability. With small sample size, low power was a disadvantage. In addition to the problem of diluting findings with a multivariate approach, there were analyses which could not be completed due to sample size. For example, we were not able to compute stability coefficients for the longitudinal sample.

A second limitation of the study, the lack of another child clinical group such as children with behavioral problems without learning disabilities, limits interpretability of
findings. Without this comparison, it is difficult to know if the results are unique to children with LD, or shared by behavior disordered, attention deficit, or other groups of children at risk for poor peer relations.

Another limitation was the lack of availability and participation of LD girls (i.e. none in the longitudinal sample, few in the cross-sectional sample). Although there were no sex differences in the study, the literature suggests that girls may be at more risk for poor peer relations than boys.

A final limitation of the study was the use of a new measure which lacks established reliability and validity (i.e. the social inferences tasks).

Despite these limitations, the present study suggests that LD children have been stereotyped as socially rejected when this may not be the case. LD children's social development follows the same sequence and pace as nonLD children, with some subtle differences. Results of the present study indicate that aspects of social relations dependent on affective cues (i.e. determining how peers feel about them) are especially difficult for LD children. In a multimethod study which provides a comprehensive view of LD children's social world, ways in which LD children's specific problems in social relations can be remediated are suggested.
APPENDIX A

SCRIPT FOR PRESENTATION, PARENT LETTER,
AND CONSENT FORMS
INTRODUCTION OF STUDY TO CHILDREN

My name is ____ and I am from The Ohio State University. I am here today to ask you if you would like to be in a study we are doing with some of the third graders in your school. If you would like to be in the study there are several things I will ask you to do. First, I'll talk to you by yourself and ask you some questions about people you know best. Then I'll ask you some questions about how well you think you do at school, sports, or other things. You will also hear a story and answer some questions about the story. If you decide that you do not want to participate after you have started the study you do not have to continue.

If you would like to hear the story and answer the questions, we need to have your parents' permission. Your teacher will give you a letter for your parents at the end of the day. After your parents read the letter, they will give you a permission slip to bring back to school if they would like you to do the study. You can bring this paper back to school and give it to your teacher. I'll be back in a few days to start the study.
Dear Parent:

We are writing to request your child's participation in a two-part study of the social relationships of children with and without learning disabilities.

In Part I, we will follow-up children who took part in a prior investigation of the relationship between academic performance, friendships in the school and neighborhood, feelings about his or her competence at school and in sports, and understanding of friendships. It is important to carry out follow-up studies such as this one because there is very little scientific information about changes with increasing age in this important relationship. The children we studied two years ago are now in the fifth grade. We would like to interview them again and a new group of fifth graders who were not in the earlier study but are similar in age and sex.

Children will be asked questions in an individual interview. They will also hear stories and answer questions about them. The child will be interviewed by a trained OSU graduate student. The child's answers will be written down by the interviewer but the interview will also be audio recorded in case the interviewer misses some of the child's words. The child will be interviewed once, in a session lasting 10-45 minutes depending on the talkativeness of the child and the nature of the interview.

In Part Two, the social interactions of the same children who participated in Part I will be observed in school for approximately 45 minutes. The observers will be OSU students who have been trained to observe and record discreetly so that no one knows that a particular child is being observed. Teachers will be asked to rate the children on a nine-point scale for academic performance and social adjustment.

In order to understand how academic performance relates to children's social relations, we will also need to obtain the following information from your child's school records: achievement and ability test scores, class placement, and educational history. School records will be used under the supervision of school personnel who will provide only this information. If recent test scores are not available, we would like your permission to give brief intelligence and achievement tests.

There is no risk involved in this type of study. Also, previous experience has shown that children enjoy being interviewed. The answers of each individual child will be kept strictly confidential. Any report based on this study will contain information about a certain age, for example, 11-year-olds' ideas about friendship. Also, the child is free to withdraw from participation at any time.
Dear Parent:

We are writing to request your child's participation in a two-part study of the social relationships of children with and without learning disabilities. Your child, if allowed to participate, will be in the comparison group of children without learning disabilities.

In Part I, we will follow-up children who took part in a prior investigation of the relationship between academic performance, friendships in the school and neighborhood, feelings about his or her competence at school and in sports, and understanding of friendships. It is important to carry out follow-up studies such as this one because there is very little scientific information about changes with increasing age in this important relationship. The children we studied two years ago are now in the fifth grade. We would like to interview them again and a new group of fifth graders who were not in the earlier study but are similar in age and sex.

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There is no risk involved in this type of study. Also, previous experience has shown that children enjoy being interviewed. The answers of each individual child will be kept strictly confidential. Any report based on this study will contain information about a certain age, for example, 11-year-olds' ideas about friendship. Also, the child is free to withdraw from participation at any time.
This study has been approved by the principal at your child's school and the child's teachers. If you would like to know more about the study, please feel free to call the principal or any of us. Otherwise, please sign the attached consent form and return it to your child's teacher. A copy of the consent form has been enclosed for you. Also, if you allow your child to participate, we would greatly appreciate it if you would please fill out the questions on the attached sheet and return it along with your signed consent form.

We hope that you will allow your child to participate and thereby contribute to an increase in our knowledge about child development.

Sincerely,

Felicisima C. Serafica, Ph.D.
Associate Professor of Psychology
Associate Professor of Pediatrics
(422-0483)

Sally G. Hoyle, M.A.
Doctoral Candidate in Psychology
(422-6332)

Ilissa K. Bloch, B.A.
Graduate Student in Psychology
(457-7019)

Enclosure
CONSENT FOR PARTICIPATION IN
SOCIAL AND BEHAVIORAL RESEARCH

I consent to participating in (or my child’s participation in) research entitled:

Stability and change in social relations of children with and without

learning disabilities; Social status, perceived social competency,
conceptions of friendships and social behavior.

Principal Investigator or his/her authorized representative has

explained the purpose of the study, the procedures to be followed, and the expected duration of my (my child’s) participation. Possible benefits of the study have been described as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me (my child). The information obtained from me (my child) will remain confidential unless I specifically agree otherwise by placing my initials here ________.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: ___________________ Signed: ___________________

(Participant)

__________

Signed: ___________________

(Principal Investigator or his/her Authorized Representative)

__________

Signed: ___________________

(Person authorized to Consent for Participant - If Required)

Witness: __________

(Witnesses)

HS-027 (Rev. 12-81) - To be used only in connection with social and behavioral research.
APPENDIX B

SOCIOMETRIC INSTRUCTIONS TO CHILDREN, SOCIOMETRIC
AND SOCIAL NETWORK QUESTIONNAIRE, VISUAL SCALES, AND
SAMPLE SOCIOMETRIC MATRIX

120
INTERVIEWER INSTRUCTIONS

1. Introduce yourself to the child when you are outside of the classroom. Talk with the child on the way to the testing location. Chatting about school activities such as gym, art, and lunch will help the child to feel at ease with you. When you arrive at the testing location, ask the child's birthdate and homeroom teacher's name. Then date and initial the form.

2. Then say: Today I'm going to ask you some questions about people you know. No one will see your answers (PAUSE) not your parents, not your teachers, and not the other kids. If you have any questions as we go along, please let me know. Listen carefully.

3. Now read Question 1 on the sociometric form. You may say "Would you like me to repeat that?" if necessary. Continue with Questions 2 and 3.

4. Now I'm going to read the names of some of your classmates. For each one, I'd like you to point to one of these faces. You point to the smiling face if you like the person (POINT), you point to the frowning face if you do not like the person (POINT), you point to this one if you do not especially like OR dislike the person (POINT) and you point to this face if you do not know the person (POINT). Now let's practice. You point to the face that shows how you feel about ice cream (CHILD RESPONDS). So you (RESPONSE REPEATED, i.e., like ice cream). If the child does not like ice cream ask what their favorite food is so you can use it to practice liking ratings.

5. Now for all the people/or for the person you said you liked, I want to know how much you like them. You can show me by pointing to one of these squares. I'll read the name of each person and ask you to point to a square. You point to this one if you like the person very much (POINT TO THE BIG SQUARE), you point to this one if you like the person only a little (POINT TO THE SMALLEST SQUARE). The others are in between. For example, if you point to the one in the middle (POINT), it shows that you do not like them a lot (POINT TO THE BIG ONE), or a little (POINT TO THE SMALL ONE), but you like them in between. Let's practice with the ice cream example. Show me how much you like ice cream. (NOW go through the list)

6. Now I want to know how you think these kids feel about you. I would like you to go through the list again, using the faces and squares, only this time say what you think they might feel about you.
7. The last thing I will ask you to do is to tell me a bit more about the people you know best. (Read questions describing the person and the relationship for up to four sociometric and four social network nominees.

8. Those are all of the questions. Thank you for your help.
1. Who are the people you know best or who know you best in your school? These might be kids you hang around with or teachers or other adults. Don't give me the names of everyone who knows you well, just the people who are really important to you. (PROBE: Do you have any more or is that all?)

2. Who are the people who you know best or who know you best outside of school? These might be people in your family, kids in your neighborhood, people you know from church or club activities. Remember, don't give me the names of everyone you know well, just the people who are really important to you. (PROBE: Do you have any more or is that all?)

3. Do you have a best friend? (IF YES) Who is it?
1. How old is this person?

2. What grade is this person in?

3. How often do you see this person?

4. Where do you see this person?
   (Check as many as apply)
   - Almost every day
   - Several times a week
   - On weekends
   - Only once or twice a month
   - Only a few times each year

5. When you get together, what do you and this person do most of the time?

6. Do you talk to this person about school, sports and other things? Yes No
LIKE

DON'T LIKE

IN BETWEEN

? DON'T KNOW
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like very much
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APPENDIX C

PERCEIVED COMPETENCE SCALE INSTRUCTIONS AND QUESTIONNAIRE
INSTRUCTIONS TO THE CHILD

I have some sentences here and, as you can see from the top of your sheet where it says "What I am like," I am interested in what you are like, what kind of a person you are like, and how you think and feel about different things. This is not a test. There are no right or wrong answers.

First let me explain how these questions work. There are two sample questions at the top. I'll read the first one out loud, which is marked (a), and you follow along with me. (Examiner reads first sample question.) This question talks about two kinds of kids.

(1) What I want you to decide first is whether you are more like the kids on the left side who would rather play outdoors, or whether you are more like the kids on the right side who would rather watch TV. Decide which kind of kid is most like you, and point to that side.

(2) Now, the second thing I want you to think about, now that you have decided which kind of kid is most like you, is to decide whether that is only sort of true for you, or really true. If it's only sort of true, then point to the box under sort of true; if it's really true for you, then point to that box, under really true.

(3) For each sentence you only point to one box. Sometimes it will be on one side of the page, and other times it will be on the other side of the page, but you can only point to one box for each sentence. Do you have any questions?

(4) OK, let's try the second sample one, which is (b). (Examiner reads and goes through the same explanation above in points 1, 2, and 3.)

(5) OK, those were just for practice. Now we have some more sentences which I'm going to read out loud. For each one, just point to one box, the one that goes with what is true for you, what you are most like.
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These consist of pages:

Pages 130-133
Pages 135-138
Pages 167-168
APPENDIX D

FRIENDSHIP CONCEPTIONS STAGE DESCRIPTIONS, STORY, AND PROBE QUESTIONS
APPENDIX E

SOCIAL INFERENCES ABOUT LIKING CATEGORIES,
INSTRUCTIONS, CARTOONS, AND QUESTIONNAIRE TASKS
Cues Indicating Liking/Disliking: Coding Categories

**POSITIVE CATEGORIES**

1. Companionability - the person is good company, plays, and 'hangs around' with them. Interaction is generally positive when they are together.

2. Sociability - the person extends invitations, asks them to play, picks them to be on their team or picks them to do something. Extends greetings, says 'hi' in school.

3. Availability - the person accepts invitations, is available for play/interaction, spends time with them, and changes other plans in order to play with them.

4. Prosociality - the person helps or shares with them. The person goes out of their way to do something nice for them.

5. Willingness to Communicate - person shows interest in talking with them.

6. Willingness to be honest/open - person tells the truth and tells them about themselves. Person is willing to give an honest opinion when asked.

7. Sensitive to feelings, Willingness to understand - person is willing to provide some psychological support, learn about their preferences, background, etc.

**NEGATIVE CATEGORIES**

1. Not Companionable - person is poor company, boring, won't play, will not hang around them.

2. Un sociability - person does not extend invitations, does not seek their company. Person does not greet them.

3. Unavailability - Person plays/spends time with someone else or says they are busy. Person may be legitimately busy (sports activities, lessons) or says they are busy.

4. Not prosocial, Aggressive - Uncooperative, does not help or share when asked, fights, teases, uses name-calling, talks about them behind their back.

5. Unwilling to Communicate - Person will not talk to or spontaneously communicate with them.

6. Unwilling to be Honest/Open - Person is evasive, lies.

7. Insensitive to feelings, not understanding - Person acts like they do not care about your feelings. May try to push them into doing things they do not want to do (i.e. get in trouble with teacher).

8. Deliberate indifference and ignoring - Person overtly avoids contact with them or makes a show of ignoring them.
NEUTRAL CATEGORIES

1. Moderate Companionability—person is sometimes good company, plays once in a while. Interaction is neither strongly positive nor negative.

2. Moderate Sociability—person may occasionally extend invitations, ask them to play, be on their team or pick them to do something. Irregularly extends greetings.

3. Moderate Availability—person is not unavailable, but is not often available.

4. Not Prosocial or Not Aggressive—person does not go out of their way to be prosocial or aggressive.

5. Moderate willingness to communicate—Person may or may not spontaneously communicate with them.

6. Moderate willingness to be honest/open—person doesn't go out of their way to disclose or withhold information.

7. Not sensitive or insensitive to feelings—person does not act especially sensitive or tuned in to their feelings but also does not show blatant insensitivity.
Now I want to find out about the ways you can tell how one kid feels about another kid. To find out, I'm going to show you some pictures. First, I'll tell you what is happening in the picture. Then, I'll ask you to tell me how you think the kids in the story feel about each other. You will show me how the kids in the story feel about each other by pointing to these faces, just like we used before. Let's do one for practice. Here are two kids. This time we'll call them Bob and Steve. Bob tells Steve about a movie he went to over the weekend. How do you think Bob feels about Steve? (IF LIKE) Since you said you think Bob likes Steve, I want you to show me how much you think Bob likes Steve by pointing to one of these squares, just like we used before. (Here's the next one. This time we'll call these two boys ___ and ___.READ VIGNETTE.) How do you think (actor on left of picture) feels about (actor on right of picture)? (AFTER ALL 45 ITEMS PRESENTED IN RANDOM ORDER). Now I'd like to do checklist asking about the same kinds of things. We're going to read some sentences together. I'll read it aloud and you follow along with me. Each one talks about something that might happen to you, for example, let's say a boy in your class laughs at one of your jokes. After we read the sentence, I'd like you to decide if the kid might like you, dislike you, or Neither like or dislike you. Let's try this with the example I just mentioned. If a kid laughs at one of your jokes, do you think that shows that he likes you, dislikes you, or neither likes or dislikes you?
Companionability

Don always sits next to Steve at lunch; they have a lot of fun.

When Joe and Tim spend time together, they do things that both of them want to do, like basketball.
Mark usually says "hi" to Dan in the hall at school.

Bill calls up Gary and invites him to his sleep-over party.
Steve asks Ted to play and Ted says "sure!". They decide to play soccer.

Bob calls Jim to see if he can come over; Jim had plans to watch a TV show but he decides to go over to Bob's instead.
Prosociality

John picks up Dave's books when he drops them in the hallway.

Kurt helps Phil with his art project.
Willingness to Communicate

Dan talks with Jim while they are looking for library books.

When they get to school, Stan and Ron always talk to each other about what's going on.
Willingness to be Honest/Open

On field day, Ben loses the 50 yd. dash to Stan. Ben tells Stan that he is sad about losing.

Matt tells Tony how he really feels about one of the girls in their grade.
Sensitive to Feelings/ Willingness to Understand

Bob understands how Nate feels when Nate worked hard on his science project but didn't get the first prize.

Mark is upset because he doesn't have the money to buy a new record album he really wants. Phil notices Mark is upset and asks him why.
When Chris plays cards with Larry during activity time, Larry always wants to pick the game.

Gordy never knows what he wants to do at recess. Ernie always has to come up with something to do.
Unsociability

George never invites Ben to his house.

When they get to school in the morning, Bob never says "hi" to Chris.
Unavailability

Mark asks Frank to play at recess but Frank says "Sorry, I'm busy"

Larry asks Mike to be his partner in gym class, but Mike says he already has a partner.
Jim tells the teacher that Alan was fooling around in class but Alan was really doing his work.

Frank needs to borrow Carl's markers in order to finish his art project. Even though Carl's not using them, he doesn't let Frank borrow them.
Unwilling to Communicate

Bill needs to get the school assignments he missed while he was sick. Bill would rather not ask Marty for them.

When Nora sits next to Ernie at a school assembly, Nora doesn't talk to Ernie even though they have to wait for it to start.
Unwilling to be Honest/Open

When Bill asks Jim how he did on the exam, Jim said "fine" even though he flunked.

Hugh asks Bob whether he likes a girl in their grade. Bob says "No way!" even though he really likes her.
Insensitive to Feelings/Not Understanding

George tells Aron that he likes this girl. Aron teases George about it and embarrasses him in front of the whole class.

When Barry's dog dies, Luke doesn't understand Barry's feelings.
Deliberate Indifference or Ignoring

Every time Paul comes over to play with Steve at recess, Steve leaves and plays with someone else.

Marty ignores Bill in the library and goes off with someone else. As he's leaving he says, "We want to be alone for once"
Moderate Companionship

Once in a while, Bob sits with Bill at lunch.

Sometimes, George spends time with Lou at recess.
Moderate Sociability

Sometimes, Ed says "hi" to Sam in the hall.

Every once in a while, Gordon invites Mathew over to his house.
Moderate Availability

Matt calls Dan to see if he can come over; sometimes Dan is busy, and other times he's not.

When Ted does not have a partner for gym class, sometimes he'll ask Norn to be his partner.
Tony notices that Frank drops his lunch money on the floor. He doesn't tell Frank about it and he doesn't take the money for himself either.

David does not tease Carl when he comes to school with his shirt on inside out. David doesn't tell Carl that he has noticed it either.
Moderate Willingness to Communicate

When Bill sits next to Rich during reading group, sometimes they will talk about the story they are reading.

Sometimes Mark and Dave talk about sports in homeroom.
Not Sensitive or Insensitive to Feelings

Nate heard that Larry lost his girlfriend to another boy in the class. Nate doesn't show Larry that he feels bad but he doesn't tease him either.

Bob did not win the spelling contest, but Fred didn't say anything to make him feel better or worse about it.
CHECKLIST

EXAMPLE: A kid laughs at one of my jokes.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

1. This kid is fun to hang around with.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

2. This kid asks me over to his house, or asks me to play with him at recess.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

3. This kid is usually able to get together with me when I want to do something with him. He might change his plans to be with me.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

4. This kid is likely to help me when I need it or to share his things with me.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

5. This kid talks to me often.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

6. This kid tells me the truth even when it's hard for him to tell me how he feels.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

7. This kid understands my problems and tries to make me feel better.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

8. This kid won't hang around with me.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

9. This kid never invites me to do things with him.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

10. This kid never seems to have time to do anything with me.

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

11. This kid will not help me, and sometimes teases me

He: ___ likes me ___ dislikes me ___ neither likes or dislikes me
12. This kid will not talk to me.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

13. This kid never tells me how he really feels about things.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

14. This kid never understands how I feel and doesn't care if I'm upset about something.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

15. This kid ignores me and walks away.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

16. Sometimes, this kid plays with me at recess.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

17. This kid invites me over sometimes.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

18. Sometimes, this kid is free to play with me, but other times he is busy.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

19. This kid doesn't go out of his way to do things for me but he doesn't do anything mean either.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

20. This kid talks to me once in a while.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

21. This kid doesn't tell me secrets but doesn't lie about things either.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me

22. This kid doesn't understand how I really feel about things, but doesn't make me feel bad either.
   He: ___ likes me ___ dislikes me ___ neither likes or dislikes me
APPENDIX F

BEHAVIOR PROBLEM CHECKLIST
APPENDIX G

LD MARKER VARIABLES
DESCRIPTIVE MARKERS

Descriptive Markers contain information which is common to all human subject research: demographics, language, education, and health. Descriptive Markers refer specifically to the LD sample.

D1. SAMPLE SIZE (N)

<table>
<thead>
<tr>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D2. CHRONOLOGICAL AGE (Months)

<table>
<thead>
<tr>
<th>Mean</th>
<th>Standard deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D3. GRADE LEVEL(S) OF LD SAMPLE

<table>
<thead>
<tr>
<th>Range</th>
<th>Ungraded classrooms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D4. LOCALE (Percent of sample from each)

- Rural (sparsely settled, largely agricultural)
- Small town (population center, not a city)
- Suburban (residential area outlying a city)
- Urban (densely settled, nonagricultural)
- University community (university & surrounding locale; takes precedence over other categories)

D5. RACE/ETHNICITY (Percent of sample)

- Asian American
- Black
- Caucasian (not Hispanic)
- Hispanic
- Native American Indian
- Other (specify) ______________________________________________________________________
D6. SAMPLE SOURCE (Percent of sample)

- Public school -- day program
- Public school -- residential program
- Private school -- day program
- Private school -- residential program
- Residential facilities (e.g., state hospital)
- Other sources (e.g., clinics, case registers)

D7. SOCIOECONOMIC (SES) DATA

a) Socioeconomic Status (Percent of sample)
   - Upper
   - Upper middle
   - Middle
   - Lower middle
   - Lower

b) Methods used to derive SES (check)
   - U.S. Census Bureau Tract ratings
   - Hollingshead Scale
   - School personnel estimates
   - Type of school (private, Title I, etc.)
   - Location of school
   - Parental education
   - Parental income
   - Other

D8. LANGUAGE (Percent of sample)

- English-speaking home
- Bilingual home (specify language)
- Non-English-speaking home (specify language)
DII. EDUCATIONAL HISTORY (Percent of sample)

- In age-appropriate grade placement
- Retained in grade
- Changed schools often
- Never classified LD prior to this study
- Spent most of educational career in special classes

D10. EDUCATIONAL PLACEMENT (Percent of sample)

- Regular class with NO special educational services
- Regular class WITH special educational services
- Self-contained special education class
- Other (specify)___________________________

D11. PHYSICAL AND HEALTH STATUS (Percent of sample)

- Sensory deficits
- Physical disabilities
- On medication
- Medically diagnosed neurological impairment
- Chronic illness
- Other (specify)___________________________
SUBSTANTIVE MARKERS

Substantive Markers are closely tied to most definitions of LD. They include intellectual ability, educational achievement, behavioral and emotional adjustment. Substantive Markers refer specifically to the LD sample.

SI. GENERAL INTELLECTUAL ABILITY

a) Categories (Percent of sample)
   __ Superior or gifted
   __ High average
   __ Average
   __ Low average
   __ Below average

b) Techniques used to determine intellectual ability (check)
   __ Standardized individual tests
   __ Standardized group tests
   __ Teacher estimate
   __ Other school personnel estimate
   __ Researcher/Research staff estimate
   __ Other (specify)________________________

c) Intellectual ability assessed by:
   __ Clinic personnel
   __ Researcher/Research staff
   __ School personnel
   __ Other (specify)________________________

d) Currency of intellectual ability information
   __ Assessed at time of study
   __ Assessed less than one year prior to study
   __ Assessed one to two years prior to study
   __ Assessed more than two years prior to study

e) Summary values of intellectual ability
   Mean
   Standard deviation
   Range
### Behavioral and Emotional Adjustment

d) **Characteristics (Percent of Sample)**
- LD with minimal behavioral/emotional problems
- Primarily LD with secondary behavioral/emotional problems
- Primarily behaviorally/emotionally disturbed with secondary learning problems

d) **Adjustment Estimate (Percent of Sample)**
- Adequate behavioral/emotional adjustment
- Mild behavioral/emotional problems
- Moderate behavioral/emotional problems
- Severe behavioral/emotional problems

c) **Techniques Used to Determine Behavioral/Emotional Adjustment (check)**
- Clinical judgment
- Standardized tests
- Behavior rating scales
- Teacher estimate
- Researcher/Research staff estimate
- Other (specify)


d) **Behavioral/emotional adjustment assessed by (check)**
- Clinic personnel
- Parent
- Researcher/Research staff
- School personnel
- Other (specify)


e) **Currency of behavioral/emotional adjustment was assumed (check)**
- At time of study
- Less than one year prior to study
- One to two years prior to study
- More than two years prior to study
Section: Reading Achievement

1. Achievement estimate (Percent of sample)
   - Above grade level
   - At grade level
   - Less than one year below grade level
   - 1.0 - 1.9 years below grade level
   - 2.0 - 2.9 years below grade level
   - More than 2.9 years below grade level

2. Techniques used to determine reading level
   - Standardized individual tests
   - Standardized group tests
   - Teacher estimate
   - Other school personnel estimate
   - Researcher/Research staff estimate
   - Other (specify)

3. Reading achievement assessed by (check)
   - Clinic personnel
   - Researcher/Research staff
   - School personnel
   - Other (specify)

4. When reading achievement was assessed (check)
   - At time of study
   - Less than one year prior to study
   - One to two years prior to study
   - More than two years prior to study

5. Summary values of reading achievement
   Mean
   Standard deviation
   Range
5. ARITHMETIC ACHIEVEMENT
   a) Achievement estimate (Percent of sample)
      ___ Above grade level
      ___ At grade level
      ___ Less than one year below grade level
      ___ 1.0 - 1.9 years below grade level
      ___ 2.0 - 2.9 years below grade level
      ___ More than 2.9 years below grade level

   b) Techniques used to determine arithmetic level (check)
      ___ Standardized individual tests
      ___ Standardized group tests
      ___ Teacher estimate
      ___ Other school personnel estimate
      ___ Researcher/Research staff estimate
      ___ Other (specify) _________________________________

   c) Arithmetic achievement assessed by (check)
      ___ Clinic personnel
      ___ Researcher/Research staff
      ___ School personnel
      ___ Other (specify) _________________________________

   d) When arithmetic achievement was assessed:
      ___ At time of study
      ___ Less than one year prior to study
      ___ One to two years prior to study
      ___ More than two years prior to study

   e) Summary values of arithmetic achievement:
      Mean _____________
      Standard deviation _ _ _ _ _ _ _ _ _ _
      Range _ _ _ _ _ _ _ _
Topical Markers define areas that are specific to a particular study. They may encompass a number of sub-areas. Clarity requires reporting of Topical Markers and specification of components. Topical Markers refer specifically to the LD sample.

<table>
<thead>
<tr>
<th>Topical Marker</th>
<th>Component (examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1. Activity Level</td>
<td>(hyperactivity, hypoactivity)</td>
</tr>
<tr>
<td>T2. Attention</td>
<td>(selective attention, sustained attention)</td>
</tr>
<tr>
<td>T3. Auditory Perception</td>
<td>(listening comprehension, discrimination)</td>
</tr>
<tr>
<td>T4. Fine Motor Coordination</td>
<td>(eye-hand coordination, tactile coordination)</td>
</tr>
<tr>
<td>T5. Gross Motor Coordination</td>
<td>(grip-strength, standing balance, running)</td>
</tr>
<tr>
<td>T6. Memory</td>
<td>(short-term memory, long-term memory, verbal memory)</td>
</tr>
<tr>
<td>T7. Oral Language</td>
<td>(receptive vocabulary, semantics, syntax)</td>
</tr>
<tr>
<td>T8. Visual Perception</td>
<td>(matching symbols, embedded figures)</td>
</tr>
</tbody>
</table>

Other (specify) ____________________________
For each TOPICAL MARKER, report the following items:

**TOPIC:**

a) Component(s) studied
   
   ____________________________________________________________
   
   ____________________________________________________________

b) Techniques/Measures used
   
   ____________________________________________________________
   
   ____________________________________________________________

C) Data collected by (check)
   
   • Clinic personnel
   • Researcher/Research staff
   • School personnel
   • Other (specify)

D) When data were collected (check)
   
   • At time of study
   • Less than one year prior to study
   • One to two years prior to study
   • Over two years prior to study

E) Summary statistics
   
   ____________________________________________________________
   
   ____________________________________________________________
   
   ____________________________________________________________
GENERAL BACKGROUND MARKERS

General Background Markers identify study-relevant information which provides a context for interpreting LD sample data. These markers refer to control/comparison groups as well as LD samples.

G1. YEAR OF STUDY

Month and year data collection began ____________________________
Month and year data collection completed __________________________

G2. GEOGRAPHICAL LOCATION (State or Country)

G3. EXCLUSIONARY CRITERIA FOR SELECTION OF LD SUBJECTS (check)

- Other than normal intelligence
- Hyperactivity
- Medication
- Achievement consistent with general ability
- Physical disabilities
- Sex
- Sensory or sensorimotor deficits
- Race/ethnicity
- Language
- Neurological problems
- Socioeconomic status
- Emotional problems
- School or classroom placement
- Behavior problems

G4. CONTROL/COMPARISON GROUP DATA

a) Subjects (check)

- Learning disabled
- Other special populations (e.g., hyperactive, mentally retarded, physically handicapped)
- Normally achieving
- Other (specify)__________________________________________
b) Factors from LD sample in (check)
   - Proportion of males to females
   - Age
   - Socioeconomic status
   - Ethnicity
   - Intelligence
   - Achievement
   - Other (specify)
FOOTNOTES

1 Due to the small number in the longitudinal group, all subjects who participated were included in data analysis. Five LD boys were matched with their original partners, three were matched with boys in the same school (i.e. their original partners were not subjects), and two were matched with boys in a different school. One boy remained unmatched.

2 The discrepancy score formula is: (Obtained IQ score - M IQ score)/(SD of IQ) - (Obtained achievement test score - M achievement)/(SD achievement). A discrepancy score of zero indicated LD, depending on the year in which the diagnosis was made (In 1982, the State Department of Education changed the minimum discrepancy score from one or above to two or above.

3 Selman & Jacquette (1977) provide the following conversion scale for interpersonal understanding scores:

<table>
<thead>
<tr>
<th>Numerical equivalent</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to .24</td>
<td>0</td>
</tr>
<tr>
<td>.25 to .49</td>
<td>0(1)</td>
</tr>
<tr>
<td>.50 to .74</td>
<td>1(0)</td>
</tr>
<tr>
<td>.75 to 1.24</td>
<td>1</td>
</tr>
<tr>
<td>1.25 to 1.49</td>
<td>1(2) and so on.</td>
</tr>
</tbody>
</table>
References


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Education.


Hill, J. P. (1980). The family. In M. Johnson & K. J. Rehage (Eds.) Toward adolescence: The middle school years (79th


