Sibling Relationships and Social-emotional Adjustment in Different Family Contexts
Kirby Deater-Deckard, *University of Oregon*, Judy Dunn, *Institute of Psychiatry* and Gretchen Lussier, *University of Oregon*

Abstract

The aims of this study were to examine family type (nonstep, stepfather, stepmother, and single mother) and sibling type (full- and half-siblings) differences in sibling relationship quality (positivity and negativity), and to investigate links between sibling relationship quality and child externalizing and internalizing problems. The sample included 192 families with a 5-year-old target child and an older sibling. In addition, 80 of these families included a third older child. Mothers and the older siblings (8 years and older) completed questionnaires and interviews regarding conflict and support in their sibling relationships, and parents and teachers reported on each child’s social-emotional adjustment. Sibling negativity (conflict, aggression) was highest in single-mother families and full-siblings were more negative than half- and stepsiblings. There was some evidence that sibling antagonism was associated with more child behavioral and emotional problems, but these effects were moderated by family type.

Keywords: siblings; stepfamilies; externalizing; internalizing

A great deal of attention has been paid to the effects of parental divorce, remarriage, and inter-parental conflict on children’s parent–child relationships and social-emotional outcomes. However, very few of these studies have examined the children’s sibling relationships (Hetherington *et al.*, 1999). Research on sibling relationships is needed, because siblings represent important agents of socialization, support, and stress throughout the lifespan (Cicirelli, 1996). The aims of the current study were to: (1) explore parents’ and children’s views of the positive and negative aspects of full- and half-sibling relationships in intact, stepparent, and single-mother households; and (2) test several hypotheses regarding family contextual influences on the links between sibling relationship quality and children’s social-emotional adjustment.

Sibling Relationships in Childhood and Adolescence

Although the sibling relationship is the longest lasting relationship that most of us will have, researchers know relatively little about the role of sibling relationship quality in child development in comparison to research on parent–child and peer relationships.

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Fortunately, the past decade has seen a surge in research on this relationship, and we are beginning to gain an appreciation for the complexity of developmental processes involving siblings. The current study extends and contributes to this literature by examining the role of sibling positivity and negativity in children’s social-emotional adjustment in a variety of types of families.

Sibling relationships are best described as emotionally ambivalent—that is, a typical pair of siblings will be warm as well as conflicted at times. For many, it is the combination of intense positive and negative emotions that makes the sibling relationship so salient. Individual differences in positivity and negativity toward siblings are moderately to highly stable over middle childhood (Dunn, 1996) and adolescence (Hetherington et al., 1999), although on average, the intensity and frequency of positive and negative interactions between siblings decrease as children age (Buhrmester & Furman, 1990; Dunn, Deater-Deckard, Pickering, & Golding, 1999; Hetherington & Clingempeel, 1992; Hetherington et al., 1999; MacKinnon, 1989b). In all types of families, sisters are more warm and supportive and less antagonistic and conflicted than brothers (Dunn et al., 1999; Hetherington & Clingempeel, 1992; Hetherington et al., 1999; Hetherington & Stanley-Hagan, 1999; MacKinnon, 1989a). Furthermore, the gender of both members of the sibling dyad may matter. Opposite-sex sibling pairs tend to be more conflicted than same-sex siblings, in early childhood (Dunn & Kendrick, 1982) and middle childhood (Epkins & Dedmon, 1999). This may be particularly true for older sister/younger brother pairs, at least in early childhood (Dunn & Kendrick, 1982).

These developmental and gender differences aside, why should we study sibling relationships? First, siblings are important and constant socializing agents in most children’s lives, particularly in early and middle childhood. For example, various aspects of the sibling relationship have been implicated in the development of theory of mind (Ruffman, Perner, Naito, Parkin, & Clements, 1998), empathy and understanding of emotion (Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991; Tucker, Updegraff, McHale, & Crouter, 1999), and prosocial and antisocial behaviors (Bank, Patterson, & Reid, 1996; Patterson, 1986).

Second, siblings can serve as sources of support in difficult times, such as during parental divorce and remarriage (Dunn, 1996), particularly if one or both of the children are girls (Hetherington & Stanley-Hagan, 1999). Dunn noted that sibling relationships could be highly adaptive to stress in family life, whereby siblings can become closer and more supportive in the face of major life events such as parental illness, hospitalization, and unemployment—although day-to-day stress is linked to more negativity in the sibling relationship.

Third, as noted above, sibling relationships are typically ambivalent—in addition to warmth, there are considerable amounts of negativity and conflict, even more so than in peer relationships (DeHart, 1999). One recent study found that siblings typically fight over possessions and each other’s behavior toward one another (and, to a lesser extent, over rivalry regarding parental attention) (McGuire, Manke, Eftekhari, & Dunn, 2000). Importantly, each child was likely to take a different view of the sources of conflict—in their study, McGuire and colleagues found virtually no agreement across siblings’ reports of the reasons behind their disputes. Previous studies have found good sibling agreement on ratings of levels of sibling warmth, with agreement on levels of conflict being less robust (see Epkins & Dedmon, 1999).

Thus, the same siblings who are capable of being supportive of one another in times of stress can also be the actual sources of stress that can lead to more deleterious con-
sequences. Findings from cross-sectional and longitudinal studies converge to suggest that sibling conflict and aggression are linked to child maladjustment (see Brody, 1998, for a review). More conflict and less warmth between siblings have been linked to child depression and internalizing problems, as well as antisocial behavior problems (Bank et al., 1996; Dunn, Slomkowski, Beardsall, & Rende, 1994; Epkins & Dedmon, 1999; Kim, Hetherington, & Reiss, 1999; Puig-Antich, Lukens, Davies, Goetz et al., 1985a, b; Slomkowski, Cohen, & Brook, 1997; Stormshak, Bellanti, & Bierman, 1996).

**Different Types of Siblings in Different Types of Families**

The evidence that the quality of sibling relationships is associated with adjustment problems highlights the importance of understanding the factors related to the very wide range of individual differences in how well brothers and sisters get along. There is increasing evidence that, in addition to the importance of parents’ relationships with their children (Brody, 1998), the quality of the parents’ marital or cohabiting relationship and the separation of parents are implicated in individual differences in sibling relationships (Dunn et al., 1999). Hetherington and Stanley-Hagan (1999) offered two hypotheses regarding the impact of these partnership transitions on the sibling relationship. The first is a ‘contamination’ hypothesis—that the conflict between parents preceding, during and following their separation and re-partnering may promote animosity and conflict in the sibling relationship as a result of a general increase in stress in family life. The second is a ‘compensation’ hypothesis, whereby siblings may turn to one another for warmth and support in the face of inter-parental conflict, increases in inept and harsh parenting, and decreases in availability of and contact with their parents surrounding these partnership transitions.

The evidence suggests that more conflicted couples have more negative and less positive parent–child relationships, and the children in those families have more conflicted and less supportive sibling relationships (Dunn et al., 1999; Brody, 1998; Bussell, Neiderhiser, Pike, Plomin et al., 1999). In light of this, it is not surprising that on average the sibling relationships in re-partnered families are more conflicted than those in intact families, a pattern that is consistent with the ‘contamination’ hypothesis (Hetherington & Clingempeel, 1992; Hetherington & Stanley-Hagan, 1999; Hetherington et al., 1999; MacKinnon, 1989b). To our knowledge, there has been little research on sibling relationships in single-mother households, a problematic gap in the literature given that nearly all children who experience a parental separation or divorce will go through a period of life in a single-mother household. For example, Haskey (1994) reported that 22% of British children spend some time living in a single-parent household, with the vast majority of these being headed by a woman. The contamination hypothesis may also apply to these single-mother households. In order to address this gap, we have included in the current study a group of siblings who live in single-mother households.

Importantly, the family type differences just described may depend, in part, on whether the siblings are biologically related. Hetherington’s research suggests that unrelated stepsiblings are more likely to be disengaged emotionally than are full-siblings or half-siblings in stepfamilies—that is, unrelated siblings may be lower in both positivity and negativity than are related siblings (Hetherington et al., 1999; Hetherington & Clingempeel, 1992; Hetherington & Stanley-Hagan, 1999). This research suggests that full- and half-siblings are more alike than different in terms of their overall levels of negativity and positivity, particularly when compared to unrelated stepsiblings.
These findings raise the question as to whether the links between sibling relationship quality and children’s adjustment outcomes differ for children in different types of families. Although this question has not been addressed in most of the past studies, more recent evidence suggests that there are more similarities than differences. In general terms, the associations between multiple risk factors and children’s behavioral and emotional problems appear to be similar for children living in intact, stepparent, and single-mother households (Deater-Deckard & Dunn, 1999). More to the point of the current study, the covariation between sibling conflict and child behavioral and emotional problems appears to be similar across these different family types (Hetherington et al., 1999). However, while there may not be family type differences in these processes, there may be sibling type differences, with stronger associations between sibling relationship quality and children’s adjustment outcomes found for biologically related siblings, compared to unrelated stepsiblings (Kim et al., 1999; Hetherington et al., 1999). The differences in processes appear when comparing unrelated stepsiblings to related siblings (i.e., both full- and half-siblings). In contrast, these associations do not appear to differ when comparing half- versus full-sibling pairs. It is noteworthy that in these recent studies conducted by Hetherington and her colleagues, all of the families were drawn from the Nonshared Environment in Adolescent Development (NEAD) study, in which the stepfamilies consisted of couples in long-term stable marriages. The results from the NEAD study may not generalize to a sample like ours, where we are examining married and nonmarried couples, many of whom have been through transitions very recently.

Hypotheses

In light of the existing findings described above, we sought to contribute to the literature on sibling relationships and children’s social-emotional adjustment by testing two hypotheses and exploring some related questions.

1. Consistent with the ‘contamination’ hypothesis, we predicted that sibling negativity would be higher, and positivity lower, among siblings in re-partnered families than those in intact families. We also asked the related questions:
   (a) Are sibling relationships in single-mother families more or less negative or positive compared to siblings in other types of families?
   (b) Are there differences in the sibling relationships of full-, half-, and step-siblings (i.e., unrelated siblings)?

2. Greater sibling negativity and less sibling positivity was predicted to be associated with higher levels of externalizing and internalizing problems. We also asked the related question:
   (a) Are the associations between externalizing/internalizing problems and sibling negativity/positivity similar or different across the various types of families, and across sibling types?

Method

Sample

The current study included 192 Caucasian families who were participants in the Avon Brothers and Sisters Study (ABSS). These families had been selected from a large epidemiological study, the Avon Longitudinal Study of Pregnancy and Childhood Development.
(ALSPAC: Golding, 1996), which included nearly 14,000 women who gave birth in the Avon Health District of England over a 20-month period (85–90% of that population). The families in the Avon Brothers and Sisters Study (ABSS) were selected when the ALSPAC target child (in this study, ‘child 1’) was 4 to 5 years of age.

We selected five different types of families to study. Definitions of family type were based on the biological relatedness of resident family members, and not on parental marital status per se. For example, the parents in intact families could be cohabiting and have never married, and a single mother could be living alone with her children because she is separated but not divorced from her husband. Intact families (n = 50) were those in which all children were biologically related to both parents living in the home. Stepfather families (n = 49) were those in which at least one child was the biological child of the mother and a stepchild to her resident partner. Stepmother families (n = 22) were those in which at least one child was a stepchild of the mother. Complex stepfamilies (n = 23) included those where both parents had children from previous relationships in the household. These stepfamilies could also include children who were biologically related to both parents. Single-mother families (n = 48) were those in which the ALSPAC target child and older siblings lived with a single mother who had either never married or cohabited or who was currently separated or divorced. The sampling procedures are described in more detail in Dunn, Davies, O’Connor, & Sturgess, 2000.

All of the 192 families included the ALSPAC target child (child 1) as well as an older sibling (child 2). In addition, 80 of these families included a second older sibling (child 3). The mean age of all children was 9.98 (SD = 2.88) and included approximately equal proportions of males (n = 143) and females (n = 129). Details regarding the ages and genders of these children in each family type are presented in Table 1.

The typical child 1 was about 5 years old. There was very little age variation within or between family types among these target children, because these families were selected from the child 1 birth cohort during the same period of time. The typical child 2 was about 9 years old, although there were significant family type differences in child 2 age, $F(4,187) = 8.04, p < .01$. Tukey comparisons indicated that the child 2s living in intact families and single-mother families were younger than those living in stepfather (intact: $t(97) = -3.93, p < .01$; single mother: $t(95) = -2.77, p < .05$) and stepmother families (intact: $t(70) = -4.68, p < .01$; single mother: $t(68) = -3.80, p < .01$). In addition, child 2s in intact families were significantly younger than child 2s in complex stepfamilies ($t(71) = -2.83, p < .05$). The typical child 3 was about 12 years old, although there were family type differences in child 3 age, $F(4,75) = 22.82, p < .01$. Tukey comparisons indicated that the child 3s in intact families were significantly younger than those in stepfather ($t(38) = -2.80, p < .05$) and stepmother ($t(23) = -4.12, p < .01$) families. Regarding family type differences in child gender, there were no significant differences in the proportion of boys and girls in each family type for child 1 and child 2. In contrast, the distribution of boys and girls was not equivalent across different family types for child 3, as there were no girls in stepmother families ($\chi^2(4) = 10.67, p < .05$). Finally, there were no significant differences in the gender constellations of these sibling relationships (boy–boy, girl–girl, mixed sex pairs) in these different family types.

There was considerable variation in parental education. For mothers, 60.4% had no qualifications or had completed GCSE or O levels (i.e., a high school diploma or less), 10.4% had additional vocational training, 19.5% completed A levels, and 9.7% had
Table 1. Age and Gender of Child Participants

<table>
<thead>
<tr>
<th></th>
<th>Child 1</th>
<th>Child 2</th>
<th>Child 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M Age (SD)</td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Total</td>
<td>4.83 (.39)</td>
<td>109</td>
<td>83</td>
</tr>
<tr>
<td>Intact</td>
<td>4.90 (.30)</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>Stepfather</td>
<td>4.71 (.46)</td>
<td>29</td>
<td>20</td>
</tr>
<tr>
<td>Stepmother</td>
<td>4.73 (.46)</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Complex step</td>
<td>4.91 (.29)</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Single mother</td>
<td>4.88 (.39)</td>
<td>27</td>
<td>21</td>
</tr>
</tbody>
</table>
university degrees. Among the fathers, 52.2% had no qualifications or had completed GCSE or O levels, 25.4% completed additional vocational training, 5.3% completed A levels, and 17.1% had university degrees. The median weekly income range in the sample was £200–£299 per week. The distribution of weekly income was as follows: less than £100 (20.4%), £100–£199 (26.3%), £200–£299 (21.6%), £300–£399 (15.6%), or more than £400 (16.2%). There were no family type group differences in these socioeconomic status indicators as measured by a composite of mothers’ and fathers’ occupations (coded on a 5-point scale, OPCS, 1990) and mothers’ and fathers’ education. However, single mothers were disproportionately represented in the low-income group (i.e., weekly income of less than £100), \( \chi^2(3) = 27.9, p < .01 \). Given these family type variations in family income, child age, and child gender, we were careful to consider these factors as potential confounds in our analyses of family and sibling type effects.

To assess the representativeness of our sample, the families were compared by family type to those of the same family type in the larger ALSPAC study from which this sample was drawn. Results indicated that for each family type, ABSS families did not differ significantly from ALSPAC families on measures of mother’s education, partner’s education, weekly family income, and child adjustment. Thus, in terms of sociodemographic variables, ABSS families in these family type categories were representative of those in these family types in the large ALSPAC sample.

Procedures

When possible, the resident mother and all participating children who were 8 years or older were interviewed. When possible and if applicable, the resident father was also interviewed. The families were visited at home where the mother, father (if participating), child 2 (if 8 years or older) and child 3 (all were 8 years or older) completed questionnaires and interviews. Child 1 (the ALSPAC target child) was not interviewed. Mothers’ reports of sibling relationship quality were obtained for up to three sibling relationships in each family: between child 1 and 2, between child 1 and 3, and between child 2 and 3. Children’s reports of sibling relationship quality were also gathered for up to three sibling relationships per family: between child 1 and 2 (based on child 2’s reports), child 1 and 3 (based on child 3’s reports), and between child 2 and 3 (based on both child 2’s and child 3’s reports). Mothers’ and fathers’ (when available) ratings of children’s externalizing and internalizing problems were gathered. In addition, teachers completed questionnaires (82% of the total sample of children), in which they reported children’s externalizing and internalizing problems.

Measures

Sibling relationship. We created sibling relationship composite measures by combining data from mothers’ and children’s reports. In order to do so, we used the same standardization procedure for each scale and higher-order composite, whereby items or scales were standardized within each of the three sibling relationships (child 1 and 2, child 1 and 3, child 2 and 3). Thus, for any given reporter (e.g., mother, child) on any given measure, the items pertaining to the sibling relationship of child 1 and 2 were standardized with respect to all of the child 1 and 2 sibling dyads. Similarly, items for the sibling relationship between child 1 and 3 were standardized with respect to all of the child 1 and 3 sibling dyads. The same was done with respect to child 2.
Kirby Deater-Deckard, Judy Dunn and Gretchen Lussier

and 3 sibling dyads. This standardization procedure was used in the creation of all of the composite scales of sibling relationship quality described below.

Mothers were asked a series of questions concerning each child’s relationship with his or her siblings, adapted from the Colorado Maternal Interview on Sibling Relationships (Stocker, Dunn, & Plomin, 1990). For sibling positivity, mothers answered five questions concerning her child’s positive behavior toward each of his or her siblings. One question addressed how close each child was to his or her siblings and was scored on a 4-point scale from 0 = ‘not at all’ to 3 = ‘very close’. One question addressed the extent to which children gave emotional support to their siblings and another addressed the extent to which the children confided in their siblings. These items were scored on a 6-point scale from 0 = ‘never’ to 5 = ‘frequently’. The last two items addressed the frequency of affectionate behavior and nurturing between siblings. These items were scored on a 6-point scale from 0 = ‘almost never’ to 5 = ‘regularly’. Items within each sibling dyad (e.g., child 1 affection toward child 2 and child 2 affection toward child 1) were highly correlated. Therefore, all 10 items pertaining to any given sibling dyad (e.g., the five items regarding child 1’s behavior toward child 2, and the five items regarding child 2’s behavior toward child 1) were standardized, averaged, and standardized again to create a dyad-level composite using the procedure described above (alphas > .82).

In addition, mothers were asked four questions concerning negativity expressed in each sibling dyad. The first question addressed the intensity of disputes between siblings and was scored on a 4-point scale (0 = no disputes, 1 = minor disputes, 2 = moderate disputes, 3 = major disputes). Mothers were also asked about the frequency of out-of-control behavior between siblings, scored on a 5-point scale from 0 = ‘never’ to 4 = ‘frequently’. In addition, mothers were asked about the frequency of arguing and physical fighting between each sibling pair. Responses for these two items were scored on a 6-point scale from 0 = ‘never’ to 5 = ‘regularly’. These four items were standardized, averaged together, and standardized again to create a dyad-level composite of negative behavior using the standardization procedure described above (alphas > .70).

Children also provided reports of various aspects of their sibling relationships. Child 2 reported on her or his sibling relationship with child 1, as well as child 3 (when applicable). Also when applicable, child 3 reported on her or his sibling relationship with child 1 and child 2.

Children’s perceptions of the sibling relationships were assessed with a shortened version of the Sibling Relationship Inventory or SRI (Stocker & McHale, 1992). An interviewer read aloud 14 questions about the child’s own behavior and feelings toward her or his sibling. Children used a 5-point scale from 1 = ‘almost never, less than once a week’ to 5 = ‘always, several times a day’. Stocker and McHale (1992) reported that this questionnaire had adequate internal consistency (alphas > .70) and one-year test-retest reliability (r > .30). Children also completed the Sibling Areas of Disagreement or SAD (Hetherington & Clingempeel, 1992; described there as the Sibling Interaction Test), a 13-item questionnaire regarding the frequency and source of arguments between siblings. Each item was rated on a 7-point scale from 1 = ‘more than once a day’ to 7 = ‘not at all in the last month’. These were then reverse scored so that higher scores would represent higher levels of sibling conflict.

Sibling positivity was assessed using the eight items from the SRI pertaining to positive behavior such as sharing secrets, displays of affection, and comforting one another. These eight items were standardized, averaged, and the resulting composite
was then standardized (alphas > .60). Sibling negativity was assessed using the six items from the SRI pertaining to hostile behaviors such as fighting, teasing, and taking siblings’ belongings without asking, and all 13 items from the SAD. These 19 negativity items were standardized, averaged, and the resulting composite was then standardized using the procedure described above (alphas > .68).

We used principal components analysis (PCA) to derive sibling relationship composite scales from mothers’ and children’s reports of sibling relationship quality. First, we fit a single factor solution to mothers’ and children’s reports of sibling positivity. This accounted for 65% of the variance (loadings > .80). A sibling positivity composite was created by standardizing each individual scale, averaging these scales across respondents, and then standardizing this total composite; at each step, we followed the same standardization procedure as before, by standardizing and averaging scales separately for each of the three sibling relationships. We did the same analysis and derivation procedure to compute a mother and child reported sibling negativity composite. The single factor in the PCA accounted for 57% of the variance (loadings from .61 to .84). Again, a standardized sibling negativity composite was computed by standardizing the individual scales, averaging them across respondents, and standardizing this composite, again using the standardization procedure described above.

**Children’s Adjustment.** Children’s adjustment difficulties were measured using the raw score Externalizing and Internalizing scales of the Child Behavior Checklist and Teacher Report Form (CBCL, TRF; Achenbach, 1991), and the Total Problems scale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). For the CBCL, the externalizing scale was the sum of the Delinquent and Aggressive syndrome profiles and the internalizing scale was the sum of the Withdrawn, Somatic Complaints, and Anxious/Depressed syndrome profiles. Each item was scored on a 3-point scale, with higher scores indicating more problems (0 = not true in the past six months, 1 = somewhat or sometimes true, 2 = very true or often true). The Total Problems scale of the SDQ included 20 items that include moderately to substantially intercorrelated indicators of aggression, conduct problems, hyperactivity, peer relationship difficulties, and emotional problems. Each item was scored on a 3-point Likert-type scale (0 = not true, 1 = somewhat true, 2 = certainly true).

Children’s externalizing problems were assessed using a composite of items from the Child Behavior Checklist and Teacher Report, and the Strengths and Difficulties Questionnaire. In a principal components analysis of the mothers’, fathers’ (when available), and teachers’ ratings (when available) on the CBCL and TRF externalizing syndrome scale and the SDQ Total Deviance scale, the single factor solution accounted for 55% of the variance; loadings ranged from .49 to .86. The composite was created by standardizing each individual scale based on that child’s score compared to all other children in the sample (CBCL: alpha = .88 for mothers, .87 for fathers, and .90 for teachers; SDQ: alpha = .80 for mothers, .83 for fathers, and .88 for teachers), averaging these scales across respondents, and then standardizing this composite. Note that mothers’ ratings were complete for 90% of the children, fathers’ ratings were complete for 39% of the children, and teachers’ ratings were complete for 82% of the children. A cross-rater composite was created for each child based on all available data, whether this was from one, two, or all three raters.

In a similar way, principal components analysis was used to derive an internalizing problem composite that included mothers’, fathers’, and teachers’ ratings on the CBCL and TRF internalizing syndrome scale. The single factor solution accounted for 59%
of the variance; loadings ranged from .55 to .88. This composite was created in the same manner as the externalizing composite. Each scale was standardized, averaged across respondents (CBCL: alpha = .85 for mothers, .89 for fathers, and .88 for teachers), and then the composite score was standardized.

Results

The data analyses were conducted in a series of steps to correspond with the hypotheses and questions to be addressed. First, we examined family type and sibling type mean differences in sibling negativity and positivity (hypothesis 1 and related questions). Second, we conducted correlational analyses to examine associations between sibling relationship quality and the children’s externalizing and internalizing problems (hypothesis 2 and related questions).

Hypothesis 1

Consistent with the ‘contamination’ hypothesis, we predicted that sibling negativity would be higher, and positivity lower, among siblings in re-partnered families (e.g., stepfather, stepmother, complex stepparent) than those in intact families. We also asked two related questions. First, are the sibling relationships in single mother families more or less negative or positive compared to siblings living in these other types of families? Second, are there differences in the sibling relationships of full-, half-, and unrelated siblings?

To test the contamination hypothesis and address the first question regarding single-mother families, we examined family type (intact, stepfather, stepmother, complex step, and single mother) mean differences in sibling positivity and negativity using analysis of variance (ANOVA). When significant differences were found, we used analysis of covariance (ANCOVA) to examine the main effect of family type while controlling for the main effects of child age (child 2 and 3 only, as child 1 age did not vary), gender, and family income. We also tested a second ANCOVA where we controlled for the gender composition of the sibling pair (same or opposite sex), age, and family income. The assumptions of ANCOVA (e.g., normality, linearity, homogeneity of variance) were met in these data. Descriptive statistics are presented in Table 2.

Child 1 and 2. A marginally significant family type mean difference was found for sibling negativity, $F(4,187) = 2.41, p < .06$. After controlling for the child age, gender, gender composition, and family income, this difference was no longer significant, so we did not interpret this family type effect. The associations between sibling negativity and the covariates were modest ($r = -.09$ to $-.18$), with the exception of the association with child 3 age, $r = -.42, n = 80, p < .01$. Tukey comparisons indicated that siblings from single-mother families were more negative than siblings from stepmother ($t(20) = 3.61, p < .01$) and complex stepfamilies ($t(27) = 3.21, p < .05$). There were no significant family type differences in sibling positivity.

Child 1 and 3. Family type mean differences were present for sibling negativity, $F(4,76) = 3.84, p < .01$. The family type differences remained marginally significant ($p < .10$) even after using analysis of covariance to control for the effects of age, gender, gender composition, and family income. Associations between sibling negativity and the covariates were modest ($r = -.03$ to $-.13$), with the exception of the association with child 3 age, $r = -.42, n = 80, p < .01$. Tukey comparisons indicated that siblings from single-mother families were more negative than siblings from stepmother ($t(20) = 3.61, p < .01$) and complex stepfamilies ($t(27) = 3.21, p < .05$). There were no significant family type differences in sibling positivity.
Table 2. Descriptive Statistics of Children’s and Mothers’ Combined Reports of Sibling Positivity and Negativity, by Family Type (Standardized Scores)

<table>
<thead>
<tr>
<th>Family Type</th>
<th>Intact</th>
<th>Stepfather</th>
<th>Stepmother</th>
<th>Complex Step</th>
<th>Single Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
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<td>SD</td>
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<td><strong>Child 1 and 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Positivity</td>
<td>.06</td>
<td>.90</td>
<td>50</td>
<td>.04</td>
<td>1.09</td>
</tr>
<tr>
<td>Negativity*</td>
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<td>.90</td>
<td>50</td>
<td>.09</td>
<td>1.00</td>
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<tr>
<td><strong>Child 1 and 3</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
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<td>.51</td>
<td>13</td>
<td>.27</td>
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</tr>
<tr>
<td>Negativity*</td>
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<td>.93</td>
</tr>
<tr>
<td><strong>Child 2 and 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>.07</td>
<td>.58</td>
<td>13</td>
<td>.13</td>
<td>1.02</td>
</tr>
<tr>
<td>Negativity*</td>
<td>.22d</td>
<td>.68</td>
<td>13</td>
<td>.18de</td>
<td>.83</td>
</tr>
</tbody>
</table>

+F marginally significant (p < .10), *F significant (p < .05).

*significantly different from intact families.

*significantly different from stepfather families.

*significantly different from stepparent families.

*significantly different from complex stepfamilies.

*significantly different from single-mother families.
Several family type differences in sibling negativity were found, $F(4,77) = 8.35, p < .01$. These differences remained significant after we controlled for age, gender, gender composition, and family income. Associations between sibling negativity and the covariates were modest ($r = -0.04$ to $-0.12$), with the exception of a somewhat higher association with child 3 age, $r = 0.27, n = 80, p < .05$. Using Tukey comparisons, we found that sibling negativity was lower in complex stepfamilies than in intact ($t(31) = -2.84, p < .05$), stepfather ($t(45) = -3.22, p < .05$) and single-mother families ($t(28) = 5.45, p < .01$). In addition, sibling negativity was higher in single-mother families compared to stepfather ($t(35) = 2.89, p < .05$) and stepmother families, $t(20) = 3.76, p < .01$. As with the sibling relationships of child 1 and 2, and child 1 and 3, there were no family type differences in child 2 and 3 positivity.

Next, using ANOVA, we addressed the second question regarding whether there were sibling type (full-, half-, unrelated step sibling) mean differences in positivity and negativity. As before, when significant sibling type differences were found, we controlled for child age, gender, gender composition, and family income, and interpreted only those sibling type differences that remained significant. Descriptive statistics are presented in Table 3.

Table 3. Descriptive Statistics of Children’s and Mothers’ Combined Reports of Sibling Positivity and Negativity, by Sibling Type (Standardized Scores)

<table>
<thead>
<tr>
<th>Sibling Type</th>
<th>Full</th>
<th>Half</th>
<th>Unrelated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
</tr>
<tr>
<td>Child 1 and 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>.07</td>
<td>.95</td>
<td>136</td>
</tr>
<tr>
<td>Negativity*</td>
<td>.05</td>
<td>.93</td>
<td>136</td>
</tr>
<tr>
<td>Child 1 and 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>-.05</td>
<td>.79</td>
<td>30</td>
</tr>
<tr>
<td>Negativity*</td>
<td>.63bc</td>
<td>.97</td>
<td>30</td>
</tr>
<tr>
<td>Child 2 and 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>.01</td>
<td>.97</td>
<td>43</td>
</tr>
<tr>
<td>Negativity*</td>
<td>.57bc</td>
<td>.79</td>
<td>43</td>
</tr>
</tbody>
</table>

+F marginally significant ($p < .10$), *F significant ($p < .05$).

a significantly different from full-siblings.
b significantly different from half-siblings.
c significantly different from unrelated siblings.
siblings (t(54) = -2.04, p < .01). In contrast, full- and half-siblings did not differ in sibling negativity.

Child 1 & 3. Sibling type differences were present for sibling negativity, F(2,77) = 12.90, p < .01. This difference remained significant after controlling for child age, gender, gender composition, and family income. Tukey comparisons showed that full-siblings were higher in negativity than half-siblings (t(74) = 5.00, p < .01) and unrelated siblings (t(48) = 2.39, p < .05). There were no significant differences in sibling positivity.

Child 2 & 3. Sibling type differences were present for sibling negativity (F(2,78) = 22.14, p < .01), an effect that remained significant after we controlled for child age, gender, gender composition, and family income. Tukey tests showed that full-siblings were higher in negativity than half- (t(61) = 4.54, p < .01) and unrelated siblings (t(36) = 6.05, p < .01). There were no significant differences in sibling positivity.

Hypothesis 2

Our second hypothesis was that greater sibling negativity and less sibling positivity would be associated with higher levels of children’s externalizing and internalizing problems. In addition, we asked the related question regarding whether these correlations would be similar or different for children living in different family types, and for the different types of siblings (full-, half-, and unrelated siblings).

First, we estimated bivariate correlations between sibling positivity and negativity and the internalizing and externalizing scores for the total sample. These are shown in Table 4. The statistically significant correlations are described in the text below. Note that we also computed partial correlations, controlling for age, gender, and family income; these partial correlations were similar to the zero-order bivariate correlations shown in Table 4.

For child 1 and 2, greater sibling positivity was associated with fewer externalizing problems for child 1. In addition, higher sibling negativity between child 1 and 2 was

Table 4. Correlations Between Sibling Relationship Quality and Children’s Externalizing and Internalizing Problems (n in Parentheses)

<table>
<thead>
<tr>
<th>Sibling Type</th>
<th>Internalizing Problems</th>
<th>Externalizing Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child 1 and 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>-0.12 (183)</td>
<td>-0.25** (183)</td>
</tr>
<tr>
<td>Negativity</td>
<td>0.03 (183)</td>
<td>0.30** (182)</td>
</tr>
<tr>
<td>Child 1 and 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>-0.07 (78)</td>
<td>-0.08 (78)</td>
</tr>
<tr>
<td>Negativity</td>
<td>0.00 (79)</td>
<td>0.30** (79)</td>
</tr>
<tr>
<td>Child 2 and 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positivity</td>
<td>-0.07 (78)</td>
<td>-0.11 (78)</td>
</tr>
<tr>
<td>Negativity</td>
<td>0.02 (79)</td>
<td>0.24* (79)</td>
</tr>
</tbody>
</table>

+p < .10; *p < .05; **p < .01.
associated with higher levels of externalizing problems for child 2. For child 1 and 3, greater sibling negativity was associated with higher child 1 externalizing problems and child 3 internalizing problems. There was also a marginally significant association between higher child 1 and 3 negativity and child 3 externalizing ($p < .10$). For child 2 and 3, greater sibling negativity was associated with higher externalizing problems for child 2.

Next, we examined whether these associations were similar for children in different family types. To do this, we estimated bivariate correlations between sibling relationship quality and child externalizing and internalizing problems separately for children in the five family types (intact, stepfather, stepmother, complex, and single mother) and used Fisher r-to-z difference scores to test for the statistical significance of these differences.

For child 1, positivity with child 2 was not associated with externalizing problems for children in stepmother families ($r(18) = .18$, nonsignificant) but was negatively associated with externalizing problems for children in complex step ($r(20) = -.51$, $p < .05$) and single-mother families ($r(47) = -.38$, $p < .05$). These differences were statistically significant (stepmother compared to complex step: Fischer’s r-to-z test, $z = -2.17$, $p < .05$; stepmother compared to single mother: Fischer’s r-to-z test, $z = -2.00$, $p < .05$), and remained significant after using partial correlations to control for child age, gender, and family income.

For child 2, negativity with child 1 was associated with higher levels of externalizing problems for children in intact families ($r(46) = .50$, $p < .05$) but not for children in complex stepfamilies ($r(20) = -.03$; Fischer’s r-to-z test, $z = 2.07$, $p < .05$). In addition, negativity with child 3 was more strongly associated with internalizing problems for children in intact families ($r(12) = .59$, $p < .05$) than it was for children in stepmother families ($r(9) = -.34$; Fischer’s r-to-z test, $z = 2.09$, $p < .05$). These differences remained significant after statistically controlling for age, gender, and family income.

For child 3, negativity with child 1 was associated with higher levels of internalizing problems for children in intact families ($r(12) = .73$, $p < .05$) than it was for those in stepmother families ($r(8) = -.63$; $z = 3.39$, $p < .01$). Negativity with child 1 was also associated with higher levels of externalizing problems for children in intact families ($r(12) = .77$, $p < .05$) compared to children in stepfather ($r(26) = .26$; Fischer’s r-to-z test, $z = 2.00$, $p < .05$), complex step ($r(15) = -.01$; Fischer’s r-to-z test, $z = 2.45$, $p < .05$), or single-mother families ($r(9) = -.15$; Fischer’s r-to-z test, $z = 2.38$, $p < .05$). Negativity with child 2 was more strongly associated with higher levels of internalizing problems for children in intact families ($r(12) = .58$, $p < .05$) than it was for children in stepmother families ($r(8) = -.41$; Fischer’s r-to-z test, $z = 2.13$, $p < .05$). These differences remained significant after controlling for age, gender, and family income.

We also estimated separate correlations for the different sibling types; none of these was significantly different from another.

**Discussion**

The aims of the current study were to examine parents’ and children’s perspectives on the children’s sibling relationships, and to investigate the links between sibling relationship quality and child social-emotional adjustment. We sought to further our understanding of these developmental processes by investigating potential family type and sibling type differences.
The ‘Contamination’ Hypothesis and Sibling Type Differences in Sibling Positivity and Negativity

Our first hypothesis, based on the ‘contamination’ hypothesis put forward by Hetherington and Stanley-Hagan (1999), was that sibling negativity would be higher, and positivity lower, among siblings in re-partnered families (e.g., stepfather, stepmother, complex stepparent) compared to siblings in intact families. There was no support for this hypothesis. In every analysis that we conducted, there were no significant differences in sibling negativity or positivity in the comparisons between the intact families and the various stepfamilies. It was not the case that siblings in intact families (i.e., families where the children have not experienced a marital transition) were the least negative and the most positive. This result contrasts with the findings from several prior studies that have shown that sibling relationships are more contentious in families that have experienced a marital transition (Hetherington & Clingempeel, 1992; Hetherington & Stanley-Hagan, 1999; Hetherington et al., 1999; MacKinnon, 1989b).

There are at least two crucial differences between the current study and these past studies that should be considered, as these differences could influence study results. First, prior studies included only married or remarried couples. In contrast, the sample in the current study included unmarried cohabiting as well as married couples, because our goal was to study a diverse and representative group of families. Second, the participants in the previous studies lived in the USA. Although divorce rates are similar in the USA and UK, there are national differences in various indicators of standard of living (e.g., per capita gross domestic product) and government benefits for families.

This is not to say that family type did not matter. There is little systematic research in these past studies regarding sibling relationship quality in single-mother families. Therefore, we asked a related question regarding whether sibling negativity and positivity would differ in this family type when compared to two-parent families. The results from this study suggest that these siblings were the most negative when compared to children in other family types, but that they were no different in terms of sibling positivity. We do not know of any previous studies that have compared sibling relations in single-mother families to those in intact and stepparent families. However, we can offer several post-hoc explanations for why siblings of single mothers would be more hostile and less positive. Before turning to these, it is worth noting that these family type differences may be mediated, at least in part, by group differences in mother–child negativity. Although not a focus of this study, related research with the current sample showed that single mothers were higher in maternal negativity than were mothers living with partners (Davies, Dunn, O’Connor, Pickering, & Deater-Deckard, 2000), a pattern that was also found in the larger ALSPAC sample from which this sample was drawn (Dunn, Deater-Deckard, Pickering, O’Connor, Goodman, & Golding, 1998).

We see several possible explanations for why siblings in the single-mother households were more negative. First, because most children who experience a parental divorce live in a single-mother household for some period of time, it is likely that some of the children in this group of families have experienced acute levels of interparental conflict more recently than those in intact and stepparent families. Thus, the contamination hypothesis may be applicable for some single-mother households. However, we could not address this conclusively because this sample of single-mother families was very diverse. Some of the children living with single mothers had never
lived with two parents, and some had not been exposed recently (or at all) to conflict between parents prior to and during a divorce.

A second potential explanation is that single mothers may experience more partner transitions than those mothers who currently live with a partner. Recent evidence suggests that it is the number of partnership transitions, rather than divorce and remarriage per se, that matters in the prediction of family relationship quality and adjustment outcomes (Hetherington, Bridges, & Insabella, 1998). As it turns out, this is not a likely explanation for the findings in these data. In a post-hoc analysis of the number of previous partnership transitions, the single mothers were, on average, similar to the mothers in stepmother and complex stepfamilies.

A third explanation is that single mothers experience more intense and chronic levels of stress and daily hassles and have the fewest socioeconomic resources when compared to mothers in two-parent families (Haskey, 1998). These factors are known to contribute to poor family relations between adults and children (Crnic & Acevedo, 1995; McLoyd, 1998). Not surprisingly, the single mothers in the current study had the fewest economic resources; they were disproportionately over-represented in the lowest income group. At the same time, the mean differences in sibling relationship quality that we found in this study remained even after controlling for this income difference, suggesting that income differences did not account for this single-mother family effect. It is noteworthy that in Britain (in contrast to the USA, where the previous research has been conducted), poor families receive more benefits in terms of food, housing, healthcare, and education, and receive these benefits for longer periods of time. Therefore, this income difference may not have an effect in the way that it might in a country like the USA where welfare benefits are less substantial.

A fourth potential explanatory factor is the lack of other resident adults to help with household tasks and childrearing—this is, in and of itself, a remarkable stressor. In all but one of the single-mother families in this study, the mothers lived alone with their children. In contrast, all of the other families in this sample, regardless of their divorce and remarriage histories, included two resident parents. This suggests that it may be the absence of the instrumental support found between romantic partners, and not socioeconomic factors, that account for difficulties in the sibling relationships in these single-mother families. Interestingly, the emotional support in single-mothers’ romantic partnerships is probably relevant as well, although few researchers consider these relationships. In this study (and probably in most other studies of single mothers), some of the single mothers had non-resident romantic partners. Some of these partners could have been fathers of one or more of the children in the household, and some could have been men and women who have no legal obligations to the children but may be deeply involved in the family. Even though this partner may not live with the mother, the quality of that relationship is likely to have an impact on the quality of mother–child and sibling relationships within the household. For instance, the partners of single mothers in the larger ALSPAC sample (the community sample from which the current sample was drawn) had the highest levels of depressive symptoms prior to and following the birth of the ALSPAC target child when compared to the men in intact and stepfamilies; these higher levels of partner depressive symptoms accounted for variance in the single mothers’ symptoms (Deater-Deckard, Dunn, Pickering, & Golding, 1998). Future research examining family contexts should consider the role of single mothers’ romantic partners.

Hetherington’s studies have also led to the suggestion that sibling negativity and positivity may be lowest among unrelated stepsiblings and highest among biologically
related siblings (Hetherington et al., 1999; Hetherington & Clingempeel, 1992; Hetherington & Stanley-Hagan, 1999). In the current study, we also explored possible sibling type differences and found patterns in sibling negativity that were somewhat consistent with these previous findings. For two of the three sibling dyads that we examined, full-siblings were more negative than half-siblings and stepsiblings. However, there were no sibling type differences in sibling positivity, and there were no significant differences between unrelated stepsiblings and half-siblings. Given the small number of stepsiblings in our sample, these results should be interpreted with caution.

Finally, we were struck by the fact that we found no sibling or family type differences in sibling positivity; significant group differences were found only for sibling negativity. Clearly, the warmth in the sibling relationship is being accounted for by other factors. These might include the temperament and personality, empathy, and emotion understanding of each child in the sibling dyad (Dunn, 1993). Also, this distinct pattern of results for sibling positivity versus negativity lends further credence to the idea that positive and negative aspects of children’s social relationships should be measured as separate dimensions, rather than as opposite ends of a single dimension.

**Links Between Sibling Relationship Quality and Child Social-emotional Adjustment**

Previous research has shown clear links between sibling relationship difficulties and the development of psychopathology. As Brody (1998) noted in his review of this literature, children with sibling relationships that are hostile and that lack warmth tend to show higher levels of adjustment problems. Therefore, we hypothesized that higher amounts of sibling negativity and lower amounts of sibling positivity would be associated with higher levels of child externalizing and internalizing problems. There was some support for this hypothesis in the current study, although there are several caveats to consider. The correlations were modest (usually in the .2 range), none replicated across all three sibling relationships, and there was only one significant correlation found for child internalizing problems.

We addressed the related question about whether and how these correlations might differ for children living in different types of households, and for different types of sibling pairs. One consistent pattern involving sibling negativity did emerge when we took family type into consideration. The highest correlations between adjustment problems and sibling negativity (typically exceeding .5) were found for children in intact families. In contrast, low correlations were found for children in the other family types. The means and distributions of the sibling negativity and positivity scores were generally similar for the intact and other two-parent family types, suggesting that group differences in sibling acrimony do not account for this moderator effect. Another possibility that we were not able to address in this study is that there are additional factors that differ between the intact and other family types—other sources of influence on child adjustment or sibling relationship quality that subsume the processes that link sibling relationship quality and child adjustment in intact families. Replicating and elucidating this group difference in these correlations is an important future direction for research.

Two other points deserve mention. First, family type and sibling type overlap considerably in this and previous studies (i.e., there are no half- or unrelated siblings in intact families, and there are fewer full-siblings in remarried families). In the current study and past research, the correlations between sibling relationship quality and child adjustment did not vary as a function of the siblings’ genetic similarity (i.e., full-,
half-, or unrelated—Hetherington et al., 1999; Kim et al., 1999). This suggests that the developmental processes underlying sibling relationship quality and child social-emotional adjustment operate in a similar way for sibling children regardless of their genetic similarity. Second, for the youngest children in these families (i.e., child 1), higher levels of sibling positivity with older siblings were sometimes associated with better adjustment for those in single-mother and complex stepfamilies. For some children who have experienced family transitions, sibling warmth may operate as a protective factor. However, such an interpretation should be made with caution given that these were correlational data.

Before drawing general conclusions from this research, there are some limitations to consider. These results must be considered in light of the size and representativeness of the sample. Statistical power was sometimes limited, particularly for analyses examining sibling type differences that compared the unrelated stepsiblings to the other sibling groups; thus, interpretations of these results should be made with caution. In addition, although the sample is likely to be representative of families living in this portion of western England, all of the families were Caucasian. It is not known whether these findings would generalize to other cultural groups. Nonetheless, it is also worth considering the study’s strengths, including its use of multiple informants, the diversity of these families in terms of family structure and socio-economic factors, and the inclusion of single-mother families.

Conclusions

Many children are exposed to parents’ partnership transitions including divorce and remarriage. Although most research on relationship transitions has focused on the impact on parent–child relationships, sibling relationships are also likely to be affected. Residency arrangements change, and new stepsiblings can arrive on the scene, creating new challenges to the family in terms of establishing supportive family relationships that promote adjustment. In this study of siblings’ relationships in different family types (intact, single mother, stepfather, stepmother, and complex step), we tested two hypotheses and explored several questions regarding the links between family context, sibling relationship quality, and children’s internalizing and externalizing problems. It was clear from these results that there was considerable variation in sibling positivity and negativity, and that the associations between these indicators of sibling relationship quality and children’s outcomes may differ for children in different family types. In work that is currently underway, we are conducting longitudinal assessments of these children. Future analyses will examine changes in sibling relationship quality across different family types and the impact of these changes on improvements or decrements in children’s social-emotional adjustment.

References


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