Sibling Relationship Quality Moderates the Associations Between Parental Interventions and Siblings’ Independent Conflict Strategies and Outcomes

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This study extends research on sibling conflict strategies and outcomes by examining unique and interactive associations with age, relative birth order, sibling relationship quality, and caregivers’ interventions into conflict. Each of 62 sibling dyads (older sibling mean age = 8.39 years; younger sibling mean age = 6.06 years) discussed 1 recurring conflict alone (dyadic negotiation) and a 2nd conflict with their primary parental caregiver (triadic negotiation). Negotiations were coded for children’s conflict strategies, outcomes, and caregiver interventions; each family member provided ratings of sibling relationship quality. Results revealed that age was associated with siblings’ constructive strategies, particularly in the dyadic negotiation. With age controlled, younger siblings referred more frequently to their own perspective. Caregivers’ future orientation in the triadic negotiation was associated with children’s future orientation in the dyadic negotiation; however, this association was most evident when sibling relationship quality was high. Similarly, caregivers’ past orientation was positively associated with dyadic compromise, especially when relationship quality was high. Results reveal the value of simultaneously considering associations among parental, affective, and developmental correlates of sibling conflict strategies.

Keywords: parental intervention, sibling conflict, relationship quality, middle childhood

Encountering situations in which our goals are in conflict with those of others is unavoidable; in this respect, conflict is not necessarily negative or positive but rather a normative feature of human experience (Valsiner & Cairns, 1992). In fact, close and intimate relationships provide a context for children to develop understanding about their social worlds, including how to deal with conflict (Dunn, 2002). Yet, the strategies used to resolve conflicts in different relationships may be more or less constructive (Deutsch, 1973). Unfortunately, sibling conflict is typically characterized by destructive strategies and outcomes (Ross et al., 1996; Siddiqui & Ross, 1999). In extreme cases, these strategies may escalate into sibling abuse, the most common type of family violence (Straus, Gelles, & Steinmetz, 1980). Moreover, sibling relationships are highly variable in quality (Dunn, 2002), and this variability is linked to the constructiveness of children’s conflict strategies (e.g., Rinaldi & Howe, 1998). Thus, identifying the correlates of higher quality relationships and constructive conflict processes among siblings is a key research goal and can potentially inform parental interventions into children’s conflicts. Not surprisingly, parents are concerned about how to intervene into sibling conflict (Piotrowski, 1999). Naturalistic (e.g., Perlmutter & Ross, 1997), and experimental studies (e.g., Smith & Ross, 2007) have provided converging evidence that characteristics of parental interventions into sibling conflict are related to conflict processes.

Family systems theory posits that the sibling relationship is influenced by the larger family context (including triadic interactions with parents), given that family subsystems are necessarily interdependent (Minuchin, 1985). As described below, the literature on associations between parental interventions and sibling conflict strategies largely provides support for this theory. However, no studies have examined the conditions under which parental interventions are most strongly linked to children’s independent conflict resolution strategies and outcomes. Parental interventions may promote the knowledge and skills necessary for siblings’ constructive conflict resolution (Smith & Ross, 2007). However, children’s interpersonal goals and motivations may be equally important determinants of their conflict strategies (Stein & Albro, 2001). In this article, we examine whether the association between primary caregivers’ socialization of constructive conflict strategies and children’s positive con-
conflict behaviors varies as a function of sibling relationship quality. This question has not been examined in the sibling relationship, but research and theory on the parent–child relationship guided our hypotheses. Grusec and Goodnow (1994) argued that children’s internalization of parental values depends on their understanding of parental messages and their acceptance of the importance and relevance of those values to their behavior. Thus, we propose that despite exposure to parental socialization of constructive conflict strategies, children who dislike each other may be less motivated to use these techniques during disputes. That is, there may be a stronger link between caregivers’ interventions and children’s conflict strategies when siblings have a positive relationship.

Our second goal in this article was to clarify links between age, relative birth order, and sibling conflict strategies. Although structural qualities of children’s sibling relationships have been examined as correlates of conflict behaviors and outcomes, studies have often confounded age and birth order (e.g., Dunn & Munn, 1986; Siddiqui & Ross, 2004). As such, it is difficult to differentiate between developmental and role differences in children’s conflict strategies. In this study, participants were 6- to 8-year-old children interacting with either an older or a younger sibling, permitting us to examine unique associations with both age and relative birth order.

Associations Between Parental Interventions and Sibling Conflict Strategies

In general, maternal interventions into sibling conflicts (as compared with nonintervention) are associated with children’s use of conciliation, justifications, other-oriented reasoning, and equitable resolutions (Dunn & Munn, 1986; Perlman & Ross, 1997; Ross, Filyer, Lollis, Perlman, & Martin, 1994; Siddiqui & Ross, 1999). More specific to this study, the features of parental interventions are also correlated with children’s fighting styles. When mothers used punitive interventions, sibling conflicts were more agonistic (Brody, Stoneman, & MacKinnon, 1986). In contrast, maternal other-oriented reasoning has been linked to children’s later constructive strategies in peer conflicts, whereas self-oriented reasoning has an inverse relationship to children’s later constructive strategies (Herrera & Dunn, 1997). Furthermore, when mothers intervened into conflict but allowed children to develop their own solutions, siblings more frequently compromised during conflict 2 years later (Siddiqui & Ross, 1999).

Experimental studies have provided more direct evidence that parental interventions influence children’s conflict strategies (Smith & Ross, 2007). Typically, when parents intervene into children’s conflicts they take sides by supporting the victim (Ross et al., 1994, 1996). However, when both parents were trained to mediate their children’s conflicts, they reported that siblings’ conflict strategies in the home became more constructive and were more likely to end in compromise or conciliation rather than win–loss or standoff solutions and that children (rather than parents) more frequently developed solutions. Furthermore, in a laboratory conflict negotiation, younger siblings exposed to mediation initiated more solutions, suggesting that they were empowered to participate more fully in the conflict resolution process. In contrast, children in the control group used more justifications. Thus, parental interventions are related in specific ways to the strategies and outcomes that children exhibit when resolving conflicts on their own.

Associations Between Age, Relative Birth Order, Relationship Quality, and Conflict Strategies

Children’s conflict strategies also vary as a function of age and birth order, as well as sibling relationship quality. Age and birth order effects on children’s conflict strategies have been difficult to disentangle because in many studies, these two effects are confounded (i.e., age ranges of older and younger siblings are nonoverlapping). Yet, some research has examined the unique effects of each variable on children’s conflict strategies in middle childhood. During a toy division task in which children decided who would receive each of six toys, children in chronologically older dyads more often considered the other’s perspective and used other-oriented reasoning (Ram & Ross, 2001). In a laboratory conflict discussion, the older sibling’s age was positively linked to providing justifications for plans and compromise outcomes (Ross, Ross, Stein, & Trabasso, 2006). In contrast, research on preschoolers’ sibling conflicts in the home has suggested that chronologically older children use more justifications but fewer conciliatory arguments such as compromise and bargaining (Tesla & Dunn, 1992). Thus, research on age effects is inconsistent, suggesting that changes may vary as a function of age group or context.

Birth order effects are often revealed for win–loss outcomes; older siblings tend to emerge as the winners (Dunn & Munn, 1986; Phinney, 1986). Theory has suggested that relative birth order differences may hinge on the power imbalance between siblings (Perlman, Siddiqui, Ram, & Ross, 2000), with older siblings controlling both negative and positive interactions (Buhrmester & Furman, 1990). Some studies have examined unique effects of relative birth order on conflict strategies, holding chronological age constant. Ram and Ross (2001) found that 6-year-olds interacting with an older sibling more often considered the other’s perspective than did 6-year-olds interacting with a younger sibling, who asked more questions and guided the toy division task. Martin and Ross (1995) reported that 4-year-olds interacting with a younger sibling were more aggressive, whereas 4-year-olds interacting with an older sibling more often cried. Finally, Phinney (1986) found that 5-year-olds interacting with an older sibling more often initiated arguments by reasoning than did 5-year-olds interacting with a younger sibling. Thus, research on relative birth order suggests that younger siblings interacting with an older brother or sister are more other oriented and less aggressive. However, it is unclear whether these effects are consistent across childhood because power differences between siblings may decrease with age (Buhrmester & Furman, 1990; Vandell, Minnett, & Santrock, 1987).
Conflict strategies and outcomes are also tied to sibling relationship quality. Relationship quality is positively linked with constructive conflict strategies and inversely associated with destructive tactics (Howe, Rinaldi, Jennings, & Petrakos, 2002; Rinaldi & Howe, 1998). More specifically, Ram and Ross (2001) found that positive relationships were related to more problem solving and less contention. In turn, these strategies were associated with successful completion of a toy division task. Similarly, Ross et al. (2006) found that when older children rated their sibling more positively, they made fewer accusations and dismissals and more counterarguments, and negotiations were more likely to end in compromise (as opposed to standoff) outcomes.

The Current Study

One limitation of existing research is that correlates of children’s conflict strategies have rarely been investigated in combination. That is, although parental interventions and sibling relationship quality have each been associated with sibling conflict strategies and outcomes, it is unknown whether both variables make unique contributions to children’s conflict strategies. Furthermore, no studies have examined whether relationship quality moderates associations between parental interventions and children’s independent sibling conflict strategies. Finally, although age and birth order effects on sibling conflict have been assessed, few studies have examined unique associations with both of these variables, especially in middle childhood.

In this study, we addressed these outstanding issues. We recruited a sample of 6- to 8-year-olds with either an older (7- to 10-year-old) or a younger (4- to 7-year-old) sibling. As such, we could examine unique associations between age and children’s conflict strategies across middle childhood and unique links with relative birth order in 6- to 8-year-olds. To examine sibling conflict processes and outcomes, children attempted to resolve a recurring conflict. In addition, their primary caregivers (typically, but not exclusively, mothers) helped them discuss and attempt to resolve a different conflict. This strategy has been used successfully in past research to examine both parental interventions into sibling conflict (Siddiqui & Ross, 2004) and children’s independent conflict strategies in this age group (Ross et al., 2006; Smith & Ross, 2007).

One advantage of asking families to engage in sibling conflict discussions is their greater likelihood of achieving constructive outcomes such as compromise (Ross et al., 2006), thus permitting us to examine the correlates of constructive sibling conflict strategies and outcomes. Therefore, as well as noting how discussions ended, we coded various features of the negotiation process itself. Specifically, for each family member we identified (a) use of justifications for past behavior, perspectives, and solutions; (b) references to each child’s individual perspective (i.e., emotions, cognitions, and goals) and siblings’ joint perspective on the problem; and (c) future planning. These variables have previously been used to examine features of family conflict discussions (Howe et al., 2002; Ross et al., 2006; Siddiqui & Ross, 2004; Smith & Ross, 2007).

On the basis of past research, we had various hypotheses regarding age, relative birth order, and relationship quality. First, we predicted that children’s conflict strategies would become more sophisticated with age (Ram & Ross, 2001; Ross et al., 2006). Specifically, we expected older children to refer more often to their sibling’s perspective and provide more justifications. Second, we expected 6- to 8-year-old younger siblings to be more other oriented and use more justifications than 6- to 8-year-old older siblings (Phinney, 1986; Ram & Ross, 2001). Third, we predicted that sibling relationship quality would be linked to constructive strategies (Ram & Ross, 2001; Rinaldi & Howe, 1998) and compromise outcomes (Ross et al., 2006).

We hypothesized that caregivers’ use of constructive conflict tactics such as future-oriented planning and references to a shared perspective between siblings would be related to children’s use of these strategies when resolving a conflict on their own (e.g., Smith & Ross, 2007). However, we expected this positive association to be stronger when sibling relationship quality was high and children were particularly motivated to achieve constructive outcomes (Stein & Albro, 2001). Similarly, we predicted that caregivers’ use of constructive intervention strategies would be associated with children’s compromise outcomes when resolving conflicts on their own (Siddiqui & Ross, 1999), but especially when sibling relationship quality was high.

Method

Participants

Sixty-two sibling dyads and their primary caregivers were recruited via participant databases, newspaper advertisements, and word of mouth. Children’s ages ranged from 3.50 to 10.75 (older sibling, mean age = 8.39, range = 6.33 to 10.75; younger sibling, mean age = 6.06, range = 3.50 to 8.75). Sixty dyads included a 6- to 8-year-old child (mean age = 7.3) participating with either an older sibling (n = 30) or a younger sibling (n = 30), allowing for an examination of relative birth order with age held constant. In two families, neither sibling was a 6- to 8-year-old (both included a 5- and a 9-year-old child). These families were included in analyses of age that used the full sample, but not in analyses of birth order. The sample included 33 same-gender pairs (15 girls and 18 boys) and 29 mixed-gender pairs (16 older boys and 13 older girls). A subset of 33 dyads were from two-child families; the other 29 dyads were from families with one or more nonparticipating siblings (13 older, 15 younger, and one family with both older and younger children).

Primary caregivers were typically mothers (n = 54), but the sample included seven fathers and one female legal guardian. Primary caregivers ranged in age from 28 to 58 (M = 40.45). The sample included eight single-parent families (six mothers, one father, and one legal guardian). Most families were European Canadian (75%), but the remaining 25% of the sample included participants of Middle Eastern
(e.g., Armenian), African (e.g., Egyptian), South American (e.g., Guyanese), and Asian (e.g., Filipino) descent. Caregivers’ education ranged from completion of high school to postgraduate school ($M = 3.3$ years of postsecondary education). Two families did not participate in the second session because medical issues made scheduling impossible. Their available data from the first session were included in analyses.

**Procedure**

Caregivers provided written informed consent on behalf of themselves and both children; children provided verbal assent. Each family participated in two sessions in either their home ($n = 55$) or a university laboratory ($n = 7$). Sessions were conducted an average of 10 days apart, but because of scheduling issues, the number of days between sessions varied (range $= 1$ to $39$).

After a warm-up period, each child was interviewed by a research assistant and privately asked to nominate at least three recurring conflicts with his or her sibling. Next, the two children and their caregiver were brought together to decide which two conflicts would be discussed during the study. In descending order, the selection criteria for conflicts were (a) nominated by both children, (b) ambiguous culpability, (c) recency, and (d) intensity. Once two recurring conflicts were chosen, one conflict was randomly selected for discussion during a triadic negotiation (i.e., primary caregivers plus both children), and the other was discussed during a dyadic (i.e., only siblings) negotiation. The order of the dyadic and triadic tasks was counterbalanced across families; each occurred on a different day. For both negotiation tasks, participants were asked to discuss a recurring conflict and to try to resolve it in any way that they thought was best. They were told that the interviewer would return after 10 min and that they would be given an additional 3 min if this was necessary; all dyadic negotiations were completed (or children stated that they were unable to continue) within 10 min. During the triadic negotiation, one family was unable to agree on a solution after 13 min. On average, triadic negotiations lasted 5 min, 32 s (range = 1 min, 27 s, to 13 min, 0 s), and dyadic negotiations lasted 2 min, 4 s (range = 0 min, 19 s, to 5 min, 20 s). At the end of the first session, each family member provided ratings of sibling relationship quality. Each of the conflict negotiations was audio- and videotaped and transcribed verbatim from the tapes. Nonverbal behaviors relevant to understanding the participants’ tone and content of dialogue were added to the transcripts (e.g., laughing, leaving the room, and pointing). Transcripts were parsed into speech clauses (i.e., one subject–verb unit per line) for coding.

**Measures and Coding**

**Appraisal of sibling relationship quality.** We assessed family members’ appraisals of sibling relationship quality using a well-validated 20-item measure (Ross, Woody, Smith, & Lollis, 2000). The scale was administered verbally to older and younger siblings using a forced-choice format.

Opposing characteristics were ascribed to two similar puppets (e.g., “I am nice to my brother/sister” and “I am not nice to my brother/sister”); children indicated which puppet was more like them (positive or negative valence) and whether the puppet was a lot ($\pm 2$) or a little ($\pm 1$) like them. The scale included 10 questions about self and the same 10 questions about sibling (order counterbalanced). Caregivers completed the same scale in paper-and-pencil format and were asked each question about both children. All items were averaged to compute overall scores for each respondent. Overall scores could range from $-2$ to 2, with higher scores reflecting a more positive relationship. This scale demonstrated good reliabilities ($\alpha = .74, .89,$ and .89, for caregiver, older, and younger sibling, respectively).

**Family contributions to conflict negotiations.** We coded each family member’s verbal contributions to the conflict negotiations using the same categories. We computed frequencies of each of the following variables for each actor (i.e., caregiver, older sibling, and younger sibling) for each session: (a) future planning (i.e., referring to what would happen the next time the conflict arose, or solution generation); (b) justifications for children’s conflict behavior (i.e., actions and perspectives (i.e., goals, emotions, and cognitions); (c) justifications for solutions; and (d) references to the older child’s perspective (i.e., conflict goals, emotions, or cognitions), the younger child’s perspective, and children’s joint perspectives (e.g., “You both think it’s not fair”). In each case, interrater reliability was established on 20% of the dyadic and triadic negotiations and agreements were adequate ($\alpha > .75$ for future orientation and justifications; agreement for identifying references to perspectives = 88%).

**Negotiation outcomes.** We coded outcomes of negotiations as (a) compromise (procedural outcomes that took both children’s goals into account or agreements for both siblings to be more considerate), (b) win–loss (only one child’s goals were considered), (c) unproductive (neither child’s goals were considered), or (d) standoff (inability to agree on a resolution). Interrater reliability was adequate ($\kappa = .67$); disagreements were resolved through discussion and consensus. In eight cases, a research assistant intervened in the dyadic negotiation because children either became too emotional or claimed that they could not reach a solution. In these situations, outcomes were coded as standoffs.

**Results**

We assessed statistical significance using two-tailed tests and used Bonferroni corrections for all post hoc tests. We first present descriptive statistics and preliminary analyses of control variables, followed by analyses examining age and relative birth order effects on conflict behaviors. Then we conducted analyses to examine the consistency of siblings’ behavior within a context and between contexts. Finally, we examined associations between children’s conflict strategies, sibling relationship quality, and caregivers’ interventions.
Descriptive Statistics and Analyses of Control Variables

The three family members’ ratings of sibling relationship quality were moderately positively correlated ($r = .31$ to $r < .44$, $p < .01$). As such, to create a global score for relationship quality and limit the number of analyses, we averaged ratings across the respondents to produce an overall relationship quality score for each dyad (intraclass coefficient [ICC] = .60; Cronbach’s $\alpha = .63; M = .69$, range = $-.40$ to $1.60$). This global score was associated with older siblings’ gender, $F(1, 58) = 6.74, p < .05, \eta^2 = .10$, such that dyads with older sisters ($M = .88, SE = .10$) had higher relationship quality than those with older brothers ($M = .54, SE = .09$).

Descriptive statistics for the frequencies of each family member’s individual conflict contributions to the negotiations are available from Holly E. Recchia. Frequencies of each outcome in the triadic and dyadic negotiations are presented in Table 1. In the triadic negotiation, win–loss solutions were infrequent but equally likely to favor the older child ($n = 3$) and the younger child ($n = 3$). In the dyadic negotiation, win–loss solutions favored the older child ($n = 11$) rather than the younger child ($n = 2$), although the Fisher’s exact test was nonsignificant. Conflicts were scored for whether a compromise was achieved. Compromises occurred more often than expected in triadic negotiations and less often in dyadic negotiations, $\chi^2(1) = 5.28, p < .05, N = 120$. Preliminary analyses did not reveal any significant associations between older and younger children’s gender (alone or in combination) and their conflict strategies and outcomes, nor between gender and caregivers’ interventions into sibling conflicts. As appropriate, we also tested links with interval between sessions, order of negotiation tasks, identity of the primary caregiver (i.e., mother vs. father), number of nonparticipating older and younger siblings, and location of testing (home vs. lab). None of these latter control factors moderated the general pattern of results reported below.

### Table 1

<table>
<thead>
<tr>
<th>Triadic negotiation</th>
<th>Compromise</th>
<th>Win–loss</th>
<th>Unproductive</th>
<th>Standoff</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compromise</td>
<td>29</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>32</td>
</tr>
<tr>
<td>Win–loss</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Unproductive</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Standoff</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>6</td>
<td>1</td>
<td>7</td>
<td>59</td>
</tr>
</tbody>
</table>

Note. Two families only completed one of the negotiation tasks because they did not participate in the second session, and one family was excluded from negotiation analyses because the older sibling misunderstood the purpose of the task. The family who completed only the triadic negotiation did not resolve the issue (i.e., a standoff), and the siblings who completed only the dyadic negotiation reached a compromise.

Associations Between Age, Relative Birth Order, and Family Conflict Behaviors and Outcomes

**Associations with age.** We tested hypotheses concerning age by examining associations between each child’s age and his or her own contributions to conflict negotiations. In the triadic negotiation, both children’s ages were related to their justifications for behavior–perspectives ($r > .39, p < .01$). However, only the older sibling’s age was related to future planning ($r = .34, p < .01$), justifications for solutions ($r = .43, p < .01$), and references to his or her own perspective ($r = .36, p < .01$). In the dyadic negotiation, both children’s ages were associated with future planning ($r > .33, p < .05$), justifications for solutions ($r > .30, p < .05$), and talk about the younger sibling’s perspective ($r > .26, p < .05$). However, only the older sibling’s age was associated with references to his or her own perspective ($r = .41, p < .05$). Children’s references to a joint conflict perspective were not significantly correlated with age in either negotiation.

Because of our sample’s characteristics, older and younger siblings’ ages were strongly correlated ($r = .82$). Thus, we computed the dyadic age (i.e., average age of siblings) and age gap (age difference between siblings) variables to examine links between children’s ages and caregivers’ interventions, as well as triadic and dyadic conflict outcomes. There were no associations between either age variable and caregivers’ intervention strategies. We computed the associations between age and the likelihood of compromise in the dyadic and triadic negotiation using binary logistic regressions; the only unique effect was between sibling age gap and triadic compromise, such that compromise was less likely when age gap was larger (odds ratio $= .92, p < .05$). Neither age variable was associated with sibling relationship quality.

**Associations with relative birth order.** To test hypotheses regarding birth order effects on 6- to 8-year-olds’ conflict contributions, we conducted mixed-model analyses of covariance with relative birth order (6 to 8 years old with an older or younger sibling) as a between-subjects factor and session (triadic or dyadic negotiation) as a withi-
subjects factor. Child age (range = 6 to 8) was entered as a covariate. The child’s conflict contributions were entered as outcomes. Because the analyses focused on relative birth order, we report only birth order main effects and interactions between birth order and session, along with means adjusted for values of the covariates.

A main effect of relative birth order on justifications for behavior–perspectives, $F(1, 54) = 5.76, p < .05, \eta^2 = .10$, was qualified by an interaction between relative birth order and session, $F(1, 54) = 6.34, p < .05, \eta^2 = .11$. In the triadic negotiation, focal children interacting with an older sibling ($M = 2.62, SE = 0.37$) used more of these justifications than those interacting with a younger sibling ($M = 0.99, SE = 0.37$). However, there was no relative birth order effect in the dyadic negotiation. There was an unqualified birth order effect on children’s references to their own perspective, $F(1, 54) = 5.47, p < .05, \eta^2 = .10$. Focal children interacting with an older sibling ($M = 3.93, SE = 0.44$) talked more about their own perspective than did focal children interacting with a younger sibling ($M = 2.41, SE = 0.45$). Notably, the pattern of birth order means was in the opposite direction for children’s talk about their sibling’s perspective ($Ms = 1.01$ and $1.76$, respectively, $ns$). Thus, children interacting with an older sibling did not talk more about perspectives in general; rather, this association was specific to references to their own perspective.

Data Reduction for Observations of Conflict Contributions

Associations between children within a session. All of the older and younger children’s corresponding behaviors were correlated in the dyadic negotiation ($.33 < r < .75, p < .01$). In the triadic negotiation, children’s future planning, justifications, and talk about their own perspective were also significantly correlated ($r = .48 < r < .59, p < .01$), although the other variables measuring children’s references to perspectives were not ($r < .24, ns$). Because of the relatively high degree of consistency between the two children’s behaviors and because primary correlates were dyadic (i.e., caregiver interventions, conflict outcomes, and relationship quality), we average children’s strategies to produce an overall measure for each dyad in each session.

Structure of family members’ conflict contributions. To reduce the total number of conflict contribution variables to be considered for further analysis, we conducted principal-components exploratory factor analyses with varimax rotation on (a) caregivers’ contributions to the triadic negotiation, (b) the children’s contributions to the triadic negotiation, and (c) the children’s contributions to the dyadic negotiation. We included each of the six conflict strategy variables in these analyses. In each instance, using an eigenvalues-greater-than-1 criterion, we obtained a two-factor solution (see Table 2). In all cases, the two factors were interpreted as future-oriented strategies (i.e., future planning, justifications for solutions, and references to the children’s joint perspectives) and past-oriented strategies (i.e., justifying behavior–perspectives and references to individual perspectives). The only variables that cross-loaded on the two factors were children’s references to the older and younger siblings’ perspectives during the dyadic negotiation. This did not change our general interpretation of the factors, although it suggests that children in the dyadic negotiation refer to their individual perspectives in reference to both past behavior and future planning. The three sets of weighted factor scores (i.e., for caregivers in the triadic session and children in each session) for each of the factors (future and past orientation) were computed and used in subsequent analyses.

Explaining Variability in Children’s Conflict Strategies and Outcomes

Children’s dyadic future orientation factor scores were correlated across negotiation sessions ($r = .26, p < .05$). However, past orientation scores were not, nor were there significant associations between future orientation in one session and past orientation in the other. Chi-square tests revealed that outcomes of conflict negotiations were consistent across contexts. Children in families that achieved compromises in triadic negotiations were also more likely to achieve compromises when resolving conflicts on their own, $\chi^2(1) = 7.96, p < .01, N = 59$ (see Table 1).

We used sequential regressions to examine how children’s conflict strategies and outcomes were associated with

### Table 2

<table>
<thead>
<tr>
<th>Conflict variable</th>
<th>Caregiver in triadic negotiation (68.3% variance explained)</th>
<th>Children in triadic negotiation (70.8% variance explained)</th>
<th>Children in dyadic negotiation (69.0% variance explained)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factor 1 (Future)</td>
<td>Factor 2 (Past)</td>
<td>Factor 1 (Future)</td>
</tr>
<tr>
<td>Future planning</td>
<td>.82</td>
<td>.41</td>
<td>.86</td>
</tr>
<tr>
<td>Justifications for behavior or perspectives</td>
<td>.18</td>
<td>.56</td>
<td>.03</td>
</tr>
<tr>
<td>Justifications for solutions</td>
<td>.85</td>
<td>.20</td>
<td>.76</td>
</tr>
<tr>
<td>Talk about older sibling’s perspective</td>
<td>.14</td>
<td>.86</td>
<td>.29</td>
</tr>
<tr>
<td>Talk about younger sibling’s perspective</td>
<td>.00</td>
<td>.91</td>
<td>.15</td>
</tr>
<tr>
<td>Talk about joint perspective</td>
<td>.74</td>
<td>-.08</td>
<td>.81</td>
</tr>
</tbody>
</table>

*Note.* The factor loadings used to interpret the meaning of each factor (i.e., the strongest factor loadings for each item for each analysis) are boldface.
unique and interactive effects of caregivers’ interventions and sibling relationship quality. We attempted to explain variability in (a) children’s past- and future-oriented factor scores and (b) compromise outcomes in the dyadic conflict negotiation. We entered dyadic age and children’s triadic negotiation contributions and triadic compromise outcomes in the first step to control for developmental effects and the cross-context consistency in children’s behavior reported above. We omitted age gap between siblings from these analyses because preliminary regressions revealed no unique associations with this variable, nor did it change any of the effects reported below. We entered caregivers’ contributions to the triadic negotiation and sibling relationship quality in the second step. Interactions between caregivers’ interventions and relationship quality were entered in the third step (see Table 3).

Dyadic age, caregivers’ future orientation, and sibling relationship quality were all unique positive correlates of siblings’ future orientation in the dyadic negotiation (this main effect of relationship quality was accounted for by the older sibling’s gender; see footnote c in Table 3). However, these effects were moderated by an interaction between caregivers’ future orientation and relationship quality (see Figure 1). The older sibling’s gender did not act as a proxy for relationship quality in moderating this link. Caregivers’ future orientation with their children was increasingly related to siblings’ independent future orientation as relationship quality increased. When relationship quality was high (i.e., mean + 1 standard deviation), there was a strong association between caregivers’ future orientation in the triadic negotiation and siblings’ future orientation in the dyadic negotiation (β = 0.72, p < .001). However, when relationship quality was low (i.e., mean – 1 standard deviation), the association between these variables was weak (β = −0.13, ns).

We conducted a second sequential regression to examine the correlates of siblings’ past orientation in the dyadic negotiation. None of the steps explaining variability in siblings’ past orientation were significant, nor were any of the unique associations with individual correlates. Finally, we conducted a sequential binary logistic regression to examine correlates of compromise outcomes. As described above, dyadic compromises were more likely when children also compromised in the triadic negotiation. However, the likelihood of dyadic compromise was also associated with an interaction between caregivers’ past orientation and sibling relationship quality (see Figure 2). Caregivers’ past orientation was positively associated with dyadic compromise when sibling relationship quality was high (i.e., mean + 1 standard deviation; odds ratio = 4.65, p < .05). However, when relationship quality was low (i.e., mean – 1 standard deviation), the association between parental past orientation and compromise was not significant (odds ratio = .74, ns).

**Discussion**

The purpose of this study was to extend research on children’s sibling conflict strategies in middle childhood. Our first goal was to clarify unique associations between

### Table 3

**Associations Between Caregivers’ Behavior During Triadic Conflict Discussions, Sibling Relationship Quality, and Children’s Behavior During Dyadic Conflict Discussions (N = 59)**

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Dyadic sibling future orientation a (β at last step)</th>
<th>Dyadic sibling past orientation a</th>
<th>Dyadic compromise outcome b (odds ratio at last step)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyadic age</td>
<td>$R^2 = .21^*$</td>
<td>$R^2 = \text{ns}$</td>
<td>$\chi^2 = 11.40^*$</td>
</tr>
<tr>
<td>Triadic sibling factor scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past orientation</td>
<td>0.30$^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future orientation</td>
<td>$-0.01$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triadic compromise</td>
<td>0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triadic caregiver factor scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent past orientation (PPO)</td>
<td>-0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent future orientation (PFO)</td>
<td>0.42$^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sibling relationship quality (SRQ)</td>
<td>0.26$^*$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triadic × Past relationship (PPO × SRQ)</td>
<td>-0.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triadic × Future relationship (PFO × SRQ)</td>
<td>0.29$^*$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Sequential multiple regression. *b Sequential logistic regression. *c The inclusion of the older sibling’s gender in this model resulted in a nonsignificant main effect of relationship quality on sibling future orientation; instead, the older sibling’s gender was uniquely associated with siblings’ future orientation, such that dyads including older girls were more future oriented (at last step $\hat{\beta} = -0.30$). However, in none of the three analyses did the older sibling’s gender act as a proxy for relationship quality in moderating the association between caregivers’ interventions and siblings’ independent conflict behavior.

$^1 p < .10$. $^2 p < .05$. $^3 p < .01$. 

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age, relative birth order, and children’s conflict behaviors. Second, we examined unique associations between caregivers’ interventions into sibling conflict and children’s own conflict strategies (controlling for relationship quality and age). Finally, we examined whether associations between caregivers’ interventions and children’s conflict strategies varied as a function of relationship quality.

The observed associations between children’s dyadic conflict behavior and age across middle childhood are generally consistent with previous studies (Ram & Ross, 2001; Ross et al., 2006). As expected, both siblings’ conflict strategies became more sophisticated with age; they provided more frequent justifications for solutions and referred more to conflict perspectives (i.e., goals, emotions, and cognitions). Children’s conflict strategies in the dyadic negotiation also became more constructive with age; namely, future-oriented planning is theorized to predict mutually agreeable resolutions (Ross et al., 2006), and engagement in planning was positively linked to age. Thus, in contrast to preschoolers (Tesla & Dunn, 1992), age appears to be positively related to constructive strategies in middle childhood, perhaps because of the increasingly egalitarian nature of sibling interactions during this period (Buhrmester & Furman, 1990).

In contrast to the dyadic negotiation, the pattern of associations with age in the triadic negotiation differed between older and younger siblings. Older siblings’ ages were linked to more future planning, talk about their own perspectives, and justifications for both solutions and behavior—perspectives. However, the younger sibling’s age was correlated only with his or her justifications for behavior—perspectives. This difference may reflect the differential roles that children adopt during conflict negotiations with their caregiver. Older siblings more often direct sibling interactions, in both positive and negative ways (Buhrmester & Furman, 1990). Thus, when involved in a negotiation with their caregiver, older siblings may make more spontaneous attempts to direct the conversation and express themselves, whereas younger siblings may be more passive, responding to questions and prompting from their caregiver and older sibling. As such, the age-related increase in the sophistication of older siblings’ conflict negotiation strategies may be revealed in the triadic negotiation more readily than it is for younger siblings.

This latter interpretation is also consistent with an interaction between relative birth order and context in predicting 6- to 8-year-old children’s use of justifications for behavior—perspectives. Specifically, 6- to 8-year-olds interacting with an older sibling used more of these justifications in the triadic negotiation than did 6- to 8-year-olds interacting with a younger sibling; however, there was no relative birth order effect in the dyadic negotiation. One possibility is that older siblings’ perspectives were perceived as more transparent, and thus they were less often asked to provide the reasoning underlying their position. Alternatively, parents may focus on the perspective of the child whom they perceive as the less powerful negotiator (e.g., Felson & Russo, 1988). That is, although parents do focus selectively on the victim’s perspective in a given conflict (Ross et al., 1994), they may more frequently perceive the younger sibling as the victim.

The study revealed only one unmoderated association with relative birth order. Unexpectedly, 6- to 8-year-olds interacting with an older sibling referred more to their own perspective than did those interacting with a younger sibling. Siblings may be more motivated to express their point of view if they think the listener will understand and benefit from it (i.e., an older child) than when they will not (i.e., a younger child). Furthermore, given younger siblings’ limited sources of power (Perlman et al., 2000), they may have sought to defend their own interests. This finding contrasts
with Ram and Ross’s (2001) report that younger siblings were more other oriented. Our study involved a negotiation of a recurring sibling conflict, whereas their study was based on a toy division task. Because a recurring conflict negotiation is based on a history of affectively intense exchanges rather than being an isolated task, this negotiation context may be relatively more stressful, producing a different pattern of results.

In general, there were few unique effects of relative birth order on 6- to 8-year-olds’ conflict strategies. Of six possible associations, only two were significant, and one was only evident in the triadic negotiation. The effect sizes for nonsignificant analyses were quite small (all accounting for less than 1% of the variance in the outcome), implying that the lack of association was not the result of limited power. As such, our data suggest that age may be a more potent correlate of siblings’ conflict processes than relative birth order, especially in dyadic interactions. In fact, by middle childhood, the power difference between older and younger siblings is becoming attenuated (Buhrmester & Furman, 1990; Vandell et al., 1987). Thus, this developmental effect may explain why, in comparison to studies with younger children (e.g., Martin & Ross, 1995), our data did not reveal strong associations with relative birth order.

A factor analysis revealed similar factors for conflict contributions for caregivers, children in the triadic negotiation, and children in the dyadic negotiation. In each case, the analysis revealed dimensions of past versus future orientation, although children appeared more likely to refer to individual conflict perspectives while engaging in future planning in the dyadic negotiation. Interestingly, this dichotomy between past and future orientation is consistent with the results of Ross et al. (2006), who distinguished between planning (i.e., discussing plans for the future) and opposition (i.e., blaming the other for past transgressions or counterarguments) in siblings’ dyadic negotiations. They found that the former was linked to constructive outcomes, whereas the latter was associated with lower quality relationships and standoffs. Although we chose past-oriented variables that were arguably potentially constructive (i.e., justifications for behavior–perspectives and references to individual conflict perspectives), in the dyadic negotiation we may have tapped into this dimension of focusing on the past rather than resolving differences.

Our results revealed greater consistency between caregivers’ and children’s future orientation than between caregivers’ and siblings’ past orientation. Specifically, with age and children’s behavior in the triadic negotiation controlled, caregivers’ future orientation was linked to siblings’ dyadic future orientation. Notably, caregivers’ future orientation and sibling relationship quality each made unique contributions to siblings’ future orientation. However, the latter association was accounted for by the presence of older sisters, in line with work suggesting that older sisters may be particularly positive relationship partners (Buhrmester & Furman, 1990). Nevertheless, as expected, sibling relationship quality moderated the association between caregivers’ and siblings’ future orientation. When children had a more positive relationship, intervention strategies such as future planning, reasoning about solutions, and the development of a joint perspective were linked to the corresponding use of these strategies by their children. However, this association became progressively weaker as sibling relationship quality decreased.

This finding may imply that caregivers’ modeling of constructive techniques will be ineffective if children are not motivated to resolve their sibling conflicts in positive ways. However, it is important to note that our data do not address the question of the circumstances in which parents can most effectively influence the behavior of their children over time. Furthermore, our concurrent data do not allow us to make any causal inferences regarding the moderated relationship that we observed. For example, a positive relationship may encourage children to apply the constructive skills modeled by their caregivers. However, consistency between caregivers’ and siblings’ constructive conflict behavior across contexts may itself promote positive sibling relationships. In either case, our data provide support for the hypothesis that concurrent positive associations between future-oriented caregiver interventions and sibling constructive conflict behavior are stronger when children have a positive relationship.

Interestingly, children who compromised in triadic negotiations also tended to compromise during interactions without their caregiver present. However, even more, with triadic compromise controlled, there was an interaction between parental past orientation and sibling relationship quality in predicting dyadic compromise. This effect speaks more directly to the relevance of parental behavior in explaining dyadic compromise. Specifically, the likelihood of dyadic compromise was positively associated with caregivers’ past orientation in the triadic negotiation, but only when sibling relationship quality was high. In contrast, compromise was not associated with caregivers’ past orientation when sibling relationship quality was low.

In explaining this effect, we note that the variables used to compute the caregivers’ past orientation (justifications for behavior–perspectives and references to each child’s individual perspective) may be useful strategies for promoting understanding between siblings (Siddiqui & Ross, 2004). Compromise depends on simultaneous consideration of two incompatible goals. If parents develop understanding between their children regarding recurring conflicts, children may have the knowledge necessary to achieve compromises. However, this knowledge may only be used when children are motivated to achieve constructive outcomes (Stein & Albro, 2001). When siblings dislike one another, parental attempts to build understanding may fall on deaf ears or this knowledge may be disregarded as each child attempts to win the negotiation outright. Thus, this moderated association corroborates the claim that caregivers’ interventions will have the strongest link with children’s conflict strategies when sibling relationship quality is high. Given this, a question for future research (and an issue of interest to parents) is how caregivers can facilitate positive sibling relationships. Along with parental interventions for dealing effectively with sibling conflict (Smith & Ross, 2007), families may benefit from programs aimed at im-
proving positive sibling interactions. For example, existing positive social skills training models (Kramer & Radey, 1997) could be adapted for use by parents in the home.

As discussed above, our cross-sectional, nonexperimental design is an important limitation because it does not permit causal claims about links among intervention, relationship quality, and conflict strategies. Also, we did not conduct home observations of siblings’ conflict behavior and parental interventions; rather, we asked families to discuss recurring conflicts in a controlled setting. In doing so, we sacrificed ecological validity but encouraged constructive conflict behaviors and outcomes (Ross et al., 2006), thus allowing us to examine the correlates of these positive strategies. Furthermore, our focus on the interventions of the siblings’ primary caregiver, regardless of his or her gender, did not permit us to examine the complementary roles of mothers and fathers (Lamb, 2004). Finally, our sample size was relatively small, and this precluded our ability to examine more complex interactions between variables and small effects (i.e., factors that explained less than 5%–7% of variance in the outcome). In the regression analyses, we could not reject the null hypothesis for some predictors with less robust but nontrivial effect sizes. Thus, our findings should certainly be replicated with a larger sample.

This study provides a significant contribution to the small literature on children’s sibling conflict strategies. By examining age, relative birth order, relationship quality, and caregivers’ interventions together in one study, our results provide information about how these variables contribute uniquely and in combination to children’s sibling conflict strategies. In particular, our data suggest that links between caregivers’ interventions and children’s conflict strategies should be considered in conjunction with the relationship context in which they occur. A goal for future research is to clarify the causal mechanisms underlying this moderated association.

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