

Effects of Social Setting on the Friendship Formation of Young Children Differing in Developmental Status

MICHAEL J. GURALNICK

JOHN M. GOTTMAN

MARY A. HAMMOND

University of Washington

This study examined the effects of social setting on the friendship formation of preschool-aged children differing in developmental status. Normally developing children (ND), children with communication disorders (CD), and children with developmental (cognitive) delays (DD) participated in a series of short-term play groups. Each of the 21 play groups consisted of children similar in developmental status (ND, CD, or DD play groups; specialized social settings) or contained primarily ND children with a small number of either CD or DD children (mainstreamed social settings). All children initially were unacquainted with one another and were carefully matched on a variety of family demographic and child characteristic measures. Results revealed that high proportions of unilateral friendships were established for all developmental status groups, but proportions were smaller when employing an index of reciprocal friendships. The proportions of unilateral and reciprocal friendships varied in accordance with a child's developmental status, but were not affected by social setting. In mainstreamed settings, the friendship choices of ND children were affected by peers' developmental status. Moreover, children with reciprocal friends were more socially interactive overall than children without reciprocal friends. The implications of these results for arranging social settings that support friendship formation for children with and without disabilities are discussed.

During the preschool years, most children establish clear preferences for one or more peers, forming friendship that often remain stable for considerable periods (Howes, 1988). The potential developmental significance of these relationships is suggested by the fact that the quality of social interactions within even relatively short-term friendships differs substantially from those between nonfriends. In comparison with acquaintances, friend pairs are characterized by more reci-

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Correspondence and requests for reprints should be sent to Michael J. Guralnick, Center on Human Development and Disability, University of Washington, Box 357920, Seattle, WA 98195-7920.

procity, higher social interaction levels, more positivity and fantasy play, and more equitable, conciliatory, and productive conflict resolution (Hartup, Laursen, Stewart, & Eastenson, 1988; Hinde, Titmus, Easton, & Tamplin, 1985; Lederberg, Rosenblatt, Vandell, & Chapin, 1987; Masters & Furman, 1981; Roopnarine & Field, 1984; Vespo & Caplan, 1993; see review by Newcomb & Bagwell, 1995). Friendships also appear to serve important socioemotional functions including facilitating entry into groups, serving as a source of emotional support, and promoting favorable perceptions of school (Dunn, 1994; Hartup, 1983; Howes, 1988; Ladd, 1990). Moreover, as Howes (1988) pointed out, the ability to form friendships is not only an indicator of a child's peer-related social competence, but it may also provide the context to foster that competence further. Young children without friends appear to be at a considerable developmental disadvantage (Hartup & Sancilio, 1986).

It has now been well documented that children with a range of developmental problems manifest significant difficulties in general aspects of peer-related social competence, such as lower levels of sustained social interactions and limited success in obtaining responses to their social bids (Guralnick, 1990). Considerable evidence indicates that even young children with mild developmental (cognitive) delays exhibit peer interaction difficulties well beyond those expected based on their developmental levels (Guralnick & Groom, 1987; Guralnick & Weinhouse, 1984). Similarly, observations of the peer interaction patterns of children with communication disorders reveal detectable, although less severe, difficulties (Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996b; Rice, Sell, & Hadley, 1991). Interestingly, challenging circumstances, such as the peer group entry task, can create almost overwhelming problems for many children with communication disorders (Craig & Washington, 1993).

Problems identified in connection with general aspects of peer-related social competence suggest the likelihood of associated difficulties in friendship formation. Even though the developmental significance of friendships is likely to be similar for children with and without disabilities, analyses of the friendship patterns of young children differing in developmental status have received only limited attention. Research focusing on the social networks of children with disabilities (Lewis, Feiring, & Brooks-Gunn, 1988) and teacher reports of their friendships (Buysse, 1993) suggest concerns. Similarly, the small number of studies examining friendship patterns in preschool or play group settings have confirmed through observational and peer sociometric measures that unusual friendship formation difficulties are experienced by young children with disabilities, including children with general (cognitive) developmental delays and those with communication disorders. Particular problems are evident in establishing reciprocal as opposed to unilateral friendships (Field, 1984; Gertner, Rice, & Hadley, 1994; Guralnick & Groom, 1988; Roopnarine & Field, 1984).

Nevertheless, existing observational and sociometric studies focusing on children with developmental problems are not informative with regard to the optimal

context for friendship formation. In each of the observational studies noted here, the social context contained heterogeneous groups of children. Specifically, in addition to children with disabilities, the social setting included same-age normally developing children and a substantial proportion of either younger normally developing children (Field, 1984; Guralnick & Groom, 1988) or children for whom English was a second language (Gertner et al., 1994). It is possible that children with disabilities may become isolated in these heterogeneous social settings, particularly those containing primarily normally developing children. The lower levels of peer-related social competence evident for children with disabilities (Guralnick, 1990) combined with the strong tendency for normally developing children to establish preferences for children exhibiting similar behavioral patterns (Rubin, Lynch, Coplan, Rose-Krasnor, & Booth, 1994) are consistent with this possibility.

Evidence does suggest that children's developmental status affects the extent to which they are generally socially integrated within preschool or play-group contexts. Based on rating scale sociometric measures and behavioral observations of social interaction patterns in heterogeneous settings, socially separate subgroups do form between normally developing children and children with developmental delays, and between normally developing children and children with communication disorders (Gertner et al., 1994; Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996a; Guralnick et al., 1996b; Guralnick & Groom, 1987). Correspondingly, when given the opportunity to establish even unilateral friendships with same-age normally developing children, younger normally developing children, or same-age mildly developmentally delayed children, 4-year-old normally developing children show clear friendship preferences for same-age normally developing peers (Guralnick & Groom, 1988). Accordingly, social settings containing children with and without disabilities may tend to restrict the friendship formation prospects for children with disabilities in comparison with more homogeneous settings containing only children with similar disabilities.

Alternatively, there are characteristics of heterogeneous social settings, particularly those that contain a substantial proportion of same-age normally developing children, that suggest certain advantages in friendship formation for children with disabilities. Specifically, a higher rate of social exchanges by children with disabilities is characteristic of settings containing heterogeneous groups of children in comparison with settings containing only children with disabilities, and normally developing children are more responsive to the social bids of peers than are children with disabilities (Field, Roseman, DeStefano, & Koewler, 1981; Guralnick et al., 1996b). In addition, some groups of children with disabilities display overall group and friendship preferences for same-age normally developing children rather than for children with disabilities similar to their own (Guralnick & Groom, 1987, 1988). That no adverse effects on the peer interactions of normally developing have been observed in settings that include children with

disabilities suggests that these advantages for children with disabilities in heterogeneous settings do not occur at the expense of normally developing children (see Buysse & Bailey, 1993, for a review). Taken together, these social interaction patterns found in settings containing primarily normally developing children may well provide circumstances that encourage higher rates of friendship formation for children with disabilities. Unfortunately, no information is available to suggest the extent to which young children's friendship formation is affected by a child's peers as defined by social settings that are homogeneous or heterogeneous with respect to children's developmental status.

Accordingly, the primary purpose of this investigation is to examine the effects of social setting on the friendship formation of preschool-aged children with and without disabilities. To address this issue, a series of play groups consisting of unacquainted children carefully matched on a variety of family demographic and child characteristics were established and compared on measures indexing both unilateral and reciprocal friendships. Each play group was composed of children similar in developmental status (either normally developing children, children with developmental delays, or children with communication disorders) or mixed developmental status (normally developing children and either children with developmental delays or communication disorders). In addition to comparisons across social settings, friendship choices in mixed developmental status settings were analyzed to determine the extent to which a child's developmental status affected those choices.

Finally, these issues are important not only because of the presumed developmental significance of friendship formation for children with disabilities, but also because of their policy and practice implications with regard to the issue of inclusion or mainstreaming. The practice of including or mainstreaming children with and without disabilities in preschool or child care settings during early childhood is encouraged by federal law (IDEA, 1991). Comparisons between mainstreamed (mixed developmental status playgroups) and specialized settings (same developmental status playgroups) carried out in this investigation are highly relevant to the debate regarding optimal educational and developmental environments for young children, particularly because friendship formation is a central theme for parents and professionals regarding the potential value or limitations of inclusive settings (Guralnick, 1994; Guralnick, Connor, & Hammond, 1995).

METHOD

Overview and Play-Group Methodology

Previously unacquainted groups of children were brought together to form a series of 21 separate play groups ($N = 6$ children per play group). The play groups differed from one another in terms of two factors: (a) the developmental status of the children, that is, normally developing children, children with com-

munication disorders, or children with developmental (cognitive) delays, and (b) the social setting. For the setting variable, play groups consisted either only of children similar in developmental status (all normally developing children, all children with communication disorders, or all children with developmental delays) or of normally developing children and children with either developmental delays or communicative disorders. No group contained children with both types of disabilities. As noted, play groups consisting of children similar in developmental status are referred to as specialized, whereas those settings containing children differing in developmental status are referred to as mainstreamed.

Of the 21 play groups, 9 were specialized; 3 consisting of only normally developing children, 3 consisting of only children with communication disorders, and 3 consisting of only children with developmental delays. The remaining 12 play groups were mainstreamed, 6 consisting of four normally developing children and two children with communication disorders, and 6 consisting of four normally developing children and two children with developmental delays. Each child participated in only one play group.

As will be described, a matching procedure ensured that normally developing children assigned to mainstreamed or specialized playgroups, as well as children with communication disorders or developmental delays assigned to mainstreamed or specialized playgroups, were equivalent within each of the two types of play groups (settings) in terms of child characteristic measures (chronological age, cognitive, language, adaptive behavior, and behavior problems). A similar matching process ensured equivalence across all play groups (developmental status and setting) for family demographic measures (family social status, marital status). During each 2-week play group, the social and play interactions of each child were recorded during a designated free-play period.

The play-group methodology used in this study is similar to that described by Coie and Kupersmidt (1983) and Dodge (1983), involving normally developing children varying in social status, and to the work of Guralnick and Groom (1987), who established a series of mainstreamed play groups involving children with developmental delays. Moreover, the friendship analyses reported here are part of a more extensive investigation of children's peer-related social competence utilizing the play-group methodology (Guralnick et al., 1996a, 1996b). In all of these studies, expected developmental patterns emerged even in the context of short-term play groups. In addition, the play-group methodology has a number of characteristics uniquely suited to the study of emerging social interaction patterns. First, children unacquainted with one another can be brought together to form play groups, thereby allowing the study of friendship formation to occur initially free of reputational factors or previously established social status hierarchies (Hymel, Wagner, & Butler, 1990). Second, control over the selection of participants and the ability to achieve appropriate matches of family and child characteristics in the formation of the play groups minimize sampling bias inherent in the study of intact groups of mainstreamed or specialized children. Finally,

the laboratory playroom housing play groups permits the use of sophisticated recording techniques and the application of multiple coding systems.

Participants

Normally developing children were recruited through direct contact with administrators and teachers of public and private nursery schools and day care programs. Children with communication disorders and developmental delays were recruited from appropriate community-based service programs and from rosters of children who had received clinical evaluations from diagnostic clinics. The chronological age range for all participants was established at 4 years 3 months to 5 years 6 months. Because it was not possible from a practical perspective to add gender as a separate variable, and more children with identified developmental problems were male, only boys were selected to participate in the 21 play groups. Similarly, to avoid potential confounds because of race, only Caucasian children were selected. In addition, children were excluded from participating for any of the following reasons: (a) having three siblings within 3 years of age of the child being considered, (b) teacher reports of major disruptive behavior problems, (c) being legally blind or having major uncorrected hearing loss, (d) having significant motor problems, (e) being acquainted with other children in the play group, and (f) having lived with the primary caregiver less than 1 year.

For selection and matching purposes the revised version of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI-R; Wechsler, 1989) was administered individually to all prospective participants. Full Scale IQ (FSIQ) scores as well as performance (PIQ) and verbal (VIQ) scores were obtained. Two language tests also were administered individually to each child. First, the revised version of the Test for Auditory Comprehension of Language (TACL-R; Carrow-Woolfolk, 1985) was administered. The TACL-R consists of scales for word classes and relations, grammatical morphemes, and elaborated sentences. A total score (standard score) is also obtained. Second, to supplement the receptive language assessment of the TACL-R, the expressive components of the Preschool Language Scale (PLS) were administered (Zimmerman, Steiner, & Pond, 1979). Because of the lack of standardization, only raw scores were used (range, 0–48 for verbal ability and 0–23 for articulation).

In addition to cognitive and language measures, mothers served as respondents for assessments of their child's adaptive behavior and behavior problems. First, the Vineland Adaptive Behavior Scales Survey Form (Sparrow, Balla, & Cicchetti, 1984) was administered to mothers by trained interviewers. Standard scores were obtained for each of the four domains (communication, daily living skills, socialization, and motor skills), as well as for the total adaptive behavior score. Second, the mother's assessment of her child's behavior problems was obtained from the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983). Mothers rated the frequency of different behavior problems from a 118-item questionnaire using a 3-point scale. Only the broad-band internalizing and externalizing scales (*T* scores) in conjunction with a total behavior problem score

were used for the selection of participants and matching purposes. Higher scores indicate greater perceived behavior problems. Finally, responses to a parent questionnaire provided basic demographic information. The Hollingshead Four Factor Index of Social Status (Hollingshead, 1975) was used to calculate a measure of family status (range, 8–66).

Beyond the inclusionary and exclusionary criteria applied to all participants, as noted, specific criteria also were established for each of the three groups of children differing in developmental status. Specifically, normally developing children were included if they achieved a FSIQ score between 90 and 130. Children were excluded, however, for any of the following reasons: (a) VIQ or PIQ lower than 90, (b) TACL-R less than 90, (c) CBCL Total Problem score greater than the 90th percentile, (d) being enrolled in a preschool program in which more than 15% of the children have established disabilities, or (5) having a sibling with an established disability.

For children with communication disorders, the selection criteria were more complex. To be included a child must have achieved a PIQ equal to or greater than 90 or a FSIQ greater than 85, and have completed a comprehensive speech, language, and hearing assessment administered by qualified personnel resulting in a categorical diagnosis of a communication disorder and a recommendation for regular therapy. In addition, as a minimal protection against possible diagnostic errors, particularly in view of the wide variability in testing procedures found in the community, and to more carefully define the study population to be included in the sample, children with communication disorders were required to meet one or more of the following criteria: (a) a $PIQ > VIQ$ differential on the WPPSI-R of at least 15 points, (b) a TACL-R total score equal to or less than 90, or (c) a diagnosed articulation disorder. Children were excluded if they obtained a TACL-R score less than 55, a CBCL Total Problem score greater than the 98th percentile, held a primary diagnosis of stuttering, or had an unrepaired cleft palate.

The criteria met by the 30 children with communication disorders who participated in the specialized and mainstreamed play groups were as follows: (a) articulation disorder only ($N = 6$); (b) $PIQ - VIQ$ differential greater than or equal to 15 points only ($N = 11$); (c) TACL-R equal to or less than 90 only ($N = 4$); and (d) children with both a $PIQ - VIQ$ differential and low TACL-R score ($N = 9$). In addition, comparisons among children with high and low receptive language scores (based on a TACL-R score of 90 as the cutoff point) and high and low expressive language scores (based on the PLS, median split with a cutoff score of 25) revealed an even distribution of children with receptive only, expressive only, and both receptive and expressive deficits.

The rationale for this complex series of criteria for selecting children with communication disorders reflects the general lack of agreement in the field for identifying research participants (McCauley & Demetras, 1990), and that it was not possible nor appropriate for the research staff to administer a complete diagnostic battery. As noted, all children were required to have received a cate-

gorical diagnosis of a communication disorder and be recommended for regular therapy by qualified specialists. With regard to our additional criteria, it is important to point out that the TACL (now revised) is the most frequently used standardized test for selecting children with language impairments (McCauley & Demetras, 1990). Moreover, although it is recognized that the $PIQ > VIQ$ differential is not sufficient to guarantee the existence of a communication disorder, it is nevertheless characteristic of children so diagnosed (Stark & Tallal, 1981).

Finally, children were identified as developmentally delayed if they achieved an FSIQ between 52 and 80. Children were excluded, however, for any of the following reasons: (a) PIQ greater than 90, (b) CBCL Total Problem scores greater than the 98th percentile, and (c) TACL-R total score less than 55 or greater than 90.

Matching Procedures

Children with communication disorders or developmental delays were first identified for each play group, with normally developing children participating in both mainstreamed and specialized groups subsequently recruited from the same neighborhoods to maximize similar demographic characteristics. Children were tested on a continuous basis across a 4-year period, and play groups were formed when an appropriate number of children meeting criteria were recruited. Specialized and mainstreamed play groups were interspersed over the 4 years. On occasion, a child meeting established criteria was not included if his or her test scores were inconsistent with matching projections for the demographic and child characteristic measures.

As indicated in Table 1, as a result of this process, all child characteristic measures were equivalent for the normally developing children participating in the mainstreamed and specialized playgroups ($p > .05$). Similar equivalencies were obtained for the children with communication disorders and developmental delays participating in specialized and mainstreamed settings. Although 126 children were recruited and participated in the 21 play groups, 5 participants were excluded from the friendship analyses because of failure to meet a minimum criterion of 12 social interactions. Excluded were 3 children with developmental delays (1 in the specialized and 2 in the mainstreamed play groups) and 2 with communication disorders (1 each in specialized and mainstreamed play groups). Table 1 contains child characteristic measures for the reduced sample. In addition, to further ensure an appropriate match between children with communication disorders participating in mainstreamed and specialized settings, similar proportions were maintained for children selected on the basis of the $PIQ > VIQ$ differential, the low TACL-R Full Scale score (< 90), and a diagnosis of articulation disorder. As noted, only a small number of children received a diagnosis of articulation disorder only.

As expected, significant differences were obtained for most of the child char-

TABLE 1
Child Characteristics as a Function of Developmental Status and Social Setting

Child Characteristics	Normally Developing						Communication Disordered						Developmentally Delayed						
	Specialized (N = 18)			Mainstreamed (N = 48)			Specialized (N = 17)			Mainstreamed (N = 11)			Specialized (N = 17)			Mainstreamed (N = 10)			
	M	SD		M	SD		M	SD		M	SD		M	SD		M	SD		
WPPSI-R																			
Full scale IQ ^a	110.06	(10.88)		111.60	(9.57)		96.35	(12.48)		95.73	(10.40)		65.35	(9.85)		70.10	(9.60)		
Performance IQ ^b	110.83	(13.01)		111.56	(12.13)		105.24	(13.70)		106.09	(10.48)		67.00	(10.89)		72.00	(7.48)		
Verbal IQ ^a	107.39	(12.19)		109.13	(9.65)		89.24	(10.10)		87.73	(14.68)		69.88	(9.96)		73.30	(8.91)		
Performance-verbal IQ ^c	3.44	(16.83)		2.44	(14.33)		16.00	(9.12)		18.36	(17.28)		-2.88	(10.43)		-1.30	(10.81)		
Full scale MA ^a	61.51	(7.18)		63.10	(7.12)		55.06	(6.62)		53.05	(4.74)		38.16	(7.13)		40.64	(4.48)		
Performance MA ^b	61.93	(8.19)		63.08	(8.23)		60.12	(7.11)		58.87	(6.23)		39.21	(7.93)		41.81	(5.53)		
Verbal MA ^a	60.03	(7.84)		61.70	(7.11)		51.08	(5.92)		48.70	(7.21)		40.71	(6.85)		42.43	(4.98)		
TACL-R																			
Total scale ^a	105.06	(7.05)		106.67	(9.83)		94.53	(9.31)		89.73	(13.13)		74.82	(9.68)		73.20	(11.40)		
Word class & relations ^a	106.33	(9.25)		108.38	(11.85)		96.12	(14.24)		92.82	(9.47)		75.59	(18.95)		79.90	(8.62)		
Grammatical morphemes ^a	103.06	(9.73)		103.96	(11.11)		92.12	(11.54)		88.82	(15.70)		78.00	(9.29)		71.80	(15.77)		
Elaborated sentences ^a	105.06	(13.48)		107.35	(11.24)		99.18	(12.43)		92.82	(13.45)		82.06	(7.48)		82.60	(11.50)		
PLS																			
Verbal ability ^a	35.83	(4.97)		37.38	(4.33)		27.18	(5.55)		24.00	(7.73)		19.41	(9.19)		23.40	(6.83)		
Articulation ^d	19.83	(2.29)		21.33	(2.88)		14.00	(3.21)		13.75	(3.45)		12.94	(6.56)		15.60	(5.32)		

(Continued)

TABLE 1
Continued

Child Characteristics	Normally Developing						Communication Disordered						Developmentally Delayed					
	Specialized (N = 18)		Mainstreamed (N = 48)		Specialized (N = 17)		Mainstreamed (N = 11)		Specialized (N = 17)		Mainstreamed (N = 10)		Specialized (N = 17)		Mainstreamed (N = 10)			
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD		
Vineland																		
Total adaptive behavior ^a	97.56	(11.12)	95.04	(10.16)	87.00	(13.74)	82.55	(11.51)	67.29	(8.06)	72.20	(8.92)	72.20	(8.92)	77.60	(12.00)	77.10	(11.16)
Communication ^d	96.00	(9.76)	96.85	(7.43)	83.29	(8.21)	80.45	(8.81)	76.88	(12.87)	77.60	(12.00)	77.60	(12.00)	77.10	(11.16)	77.10	(11.16)
Daily living skills ^a	97.61	(11.06)	92.02	(11.75)	87.47	(13.78)	85.55	(13.29)	70.06	(7.14)	77.10	(11.16)	77.10	(11.16)	77.10	(11.16)	77.10	(11.16)
Socialization ^b	99.39	(8.53)	99.69	(10.28)	94.35	(10.94)	92.64	(14.83)	78.12	(9.10)	83.00	(13.35)	83.00	(13.35)	83.00	(13.35)	83.00	(13.35)
Motor skills ^b	100.83	(9.65)	97.98	(12.99)	95.88	(17.14)	88.09	(10.65)	64.18	(14.50)	72.30	(13.87)	72.30	(13.87)	72.30	(13.87)	72.30	(13.87)
CBCL																		
Total behavior problems ^a	46.61	(7.82)	47.79	(7.85)	54.65	(9.14)	51.36	(8.94)	55.18	(9.06)	52.20	(9.72)	52.20	(9.72)	50.10	(12.21)	52.90	(5.17)
Externalizing	48.61	(8.42)	48.56	(9.17)	51.47	(9.43)	51.00	(8.51)	50.00	(10.69)	50.10	(12.21)	50.10	(12.21)	50.10	(12.21)	50.10	(12.21)
Internalizing ^a	46.00	(9.31)	47.71	(7.84)	53.76	(7.00)	52.91	(8.78)	58.35	(10.21)	52.90	(5.17)	52.90	(5.17)	52.90	(5.17)	52.90	(5.17)

Note. Standard deviations are in parentheses. WPPSI-R = Wechsler Preschool and Primary Scale of Intelligence; VIQ = verbal IQ; PIQ = performance IQ; FSIQ = Full-Scale IQ; TACL-R = Test of Auditory Comprehension-Revised; PLS = Preschool Language Scale; VABS = Vineland Adaptive Behavior Scales; CBCL = Child Behavior Checklist; ND = normally developing; CD = communication disorder; DD = developmental delay.

^aND > CD > DD.

^bND = CD > DD.

^cCD > ND, DD.

^dND > CD, DD.

^eCD = DD > ND Based on Sheffe tests, $p < .05$.

acteristic measures (see Table 1 for details) when comparing normally developing children, children with communication disorders, and children with developmental delays. The only exceptions were child's chronological age and CBCL externalizing factor. Finally, for family demographics, 88.4% of the mothers were partnered with an average Hollingshead index of 45.91 (medium business, minor professional). The six groups did not differ for these measures, $p > .05$. Finally, because normally developing children participated in mainstreamed play groups containing either children with communication disorders or developmental delays, it was important to confirm that the two groups of normally developing children were equivalent. Separate ANOVAs comparing normally developing children in the two types of mainstreamed playgroups ($N = 24$ per group) revealed no differences on family demographics or child characteristics, with the only exception found for the daily living skills scale of the Vineland Adaptive Behavior Scale, $F(1, 40) = 5.01$, $p < .05$. In view of the large number of ANOVAs carried out and the fact that neither the Vineland Total Score nor the three other scales yielded significant differences, this daily living scale finding was not given further consideration in the analyses.

Play-Group Setting and Procedure

Each six-child playgroup operated 2.5 hr per day, 5 days per week, for 2 weeks (10 sessions) in either a morning or afternoon period. Children arrived in separate vehicles (via parents or drivers), and parents were asked to avoid contact with the other families or children for the duration of the play group. Parents were paid \$100 plus transportation expenses.

Play groups were supervised by a teacher and a graduate assistant in a specially designed laboratory playroom. Children participated in a series of group and individual activities typical of preschool programs, including circle time, music, art, a snack, and story. During two daily 30-min free-play periods, children had access to the extensive array of toys and equipment found in the playroom. Separate areas provided opportunities for housekeeping, blocks, puzzles, games, and precast and manipulative toy play activities, as well as an option for individual reading. Although the teacher generally encouraged social and play interactions among the children in other activities, during free-play periods the teacher limited her interactions to providing assistance when necessary.

Using split-screen technology, children's social and play interactions were videorecorded by two remote-controlled cameras mounted at either end of the playroom and a hand-operated camera in an adjacent observation room. The child being recorded at the time (focal child) wore a specially designed lightweight vest equipped with a professional quality wireless microphone and transmitter secured in a hidden pocket in the back of the vest. Other microphones were placed discreetly throughout the room, and a control panel of mixers balanced the auditory signals.

Each child was observed for a total of 60 min during free play over the 2-week period. Recording commenced on the second play-group day and was divided into segments of 10 consecutive min for each of six recording periods per child. The order of recording children was randomized within blocks of six 10-min segments, and no child was observed more than once per day. In addition, recordings were distributed such that each child was videotaped on three occasions within the 1st week (Time 1) and on three occasions during the 2nd week (Time 2).

As will be described, videotaped recordings were analyzed using two separate scales; one focusing on more global measures of social participation and cognitive play, and the other on individual social behaviors. Data obtained from these scales formed the basis for subsequent analyses of friendship formation.

Observational Measures

Social Participation and Cognitive Play. Parten's (1932) index of social participation formed the basis for characterizing global differences in children's peer relationships. Despite legitimate concerns regarding the sequential and hierarchical nature of this measure of social participation (Bakeman & Brownlee, 1980; Roper & Hinde, 1978; Rubin, Maioni, & Hornung, 1976; Smith, 1978), variations and modifications of the Parten scale, many including measures of cognitive play based on Smilansky's (1968) categories (see Rubin, 1985), appear to have considerable utility. Various forms of the scale have been shown to be sensitive to developmental changes over time (Barnes, 1971; Rubin & Krasnor, 1980; Rubin, Watson, & Jambor, 1978; Smith, 1978), to socioeconomic status (Rubin et al., 1976), to environmental conditions (Vandenberg, 1981), to the familiarity of peers (Doyle, Connolly, & Rivest, 1980), and to differences between mixed-age and same-age groupings (Goldman, 1981). Moreover, variations of the scale have been applied effectively to populations of children with disabilities (Guralnick et al., 1996a, 1996b; Guralnick & Groom, 1985, 1987; Higgenbotham & Baker, 1981) and may well be of value in identifying children at risk for developmental problems (Rubin, 1982; Rubin, LeMare, & Lollis, 1990).

A time code superimposed on each videotape in conjunction with a remotely controlled tape-stop device allowed observers to view tapes at 10-sec intervals. Coders recorded the categories of social participation and level of cognitive play (where required) during each 10-sec interval using a slightly modified version of the scale developed by Rubin (1985). This scale consists of 10 mutually exclusive and exhaustive categories, with only the dominant category coded in each interval. The first three were derived from Parten's (1932) social participation categories consisting of the following play classifications: (a) solitary (playing alone), (b) parallel (playing next to another child), and (c) group (playing with another child; a combination of Parten's associative and cooperative play catego-

ries). Nested within these three social participation categories are four measures of cognitive play based on the work of Smilansky (1968): (a) functional (simple repetitive play), (b) constructive (learns to use materials, creates something), (c) dramatic (role taking and pretend play), and (d) games with rules (child behaves in accordance with prearranged rules). If any 10-sec interval was coded as either solitary, parallel, or group play, then one of the four cognitive play categories was also scored.

The seven remaining categories consisted of the following: (a) unoccupied behavior (child not playing), (b) onlooker behavior (child watches other children but does not enter into play), (c) reading or listening (reading, leafing through a book, listening to a tape), (d) exploration (examining physical properties of objects), (e) active conversation (talking, questioning, and suggesting to other children but not playing), (f) transition (moving from one activity to another), and (g) adult-directed (any activity with an adult).

To obtain information about the child with whom the focal child interacted, the identity of the peer for the group, parallel play, active conversation, and onlooker categories was noted whenever these categories were coded. When more than one child was involved in the interaction, the one in closest proximity to the focal child was coded. More specific definitions for the social participation and cognitive play categories can be found in Rubin's (1985) manual. (Coding rules and related modifications of this scale as well as the coding manual for the Individual Social Behavior Scale may be obtained by writing the first author.)

Individual Social Behaviors. Each videotape was reviewed a second time to examine specific peer-related social behaviors. For this purpose, the Individual Social Behavior Scale was developed based on the work of White and Watts (1973) and adapted in a manner similar to Doyle et al. (1980) and to Guralnick (Guralnick et al., 1996a, 1996b; Guralnick & Groom, 1985, 1987). The cluster of individual social behaviors originally described by White and Watts (1973), including the ability to gain the attention of peers, to use peers as resources, to express affection, and to direct peers successfully during play, has been employed extensively. These component behaviors increase over the preschool years, correspond to other measures of social competence with peers such as teacher ratings and peer sociometrics, vary with the familiarity of interacting children, and correlate positively with social participation (Connolly & Doyle, 1981; Doyle et al., 1980; Wright, 1980).

Specifically, observers recorded continuously the occurrence of individual social behaviors defined by 34 categories. The following categories were designed to record social interactions of the focal child as directed to peers: (1) seeks attention of peer; (2) uses peer as a resource; (3) leads in peer activities—direct, positive or neutral; (4) leads in peer activities—indirect, positive or neutral; (5) leads in peer activities—direct, negative; (6) leads in peer activities—indirect, negative; (7) imitates a peer; (8) involved observation of peer; (9)

joins peer(s) in specific activity; (10) verbally supports peer's statement; (11) verbally competes with peer; (12) shows pride in product to peer; (13) competes with peer for adult's attention; (14) expresses affection to peer; (15) shows empathy toward peer; (16) expresses hostility toward peer; (17) takes unoffered object; (18) defends property; and (19) seeks agreement from peer.

Fourteen of the remaining categories focused on the social behaviors of the focal child in response to directed activities of peers. Categories consisted of following the lead of a peer (four categories tied to direct or indirect and positive, neutral or negative dimensions), failing to follow the lead of a peer (similar four categories), responding and failing to respond to a peer's attempt to use the focal child as a resource (two categories), responding and failing to respond to a peer's attention-seeking behavior (two categories), and responding and failing to respond when a peer sought agreement from the focal child (two categories). The final category was one in which the focal child served as a model for a peer.

Ten of the categories designed to record the social interactions of the focal child as directed to peers (1–6, 13, 17–19) also were judged as either successful or unsuccessful. Definitions for successful or unsuccessful social interactions were specific to each category of social behavior. For example, the category "gains the attention of peer" would be coded as successful if the peer attended within 5 sec, either visually or verbally, or moved closer to or touched the focal child. The response of the peer must be appropriate to the attention-getting effort of the focal child. Finally, the identity of the peer interacted with also was recorded following the procedures outlined for the social participation scale.

Coders were free to review any segment of the tape as often as needed. The coding protocol was divided into 10-sec intervals following the time codes superimposed on the tape. Although coding was continuous, these divisions provided a structure for the coding task and served as a framework for establishing reliability within the event-based system.

Reliability. Prior to coding, raters were trained for a period of 12 to 19 weeks on the two observation scales. Videotapes of pilot play groups were used for training and final prestudy reliability assessments. Following the training program, all raters achieved the minimum average criterion necessary for participation—70% interobserver agreement for each of the major categories for ten 10-min segments from a reliability tape (containing complex segments) for each of the two scales. Reliability also was obtained during the course of the study for 25% of the play-group tapes, selected on a random basis but balanced to ensure representation from the two types of social settings and the three developmental status groups. Tapes also were selected to ensure balance across each of the six observation periods for each play group.

For the social participation and cognitive play scale, reliability was based on percentage agreement obtained across each of the 10-sec observation intervals (number of agreements divided by the total number of observations and

transformed to a percentage). Cohen's (1960) kappa also was calculated where appropriate. For prestudy reliability, raters agreed on a mean of 84% (range, 83%–85%) of the intervals (kappa = .80) for the 10 categories of the social participation scale. Using only those instances in which observers agreed that a cognitive play coding was required, interobserver agreement averaged 94% (range, 93%–96%) for the four cognitive play categories. Average agreement with regard to the identity of the peer involved in the social interaction was 85% (range, 80%–93%). During the course of the study, average interobserver agreement continued to be high in all instances for each of the 21 groups: social participation, 86% (range, 82%–92%), kappa = .80 (range, .70–.97); cognitive play, 91% (range, 82%–97%); and the identity of the peer, 90% (range, 84%–96%).

For the Individual Social Behavior Scale, raters were considered to be in agreement if codes matched within a specified 30-sec interval using the "best fit" matching method (Hollenbeck, 1978). This method evaluates the likely concordance between observers on event codes within each interval. (A reliability manual describing this method is available from the first author.) In addition to the 34 individual social behavior categories, a "no interaction" event was included to complete the possible options within each interval. Percentage agreement was obtained for each 10-min segment by taking the total number of agreements, dividing by the total number of observed individual social interactions, and transforming to a percentage. Calculated in this manner, the average prestudy agreement for this scale was 84% (range, 84%–87%), kappa = .75. Given agreement on the occurrence of a particular social interaction, observers further agreed on an average of 82% (range, 80%–90%) of the occasions as to whether the event could be classified as successful or unsuccessful, and an average of 98% (range, 97%–99%) as to the identity of the peer involved in the social interaction. Mean reliabilities for observations carried out during the course of the study (25% of the total) were as follows: individual social behaviors, 86% (range, 83%–92%), kappa = .78 (range, .75–.83); successful or unsuccessful, 90% (range, 84%–100%); and identity of peer, 95% (range, 91%–99%).

RESULTS

Friendship pairs were identified on the basis of a formula derived from the following 18 positive social interaction codes from the Individual Social Behavior Scale (ISBS): (1) joins, (2) verbal support, (3) verbal imitation, (4) pride in product, (5) affection, (6) empathy, (7) lead peer direct (positive, neutral), (8) lead peer indirect (positive, neutral), (9) follow peer (direct positive, neutral), (10) follow peer indirect (positive, neutral), (11) use peer as resource, (12) respond to peer as resource, (13) imitation, (14) being a model, (15) seeking attention of peer, (16) responding to peer's attention, (17) seeking agreement from a peer, and (18) responding to peer's seeking agreement. Approximately

59% of all child-child social interactions occurring across the six sessions were positive.

Measures of both unilateral and reciprocal friendships were obtained. To determine whether a child established a unilateral friendship, peer preferences for each (focal) child were evaluated by constructing a matrix consisting of the total frequency (summed) of the 18 positive social behaviors distributed in relation to the focal child's five potential companions in the play group (minimum of 12 social interactions). The proportion of total interactions occurring between the focal child and each of his companions was then calculated. To be considered a unilateral friend, at least 33% of the focal child's total positive social interactions must have occurred with a specific companion. More than one friend could be identified by this procedure. For the reciprocal friendship measure, the matrix of interactions was used to identify those children who not only met the 33% criterion for a particular child in their play group (unilateral friendship) but also were selected by that child as a friend (also meeting the 33% criterion). More than one reciprocal friendship pair also could be identified using this procedure. Each of these two friendship measures was calculated separately for each child participating in the 21 play groups.

To examine whether the friendship index based on the frequency of positive social interactions yields results similar to durational indices (see Hinde et al., 1985), the following analysis was carried out. An approximation to a durational criterion was obtained by selecting all of the observational intervals consisting of group and parallel play (each interval was 10 sec in duration) derived from the Peer Observation Scale (POS). A matrix was then created identical to that based on the frequency of positive social interactions, and preferences for individual children were identified in the same way using both unilateral and reciprocal criteria. The results of this comparison revealed that the percentage of friendship selections that would have resulted using the durational approximation index was highly similar to that using the positive social interaction index. Specifically, for unilateral friendships, percentage agreement for normally developing children (ND), children with communication disorders (CD), and children with developmental delays (DD), was 80.3%, 85.7%, and 88.9%, respectively. A slightly lower level of agreement was found for reciprocal friendships. Percentage agreement for ND, CD, and DD children was 62.1%, 82.1%, and 77.8%, respectively. Similar levels of agreement were obtained for both friendship measures calculated separately for the specialized and mainstreamed settings.

Comparisons Among Developmental Status Groups

Initially, children in both social settings (mainstreamed and specialized) were combined within each of the three developmental status groups (ND, CD, DD), and the overall proportion of children in each group who met the friendship criteria were compared. Overall, a high proportion of children in each of the three developmental status groups established unilateral friendships (ND = .833;

CD = .964; DD = .778). Proportions tests (two-tailed) revealed that only the CD and DD groups differed from one another, $Z = 2.07, p < .05$. In comparison, a far smaller proportion of children was able to establish reciprocal friendships (ND = .455; CD = .571; DD = .222). Proportion tests (two-tailed) indicated that, overall, children with developmental delays formed reciprocal friendships least often (ND vs. DD: $Z = 2.09, p < .05$; CD vs. DD: $Z = 2.64, p < .01$). No difference was found for the comparison between ND and CD groups, $p > .05$.

Social Setting

The proportion of children in each of the three developmental status groups meeting unilateral and reciprocal friendship criteria as a function of social setting (specialized versus mainstreamed) is presented in Table 2. The first set of parentheses under each proportion contains the basis for the proportion, whereas the second set of parentheses contains the number of children with two peer preferences. Preliminary analyses comparing the proportions of unilateral and reciprocal friendships of ND children when participating with CD or DD children in separate mainstreamed play groups revealed no differences for either type of friendship (proportions tests; two-tailed; $Z > .05$). Consequently ND children participating in both types of mainstreamed play groups were combined in Table 2.

As already indicated, the vast majority of children from all three developmental status groups formed unilateral preferences, evident even within the relatively brief 2-week period. Separate proportions tests comparing the two social settings for each group did not yield any significant differences, $p > .05$. As noted, for reciprocal friendships, a much reduced proportion of children meeting the criterion was obtained across groups, but once again, no social setting effects were obtained, $p > .05$. A strong trend for the CD group can be noted, $p < .10$, with a greater proportion of children developing reciprocal friendships in specialized in comparison to mainstreamed settings.

Friendship Patterns in Mainstreamed Playgroups

The extent to which a child's developmental status was related to the selection of unilateral and reciprocal friendships in mainstreamed play groups is depicted in Table 3. Preliminary analyses comparing the proportion of ND children selecting either DD or CD children in their respective mainstreamed play groups revealed no significant differences for either unilateral or reciprocal friendships, $p > .05$. Consequently, friendship choices were combined for ND children in Table 3.

Separate one-sample Chi-square tests (two-tailed) were used to evaluate differences between observed proportions of friendship choices for each of the three groups of children and expected proportions (based on the availability of children in each developmental status peer group). For both unilateral and reciprocal friendships, CD and DD children distributed their friendship choices consistent with the availability of children from different developmental status peer groups. However, ND children established friendships with other ND children to a great-

TABLE 2
 Comparisons of Friendship Formation Between Settings for Each Developmental Status Group

Proportion Meeting Criterion	Normally Developing		Communication Disordered		Developmentally Delayed	
	Specialized	Mainstreamed	Specialized	Mainstreamed	Specialized	Mainstreamed
Unilateral	.833 (15/18)(3)	.833 (40/48)(4)	1.000 (17/17)(4)	.909 (10/11)(3)	.824 (14/17)(1)	.700 (7/10)(1)
Reciprocal	.389 (7/18)(1)	.479 (23/48)(1)	.706 (12/17)(0)	.364 (4/11)(0)	.235 (4/17)(0)	.200 (2/10)(0)

Note. The first set of parentheses contains the basis for the proportion. The second set of parentheses contains the number of children with two peer preferences.

TABLE 3
Distribution of Friendship Choices for Each Developmental Status Group
in Mainstreamed Settings

Friendship Choices Peer Group	Normally Develop- ing		Communication Disordered		Developmentally Delayed	
		<i>n</i> (%)		<i>n</i> (%)		<i>n</i> (%)
Unilateral	ND	36 (81.8)	ND	11 (84.6)	ND	7 (87.5)
	DD/CD	8 (18.2)	CD	2 (15.4)	DD	1 (12.5)
Reciprocal	ND	20 (83.3)	ND	2 (50.0)	ND	2 (100.0)
	DD/CD	4 (16.7)	CD	2 (50.0)	DD	0 (0)

Notes. ND = normally developing; CD = communication disorder; DD = developmental delay. Expected percentages for the ND group were 60 for ND and 40 for CD/DD peer groups; for the CD and DD groups, expected percentages were 80 for the ND and 20 for the CD/DD peer groups.

er extent than expected on the basis of availability for unilateral friendships, $\chi^2(1) = 8.73$, $p < .01$, and for reciprocal friendships, $\chi^2(1) = 5.44$, $p < .05$.

Comparisons Between Children With and Without Reciprocal Friends

In the final set of analyses, children with and without reciprocal friends were compared within each developmental status group irrespective of setting. Separate ANOVAs for each of the family demographic or child characteristic measures (total scores or full scale measures only) were carried out. These indicated that children with and without reciprocal friends did not differ for children in DD and CD groups, $p > .05$. For ND children, only the TACL-R total scale differentiated ND children with ($M = 108.77$) and without ($M = 104.11$) reciprocal friends, $F(1, 64) = 4.48$, $p < .05$.

Subsequent analyses examined the hypothesis that those children who established a reciprocal friendship would exhibit a higher overall level of social interactions with their peers. Separate sets of measures were selected from the POS and ISBS codes. For the POS, children with and without friends were compared on measures of group and parallel play, a solitary play composite (consisting of solitary play, reading, exploring, and unoccupied categories), active conversation, transition, and onlooker. The cognitive play categories of dramatic, constructive, and functional play also were included. For the ISBS, the six most frequently occurring categories were selected and transformed into proportions of occurrence relative to total ISBS codes. This set of measures reflects the pattern of social interactions directed to peers by children with and without friends. Finally, a series of ISBS summary scores was selected, consisting of total positive and negative behaviors, the proportion of positive behaviors, and the proportion of successful social bids. Multivariate analyses were first carried out for the six POS categories and the six ISBS proportions. Separate

TABLE 4
Comparisons Between Children With and Without Reciprocal Friends

	Normally Developing			Communication Disordered			Developmentally Delayed					
	With Friends (N = 30)	Without Friends (N = 36)		With Friends (N = 16)	Without Friends (N = 12)		With Friends (N = 6)	Without Friends (N = 21)				
	M	SD	M	SD	M	SD	M	SD	M	SD		
Social Participation Categories												
Group play	40.57	(25.81)	42.58	(30.01)	56.06	(39.25)	32.42	(33.13)	27.67	(18.91)	26.86	(29.71)
Parallel play	86.07	(28.08)	92.25	(44.66)	92.38	(36.82)	77.00	(24.06)	53.00	(41.52)	66.38	(52.38)
Solitary play composite ^a	148.73	(51.61)	143.92	(47.34)	144.62	(47.60)	159.83	(45.89)	192.33	(58.13)	189.38	(63.16)
Active conversation	38.57	(22.25)	29.72	(13.15)	26.63	(13.21)	22.50	(14.44)	21.83	(15.17)	17.24	(16.99)
Transition	10.27	(4.67)	13.78	(6.84)	14.94	(8.06)	21.92	(8.63)	18.50	(12.00)	19.86	(13.11)
Onlooker	27.43	(18.53)	29.83	(19.33)	18.19	(13.04)	37.42	(22.26)	30.67	(31.33)	29.14	(23.69)
Cognitive Play Proportions												
Dramatic	.40	(.19)	.42	(.16)	.45	(.19)	.41	(.17)	.27	(.20)	.30	(.20)
Constructive	.56	(.19)	.54	(.15)	.52	(.20)	.56	(.15)	.65	(.22)	.61	(.19)
Functional	.04	(.05)	.04	(.04)	.03	(.03)	.04	(.05)	.09	(.11)	.09	(.10)
ISBS (Proportions)												
Observe	.07	(.06)	.08	(.08)	.05	(.05)	.16	(.17)	.09	(.13)	.14	(.13)
Lead direct positive	.11	(.05)	.10	(.04)	.11	(.04)	.06	(.04)	.10	(.07)	.06	(.05)
Lead indirect positive	.08	(.04)	.07	(.03)	.06	(.04)	.03	(.03)	.05	(.05)	.02	(.02)
Lead direct negative	.07	(.04)	.07	(.04)	.09	(.05)	.08	(.08)	.07	(.04)	.09	(.05)
Use as resource	.08	(.05)	.07	(.04)	.09	(.05)	.04	(.04)	.04	(.03)	.03	(.04)
Seek attention	.06	(.05)	.07	(.03)	.05	(.02)	.11	(.05)	.10	(.10)	.10	(.07)
ISBS summary scores												
Positive behaviors	108.63	(35.87)	100.64	(31.05)	100.94	(41.16)	66.25	(25.66)	71.33	(41.49)	52.43	(33.01)
Negative behaviors	54.83	(22.23)	66.33	(21.23)	69.63	(20.98)	50.25	(22.61)	60.50	(37.90)	52.95	(27.91)
Proportion positive behaviors	.67	(.07)	.60	(.08)	.58	(.09)	.58	(.13)	.55	(.07)	.48	(.08)
Proportion successful bids	.56	(.11)	.52	(.09)	.53	(.11)	.41	(.09)	.45	(.10)	.50	(.11)

ISBS = Individual Social Behavior Scale.

^aSolitary play composite = solitary play + read + explore + unoccupied.

ANOVAs were conducted for the three POS cognitive play categories and the four ISBS summary scores.

For ND children, neither MANCOVA (TACL-R total score was the covariate) was significant, nor were the separate ANCOVAs for the POS cognitive play categories, $p > .05$. The only significant finding for ND children was for the ISBS summary score in which the proportion of positive behaviors was higher for children with friends ($M = .67$) than for children without friends ($M = .60$), $F(1, 63) = 9.29, p < .01$ (see Table 4). For the CD children, a significant MANOVA, $F(6, 21) = 3.44, p < .05$, was obtained for the six ISBS proportions. Separate ANOVAs revealed that CD children with friends had a higher proportion of leads, both direct, $F(1, 26) = 10.61, p > .01$, and indirect, $F(1, 26) = 7.06, p > .05$, and used peers as a resource more often, $F(1, 26) = 6.05, p < .05$, than did children without friends. In contrast CD children without friends observed peers proportionally more, $F(1, 26) = 5.21, p < .05$, and sought the attention of others to a greater extent, $F(1, 26) = 16.67, p < .001$. Nevertheless, CD children with reciprocal friends were more successful in obtaining a response to their social bids, $F(1, 26) = 9.66, p < .01$, and had higher frequencies of both positive, $F(1, 26) = 6.57, p < .05$, and negative, $F(1, 26) = 5.48, p < .05$, social behaviors. Finally, similar comparisons for the DD group failed to produce any significant differences, $p > .05$.

DISCUSSION

Preschool-aged children rapidly form preferences for one another in small play-group settings, choosing to direct their social interactions in a selective manner. The social motivation to form these friendships appears to be considerable, as the vast majority of young children (overall $M = 85\%$) established unilateral friendships; a pattern that was apparent irrespective of a child's developmental status. However, despite interest in specific peers, as indexed by unilateral friendships, young children's ability to form preferences that were reciprocated was significantly smaller for all three developmental status groups. To successfully form a reciprocal friendship is indeed cognitively and socially demanding (see Gottman, 1983), and this may well require considerable time to evolve. Moreover, reciprocal friendships appear to depend on cognitive factors such as positive evaluations of one another, whereas unilateral friendships appear to depend upon less-demanding environmental features such as toy possession and proximity (Hayes, Gershman, & Bolin, 1980).

Children who were developmentally delayed formed the fewest reciprocal friendships, a finding consistent with expectations based on their developmental levels (Guralnick & Groom, 1988). In contrast, children with communication disorders, although generally less socially interactive than their normally developing chronological age-mates in both classroom and play-group settings (Guralnick et al., 1996a, 1996b; Hadley & Rice, 1991), nevertheless, were able to form

reciprocal friendships to the same extent as the normally developing children in the play groups. In view of the importance of various features of language and communication in establishing and maintaining productive peer relations, including intelligibility (Mueller, 1972) and factors related to discourse (Black & Hazen, 1990), it remains to be seen whether children with communication disorders will be able to sustain a level of reciprocal friendships comparable to that of normally developing children as social play becomes more complex over time.

Of central importance, and the primary question addressed in this study, was whether friendship patterns for each of the three developmental status groups were affected by the different social settings. For normally developing children, the inclusion of either children with communication disorders or developmental delays appeared to have no impact on friendship formation. Previous research has consistently found that overall peer interaction patterns of normally developing children are unaffected by participation in specialized or mainstreamed settings (see Buysse & Bailey, 1993, for a review). The findings of this study indicate that friendship formation is unaffected as well.

Correspondingly, the proportion of children with developmental delays forming unilateral friendships was similar in both specialized and mainstreamed settings. However, reciprocal friendships occurred too infrequently to evaluate setting effects meaningfully for this group of children. Perhaps social setting differences will emerge when the children with developmental delays become older and the base rate of reciprocal friendships increases. This constitutes an important direction for future research and may be useful in understanding problems in peer relations experienced by school-aged children defined as mildly mentally retarded (Taylor, Asher, & Williams, 1987).

Although the effect of social setting did not reach statistical significance for children with communication disorders for either unilateral or reciprocal friendships, the strong trend toward fewer reciprocal friendships in the mainstreamed than in the specialized setting requires comment. It is important to note that the proportion of children who established reciprocal friendships in the specialized setting was unusually high (.706); substantially larger than for normally developing children in comparable settings (.389). This seemingly anomalous result, coupled with the unusually high level of responsiveness to the social bids of children with communication disorders by normally developing children that occurs in mainstreamed settings (see Guralnick et al., 1996a, 1996b), suggests that this trend does not reflect a true setting effect.

In mainstreamed settings, as assessed by both unilateral and reciprocal friendship measures, normally developing children preferred other normally developing children to a greater extent than expected on the basis of the number of children with and without disabilities available in the setting. In contrast, for unilateral friendships, children with communication disorders and those with developmental delays revealed no preferences in relation to a peer's developmental status. As a consequence, approximately 85% of the peers preferred by

children with disabilities were normally developing children. Unfortunately, the small number of reciprocal friendships formed in the mainstreamed play groups by children with disabilities did not permit a meaningful assessment of the distribution of friendship preferences by peers' developmental status. It is interesting to note, however, that the two children with developmental delays who did form reciprocal friendships did so with normally developing children. The four children with communication disorders who formed these friendships directed their preferences equally between normally developing children and other children with communication disorders. Future research employing larger samples of children with disabilities, likely requiring observations in community-based mainstreamed programs, will be needed to determine if preference patterns for reciprocal friendships vary in accordance with a peer's developmental status.

Consistent with previous results (Field, 1984; Guralnick & Groom, 1988), children with reciprocal friends were more socially interactive than children without reciprocal friends. The strongest and most consistent effects occurred for children with communication disorders as children with friends were more socially involved, directive, and successful than children without friends. Correspondingly, a higher proportion of positive interactions was found for normally developing children with reciprocal friends when compared with those without reciprocal friends. The possible developmental advantages of reciprocal friendships for children with communication disorders extends previous work to this group of children with developmental problems (Hartup & Sancilio, 1986; Howes, 1988), although it cannot be assumed that benefits will be found for children with other types of disabilities (see Guralnick & Groom, 1988). Unfortunately, the small number of reciprocal friends for children with developmental delays limited the power of the analyses for this comparison.

Consistent with the work of Field (1984), Roopnarine and Field (1984), and Guralnick and Groom (1988), family status (e.g., socioeconomic status) or broadly based child development characteristics (e.g., IQ, language level) did not differentiate between children with and without reciprocal friends, with one exception for the normally developing children. Similarly, it does not appear that children with reciprocal friends were simply more interested in social relationships, as the uniformly high level of unilateral friendships argues against a social motivation explanation. However, as Howes (1988) has indicated, differences in social interaction patterns between children with and without friends may be the result of both higher levels of social interaction and the ability to form reciprocal friendships which are both rooted in differences in children's overall peer-related social competence. Perhaps measures derived from recent models of peer-related social competence that emphasize constructs of social information processing and emotional regulation (Dodge, 1991; Guralnick, 1992; Rubin & Krasnor, 1986) or rely upon complex social interaction processes (Gottman, 1983), may prove to be more valuable in discriminating between children with and without reciprocal friends than the more global family demographic or domain-specific

individual child assessments. An independent assessment (e.g., teacher ratings in a different setting) of children's peer-related social competence would also contribute important information. Although difficult to disentangle, determining the contributions of these or other factors to understand why children do and do not form reciprocal friendships, especially children with disabilities, constitutes an important task for future research.

Finally, it is important to examine whether certain features of this study may have restricted the generality of the findings. First, this study was limited to assessments of the formation of friendships by unacquainted peers in short-term play groups, and additional research is therefore needed to determine whether the patterns observed here are sustained over extended periods. However, it should be noted that the small group size and same-gender play groups were likely to have facilitated the acquaintanceship process. Previous research has demonstrated that characteristic peer interaction patterns occurring during this acquaintanceship process are predictive of later friendships (Gottman, 1983). These patterns may be more likely to occur between reciprocal friends, a hypothesis that is currently being examined in additional analyses. Second, it is possible that by including only two children with disabilities in the mainstreamed play groups, their opportunities for establishing reciprocal friendships were limited. However, reciprocal friendships were no more prevalent in the specialized play groups. Moreover, community-based mainstreamed programs usually consist of only a small percentage of children with disabilities. As a consequence, the play groups as constituted in this study, despite their smaller scale, represent important features of community programs, thereby increasing the relevance of these findings for policy and practice issues regarding the most appropriate educational and developmental setting for young children with disabilities.

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