Becoming a Sibling: "With a Little Help From My Friends"

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The qualities of children's friendships that may promote the development of positive sibling relationships were examined. Thirty 3- to 5-year-old firstborn children whose families were expecting a 2nd child participated in longitudinal assessments of parent–child, sibling, and best-friend peer relationships. Families were studied from the last trimester of pregnancy to 14 months following the new child's birth. Peer relationship variables, particularly, the overall quality of peer play, engagement in fantasy play, and conflict management were found to be significant predictors of the quality of children's interactions with their 6- and 14-month-old siblings. Results are discussed in terms of the functions friendships may hold for helping children make the transition to the sibling role.

This is a report of a longitudinal study of firstborn preschool children's transition to becoming a sibling. The purpose of the study was to examine the role of firstborn children's friendships in the adaptation to the newborn. It has become increasingly clear that the peer system can make important contributions to children's socialization and eventual adaptation (Parker & Asher, 1987). This report proposes that being a friend, which is a role children often have before becoming a brother or sister, may be valuable preparation for the sibling role.

Recent research has focused on the adaptive properties of children's personal social networks (Berndt & Perry, 1986; Felner, 1984; Furman & Buhrmester, 1985; Lewis, Feiring, & Kotsonis, 1984; Reid, Landesman, Treder, & Jaccard, 1989). These studies have confirmed that peers are significant members of children's social networks for children in early and middle childhood. The opportunity to interact with peers has also been associated with enhanced social development. In the primate world, repeated exposures to socially normal peers has been associated with the remediation of abnormal social behaviors among infant rhesus monkeys reared under isolate conditions (Suomi & Harlow, 1972). Furman, Rahe, and Hartup (1979) have applied these findings to socially withdrawn 4- and 5-year-old children. When exposed to same-aged and younger peers, these children were significantly more sociable in posttreatment observations than those who were not exposed to peers.

Beyond the adaptive significance of peer relationships in general, the best-friend relationship, in particular, may be a critical context for social adaptation. Best friendships have unique characteristics and provide vital functions for children's social and emotional development (Asher & Parker, 1989; Buhrmester & Furman, 1986). These functions may have important benefits for children who are becoming siblings. First, through their interactions with one another, children develop and exercise social skills (Fine, 1981; Gottman & Parker, 1987; Howes, 1987; Newcomb & Brady, 1982; Rubin & Ross, 1982). Children who have learned to sustain play and communication with an age-mate may be better able to establish interaction sequences with a younger, more dependent child. In addition, friendships provide children with opportunities to learn how to negotiate the emotional aspects of childhood relationships, such as tolerating frustration and managing disagreements (Piaget, 1962; Shantz & Hobart, 1989). The ability to manage conflicts with a peer may be critical for getting along with a sibling, because sibling relationships are frequent contexts for conflict (Straus, Gelles, & Steinmetz, 1980). Children may also have emotional experiences with peers that are validating and that enhance self-esteem (Bigelow & LaGaipa, 1975; Duck, 1983; Fine, 1981; Furman & Buhrmester, 1985; Parker & Gottman, 1989). Similarly, friendships may provide emotional security in novel or potentially threatening situations (Ispa, 1981; Ladd & Price, 1987; Schwarz, 1972) and are contexts for intimacy and affection (Buhrmester & Furman, 1987; Gottman & Parker, 1987; Reisman & Schorr, 1978; Sullivan, 1953). These emotionally supportive aspects of friendships may contribute to children's ability to cope with the stressors associated with becoming a sibling. The level of support children receive from members of their peer network has been associated with the ability to cope with stress and adapt to critical life transitions (Garmezy & Rutter, 1983; Maccoby, 1983; Werner & Smith, 1979). However, there may be considerable variation in the degree to which particular friendships fulfill the functions outlined here, and this may have differential implications for children's adaptation.

Attention to the role of friendships in helping children adapt to becoming a sibling is new. Traditionally, researchers and theo-

reticians have looked to parent–child relationships (or more specifically, mother–child relationships) for determinants of the quality of sibling relationships (Baldwin, 1947; Dunn & Kendrick, 1982; Jacobs & Moss, 1976; Lasko, 1954; Stewart, 1990; Taylor & Kogan, 1973). This emphasis stemmed, in part, from the psychoanalytic tradition that viewed difficulties in the sibling relationship as a response to the firstborn's loss of a special relationship with the mother (Freud, 1920; Levy, 1937). The mother–child relationship was also seen as critical because, as the first "love" relationship, it serves as a model for subsequent intimate associations (Freud, 1920; Winnicott, 1965). This is consistent with more recent theories of attachment (Bowlby, 1973) that presume that children develop working models or psychological representations of relationships through early experiences with their mothers (Main, Kaplan, & Cassidy, 1985). Disturbances in the early mother–child relationship appear to have negative implications for future relationships (see Sameroff & Emde, 1989, for a review). This suggests that sibling relationships may develop most optimally when mother–child relationships are positive. Research by Dunn and Kendrick (1982) supports this premise: They found that mothers who communicated to their older children that the new baby was a person with needs, wishes, intentions, and was someone they could share responsibility for had children who demonstrated more positive relationships with their siblings 14 months after the arrival of the second child.

Few studies have focused on the contribution of fathers to children's adaptation to becoming a sibling (Stewart, 1990; Thomas, Birch, Chess, & Robbins, 1961). Similarly, there have been only a few investigations of associations between marital relationship quality and sibling interactions. Although the data is limited, it does seem that enhanced marital satisfaction is related to more prosocial interactions among siblings (Brody, Stoneman, & Burke, 1987; MacKinnon, 1989). However, this association may be moderated by characteristics of the individual children (Stoneman, Brody, & Burke, 1989).

It appears unlikely that parent–child or marital relationships are the sole determinants of the quality of sibling relationships. Dunn (1986) reviewed the research on parental influences and emphasized how little of the variance in child development was accounted for by studies of parental behavior. For example, despite stability in maternal behavior toward different siblings (Ward, Vaughn, & Robb, 1988), children in the same family are usually very different (Maccoby & Martin, 1983). A child's experience with peers may be an important contribution of the "nonshared environment" (Daniels & Plomin, 1985) that uniquely influences individual social and cognitive development.

Furthermore, parent–child relationships are very different from sibling relationships. The parent–child relationship is largely a complementary relationship (Hinde, 1976) in which authority is held by the parent. The sibling relationship has aspects of complementary relationships, because it involves children of different ages and often includes complementary interpersonal processes such as caretaking or tutoring. Sibling relationships also have characteristics of reciprocal relationships (Dunn, 1983; Pelletier-Stiefel et al., 1986) in which there may be a close matching of perspectives and interests. For example, siblings may often choose each other as companions and

engage in collaborative play and conversation. Because of these similarities, peer relationships may be important predictors of how a child relates to a sibling. However, few studies have identified linkages between peer and sibling relationships.

Although the present study focused on the role of children's friendships during adaptation to becoming a sibling, the contributions of parent–child and marital relationships were also assessed. This is in line with Hartup's (1983) "synergistic" model in which parent–child and peer relationships are thought to contribute in complementary ways to social development. Parent–child relationships provide the child with the foundation for healthy development and the capacity for establishing intimate relationships with others. However, the specific competencies that develop within the context of parent–child relationships are elaborated through social interactions the child has with peers. According to Hartup (1983), the peer system allows children to develop competencies with play, the expression and control of aggression, perspective taking, and reciprocating positive affect. In this model, neither system in and of itself is viewed as capable of promoting optimal social development.

Attributes of Friendship

Four attributes of children's friendships were evaluated in the present study for their contribution in helping children adapt to the sibling role. These were the general quality of peer play, engagement in fantasy play, conflict management, and reciprocity in best-friend selection. In addition, children's overall level of social competence was examined as an alternative factor that may influence adaptation.

Quality of Peer Play

The abilities to coordinate play and conversation are essential for children's social relationships. Gottman and his colleagues (Gottman, 1983; Gottman & Mettetal, 1987; Gottman & Parker, 1987; Gottman & Parkhurst, 1980) identified a set of social processes that are important in the development and maintenance of children's friendships. These included play (parallel, common ground, and fantasy play); self-exploration (gossip, self-disclosure, and exploration of similarities and differences); processes that involve the repair and maintenance of interaction (conflict resolution, message clarification, the deescalation of interaction in order to avoid conflict); amity (varieties of positive affect); and conflict. These processes were differentially important at varying ages in predicting whether unacquainted dyads would "hit it off." These social processes may be relevant for the development of sibling relationships. Children who engage in relatively more positive interpersonal processes with a peer may be expected to demonstrate more positive behaviors and affects when interacting with a sibling.

Fantasy Play

Fantasy play represents one of the highest levels of social involvement for young children, because it requires active participation and joint attention (Gottman, 1983), clear and sustained communication (Giffin, 1985), an understanding of how to exchange metacommunicative messages (Forbes, Katz,

& Paul, 1986; Giffin, 1985), and the use of conflict management strategies (Garvey, 1987; Gottman, 1983). Fantasy play may also play an important role in emotional functioning, for example, in expressing emotions and problem solving (Gottman & Parkhurst, 1980) and in coping with stressful events (Field & Reite, 1984; Gilmore, 1966; Milos & Reiss, 1982; Nagera, 1981; Silber, Perry, & Bloch, 1957). Successful experiences with fantasy play have been found to be associated with greater facility in interacting with others, popularity, and enhanced social competence (Connolly, Doyle, & Reznick, 1983). However when fantasy play is unsuccessful (e.g., conflict ensues), children revert to a less demanding form of social exchange (Gottman, 1983).

Participation in interactive fantasy play may have benefits for children who are becoming siblings. For example, gains in social competence that stem from fantasy engagement may help firstborn children to interact more positively with younger siblings. Children who are becoming siblings have been shown to increase their levels of spontaneous fantasy play when playing with their parents (Field & Reite, 1984). However, the relationship between coping with the second-child transition and fantasy play engagement with an intimate peer has not yet been examined. This is explored in the present study.

Conflict and Conflict Management

Following Shantz (1987), we consider conflict to be an interpersonal event that involves mutual opposition between children and where the precipitant of conflict can be an object, activity, idea, fact, or belief. This definition of conflict includes, but is not restricted to, aggression. Conflict management refers to behaviors that reflect an intention or desire to de-escalate or resolve the conflict (Gottman & Parkhurst, 1980). Whereas previous studies have focused on the frequency of conflicts or on the types of management strategies used, the present study also recognizes failures in managing conflicts as a key interpersonal process. Unmanaged conflicts refer to situations in which conflict escalates or when no conflict management strategies are used. The inability to manage conflicts with a significant peer is expected to have negative implications for the development of sibling relationships.

Reciprocity in Best-Friend Selection

Reciprocal friendships are those in which children mutually consider each other as their best friends (Bukowski & Newcomb, 1984). Children in reciprocal relationships are more likely to experience companionship, affection, and mutual support than children in unilateral friendships (Bukowski & Newcomb, 1984). They are also more likely to remain friends over time (Bukowski & Newcomb, 1984; Gershman & Hayes, 1983) and to be more knowledgeable about each other's characteristics than children in unilateral friendships (Ladd & Emerson, 1984). These findings suggest that reciprocity may be a global index of the intimacy and intensity of a friendship relationship. The present research examines the hypothesis that children in reciprocal best friendships may develop more positive sibling relationships than children in unilateral friendships.

Social Competence

The term social competence has been used variously in the literature to refer to (a) how well accepted a child is by his or her peers, as indexed by sociometric status; (b) how well a child functions within a group context, as assessed by the social skills that are demonstrated in social situations (e.g., general social behaviors or responses on group entry tasks); and (c) how a child relates to other individuals in dyadic or small-group contexts. Given these multiple meanings, social competence does not appear to be a unitary construct. In the current study, we propose that social competence, defined as the skills that one develops within the context of a best-friendship relationship, is likely to be more valuable for establishing another child-based relationship than those competencies that are exhibited in either adult–child relationships or in larger group contexts (e.g., classroom contexts). Our reasoning is as follows. The skills a child needs to function competently in a familiar dyadic relationship are probably quite different from those required for interaction within larger social groups. Gaining early competence in dyadic peer relationships is expected to have a more direct influence on sibling relationship quality than (a) competence in parent–child relationships and (b) general social competence level as assessed in larger group contexts. The present study examines the association between measures of children's friendships and social competence, their relationships with family members, and the quality of the developing sibling relationship.

Method

Subjects

Participants were 30 families who were expecting a second child. Firstborn children were 3- to 5-years-old (M = 47 months, SD = 10.04 months) when their siblings were born. Eighteen (60%) of the children were girls. Once their siblings were born, the following older–younger sibling dyads were formed: 11 girl–girl, 7 boy–boy, 7 girl–boy, and 5 boy–girl. All families were native English speakers. The mean age of mothers was 31.47 years (SD = 3.31), and fathers, 33.00 years (SD = 4.17). Fathers had a mean of 17.10 years of education (SD = 3.16), and mothers had 16.58 years (SD = 2.49). Couples were married 7.64 years on the average (SD = 2.85) and had a median income of $25,000–$35,000. Families were recruited from preschools, day-care centers, obstetricians, and newspaper advertisements. Of the 39 families who requested information about the study and who met the criteria for subject inclusion, 82% agreed to participate.

The best friends of the firstborn children also participated (n = 37). In 7 cases, friendship patterns changed during the course of the study, and a new child was added as a participant. These children were similar to their peers in gender (14 boys, 23 girls), but were on the average 1 year older than the target children (60.68 months, SD = 26 months). All but six dyads (16.22%) were same-sexed friendships. Eighteen (49%) of the best-friend children were firstborns, 13 (35%) were second borns, and 4 (11%) were third- or later-born children. Only 2 (5%) had no siblings. On the average, the best friends knew each other 1.78 years (SD = 1.26) at the beginning of the study.

Procedure

Children's reactions to becoming a sibling and the factors that contributed to these reactions were assessed at repeated points across the

transition. This period spanned from 3 months before and 6 months after the birth of the second child. A follow-up evaluation was conducted at 14 months postbirth. During the initial 10 months of the study, families were visited in their homes every 2 to 3 weeks. Observational, interview, and standardized self-report methods were used to obtain data on parent–child relationships, the marital relationship, the developing sibling relationship, and the child's relationship with a best friend. All of the procedures were administered again at the 14 month follow-up with the exception of the observation of best-friend interaction. All families participated in the interview and self-report components of the follow-up. However, owing to changes in residence, observations of sibling interaction were conducted with 24 of the 30 families at follow-up. A time line summarizing the administration of procedures is presented in Table 1.

Maternal Interview

The initial contact with the family was an interview with mothers at the onset of the last trimester of pregnancy. The interview was composed of a set of structured but open-ended questions that covered the status of the pregnancy, parental perceptions of the child's response to the pregnancy and anticipated sibling relationships, the child's social contacts, play activities, and previous instances of stress and coping. Items in the interviews were adapted from Sostek (1981), Gunsberg (1985), and Newson and Newson (1968). Updated versions of the interview were given at 2 weeks, 6 months, and 14 months after the sibling's birth.

Play Sessions

To identify a best friend for each child, mothers were asked a series of questions in the first interview about their children's social activities. Mothers reported whom their children considered as special friends, whom they played with most frequently and enjoyed playing with the most, the length of their friendship, and the degree of familiarity with each other's homes. Mothers were free to consult with their children about their preferred friendships, and they routinely did. Friends could be selected from any context (e.g., school, church, or neighborhood). We looked for consistency in responses to these questions as a way to determine which child would best meet the criteria of best friend. The child identified as the best friend was then invited to join the study and to participate in a series of play sessions in the target child's home. Play sessions were scheduled at 3 months and 1 month before the new sibling's expected birth and 1, 3, and 6 months after the baby's arrival.

Following the Gottman and Parkhurst (1980) procedure, an audiotape recorder was placed in the bedroom or playroom before each play session. Children were simply asked to play together in this room for 30 min. No adults were present during the play, although the experimenter was in the home to begin the recorder and to ensure that the children played without adult intervention. The audiotapes were later coded for the overall quality of play, episodes of fantasy play, conflict management, and positive and negative affect.

Diaries

Mothers kept 3-day diary records at two pre- and three postbirth intervals to assess fluctuations in the firstborn children's behavior across the transition. Mothers reported daily frequencies of 18 items, representing self-care (toilet accidents, asking for help with dressing, eating, refusing food, drinking from a bottle, or using a pacifier); self-control (deliberately naughty, aggressive, destructive behaviors, demanding attention, being fussy about bedtime, or engaging in any behavior leading to parental discipline); and stress-related behaviors (e.g., trouble falling asleep, waking up in the middle of the night, nightmares, asking to sleep with parents, asking to be treated like a baby, or clinging). This provided a measure of children's level of adjustment prior to and following the birth of the sibling.

Mothers also used the diaries to indicate who their child's best friend was at each time point. Mothers of the best-friend children also completed diaries at 1 month before, and 3 and 5 months after the second-born child's birth. This provided measures of both the mutuality of the best-friendship selection and consistency of the friendship over time.

Mother–Child Interaction

A sample of mother–firstborn interaction was obtained during the 8th month of pregnancy. Mothers and firstborn children were videotaped in their homes as they discussed the new baby's arrival. These 10-min observations were later coded for the presence of positive and negative behaviors and affects and provided a measure of the quality of the mother–firstborn relationship before the sibling was introduced to the family.

Sibling Relationship

Observations of sibling interaction were conducted at each of the 1-, 3-, 6-, and 14-month assessments. The siblings were videotaped in their homes as they interacted with (for 10 min) and without (for 10 min) their mothers present. The order of these conditions was randomized across families. The length of the interaction was a compromise between two considerations. First, preliminary interviews had indicated that 10 min was the longest interval that parents felt comfortable leaving the infants alone with their older siblings. Second, the length of the observation needed to be large enough so that the least frequently occurring behaviors of interest were observed with reasonable frequency and variability across subjects (Bakeman & Gottman, 1986). With regard to sibling interaction, conflict may represent such an event, because it is a very salient but possibly low-frequency event. Pilot observations confirmed that adequate samples of sibling conflict, as well as other varieties of sibling behaviors, could be observed during this observation interval (and particularly during the mother-absent condition). Because we were interested in obtaining as objective an assessment of the quality of the sibling relationship as possible, only the data obtained from the mother-absent condition were used in the current analyses.

Table 1
Time Line of Procedures

Procedure	Months					
	-3	-1	1	3	6	14
Maternal interviews	x		x		x	x
Peer play sessions	x	x	x	x	x	x
Diaries	x	x	x	x	x	x
Mother–firstborn interaction		x	x	x	x	
Sibling interaction			x	x	x	x
Marital satisfaction	x				x	x
Social competence		x				

Marital Satisfaction

Mothers completed the Locke-Wallace Marital Adjustment Test (Locke & Wallace, 1959) before the new child's birth (−3 months) and again at 6 and 14 months after the birth.

Global Social Competence

If a relationship is obtained between social behavior in the child peer context and the sibling context, it could be due to a general factor of social competence that cuts across social settings. To test for this possibility, it would be helpful to have an independent assessment of the child's social competence. Toward this end, the Kohn Social Competence Scale (Kohn, 1977) was completed for each of the firstborn children by their preschool or day-care teachers. Teachers rated each of 64 statements about a child's social behavior on a 5-point scale of frequency. Ratings were based on observations of the child during the most recent week. The teachers knew the children fairly well by the time they rated their social behaviors, because the instrument was completed on the average 7.82 months (SD = 4.11) after the school year began. The scale has been shown to be a reliable and valid measure of social competence, because it correlates highly with comparable measures of teacher–rater social competence (Peterson, 1961; Schaefer, 1971) and provides relatively stable factor scores over the first 5 years of school (Kohn, 1977).

Measurement of Constructs

Measures of Sibling Acceptance

Two measures of sibling acceptance were constructed. They were (a) the quality of sibling interaction based on observational coding of videotaped interactions and (b) mothers' ratings of the quality of the sibling relationship as assessed by their responses to the interviews. The final administrations of these measures at 6 and 14 months after the birth of the second child were used as the indexes of sibling acceptance. This was because we expected child behaviors at these time points to be the most stable and representative of children's final adjustment.

Sibling interaction. We assessed the degree of positive sibling interaction occurring in the four videotaped observations using a rapid coding procedure. A menu approach was used for coding 31 categories of positive and negative interaction events and affects that have been suggested in previous research to be salient dimensions of interpersonal behavior in this context (Abramovitch, Corter, & Lando, 1979; Dunn & Kendrick, 1982). The specific interpersonal behaviors that were coded are listed in Table 2.[1]

This coding system was designed to assess interactive behaviors of the dyad, rather than the behaviors of individual children. However, because of their age, second-born children were expected to demonstrate more limited behavioral repertoires than their older siblings. For example, second-born children are more likely to be recipients of affection, caretaking, and disapproval than to perform these behaviors themselves. Whereas the present system acknowledges that many codes represent behaviors performed by firstborn children directed to their younger siblings, the behaviors of second-born children are also taken into account. Second-born children contribute to interactions through basic responses such as smiling, laughter, whining, and crying. These responses may then be catalysts for further positive and negative behaviors from their older siblings. In addition, the contribution of second-born children is likely to increase with maturation. Thus, the dyadic properties of this coding system are desirable for tracking changes in sibling interaction over longer periods of time.

The procedure for coding sibling interaction was based on Gottman's Rapid Couples Interaction Scoring System (R-CISS) validated

by Krokoff, Gottman, and Hass (1989) for coding marital interaction. This is a detection coding system that furnishes comprehensive information about the overall quality of interactions in a relatively rapid manner. Two aspects of this system allow for rapid coding. First, a larger coding unit is used than in traditional observational studies. Second, as a detection system, the usual requirement that the codes are mutually exclusive or exhaustive is relaxed. That is, the coder does not need to make complex decisions, such as how many times a code occurred or which code most aptly represents a given event but, more simply, whether a code is appropriate or not.

The 10-min observations were divided into two 5-min periods. An observer watched the videotape for 5 min using verbatim transcripts and indicated all of the events and affects listed on the menu that occurred during the interval. This was repeated with the remaining observational period. A summary score of percentage positive interaction was obtained for each observational period. A summary score of percentage positive interaction was obtained for each observational period by dividing the number of positive events by the total number of positive and negative events and multiplying the ratio by 100. A mean percentage positive score was derived for all of the observational periods within the session.

Each observation was coded by two independent raters. Agreement across raters for the percentage positive interaction summary score was estimated with intraclass correlations. The resulting coefficient alphas were .86, .91, .95, and .91 for the +1-, +3-, +6-, and +14-month observations, respectively. Test–retest reliability was assessed by correlating percentage positive interaction scores from one observation to the next. The correlation of sibling interaction quality was .41 ($p < .01$) at +3 and +6 months and .54 ($p < .01$) at +6 and +14 months.

A second way in which the observational data was used was to calculate the number of observational periods in which each of the categories of sibling interaction occurred. As each observation consisted of two coding periods, scores could range from 0 to 2. Percentage agreement statistics for these frequencies averaged 89.22% and are presented in Table 2.

Mothers' appraisals of the quality of the sibling relationship. The maternal interviews at the criterion time point of +6 and +14 months were rated according to 13 dimensions of sibling acceptance. These dimensions were (a) mothers' perceptions of how well the siblings got along, (b) how well they liked each other, (c) the level of affection, (d) caretaking, (e) helpfulness, (f) hostility, (g) aggression, (h) jealousy, (i) complaints, (j) parental concerns about leaving the siblings alone, (k) how stressful and (l) how positive an experience this had been for the firstborn child, as well as (m) how well the firstborn child had adapted to becoming a sibling. Mothers were asked to consider each of these dimensions on a 5-point rating scale that ranged from 1 = *extremely poorly* to 5 = *extremely well.* A global score of sibling acceptance was obtained by summing the 13 ratings. Internal consistency was .81.

The two measures of sibling relationship quality, derived from the observations and mother's reports, were significantly correlated (r = .38 and r = .36, $p < .05$, for the +6- and +14-month assessments, respectively). Although this provides some support for the construct validity of the measures, it was surprising that higher intercorrelations were not obtained. Although this may be a function of the moderate estimates of test–retest reliability obtained for both measures, it is also possible that the observational and self-report measures tap somewhat different dimensions of sibling relationship quality.

The two measures of sibling acceptance were considered in relation to a set of variables assessed before the second-child's birth and encompassed measures of child characteristics (firstborn age, gender, and prior adjustment), mother–child relationships, marital relationships (mothers' marital satisfaction), and children's relationships with

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[1] Copies of the coding manuals are available from Laurie Kramer.

Table 2

Observed Frequencies of Sibling Interaction Behaviors (N = 30)

Code	Interobserver agreement (%)	Month			
		1	3	6	14[a]
Positive activities					
Caretaking	99.73	26	15	11	0
Interactive play	98.17	27	32	34	17
Independent play, monitoring sibling	78.26	5	7	6	7
Shared fantasy play	85.00	7	7	9	4
Information exchange	97.40	36	38	49	46
Positive affective climate					
Affection, approval	84.73	52	44	25	30
Laughter, joy, excitement	93.48	13	12	21	13
Smiles	89.41	20	19	29	23
Helping, sharing	66.67	19	25	20	15
Comfort, sympathy	97.06	31	26	19	13
Physical proximity	97.04	56	52	51	55
Highlighting feelings	96.43	13	7	5	7
Other positive	62.50	5	4	2	5
Negative activities					
Independent play, ignoring sibling	98.85	22	22	25	32
Independent fantasy play, ignoring sibling	76.47	9	9	5	2
Passive observation	92.86	10	10	2	1
Inappropriate treatment of sibling	100.00	29	30	24	14
Unoccupied	93.24	29	25	16	12
Negative affective climate					
"Near miss" aggressive behaviors	96.23	22	21	15	5
Aggression	81.25	7	8	5	5
Object struggle	80.00	4	7	9	10
Prohibitions, threats	96.43	8	15	17	30
Whining, crying	89.25	23	23	24	29
Insult, tease, disapproval	92.00	6	8	10	14
Anger, frustration	100.00	6	8	10	14
Sadness, unhappiness	76.92	5	11	2	1
Boredom	76.60	22	19	7	6
Physical distance	96.15	42	32	29	36
Wild, out of control	90.00	8	7	2	0
Demands parental attention	93.39	37	36	32	24
Other negative	90.24	21	18	18	36

[a] N = 24.

peers (the overall quality of peer play, engagement in extended fantasy play, the frequency of unmanaged conflicts, reciprocity of best-friend selection, and social competence). These measures are described next.

Child Characteristics

In addition to the firstborn child's age and gender, the level of personal adjustment each child achieved before the birth of their sibling was assessed. Prior adjustment was defined as the level of immature behaviors the children were reported to have performed on the maternal diary records. A summary score of total frequency of immature behaviors per day was calculated by summing the individual items of the scale. Owing to very low frequencies, six items were omitted from the scale: drinking from a bottle, nightmares, asking for more help with dressing and eating, using a pacifier, and day-time toilet accidents. The internal consistency of the remaining 12-item scale was .53, .71, .82, .57, and .58 at the five observations, respectively. Test–retest

reliability was assessed by correlating the summary scores of total immature behaviors per day across a 2-week interval ($r = .77$, $p < .01$).

Parent–Child Relationships

We developed a coding system to assess 34 categories of mother–firstborn interaction. These categories were developed on the basis of previous research (Dunn & Kendrick, 1982) and pilot observations. They represented dimensions of positive activities (4 categories), positive affect (11 categories), negative activities (5 categories), and negative affect (14 categories). These are briefly defined in the Appendix.

A rapid procedure for coding was again used. The 10-min observations were divided into two equal periods. Instances of the categories occurring in each of the observation periods were noted. A mean percentage positive interaction score served as the summary measure of the quality of mother–firstborn interaction. Two independent raters

coded each of the observations. Agreement between observers was .86 (alpha).

Marital Relationship

Mothers' scores on the Locke-Wallace Marital Adjustment Test, assessed at −3, +6, and +14 months, were used as estimates of marital satisfaction.

Children's Peer Relationships

Quality of peer play. The observational coding system for peer play followed the systems described earlier for sibling and mother–firstborn interaction. A menu of 44 positive and negative codes representing conversation, play, affect, and repair and maintenance of the continuing interaction was created. Many of these codes were adapted from Gottman's (1983; Gottman & Parker, 1987) coding systems that analyzed videotaped interactions between older best friend and stranger dyads. The 44 play codes were collapsed into 11 categories on a rational basis. The decisions for combining codes were guided largely by the lumping scheme used by Gottman (1983) with similar play codes. This lumping scheme was derived from sequential analyses of the functional relationships among the codes. The 11 categories were (a) Sustained Communication; (b) Coordinated Gossip; (c) Coordinated Play; (d) Shared Fantasy Play; (e) Excitement; (f) Amity (e.g., affection and approval); (g) Unsustained Communication; (h) Uncoordinated Play; (i) Negative Emotions; (j) Prohibitions, and (k) Conflict. The internal consistency of the categories ranged from .73 to 1.00 ($M = 0.86$).

Interrater agreement on the frequency of the play categories was calculated using intraclass correlations and ranged from .73 to .91 (median = .80). Interrater agreement on the mean percentage positive interaction summary score was .85, .78, .80, .93, and .80 (alpha) for the five play observations, respectively. Test–retest reliability was assessed by correlating the percentage positive interaction summary scores of two prebirth play sessions ($r = .40$, $p < .05$).

Engagement in extended fantasy play. Episodes of extended fantasy play were coded for their duration, measured by turn units on the verbatim transcripts. Brief episodes of fantasy play (i.e., less than 15 turn units) were not included. Interrater agreement was first assessed by ensuring that both observers identified the same portions of play as fantasy episodes. Tapes were rescored by different raters on 6 of 148 occasions (4.05%) because of large discrepancies in identifying episodes (more than 30 turn units). Next, interobserver agreement for the total length of extended fantasy play in the 30-min observation was assessed by calculating an agreement ratio of shorter to longer estimates of fantasy length (in turn units) multiplied by 100. The mean agreement ratios were 94.00, 97.21, 94.62, 96.05, and 99.94 at the five observation time points, respectively.

Unmanaged conflicts. Conflicts were considered to be unmanaged either when disagreements escalated and additional negative interaction followed or when either child failed to perform a conflict management strategy (e.g., give a reason for the disagreement, compromise, or make a conciliatory offer). All instances of unmanaged conflicts were recorded by two independent raters. Percentage agreement coefficients, used to calculate interrater agreement on the absolute frequencies of unmanaged conflict occurring in the 30-min observations, were 93.33, 80.00, 84.00, 86.67, and 93.33 for the five assessments, respectively.

Reciprocity of best friendship. Friendship reciprocity was defined as occurring if the parents of the target child continued to identify the initially designated best friend as the current best friend in four out of five diary records, and if the best friend's parent also named the experimental child as their child's best friend in all three diary records they

provided. In the case where the experimental child had more than one best friend in the study, at least one of the best friendships needed to be reciprocal. Reciprocity in best-friend selection was an all-or-none classification.

Evidence for the validity of this measure of best friendship reciprocity comes from an examination of how close or intimate the friendship appeared to be. After coding the play sessions, independent observers rated the dyad on a 7-point scale of closeness. Closeness was defined as how much the children seemed to like each other and have fun together. Interrater agreement was satisfactory ($r = .83$, $p < .01$). Dyads who were identified as having a reciprocal best friendship earned a mean closeness rating of 4.98 ($SD = 0.73$), whereas those in nonreciprocal friendships had a mean of 4.28 ($SD = 1.02$). This difference was significant, $t(28) = 2.19$, $p < .05$, indicating that children in reciprocal best friendships were indeed in more intimate relationships than those children in nonreciprocal relationships. Further support for this measure comes from the observation that 93.75% of the reciprocated friendships were continued at +14 months, whereas only 57.14% of the children in unilateral friendships were still friends at this time.

The distribution of reciprocal and nonreciprocal friendships were nearly equivalent. Sixteen (53.33%) of the experimental children were found to have a reciprocal friendship.

Social competence. The Kohn Social Competence Scale provides two measures of social competence. Factor 1 is defined as "interest-participation vs. apathy-withdrawal" and focuses on the child's use of classroom opportunities. The scale measures (a) the extent of the child's interest, curiosity, and assertiveness; (b) the ability to elicit the cooperation of peers; (c) withdrawal from classroom opportunity; and (d) failure to elicit cooperation (Kohn, 1977). Factor 2 relates to the child's ability to conform to the rules, regulations, and routines of the classroom. Because this was not considered of interest in the present study, only Factor 1 scores were used in the analyses.

Results

Longitudinal Analysis of the Quality of the Sibling Relationship

Descriptive data for the two measures of sibling relationship quality are presented in Table 3. Inspection of the means and standard deviations for these measures over time reveals substantially less variability for the maternal report scale than the observational measure. Mothers' general reluctance to describe their children as having poor sibling relationships appears to have constrained the variability of this measure.

The consistency of sibling relationship quality over time was first examined using repeated measures analysis of variance (ANOVA). A significant effect was found for observation on mothers' appraisals of the quality of the sibling relationship, $F(2, 87) = 10.33$, $p < .01$. Post hoc contrasts (Scheffe) revealed that whereas reports of the quality of the sibling relationship were relatively consistent between +1 and +6 months, mothers rated their children's relationship as significantly less positive at the +14-month follow-up.

Slightly different results were found when percentage positive sibling interaction was used as the criterion measure of sibling relationship quality. In this case, evidence for consistency across the +1-, +6-, and +14-month observations was obtained, because a repeated measures ANOVA failed to identify significant differences in percentage positive sibling interaction in accordance with time, $F(3, 116) = 0.65$, *ns*. However, there were changes in the distribution of specific sibling-di-

Table 3

Means and Standard Deviations of Predictor and Criterion Variables

Variable	−3 months		−1 month		1 month		3 months		6 months		14 months[a]	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Sibling interaction quality					47.73	18.08	45.90	21.48	50.81	20.43	52.49	17.36
Mothers' appraisals of sibling relationship quality					44.65	7.42			48.10	7.14	35.68	7.14
Prior adjustment	5.65	3.93	5.84	4.76	8.57	6.75	7.48	6.45	5.44	3.57		
Mother–firstborn interaction			76.51	14.28								
Marital satisfaction	116.07	17.68							104.50	25.42	103.50	26.50
Social competence			53.11	18.18								
Peer play quality	55.80	12.06	58.43	14.90	60.60	10.90	60.01	11.62	59.76	10.86		
Extended fantasy play	99.63	88.36	102.43	76.31	76.29	64.81	86.45	85.11	79.59	81.95		
Unmanaged conflicts	2.20	2.44	1.77	2.96	1.03	1.22	1.20	1.58	1.40	2.09		

[a] $N = 24$.

rected behaviors over the observations. We addressed this by examining the dependencies between frequencies of the sibling interaction codes and observation time point, using log linear analysis techniques (Fienberg, 1980). For these analyses, the frequencies of the individual sibling interaction were pooled across subjects and were cast into a 4 (observation) × 31 (sibling interaction codes) contingency table (see Table 2). This represents the saturated model for observation and sibling interaction. Frequencies in this case refer to the number of 5-min observation periods in which each of the interactive behaviors were coded. As the total assessment consisted of two observational periods per time point, each sibling dyad contributed between 0 and 2 to each cell of the table. Because we were particularly interested in changes between the +1-month and +6-month observations and between the +1-month and +14-month observations, contrasts between these individual cells of the table were performed using Upton's (1978) method of weighted contrasts.

The results indicated that as the infants aged from 1 to 6 months, there were significant declines in the passive observation of the sibling ($z = 4.16$, $p < .001$), being unoccupied ($z = 1.91$, $p < .06$), and bored ($z = 2.64$, $p < .01$). There was also less caretaking ($z = 2.39$, $p < .01$) and affection and approval ($z = 3.01$, $p < .01$) at the +6-month observation. Interestingly, the frequency of prohibitions and threats was the only sibling interaction category to significantly increase at the +6-month observation ($z = -4.10$, $p < .001$).

Similar results were found when contrasts were performed between the +1-month and +14-month observations. Because interactional data were only available for 24 of the sibling dyads at follow-up, contrasts between the +1- and +14-month observations were conducted with only these subjects. The interactions between the siblings appeared to be more collaborative at +14 months. First, there was more verbal communication in

the form of information exchange ($z = 1.85$, $p < .06$) and shared laughter and excitement ($z = 2.46$, $p < .05$). Although independent play was observed in the later observations, it was likely to involve some monitoring of the other's actions ($z = 2.46$, $p < .05$). However, a significant decline was observed for caretaking ($z = -2.94$, $p < .01$). This may indicate a shift from more unilateral to more reciprocal behaviors in the dyad.

Negative affect also appeared to be expressed more directly rather than indirectly over time. In comparison to the initial observation, there were fewer instances of "near miss" aggressive behaviors at +14 months ($z = -3.15$, $p < .01$). These were behaviors that put one child in a precarious situation but were not clearly aggressive in intent (e.g., a shoe lands a foot away from the baby). In contrast, more direct expressions of displeasure, such as prohibitions and threats, occurred more frequently at +14 months ($z = 3.41$, $p < .001$). Similarly, occurrences of anger and frustration ($z = 2.38$, $p < .05$) and object struggles ($z = 1.96$, $p < .05$) were more frequent at the later observation.

Longitudinal Analysis of Friendship Interaction

In general, the children's behaviors with their friends were stable across the two pre- and three postbirth sessions. Table 3 indicates the mean percentage positive peer interaction scores, the mean frequencies of unmanaged conflicts, and the mean length (in turn units) of shared fantasy play for each of the five 30-min observations of friendship interaction. A series of repeated measures ANOVAs were conducted to assess the stability of these peer play variables over time. The effects of observation were found to be nonsignificant in accounting for variation in the overall quality of play score, $F(4, 112) = 0.94$, ns, the length of fantasy play engagement, $F(4, 112) = 1.25$, ns, and the frequency of unmanaged conflicts, $F(4, 112) = 2.23$, ns.

Associations Between Measures of Parent–Child, Marital, Peer, and Sibling Relationships

The next objective of data analysis was to identify the dimensions of peer, parent–child, and marital relationships that were associated with sibling relationship quality. A correlation matrix of these variables is presented in Table 4.

Associations Between Individual Child Variables and Sibling Relationships

The age of the firstborn children was significantly related to the quality of sibling interaction at both +6 and +14 months. Relatively older firstborn children interacted more positively with their siblings at these times ($r = .54$, $p < .001$ and $r = .67$, $p < .001$, respectively). Interestingly, mothers did not rate their children as more accepting of their siblings in accordance with age.

Whereas children's level of prior adjustment was not significantly related to either measure of sibling acceptance, prior adjustment was negatively correlated with firstborn age ($r = -.46$, $p < .01$). Younger firstborn children entered the transition with relatively lower levels of competency with personal self-care and self-control behaviors. These children also interacted less positively with their siblings at +6 months ($r = .54$, $p < .001$). The gender of the firstborn child and the gender constellation of the sibling dyad were not found to be related to sibling interaction quality or to mothers' ratings of the relationship at +6 months.

Associations Between Parent–Child and Sibling Relationships

In general, correlations between measures of the mother–firstborn relationship and the quality of the sibling relationship were weak. Only one marginally significant correlation was found linking the quality of mother–firstborn interaction with the quality of sibling interaction at +6 months ($r = .35$, $p < .06$). Children who interacted more positively with their mothers before their sibling's birth tended to relate more positively with their sibling at the first criterion assessment.

Associations Between Marital and Sibling Relationships

Maternal marital satisfaction was significantly correlated with sibling interaction quality at +6 months ($r = .36$, $p < .05$). More satisfied couples had children who related more positively to each other at this time.

Associations Between Best Friend and Sibling Relationships

As shown in Table 4, the overall quality of peer play, assessed before the birth of the sibling, was significantly correlated with sibling interaction quality at both the +6- ($r = .44$, $p < .01$) and +14-month ($r = .47$, $p < .01$) observations. However, this overall measure of peer play quality was not significantly related to mother's appraisals of the quality of the sibling relationship.

The frequency of unmanaged conflicts was negatively correlated with the quality of sibling interactions at +6 ($r = -.36$, $p < .05$) and +14 months ($r = -.39$, $p < .05$). Children who demonstrated fewer unmanaged conflicts in their interactions with peers also appeared to have more positive interactions with their 6- and 14-month-old siblings. Again, the frequency of unmanaged conflicts was not found to be related to mothers' reports of sibling relationship quality.

Whereas engagement in extended fantasy play was not significantly correlated with measures of sibling relationship quality at +6 months, it was related to sibling relationship quality at +14 months ($r = .51$, $p < .01$). Greater engagement in fantasy play before the birth of the sibling was associated with more positive sibling interactions at the follow-up observation.

The associations between reciprocity of the best friendship and measures of sibling relationship quality did not reach statistical significance. However, children who engaged in fewer unmanaged conflicts tended to be in reciprocal best friendships ($r = -.45$, $p < .01$).

Whereas dimensions of children's relationships with their best friends (e.g., the overall quality of peer play and the frequencies of unmanaged conflicts and fantasy play) correlated with sibling interaction quality, no significant associations were found linking children's general social competence with their success in the sibling relationship.

In summary, children who participated in more positive interactions in peer play, including fewer unmanaged conflicts before the arrival of the new baby, interacted more positively with their siblings at the +6-month assessment. More positive sibling interaction at +14 months was related to more positive play, fewer unmanaged conflicts, and more extended fantasy play in the best-friend relationship. General social competence, as assessed through teachers' ratings, was not significantly associated with success in the sibling relationship.

A Comparison of Friendship and Family Variables in Predicting Sibling Acceptance

A series of partial correlations were conducted to assess whether the relationships between the friendship variables (general quality of peer play, unmanaged conflicts, and extended fantasy play) and sibling relationship quality would still hold if the contribution of the family variables (mother–firstborn interaction and marital satisfaction) were controlled. For the most part, the results of these analyses confirmed this speculation. The correlations between the overall quality of peer play and sibling interaction quality at +6 and +14 months were .34 ($p < .07$) and .44 ($p < .05$), respectively, when the effects of the family variables were partialled out. The corresponding partial correlations for the frequency of unmanaged conflicts and sibling interaction were -.33 and -.34, respectively ($p < .07$). Because the first-order correlation for extended fantasy and sibling interaction quality at +6 months was insignificant, we were not surprised to find an insignificant partial correlation ($r = .17$). However, the relationship between extended fantasy and sibling interaction at +14 months was significant ($r = .49$, $p < .05$) when the family variables were controlled.

Corresponding partial correlations were computed for both

Table 4

Correlation Matrix: Sibling Interaction Quality, Sibling Acceptance, and Predictor Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. 6-month sibling interaction	—													
2. 6-month sibling acceptance	.38*	—												
3. 14-month sibling interaction	.54***	.63***	—											
4. 14-month sibling acceptance	.27	.63***	.36*	—										
5. Firstborn age	.54***	.18	.67***	.18	—									
6. Firstborn gender	-.17	-.06	-.35	-.12	-.15	—								
7. Prior adjustment	-.02	.20	-.16	-.11	-.46**	-.09	—							
8. Mother–child interaction	.35	.11	.16	.21	.31	.11	-.20	—						
9. Marital satisfaction	.36*	.25	.12	.24	.24	.05	-.03	.16	—					
10. Social competence	.09	.08	.31	.06	.14	.16	.12	.30	-.22	—				
11. Reciprocity of best friendship	.28	.24	-.01	.10	.07	-.19	-.16	.25	-.17	.07	—			
12. Peer play quality	.44**	.14	.47**	.15	.56***	-.17	-.28	.30	.25	.17	.17	—		
13. Extended fantasy play	.25	-.21	.51**	-.14	.47**	-.36*	-.36*	.14	.17	.30	-.10	.46**	—	
14. Unmanaged conflicts	-.36*	-.01	-.38*	.01	-.22	.05	.27	-.16	-.19	-.16	-.45**	-.65***	.05	—

$* p < .05.$ $** p < .01.$ $*** p < .001.$

of the family variables (mother–firstborn interaction and marital satisfaction) and sibling interaction quality, controlling for the effects of the friendship variables (quality of peer play, unmanaged conflicts, and extended fantasy play). These analyses revealed that the association between mother–firstborn interaction and sibling interaction quality at +6 months was not significant when the peer relationship variables were taken into account ($r = .25$, ns). However, the partial correlation between marital satisfaction and sibling interaction at +6 months approached significance ($r = .31$, $p < .10$). No other significant associations were found between the family and sibling relationship variables.

Discussion

Contribution of Friends

The results of this research suggest that children's friendships make a significant and unique contribution to their adaptation to becoming a sibling. More positive play interactions, fewer unmanaged conflicts, and greater joint participation in extended fantasy play within the peer relationship were associated with more positive sibling interactions. Being in a peer relationship in which each child considered the other as his or her best friend was also associated with fewer unmanaged conflicts with peers. These results are consistent with those of Gottman (1983; Gottman & Parker, 1987), who identified conflict, coordinated play, shared fantasy play, and sustained communication as important interpersonal processes for preschool-aged children. The present results serve to extend Gottman's findings, which described the behaviors for developing friendships in the normative case, to the situation in which one child is experiencing a stressful transition within the context of the ongoing friendship.

There are several possible mechanisms that may explain these associations between experiences with friends and the quality of developing sibling relationships. First, children may develop particular social and emotional competencies through their interactions with friends that prepare them well for sibling relationships. For example, conflict management and the coordination of play may be two types of social skills commonly developed through peer interaction that may lead to enhanced competency in relating to a sibling. Similarly, friendships offer children emotional experiences that may help them negotiate the affective components of relationships. Learning to de-escalate negative affect, cope with bad feelings, and tolerate frustrations may be emotional competencies—commonly exercised in peer relationships—that are directly applicable to the early development of the sibling relationship.

Second, close friendships may provide a suitable context for working through issues about becoming a sibling and for the exchange of emotional support. Engagement in fantasy play with an intimate peer may be one way that young children obtain support from one another and play out their concerns about the changes occurring in their lives. For example, many of the children in the current study enacted sibling-related fantasy themes, oftentimes in a repetitive fashion. This type of play may help children consolidate their understanding of what it will be like to have a baby in the family (Waelder, 1933) and to

gain support from their friend as they explore their feelings about becoming a sibling. Furthermore, the validation and support that children experience in their role as friend may lead to enhanced self-esteem and self-regard (Furman & Buhrmester, 1985). This, in turn, may increase children's abilities to negotiate the stressors that accompany the transition.

An alternative explanation of these findings could be that children who possess particular characteristics behave more positively with both friends and siblings. That is, the association between peer relationship quality and sibling acceptance may be accounted for by factors such as social competence or personality traits. Although the assessment of personality characteristics was not a focus of the present research, we did examine the role of global social competence as teachers completed the Kohn Social Competence Scale. As stated earlier, social competence is a multifaceted construct, and teachers' ratings represent only one dimension. However, teachers' ratings of social competence have been shown to have considerable validity, because they correlate highly with sociometric and other measures of social adjustment (Parker & Asher, 1987). In the present study, this measure of social competence was not significantly correlated with sibling interaction quality at +6 months and was only marginally correlated with this measure at +14 months. This suggests that constructs related to the qualities of the best-friend relationship may be more strongly linked with the quality of sibling relationships than a construct of global social competence. It is intuitive that a child's behavior in one relationship should be a better predictor of the quality of other relationships he or she develops, in comparison to measures of social behaviors in groups. In fact, it is at the level of relationships that we may find the best indicators of social competence.

Additional research is needed to help clarify the associations between children's friendship relationships, social competence, personality traits, and sibling relationships. Systematic replications of this work should be conducted with additional measures of the quality of children's friendships, social competence, and personality variables. One strategy could be to compare the sibling relationships of children who participate in friendships of varying quality. Descriptive measures of children's friendships could be developed from both self-report and naturalistic observation that would assess relevant dimensions of friendship. For example, these dimensions may include the opportunity to work through emotional issues relevant to becoming a sibling, the level of emotional support exchanged in the relationship, and the degree to which the children demonstrate particular social competencies in their friendship interactions. At the same time, researchers could examine children's success in accepting a new sibling in relation to additional measures of social competence, for example, by their level of social acceptance or sociometric status, or by their facility with specific social skills. Similarly, personality traits such as general friendliness, hostility, or flexibility could also be assessed. Correlational and multiple regression techniques could then be used to examine the associations between the friendship dimensions and sibling relationship quality in relation to these other factors. In these ways, researchers may begin to tease apart the key ingredients for the formation of harmonious sibling relationships.

Contribution of Family Relationships

Mother–child interaction quality and marital satisfaction were found to be associated with the quality of sibling interaction at +6 months. However, when the effects of the peer relationship variables were controlled, the remaining partial correlations between each of the family variables and sibling interaction quality were no longer significant. Given the results of previous research linking mother–child (Baldwin, 1947; Dunn & Kendrick, 1982; Jacobs & Moss, 1976; Lasko, 1954; Legg, Sherick, & Wadland, 1974; Taylor & Kogan, 1973) and marital relationship quality (Brody et al., 1987; MacKinnon, 1989) with sibling relationship quality, stronger associations were expected.

These results should not be interpreted as evidence that parents are unimportant in the early development of sibling relationships. It is possible that the relatively weak correlations between the family variables and sibling relationship quality may be due to limitations in the measurement of constructs. For example, the observations of mother–firstborn interaction were relatively brief. Even though over 30 possible parent–child behaviors were targeted for observation, it is still possible that some salient dimensions of the parent–child relationship were not assessed. In addition, although the observations were conducted in a natural setting, the nature of the interaction may have been influenced by our request that they discuss the arrival of the new baby. Furthermore, the measure of marital satisfaction was also limited by the reliance on mothers' reports.

Another explanation for the weak relationships between the family and sibling relationship variables may be that parents contribute to the development of sibling relationships in ways that were not evaluated in the current study. For example, the parental system may influence sibling relationships indirectly, perhaps by facilitating firstborn children's general social development. Parents contribute to the development of social and emotional competencies that are relevant for sibling interaction through the provision of opportunities for peer interaction, through the teaching of basic social skills, and by directing and supervising children's play (Ladd & Golter, 1988; Parke, MacDonald, Beitel, & Bhavnagri, 1988). Furthermore, parents may also influence children's social behaviors through their beliefs, attitudes, and expectations for interpersonal relationships (Mills & Rubin, 1990). Further research is needed to understand the ways in which parental behaviors and attitudes help shape relationships among siblings.

The results are also consistent with the view that parents and friends make different, yet complementary, contributions to children's social adaptation (Hartup, 1983). The finding that associations between the peer relationship variables and sibling interaction quality were at least marginally significant when the effects of the family variables were controlled supports the notion that friendship relationships offer unique benefits to children becoming siblings. In light of the social support literature that only recently has considered the supportive influences of young children (Felner, 1984; Lewis et al., 1984; Reid et al., 1989), it is remarkable that children as young as 3 years of age can be shown to play a role in sibling acceptance. The results parallel those of Furman et al. (1979) and Suomi and Harlow

(1972), among others, in suggesting that peers, and in this case, close friends, may be optimal partners for helping children develop requisite social skills.

In some ways, the skills that children learn from relating to their friends may be more relevant for sibling interaction than what they learn from their parents. Because most children have already exercised social and emotional skills in the peer context, it may be relatively easy for them to translate these abilities to another child–child relationship. Furthermore, in comparison with parent–child relationships, the peer system demands more advanced interpersonal behaviors from children in order to sustain a relationship. Parents usually adapt to the needs of children in ways that peers do not. Because it is relatively unforgiving, the peer context may be more diagnostic of a child's social abilities. Because younger siblings are even less likely than peers to adapt their behaviors to the firstborn child, the social and emotional skills that children develop through the peer context may be highly valuable for sibling interaction. The best-friend relationship, with its emphasis on the coordination of play and fantasy, and the regulation of affect and conflict may offer a great deal to young children in terms of negotiating stress and developing positive relationships with others.

Finally, additional limitations of this work must be addressed. First, the data are correlational, and conclusions about cause and effect cannot be drawn. However, the longitudinal design does allow for some interpretations about the direction of correlational relationships. In addition, the participants in this study were unique in that they were generally well educated and highly motivated. Support for the generalizability of the present findings stem in part from its systematic replication of previous work (Brody et al., 1987; Dunn & Kendrick, 1982; Stewart, 1990). However, replication of the unique findings from this study will be important.

References

Abramovitch, R., Corter, C., & Lando, B. (1979). Sibling interaction in the home. *Child Development, 50,* 997–1003.

Asher, S. R., & Parker, J. G. (1989). Significance of peer relationship problems in childhood. In B. H. Schneider, G. Attili, J. Nadel, & R. P. Weissberg (Eds.), *Social competence in developmental perspective* (pp. 5–23). Amsterdam: Kluwer Academic.

Bakeman, R., & Gottman, J. M. (1986). *Observing behavior.* Cambridge, England: Cambridge University Press.

Baldwin, A. L. (1947). Changes in parent behavior during pregnancy. *Child Development, 18,* 29–39.

Berndt, T., & Perry, T. B. (1986). Children's perceptions of friendships as supportive relationships. *Developmental Psychology, 22,* 640–648.

Bigelow, B. J., & LaGaipa (1975). Children's written descriptions of friendships: A multidimensional study. *Developmental Psychology, 11,* 857–858.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation, anxiety and anger.* New York: Basic Books.

Brody, G. H., Stoneman, Z., & Burke, M. (1987). Family system and individual correlates of sibling behavior. *American Journal of Orthopsychiatry, 57,* 561–569.

Buhrmester, D., & Furman, W. (1986). The changing functions of friends in childhood: A neo-Sullivanian perspective. In V. J. Derlega & B. A. Windstead (Eds.), *Friendship and social interaction* (pp. 41–62). New York: Springer-Verlag.

Buhrmester, D., & Furman, W. (1987). The development of companionship and intimacy. *Child Development, 58,* 1101-1113.

Bukowski, W. M., & Newcomb, A. F. (1984). Stability and determinants of sociometric status and friendship choice: A longitudinal perspective. *Developmental Psychology, 20,* 941-952.

Connolly, J. A., Doyle, A. B., & Reznick, E. (1983, April). *Social fantasy play as a forum for the practice of social skills: The features of fantasy vs. non-fantasy peer interaction.* Paper presented at the biennial meeting of the Society for Research in Child Development, Detroit.

Daniels, D., & Plomin, R. (1985). Differential experience of siblings in the same family. *Developmental Psychology, 21,* 747-760.

Duck, S. (1983). *Friends for life: The psychology of close relationships.* New York: St. Martin's Press.

Dunn, J. (1983). Sibling relationships in early childhood. *Child Development, 54,* 787-811.

Dunn, J. (1986). Growing up in a family world: Issues in the study of social development in young children. In P. Light (Ed.), *Children of social worlds* (pp. 98-115). Cambridge, England: Cambridge University Press.

Dunn, J., & Kendrick, C. (1982). *Siblings: Love, envy and understanding.* Cambridge, MA: Harvard University Press.

Felner, R. D. (1984). Vulnerability in childhood: A preventative framework for understanding children's efforts to cope with life stress and transitions. In M. C. Roberts & L. Peterson (Eds.), *Prevention of problems in childhood* (pp. 133-169). New York: Wiley.

Field, T., & Reite, M. (1984). Children's responses to separation from mother during the birth of another child. *Child Development, 55,* 1308-1316.

Fienberg, S. E. (1980). *The analysis of cross-classified categorical data.* Cambridge, MA: MIT Press.

Fine, G. A. (1981). Friends, impression management, and preadolescent behavior. In S. R. Asher & J. M. Gottman (Eds.), *The development of children's friendships* (pp. 29-52). New York: Cambridge University Press.

Forbes, D., Katz, M., & Paul, B. (1986). "Frame talk": A dramatistic analysis of children's fantasy play. In E. Mueller & C. Cooper (Eds.), *Process and outcome in peer relationships* (pp. 249-265). San Diego, CA: Academic Press.

Freud, S. (1920). *A general introduction to psycho-analysis.* New York: Liveright.

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology, 21,* 1016-1024.

Furman, W., Rahe, D., & Hartup, W. W. (1979). Rehabilitation of socially-withdrawn preschool children through mixed-age and same-age socialization. *Child Development, 50,* 915-922.

Garmezy, N., & Rutter, M. (1983). *Stress, coping and development in children.* New York: McGraw-Hill.

Garvey, C. (1987, April). *Creation and avoidance of conflict in preschool children's play.* Paper presented at the biennial meeting of the Society for Research in Child Development, Baltimore.

Gershman, E. S., & Hayes, D. S. (1983). Differential stability of reciprocal friendships and unilateral relationships among preschool children. *Merrill-Palmer Quarterly, 29,* 169-177.

Giffin, H. (1985). The coordination of meaning in the creation of a shared make-believe reality. In I. Bretherton (Ed.), *Symbolic play and the development of social understanding* (pp. 73-100). San Diego, CA: Academic Press.

Gilmore, J. B. (1966). The role of anxiety and cognitive factors in children's play behavior. *Child Development, 37,* 397-416.

Gottman, J. M. (1983). How children become friends. *Monographs of the Society for Research in Child Development, 48*(No. 3, Serial No. 201).

Gottman, J. M., & Mettetal, G. (1987). Speculations about social and affective development: Friendship and acquaintanceship through adolescence. In J. M. Gottman & J. G. Parker (Eds.), *Conversations of friends: Speculations on affective development* (pp. 192-240). New York: Cambridge University Press.

Gottman, J. M., & Parker, J. G. (Eds.). (1987). *Conversations of friends: Speculations on affective development.* New York: Cambridge University Press.

Gottman, J. M., & Parkhurst, J. T. (1980). A developmental theory of friendship and acquaintanceship processes. In A. Collins (Ed.), *Minnesota symposium on child psychology: Vol. 13* (pp. 197-253). Hillsdale, NJ: Erlbaum.

Gunsberg, A. (1985). *The impact of a second child on family interaction.* Unpublished masters thesis, University of Illinois at Champaign-Urbana.

Hartup, W. W. (1983). Peer relations. In E. M. Hetherington (Ed.), *Handbook of child psychology: Vol. IV. Socialization, personality, and social development* (pp. 103-196). New York: Wiley.

Hinde, R. (1976). On describing relationships. *Journal of Child Psychology and Psychiatry, 17,* 1-19.

Howes, C. (1987). Peer interaction of young children. *Monographs of the Society for Research in Child Development, 53*(No. 1, Serial No. 217).

Ispa, J. (1981). Peer support among Soviet day care toddlers. *International Journal of Behavioral Development, 4,* 255-269.

Jacobs, B. S., & Moss, H. A. (1976). Birth order and sex of sibling as determinants of mother-infant interaction. *Child Development, 47,* 315-322.

Kohn, M. (1977). The Kohn Social-Competence Scale and Kohn Symptom Checklist for the preschool child. A follow-up report. *Journal of Abnormal Child Psychology, 5,* 249-263.

Krokoff, L. J., Gottman, J. M., & Hass, S. D. (1989). Validation of a global rapid couples interaction scoring system. *Behavioral Assessment, 11,* 65-79.

Ladd, G. W., & Emerson, E. S. (1984). Shared knowledge in children's friendships. *Developmental Psychology, 20,* 932-940.

Ladd, G. W., & Golter, B. S. (1988). Parents' management of preschooler's peer relations: Is it related to children's social competence? *Developmental Psychology, 24,* 109-117.

Ladd, G. W., & Price, J. M. (1987). Predicting children's social and school adjustment following the transition to kindergarten. *Child Development, 58,* 1168-1189.

Lasko, J. K. (1954). Parent behavior toward first and second children. *Genetic Psychology Monographs, 49,* 97-137.

Legg, C., Sherick, I., & Wadland, W. (1974). Reaction of preschool children to the birth of a sibling. *Child Psychiatry and Human Development, 5,* 3-39.

Levy, D. M. (1937). Studies in sibling rivalry. *Research Monographs, American Orthopsychiatric Association* (No. 2).

Lewis, M., Feiring, C., & Kotsonis, M. (1984). The social network of the young child: A developmental perspective. In M. Lewis (Ed.), *Beyond the dyad* (pp. 129-160). New York: Plenum Press.

Locke, H. J., & Wallace, K. H. (1959). Short marital-adjustment and prediction tests: Their reliability and validity. *Marriage and Family Living, 21,* 251-255.

Maccoby, E. E. (1983). Social-emotional development and response to stressors. In N. Garmezy & M. Rutter (Eds.), *Stress, coping and development in children* (pp. 217-234). New York: McGraw-Hill.

Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family. In P. H. Mussen (Ed.), *Handbook of child psychology: Vol. 4, Socialization, personality, and social development* (pp. 1-101). New York: Wiley.

MacKinnon, C. E. (1989). An observational investigation of sibling interactions in married and divorced families. *Developmental Psychology, 25,* 36-44.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. *Monographs of the Society for Research in Child Development, 50*(1–2, Serial No. 209).

Mills, R. S. L., & Rubin, K. H. (1990). Parental beliefs about problematic social behaviors in early childhood. *Child Development, 61*, 138–151.

Milos, M. E., & Reiss, S. (1982). Effects of three play conditions on separation anxiety in young children. *Journal of Consulting and Clinical Psychology, 50*, 389–395.

Nagera, H. (1981). *The developmental approach to childhood psycho-pathology.* New York: Jason Aronson.

Newcomb, A. F., & Brady, J. F. (1982). Mutuality in boys' friendship relations. *Child Development, 53*, 392–395.

Newson, J., & Newson, E. (1968). *Four years old in an urban community.* Chicago: Aldine.

Parke, R. D., MacDonald, K. B., Beitel, A., & Bhavnagri, N. (1988). The role of the family in the development of peer relationships. In R. Peters & R. J. McMahon (Eds.), *Social learning system approaches to marriage and the family* (pp. 17–44). New York: Brunner/Mazel.

Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin, 102*, 357–389.

Parker, J. G., & Gottman, J. M. (1989). Social and emotional development in a relational context: Friendship interaction from early childhood to adolescence. In T. J. Berndt & G. W. Ladd (Eds.), *Peer relationships in child development* (pp. 95–131). New York: Wiley.

Pelletier-Stiefel, J., Pepler, D., Crozier, K., Stanhope, L., Corter, C., & Abramovitch, R. (1986). Nurturance in the home: A longitudinal study of sibling relationships. In A. Fogel & G. F. Melon (Eds.), *Origins of nurturance: Developmental, biological and cultural perspectives on caregiving* (pp. 3–24). Hillsdale, NJ: Erlbaum.

Peterson, D. R. (1961). Behavior problems of middle childhood. *Journal of Consulting Psychology, 25*, 205–209.

Piaget, J. (1962). *Play, dreams and imitation.* New York: Norton.

Reid, M., Landesman, S., Treder, R., & Jaccard, J. (1989). "My family and friends": Six- to twelve-year-old children's perceptions of social support. *Child Development, 60*, 896–910.

Reisman, J. M., & Schorr, S. E. (1978). Friendship claims and expectations among children and adults. *Child Development, 49*, 913–916.

Rubin, K. H., & Ross, H. S. (1982). *Peer relationships and social skills in childhood.* New York: Springer-Verlag.

Sameroff, A. J., & Emde, R. N. (Eds.). (1989). *Relationship disturbances in early childhood.* New York: Basic Books.

Schaefer, E. S. (1971). Development of hierarchical, configurational models for parent and child behavior. In J. P. Hill (Ed.), *Minnesota symposium on child psychology* (Vol. 5, pp. 130–161). Minneapolis: University of Minnesota Press.

Schwarz, K. C. (1972). Effects of peer familiarity on the behavior of preschoolers in novel situations. *Journal of Personality and Social Psychology, 24*, 276–284.

Shantz, C. (1987). Conflicts between children. *Child Development, 58*, 283–305.

Shantz, C., & Hobart, C. J. (1989). Social conflict and development: Peers and siblings. In T. J. Berndt & G. W. Ladd (Eds.), *Peer relationships in child development* (pp. 71–94). New York: Wiley.

Silber, E., Perry, S. E., & Bloch, D. E. (1957). Patterns of child-interaction in a disaster. *Psychiatry, 21*, 159–167.

Sostek, A. M. (1981, April). *Development of children's reactions to an infant sibling: Sex and age differences.* Paper presented at the meeting of the Eastern Psychological Association, NY.

Stewart, R. B. (1990). *The second child: Family transition and adjustment.* Newbury Park, CA: Sage.

Stoneman, Z., Brody, G. H., & Burke, M. (1989). Sibling temperaments and maternal and paternal perceptions of marital, family, and personal functioning. *Journal of Marriage and the Family, 51*, 99–113.

Straus, M., Gelles, R., & Steinmetz, S. (1980). *Behind closed doors.* New York: Doubleday.

Sullivan, H. S. (1953). *The interpersonal theory of psychiatry.* New York: Norton.

Suomi, S., & Harlow, H. F. (1972). Social rehabilitation of isolate-reared monkeys. *Developmental Psychology, 6*, 487–496.

Taylor, M. K., & Kogan, K. L. (1973). Effects of the birth of a sibling on mother–child interaction. *Child Psychiatry and Human Development, 4*, 53–58.

Thomas, A., Birch, H. C., Chess, S., & Robbins, L. C. (1961). Individuality in responses of children to similar environmental situations. *American Journal of Psychiatry, 117*, 798–803.

Upton, G. J. G. (1978). *The analysis of cross-tabulated data.* New York: Wiley.

Waelder, R. (1933). The psychoanalytic theory of play. *Psychoanalytic Quarterly, 2*, 208–224.

Ward, M. J., Vaughn, B. E., & Robb, M. D. (1988). Social-emotional adaptation and infant–mother attachment in siblings: Role of the mother in cross-sibling consistency. *Child Development, 59*, 643–651.

Werner, E. E., & Smith, R. S. (1979). *Vulnerable but invincible.* New York: McGraw-Hill.

Winnicott, D. (1965). *The maturational processes and the facilitating environment.* New York: International Universities Press.

Appendix

Quality of Mother–Firstborn Interaction: Summary of Codes

Positive Activity Codes

Four codes were used to indicate the incidence of mother–firstborn activities such as joint conversation about the baby coming, joint play, or shared fantasy play. Activities performed individually or in parallel were also included in this category if the affective climate was also positive.

Positive Affect Codes

Ten codes were used to denote positive processes such as approval, affection, smiles, laughter, sympathy, close physical proximity, the acceptance of positive or negative feelings, a subdued or peaceful emotional climate, or other positive affects.

Negative Activity Codes

Five negative activity codes recorded unsuccessful initiations of conversation, joint play, or shared fantasy play. Instances of ignoring one another and intrusive maternal behaviors were also recorded.

Negative Affect Codes

These 14 codes denoted prohibitions, conflict, threats, anger, whining and crying, insults, criticism, physical aggression, "wild" or out of control behaviors, sadness, boredom, rejecting or ignoring feeling statements, physical distance, or other negative affects.