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Sibling Relationship Quality From Birth to Adolescence: The Enduring Contributions of Friends

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The purpose of the present study was to examine continuity in sibling relationships across childhood and to evaluate the degree to which children's experiences with their friends and mothers prior to their sibling's birth predict the quality of the relationship they establish with their siblings in adolescence. Twenty-eight firstborn children, who were 48 months old at the time of their sibling's birth, were observed interacting with their siblings and friends at multiple time points. The level of positive social behaviors demonstrated in their early relationships with friends continued to predict sibling relationship quality in adolescence. Firstborn children who had more positive interactions with friends prior to their sibling's birth demonstrated more prosocial interactions with both their siblings and friends in adolescence and exhibited fewer externalizing behaviors. Longitudinal associations support the hypothesis that the social competencies that young children demonstrate in their early relationships with friends may have enduring significance for their social development.

Keywords: siblings, sibling relationship quality, friendship, sibling–peer linkages

The quality of family life is significantly influenced by the degree to which children in the family get along. However, the factors that promote harmonious and supportive sibling relationships are not yet fully understood. Longitudinal research that assesses children's functioning in different relationship systems across development plays an important role in this discovery process. The present study is an extension of a longitudinal investigation of the early establishment of sibling relationships to evaluate continuity in these relationships into adolescence. Further, the study investigated the degree to which children's early experiences with friends and mothers predict the quality of sibling relationships in late adolescence.

Although very few longitudinal studies have been conducted that assess sibling relationship quality from the birth of a sibling to late adolescence, there is some evidence that sibling relationships are generally consistent in their quality across much of childhood in the absence of formal intervention or significant life change (Slomkowski & Manke, 2004). Much of this evidence for continuity stems from Judy Dunn's (Dunn & Kendrick, 1982) landmark longitudinal investigation of 40 families in Cambridge, England, who were expecting their second child in the early 1980s. Follow-up assessments conducted by Dunn, Slomkowski, and Beardsall (1994) when the elder siblings were 9, 11, and 13 years old revealed considerable consistency in mothers' reports of the positive and negative behaviors older children directed toward their younger siblings, suggesting reasonable stability over a 7-year period. Greater stability was evident through middle childhood (ages 5–10 years), with declines in sibling intimacy evident in early adolescence. Observational measures of sibling behavior at age 6 were correlated with both internalizing and externalizing behaviors 7 years later (Dunn, Slomkowski, Beardsall, & Rende, 1994).

Despite the evidence for continuity, there are events that are likely to "naturally" alter the trajectory of sibling relations without formal intervention. Changes in the quality of sibling relationships may occur as children reach new developmental levels that bring novel opportunities for social relationships outside of the family (e.g., during adolescence; Conger, Bryant, & Brennom, 2004). Although sibling relationships have generally been found to become less intimate as children enter adolescence, by virtue of increased involvement with peers (Buhrmester, 1992; Dunn, Slomkowski, Beardsall, et al., 1994), they may improve in quality as the siblings' relationships with parents become more differentiated (Feinberg, McHale, Crouter, & Cumsille, 2003). In addition, life events and adversities, such as pa-

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rental marital disharmony, separation, or divorce, may lessen sibling relationship quality (Dunn, Slomkowski, Beardsall, et al., 1994; Hetherington, 1988), although Jenkins (1992) has pointed out that some siblings develop close and protective relationships to compensate for adverse family situations. Likewise, stressors such as economic hardship may have an indirect effect on sibling relations, as they disrupt good parenting, which in turn may contribute to more negative sibling interactions (Conger & Conger, 1996). Thus, a thorough understanding of continuity and change in sibling relationships requires taking into account a variety of personal, interpersonal, and ecological variables.

A key premise tested in the present study is that social experiences that occur early in children's development help shape the quality of sibling relationships throughout childhood. We examined the contributions of two relationships systems that young children commonly engage in before they become siblings—those involving mothers and those involving friends.

The ways that parents help shape the character of children's relationships with sisters and brothers have received considerable experimental attention. For example, studies have investigated the effects of parental differential treatment (Feinberg et al., 2003; Kowal, Kramer, Krull, & Crick, 2002; McGuire, Dunn, & Plomin, 1995; McHale, Updegraff, Jackson-Newsom, Tucker, & Crouter, 2000), warmth and hostility in the parent–child relationship quality (Brody, Stoneman, & Burke, 1987; Dunn, Deater-Deckard, Pickering, Golding, & the ALSPAC Study Team, 1999; Hetherington & Clingempeel, 1992; Stocker, Dunn, & Plomin, 1989), and parental responses to sibling conflicts (Kramer, Perozynski, & Chung, 1999; Ross, Filyer, Lollis, Perlman, & Martin, 1994) on sibling relationship quality and socioemotional well-being. Findings from these studies emphasize that children benefit from warm and attentive parental interactions that take into consideration the unique needs of individual children. In the present study, we examined the longitudinal associations between mother–firstborn interaction quality, assessed prior to the birth of a second child, and sibling relationship quality in adolescence.

The ways that friendship relationships may influence the nature of the developing sibling relationship have received relatively little attention despite the fact that firstborn children in Western societies tend to have regular contact with peers prior to becoming siblings (Kramer & Gottman, 1992; McCoy, Brody, & Stoneman, 2002). Even in early childhood, close friendships have been shown to provide unique benefits for children encountering stress (Berndt & Perry, 1986; Hartup, 1999; Parker & Asher, 1993) through their provision of social support and social-competence-building functions. Thus, friendship relationships have the potential to help children to respond effectively to challenges they face in their sibling relationships.

Significant linkages between peer and sibling systems of relationships have been documented in several investigations (Buhrmester, 1992; Dunn & McGuire, 1992; McCoy, Brody, & Stoneman, 1994; Stocker & Dunn, 1990; Updegraff & Obeidallah, 1999), with stronger correspondences found between sibling and friend relationships rather than between sibling and peer (e.g., acquaintance) relationships (Stocker & Dunn, 1990). The nature of these associations is not yet fully understood and may depend to some extent on sibling gender constellation (Conger et al., 2004). Whereas some studies have found congruent associations with children having relatively poorer relationships with their best friends also experiencing more conflict and less warmth with siblings (e.g., Kramer & Gottman, 1992; McCoy et al., 1994), other studies have found evidence for compensatory processes, where deficits in one relationship system are "compensated" by more adaptive experiences in the other (East & Rook, 1992; Stocker, 1994). Because the nature of sibling–peer linkages may change across development, Dunn and McGuire (1992) have called for additional longitudinal research on these associations. Whereas many of the previous studies on sibling–peer linkages have focused on the ways that sibling relationships may be important contexts for developing social competencies that they can apply to their relations with peers (e.g., McCoy et al., 2002; Stormshak, Bellanti, & Bierman, 1996), the present study investigated the opposite direction of effects—how close peer relationships can contribute to sibling relationship quality.

The present study is an extension of Kramer and Gottman's (1992) longitudinal study, which charted variations in children's sibling relationship quality from the last trimester of the mothers' pregnancy with a second child to when this child was 14 months of age. Thirty firstborn children who were, on average, 4 years of age were visited in their homes every 2 to 3 weeks until the second child was 6 months old to obtain observational and parental reports of their functioning in three salient relationship systems: (a) mother–child, (b) sibling, and (c) best friend peer. Follow-up assessments were conducted when the second child was 14 and 48 months of age. In line with Dunn and Kendrick's (1982) findings, mother–child relationship quality was a significant predictor of sibling relationship quality; children who were reported to have positive relationships with their mothers before the sibling was born directed more prosocial behaviors to their sibling when the baby was 6 months of age. The quality of the relationship that children had with their best friends prior to the birth of their sibling also significantly predicted sibling relationship quality at 6 months, when controlling for the effects of age, gender, mother–child relationship quality, and parental marital satisfaction. Follow-up assessments indicated that the overall quality of the best friend relationship continued to predict the sibling relationship measures when the younger siblings were 14 months and 48 months of age. Because this was a longitudinal study, and measures of best friend interaction were assessed prior to the birth of the sibling, these results suggest that social competencies exercised in the best friend context may be one important factor that contributes to the development of more positive sibling relationships.

A detailed analysis of the observed play behaviors indicated that preschoolers who were better able to coordinate play with a friend, engage in extended fantasy play, manage conflicts, and avoid a negative emotional climate later had

more positive sibling relationships than did age mates who demonstrated fewer capabilities in these areas. Kramer and Gottman (1992) interpreted these results as an indication that the skills children learn by interacting with their friends may be particularly relevant for sibling interaction because both are child-based relationship systems: "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 sibling relationships" (p. 695). The degree to which early experiences with friends continues to predict sibling relationship quality in adolescence is a key question addressed in this study.

The present study reports the results of a follow-up assessment conducted with the original sample when the elder siblings were 17-year-old juniors and seniors in high school, preparing to leave the family for college or independent living, and their younger siblings were 13 years of age. In addition to assessing continuity in sibling interaction quality across childhood, the study tested the hypothesis that positive social encounters with friends and mothers, before the entrance of a sibling into the family, are linked with more positive and less negative sibling interactions in adolescence. We also tested whether the quality of early friendship interaction predicts firstborn children's socioemotional well-being in adolescence, as indexed by levels of internalizing and externalizing behavior problems. We hypothesized that positive interactions with friends and mothers would be linked with more positive and less negative sibling interactions, and more favorable socioemotional development, in adolescence.

Method

Participants

Twenty-eight of the original 30 sibling dyads participated in the follow-up study. Families were recruited by means of newspaper advertisements and flyers distributed at local preschools. Detailed information about the sample at the time the participants initially volunteered to participate is presented in Kramer and Gottman's (1992) study. Participants in the present follow-up assessment included 18 female and 10 male firstborn children, along with their younger sisters ($n = 15$) and brothers ($n = 13$). The gender constellation of these older/younger sibling dyads was as follows: 11 female/female, 7 female/male, 4 male/female, and 6 male/male. At the time of the follow-up visit, the firstborn siblings were 17.34 years of age ($SD = 1.04$), and second-born siblings were 13.42 years of age ($SD = 0.68$). The mean age difference between siblings was 47 months ($SD = 10.04$).

All of the families were White and middle class. Median family income at this follow-up assessment was in the $50,000–60,000 range. Although all families had been maritally intact when the study began, parents in 6 of the 28 families (21%) had divorced by the time of the follow-up assessment. Eight families (29%) had a third child by the time of the follow-up assessment. Although information was obtained about these later-born children, all analyses reported in the present study are based on the first- and second-born children.

The best friends of the firstborn children in early childhood were similar to the target children in gender (all but 6 dyads were of the same sex) but were, on average, 12 months older ($M = 60.68$ months, $SD = 26$).

Procedures

Families were contacted by telephone and invited to participate in the follow-up investigation. Seventeen of the 28 families (61%) continued to reside in the midwestern communities in which the study had originally been conducted. The remaining 11 families had moved to diverse areas of the United States and were located through Web-based searches of telephone directories and by contacting individuals the family had initially listed as people "who would always know where they are." Home visits were conducted with all families who lived within 1 day's driving distance ($n = 23$). The remaining five families participated in telephone interviews and responded to questionnaires through the mail. These geographically distant families were also mailed recording equipment and instructions so that they could produce their own videotapes of sibling interaction. Further, we reviewed the taping procedures with parents over the telephone. These families had taken part in the recording procedures on 12 previous occasions and reported feeling well prepared to implement the videotaping on their own. These families did not differ from their counterparts on any demographic characteristics or outcome measure.

Sibling Interaction

Sibling interaction was videotaped for 30 min in the home. Because pilot testing had indicated that an observation with little structure led adolescent siblings to be relatively disengaged with one another, we devised three tasks to increase the likelihood that we would elicit a full range of sibling behavior. The three tasks were devised to allow for conflictual, competitive, cooperative, and prosocial interaction. A research assistant instructed the siblings in one task at a time (presented in a random sequence), leaving the dyad alone for 10 min to carry out a task and then returning to introduce the next task. The task designed to set the occasion for conflict behaviors involved asking each adolescent to complete an "issues checklist," in which they rated the severity of 11 issues commonly reported by sisters and brothers as problems in their relationship. Sample items were "using the TV remote control" and "being able to be with friends without a sibling bothering you." The siblings were asked to compare their lists and to select one issue to discuss together, with the goal being to work toward a resolution of the issue. The second task was designed to set the occasion for competition versus cooperation. Siblings were asked to work together to replicate a series of complex designs by using abstract shapes. Because the task was expected to be differentially challenging for older and younger siblings, we reasoned that two outcomes were possible: Siblings might either help one another or, alternately, view this task as an opportunity to compete. Finally, the third task was intended to promote positive affect, enjoyment, and solidarity between siblings. Siblings were asked to work together to plan a weekend's worth of activities for their entire family, with an imaginary $10,000 at their disposal. To enhance the likelihood that the final measures of sibling relationship quality tapped a relatively wide range of sibling behaviors, we intended to aggregate the data obtained from the three tasks.

Socioemotional Well-Being

Each family member was asked to participate in an interview and to complete a packet of questionnaires that assessed their perceptions of sibling and parent–child relationship quality, be-

havior problems, and parental differential treatment. Of interest to the present study was mothers' completion of the Child Behavior Checklist (Achenbach, 1991).

Measures

Observed Best Friend Interaction Quality: Prenatal Period

The quality of the firstborn children's interactions with their best friends, assessed during the last trimester of mothers' pregnancy with the second child, was measured with a rapid observational coding procedure adapted from Krokoff, Gottman, and Hass (1989). This coding system provides a global assessment of the degree to which siblings direct positive and negative behaviors toward one another. As a relatively large coding unit (e.g., 5 to 10 min of interaction) is used, coding is performed in a comparatively rapid manner. As a detection system, the usual requirement that codes are mutually exclusive and exhaustive is relaxed so that observers are not required to make complex distinctions between codes. Rather, coders simply indicate all of the codes that fit the interaction.

While following a verbatim transcript, coders listened to the 30-min audiotape and, using a menu of 44 interpersonal events, indicated all of the behaviors and affects that occurred during each 5-min interval. The 44 codes represented diverse aspects of positive and negative conversation, play, affect, and repair and maintenance of continuing peer interaction. The coding system was conceptualized as a dyadic system in that the behaviors of both relational partners were taken into consideration; for example, self-disclosure (i.e., stating a feeling or preference) would be coded as either successful (a "positive" code) or unsuccessful (a "negative" code) on the basis of the response the child received from his or her friend. 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 summary score was derived by averaging across all of the observational periods within the session. Interrater agreement, assessed with intraclass correlations, was .85 (alpha).

Sibling Interaction Quality

Early childhood observations. Children's sibling relationship quality in the earlier assessments was indexed with a rapid observational coding system that included 31 categories of positive and negative affects and behaviors. Coders identified whether each category occurred within a 5-min coding interval. A summary score of percent positive interaction score was obtained for each observational period, and a mean percentage positive score served as the summary measure of sibling interaction quality. As reported in Kramer and Gottman's (1992) article, interrater agreements (alphas), assessed through intraclass correlations, were .86., .91, .95, and .91 (alphas) for the 1-, 3-, 6-, and 14-month observations, respectively. With the same method, interrater agreement for the 48-month observation was .92.

Adolescent observations. The same coding system was used to code the observations of adolescent sibling interactions. One modification was made to ensure that the coding system would satisfactorily describe interactions performed by adolescent siblings: Coders were instructed to use the "other positive" and "other negative" categories to denote a small set of behaviors that the adolescent siblings performed that were not reflected in the original set of codes. These other positive and other negative behaviors included "psychological" comments that inferred the emotional state or thoughts of the sibling (e.g., "You really don't like it when I talk about your boyfriend"), sarcastic remarks, and unusual physical demonstrations of affection (e.g., lying on a couch with one's legs over a sibling's lap).

A summary score of percent positive interaction was obtained for each observational period. Although mean percent positive interaction scores were higher for the planning a vacation (M = 76.10, SD = 17.98) and the competition/cooperation tasks (M = 75.29, SD = 21.77) than for the conflict task (M = 69.36, SD = 21.56), $t(27) = 3.71$ and 3.82, $p < .01$, respectively, the scores for the three observational tasks were highly intercorrelated (rs ranged from .88–.94, $p < .001$). Given these high intercorrelations, scores for the three interaction tasks were aggregated, and a mean percentage positive score was used as the summary measure of global sibling interaction quality. Interrater agreement (alpha) was .90.

To obtain a more detailed picture of sibling interaction quality during adolescence, we coded the videotapes an additional time with Stocker et al.'s (1989) rating scale system to assess levels of sibling involvement, warmth, agonism, control, and rivalry/competition. Two independent coders used a 5-point Likert scale to rate 5-min intervals on these five dimensions of sibling interaction. Higher ratings indicated higher frequencies of each of these behaviors or affects. Estimates of interrater agreement (kappa), assessed with 55% of the videotaped interactions, were .86 for involvement, .87 for warmth, .83 for agonism, .80 for control, and .70 for rivalry/competition.

Mother–Firstborn Interaction Quality

Observations of mother–firstborn interaction, assessed during the 8th month of pregnancy with the second child, served as the measure of prenatal mother–child relationship quality. Mother–firstborn dyads were videotaped for 10 min as they discussed the new baby's arrival. Two independent raters coded the presence of 15 positive behaviors and 19 negative behaviors and affects during each of two 5-min intervals. Interrater agreement was .86. A mean percent positive interaction score (number of positive behaviors divided by the number of positive and negative behaviors, multiplied by 100) was computed as the summary measure.

Internalizing and Externalizing Behavior Problems

Adolescents' internalizing and externalizing behavior problems were assessed with maternal reports on the Child Behavior Checklist (Achenbach, 1991). Mothers rated on a 3-point scale (0 = *not true of the target child*, 1 = *somewhat or sometimes true of the target child*, 2 = *very true or often true of the target child*) the degree to which each of their teens exhibited each of the 118 behaviors. The internalizing scale assesses level of depression, social withdrawal, and somatic complaints. The externalizing scale assesses aggressiveness, delinquency, and hyperactivity. The internal consistency of the internalizing and externalizing scales for the present sample was .92 and .91, respectively.

Results

Longitudinal Assessment of Sibling Interaction Quality

Percent positive sibling interaction, as measured from the observation of sibling interaction in adolescence, is presented in Table 1. The corresponding percent positive sibling interaction scores derived from the earlier assessments

Table 1
Continuity in Sibling Relationship Quality: Correlations of Percent Positive Interaction Scores Obtained From Contiguous Observations (N = 28)

Observation: Age of second-born	*M* (SD)	Observation: Age of second-born				
		3 months	6 months	14 months	48 months	13 years
1 month	47.73 (18.08)	.34†				
3 months	45.90 (21.48)		.42*			
6 months	50.81 (20.43)			.54**		
14 months	52.49 (17.36)				.33†	
48 months	61.85 (21.13)					.69*
13 years	73.64 (19.82)					

Note. Partial correlations control for level of sibling relationship quality obtained from the immediately preceding observation.
† $p < .07$. * $p < .05$. ** $p < .01$.

with this sample are included in this table for comparative purposes. Mean ratings of the specific dimensions of sibling interaction quality, rated on a 5-point Likert scale, were as follows: warmth ($M = 2.65$, $SD = 1.08$), involvement ($M = 3.86$, $SD = 0.89$), agonism ($M = 2.16$, $SD = 1.22$), control ($M = 2.88$, $SD = 1.08$), and rivalry/competition ($M = 2.33$, $SD = 1.18$).

Age and gender effects were examined with correlational analyses and univariate analyses of variance (ANOVAs). Age of the firstborn children when their sibling was born (which is equivalent to the age difference between siblings) was marginally correlated with percent positive sibling interaction in adolescence ($r = .38$, $p < .08$). Investigation of the specific dimensions of sibling interaction quality revealed that sibling agonism ($r = -.40$, $p < .05$) and rivalry/competition ($r = -.46$, $p < .05$) were higher when the age difference between siblings was smaller. No significant effects were found for the sex of the first- or second-born child. Given the limited size of the sample, the effects of gender constellation could not be examined.

Correlational analyses were conducted to determine the degree to which contiguous measures of sibling interaction quality, obtained when the younger sibling was 1, 3, 6, 14, and 48 months and 13 years, were significantly associated. As shown in Table 1, the results reveal considerable consistency in mean levels of sibling interaction quality, as the indices derived from each assessment were positively correlated with those of the next (controlling for the level of sibling interaction quality obtained from the immediately preceding observation), with *r* values ranging from .33 ($p < .07$) to .69 ($p < .001$). The strength of these correlations appears to increase across development.

Predicting Sibling Interaction Quality in Adolescence From Mother–Firstborn Child Prenatal Interaction Quality

The quality of mother–firstborn interaction ($M = 76.51$, $SD = 14.28$), assessed during the prenatal period, was significantly associated with percent positive sibling interaction in adolescence ($r = .60$, $p < .001$; a partial correlation of .58, $p < .01$, was obtained when controlling for the effects of firstborn age). Further, prenatal mother–firstborn interaction was associated with adolescent sibling involvement ($r = .43$, $p < .05$), agonism ($r = -.67$, $p < .001$), control ($r = -.45$, $p < .05$), and rivalry/competition ($r = -.69$, $p < .001$). The correlation between prenatal mother–child interaction and sibling warmth in adolescence did not reach significance. Thus, more positive interaction between mothers and firstborn children, assessed prior to the birth of the sibling, was linked with less sibling negativity in adolescence. This association held when controlling for firstborn age.

Predicting Sibling Interaction Quality in Adolescence From Firstborn Children's Prenatal Best Friend Interaction Quality

Associations between the quality of firstborn children's prenatal play with a best friend and the quality of their sibling relationship in adolescence were examined by computing a series of bivariate correlations. More positive play with a friend during the prenatal period was associated with higher levels of positive sibling interaction in adolescence ($r = .41$, $p < .05$; a partial correlation of .26, $p < .10$, was obtained when controlling for the effects of firstborn age). More positive play with a friend during the prenatal period was associated with lower levels of adolescent sibling agonism ($r = -.44$, $p < .05$), control ($r = -.37$, $p < .05$), and rivalry/competition ($r = -.44$, $p < .05$). In addition, firstborn prenatal peer play quality was positively correlated with adolescent sibling warmth ($r = .41$, $p < .05$) but not with sibling involvement ($r = .22$, *ns*).

The finding of a lower correlation when controlling for firstborn age led us to conduct some exploratory within-group analyses of younger and older firstborn children, identified through a median split (median = 43 months). Whereas the association between prenatal peer play quality and later sibling relationship quality was apparent for older firstborn children ($r = .44$, $p < .10$), it was not significant for younger firstborn children ($r = .17$, *ns*).

Although hampered by a limited sample size, we conducted exploratory correlational analyses to identify whether these results held equally well for firstborn boys and girls. In recomputing the correlation for each gender group, we found that the quality of prenatal play predicted percent positive sibling interaction in adolescence for both girls ($r = .56$, $p < .05$) and boys ($r = .29$, $p < .10$).

Although the effect appeared to be less robust for boys, no significant difference was found between these two correlations using Fisher's *R* to *z* test.

Given the significant associations between prenatal mother–firstborn interaction and adolescent sibling relationship quality (reported above), we next examined whether these correlations continued to be significant when the quality of prenatal mother–child interaction was controlled. The resulting partial correlation was significant: More positive prenatal best friend interaction was linked with more positive sibling interaction in adolescence ($r = .40$, $p < .05$). Specifically, more positive prenatal best friend interaction was linked with lower levels of adolescent sibling agonism ($r = -.37$, $p < .05$), control ($r = -.27$, $p < .10$), and rivalry/competition ($r = -.33$, $p < .05$) and higher levels of warmth ($r = .24$, $p < .10$). Taken together, these results suggest that even when taking into account the quality of prenatal mother–firstborn interaction, sibling agonism and rivalry/competition in adolescence tend to be preceded by peer play that involves higher levels of negative social behaviors.

Predicting Personal Well-Being in Adolescence

Firstborn children's mean scores on the Child Behavior Checklist were 4.91 ($SD = 4.60$) and 4.91 ($SD = 7.99$) for internalizing and externalizing behavior problems, respectively. Mean scores for second-born children were similar: $M = 5.00$ ($SD = 5.48$) for internalizing behavior problems and $M = 5.68$ ($SD = 7.03$) for externalizing behavior problems. Four percent of firstborn children and 8% of second-born children scored above the cutoff for borderline clinical problems; percentages were calculated for each sibling using the cutoff scores provided by Achenbach (1991). These scores are comparable to those found for nonclinical samples (Achenbach). Of note, the scores obtained from first- and second-born children were not significantly correlated.

Best friend interaction quality, assessed at the prenatal observation, was negatively correlated with firstborn children's externalizing (but not internalizing) behavior problems in adolescence ($r = -.40$, $p < .05$). Children who interacted more positively with their friends prior to their siblings' birth demonstrated fewer externalizing behaviors in adolescence.

As shown in Table 2, firstborn children's externalizing behaviors were predicted by the quality of sibling interaction, assessed at 6 months and beyond. More positive sibling interaction in early childhood and adolescence predicted enhanced well-being, at least in terms of fewer externalizing behavior problems, in adolescence. No significant associations were found with respect to internalizing behavior problems. These findings were not significant for second-born children. The quality of mother–child interaction, assessed during the mothers' pregnancy with the second child, was not associated with either firstborn or second-born children's behavior problems in adolescence.

Table 2
Correlations Between Externalizing Behavior Problems in Adolescence and Longitudinal Measures of Sibling Relationship Quality ($N = 28$)

Observation: Age of second-born	Birth order	
	Firstborn	Second-born
1 month	−.14	−.09
3 months	−.27	.01
6 months	−.51**	.22
14 months	−.31*	.21
48 months	−.41*	.23
13 years	−.82***	.21
Warmth	−.42*	.22
Involvement	−.75***	.23
Agonism	.63***	−.11
Control	.21	−.22
Rivalry	.68***	−.15

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

Discussion

This study provides a longitudinal assessment of children's experiences in multiple relationship systems—albeit in a small sample of families—stemming from before the inception of the sibling relationship (during the mothers' pregnancy with the second child) to the last period of time when both siblings lived together in their family's home. The results support Kramer and Gottman's (1992) conceptualization that the social competencies that young children demonstrate in their early relationships with friends may have enduring significance for their social and personal development. The quality of firstborn children's play with their best friend, assessed before the birth of their sibling, predicted sibling interaction quality in both early childhood and adolescence. The externalizing behavior problems of firstborn children in adolescence were predicted by the quality of early best friend interactions. Taken together, these results suggest that the social behaviors that are developed and exercised in early childhood may be critical predictors of later relational competence and certain forms of personal well-being.

The finding that the social and emotional competencies that young children demonstrated in their early relationships with their friends predicted sibling relationship quality in adolescence, even when controlling for the quality of mother–firstborn interaction quality, suggests that the peer relational system may prepare children for siblinghood in some unique and enduring ways. Because most children who are becoming siblings have already exercised social and emotional skills in the peer context—which often demands complex interpersonal behaviors—it may be relatively easy for them to translate these abilities to another child–child relationship. In comparison to parent–child relationships, the peer system demands more advanced interpersonal behaviors from children to sustain a relationship. For example, parents generally work to adapt their own behavior to meet the needs, and interpersonal limitations, of their young children. Peers, however, are significantly less likely to adapt their behaviors to meet their partners' needs

and interests, and so interactions with friends are more likely to challenge children to draw on more sophisticated social competencies as they work to clearly explain and offer justification for their positions to their friends while managing the emotional climate of the interaction (Gottman, 1986; Kramer & Gottman, 1992). Social experiences such as these may bolster young children's abilities to respond effectively to their younger siblings, who are even less likely than peers to modify their behaviors to meet their needs and interests. Our findings suggest that the competencies learned or exercised through interactions with friends may have enduring effects, as they are associated with more prosocial and less negative sibling behaviors in adolescence.

In the present study, the most notable linkages between early friendship and adolescent sibling relationships were found with regard to the more negative dimensions of sibling interaction: agonism and rivalry/competition. Thus, the ability to successfully coordinate interaction with a friend early in development may help to head off significant negativity in the sibling relationship in adolescence. Understanding the roots of sibling negativity is important because such negativity may launch children on a path of antisocial behaviors. Brothers who have coercive conflictual relationships are more likely to engage in delinquent behaviors, both concurrently and longitudinally (Bank, Patterson, & Reid, 1996); similar effects have been found for sisters in early and middle adolescence (Slomkowski, Rende, Conger, Simons, & Conger, 2001). Several recent studies have found that older siblings may socialize their younger brothers and sisters to engage in antisocial behaviors, through direct interaction (Slomkowski et al., 2001) and by introducing them to an antisocial peer culture (Snyder, Bank, & Burraston, 2005). The results from the present study suggest that one important mechanism for preventing such "sibling training in coercion" (Patterson, 1986) may be to ensure that elder children in particular have positive peer experiences early in life so that they develop greater social competence and are less likely to exert negative influences on younger siblings.

The results of this study highlight the importance of helping young children to develop appropriate social and emotional competencies at the earliest time point. The finding that sibling interaction quality is reliably consistent from one observation to the next across childhood suggests that setting the sibling relationship off on a positive trajectory may have lasting impact. Instruction in key social competencies, when children are young, may have long-term significance for individuals' ability to form prosocial relationships with peers and siblings as well as for maximizing the personal well-being of older siblings. Conger et al. (2004) has called for greater attention to methods that proactively teach siblings social behaviors that are conducive to positive interaction and discourage the establishment of hostile and coercive patterns. Because the quality of sibling relationships appears to be relatively stable through childhood (at least among siblings drawn from a nonclinical sample), preventive strategies should be applied early to ensure that the relationship begins on the most positive note possible (Kramer, 2004).

The degree to which the observed results were driven by the developmental or maturational level of the firstborn children merits some discussion. Children who were relatively older (4 to 5 years of age) when their sibling was born experienced less sibling agonism and rivalry/competition in adolescence than did those who were 3 years of age when their sibling was born. Although the linkages between prenatal mother–firstborn interaction and adolescent sibling relationship quality were apparent regardless of firstborn age, exploratory analyses suggest that this predictive link may be stronger for older firstborn children. This finding supports the notion that developmental maturity contributes to children's early relational competence with friends and that such competence may also help shape the quality of emerging sibling relations.

The quality of sibling relationships early in childhood predicted the expression of externalizing behavior problems of firstborn children. These results are in line with those of Hetherington (1988), who found that children who demonstrated low involvement, low warmth, and high hostility and coercion in their sibling interactions also evidenced higher levels of externalizing behavior problems, poor school achievement, and difficulties with peers. Hetherington also did not find significant associations for internalizing behavior problems. However, Dunn, Slomkowski, Beardsall, et al. (1994) did report linkages between sibling relationship quality, measured when the firstborn was 6 years of age, and both externalizing and internalizing behavior problems in early adolescence. Different patterns of results may have emerged from these studies because of the different developmental periods in which behavior problems and sibling relationship quality were assessed.

Significant associations were not revealed between sibling relationship quality early in life and younger siblings' later behavior problems. Although the design of this study does not allow us to ascertain why comparable associations between sibling relationship quality and externalizing behavior problems were not found for second-born children, it is possible that factors associated with the family (and larger social) environment may contribute to these differences. For example, simply growing up in a family system in which an older child is already present may set first- and later-born siblings on different pathways of social development. Other studies have also found different patterns for older and younger siblings. For example, Snyder et al. (2005) found that sibling relationship quality did not have a direct effect on younger siblings' adjustment, as it did for older siblings, but rather was mediated through parenting practices and opportunities to associate with their older brother's deviant peers. Although Snyder et al.'s findings were derived from an at-risk sample, they do call for further study on the ways that the social development of younger and older siblings may be influenced by distinct processes.

It is also noteworthy that the quality of prenatal mother–firstborn interaction did not significantly predict behavior problems in adolescence but did predict later sibling relationship quality. Few studies have examined linkages between these two factors over such a wide time span, and it is possible that qualities of the mother–firstborn relationship

are not effective forecasters of child behavior problems when assessed 13 years later. Alternately, it may be that children's early competence in relationships is a better predictor of later success in relationships than of individual behavior problems.

Another intriguing issue is the role of children's gender and the gender constellation of the sibling dyad in moderating the observed effects. Because of the limited sample, the contributions of gender constellation could not be distilled. Although exploratory analyses did not support the presence of distinct processes for firstborn boys and girls, further study is merited regarding how the contributions of early friendships may differ by gender.

The limitations of this study are important to consider. Although this study emphasized the potential contributions of childhood friendships, additional factors may also shape the quality of sibling relationships and warrant examination. These may include the temperament and personality qualities that each individual child brings to the sibling relationship, dimensions of father–child relationships and other family relationships, indices of family stress and change (e.g., economic pressure, critical family transitions), and experiences with social institutions, community groups, and larger peer groups (e.g., schools, team sports).

Although multiple waves of data were collected over a 13-year period, there was a large gap in time between the early childhood observations and the adolescent observations. Future research should address the extent to which formative events in middle childhood, such as the transition to school or changes in family structure, may be linked with shifts in the sibling relationship.

Most important, although consistent with other longitudinal studies on sibling relationships (Dunn, Slomkowski, & Beardsall, 1994; Dunn, Slomkowski, Beardsall, et al., 1994), the small sample size precluded the use of more sophisticated data analytic strategies that would allow for the assessment of multivariate associations and the testing of competing conceptual models. In addition, this study relied on global measures of relationship quality; future analyses should be conducted to ascertain which specific interpersonal processes of sibling, friend, and mother–child interactions are driving the observed longitudinal associations. Finally, the generalizability of the results is also hampered by the use of a primarily White, well-educated, middle-income sample.

In summary, the results of this study highlight the importance of children's early social experiences with friends and parents in shaping the quality of their later relationships with siblings and promoting enhanced personal well-being. Future research should pursue this line of investigation to determine more specifically the mechanisms by which friends make an enduring contribution to young children's lives.

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