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Explaining Variability in Sibling Conflict Resolution Strategies during Middle Childhood

Holly Elizabeth Recchia

A Thesis

In the Department

Of

Psychology

Presented in Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy at

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ABSTRACT

Explaining Variability in Sibling Conflict Resolution Strategies during Middle Childhood

Holly Recchia, Ph.D.
Concordia University, 2009

The goal of this dissertation was to identify the correlates of 4- to 10-year-olds' strategies for resolving actual sibling conflicts. A sample of 62 sibling dyads participated in two sessions with their primary caregivers (54 mothers, 7 fathers, 1 legal guardian). Each child was interviewed privately about two recurring conflicts; in one session, siblings subsequently attempted to resolve the conflict in a dyadic negotiation, and in the other, during a triadic negotiation with their caregiver. Measures of siblings' conflict strategies in the home, social-cognitive abilities, and relationship quality were also administered. In Study 1, siblings' conflict strategies and outcomes were examined as a function of age, birth order, and parental interventions into children's conflict. Siblings' conflict strategies became more constructive with age. Further, parents' constructive intervention strategies (e.g., future planning, developing understanding) were related to siblings' independent use of constructive strategies and achievement of compromise outcomes, but especially when children liked each other. In Study 2, associations between children's social understanding and conflict strategies were tested. There were unique patterns of association for each measure of social-cognitive ability (i.e., second-order false belief, conflict interpretive understanding, and narrative references to conflict perspectives). However, links between younger siblings' social understanding and conflict behaviour typically depended on how much siblings liked each other. In Study 3, siblings' conflict outcomes were examined as a function of each sibling's description of conflict (i.e.,

issues, culpability, and emotions). Siblings compromised more when their narratives included references to physical harm and when they described feeling sad during conflict. Children were less likely to compromise when they (a) described fairness/right violations in their conflict narratives, and (b) believed that their sibling was solely culpable for a fight. In sum, to best explain variability in sibling conflict strategies, results highlight the need to consider features of siblings' (a) family system (e.g., behaviour socialized by parents), (b) individual characteristics (e.g., social understanding), (c) dyadic motivations (e.g., relationship quality), and (d) descriptions of specific conflicts. In particular, results suggest that despite sophisticated social and cognitive skills, children will not engage in constructive sibling conflict strategies unless they are motivated to do so.

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Contributions of Authors

The sole authors on all three manuscripts included in this dissertation were Holly E. Recchia (first author) and Nina Howe (her research supervisor; second author). Holly Recchia was centrally involved in all stages of the research that culminated in these papers (i.e., design, data collection, coding, analyses, and writing).

General Introduction

Conflict is an inevitable feature of interpersonal relationships. Due to the prevalence of interpersonal interactions in our everyday experience, encountering situations in which our goals are in conflict with those of others is unavoidable (Shantz & Hartup, 1992). Overt conflict occurs when people choose to act on those conflicting goals (Stein & Miller, 1991), either because of the importance of achieving one's goal (e.g., a desired object) or of maintaining a relationship. In this respect, conflict is not necessarily negative or positive, but is rather a normative feature of human experience (Valsiner & Cairns, 1992). Interpersonal and/or intrapersonal conflicts are implicated in many theories of development (Valsiner & Cairns, 1992). Conflict may influence the development of the self-concept, understanding of social rules, and relationships (Erikson, 1963; Piaget, 1932; Sullivan, 1953). More specifically, Shantz and Hobart (1989) argue that conflict supports two central developmental goals: individuation and connection. Conflict serves as a mechanism for individuation by emphasizing divergence between one's own perspective and those of others, and is a means for a child to assert his/her autonomy (Killen & Nucci, 1995). Further, conflict supports the developmental goal of connectedness in that it helps children to learn strategies that allow them to cooperate with others despite differences of opinion (Youniss, 1980). Related to this point, features of some conflicts in close relationships may be themselves related to connectedness goals, such as betrayals of trust and enforcement of social rules (Shantz & Hobart, 1989). Thus, theorists have argued that conflict has the potential to have substantial impact on children's development, highlighting the broad relevance of this area of research.

It is useful to distinguish between conflicts that act as mechanisms for positive change versus destructive forces in children's development. Valsiner and Cairns (1992) propose a "goodness-of-misfit" model in which they argue that conflict is a positive contributor to development if it leads to novel states, whereas conflict is destructive if antagonists devastate one another (or the relationship). More specifically, Deutsch (1973) differentiated between constructive and destructive strategies for resolving conflicts. He argued that conflicts were destructive if negotiations escalated beyond the initial issue and antagonists relied on aggressive or coercive strategies to resolve the problem (e.g., threats, power assertion). In contrast, constructive conflict negotiations were characterized by reasoned argument and resulted in new mutual understandings (e.g., compromises or integrative solutions). In this sense, conflict negotiation can have either constructive or destructive effects on one's relationships.

Conflict in Sibling Relationships

Sibling relationships are characterized by a number of distinctive features (Dunn, 1983, 2002) that are associated in predictable ways to children's conflict behaviour. First, similar to other family relationships (but unlike relationships with peers), sibling relationships are involuntary and interminable. Thus, regardless of the intensity of sibling conflict, the relationship is extremely unlikely to end. As such, one might expect a greater preponderance of destructive strategies between family members than in voluntary relationships, because the relationship risks associated with conflict are smaller. Consistent with this, Dunn, Slomkowski, Donelan, and Herrera (1995) found that children used more other-oriented arguments with friends than they did with either mothers or siblings. During adolescence, Laursen and Collins (1994) found that the

frequency of conflicts with family members was higher, and more conflicts were resolved via power assertion with family members than with friends. Thus, interminable family relationships appear to be more conflictual than friendships, and conflicts in these relationships appear to be resolved using less constructive strategies.

Second, relationships differ in the extent to which they are predominated by reciprocal/horizontal exchanges (such as in play) or complementary/vertical exchanges (such as in teaching or caretaking). Friendships between same-aged peers are reciprocal, in that children generally have equal power during interactions. In contrast, parent-child relationships are complementary, in that parents have much greater control over interactions than children (Youniss & Smollar, 1985). Sibling relationships have been described as “diagonal,” in that they are characterized by some reciprocal features (as children are close in age) and some complementary features (as one child is older and more developmentally advanced than the other; see Howe & Recchia, 2005).

Both reciprocal and complementary features of sibling relationships are evident in their conflict interactions. This pattern is best illuminated by comparing sibling conflict to parent-child conflict (which is more hierarchical) and conflict between peers (which is more reciprocal). Dunn and Munn (1987) recorded the frequencies of simple (i.e., unilateral) and complex (i.e., bilateral) disputes between preschoolers with mothers and younger siblings. They found that simple disputes were equally frequent in parent-child and sibling dyads; however, complex disputes were more frequent between siblings. Thus, disputes with siblings are reflective of more equal power in the sense that they are more oppositional; children do not simply give in to their siblings, as they do with parents. In contrast, as compared to siblings, friends were more likely to negotiate

(Laursen, Finkelstein, & Betts, 2001), provide elaborated arguments (Phinney, 1986), and use conciliatory strategies (DeHart, 1999). Thus, unsurprisingly, friends are more likely to compromise than siblings (Phinney, 1986). As compromise outcomes require a willingness to consider both negotiators' goals, they may reflect more equal power between negotiators. Moreover, when sibling conflicts end in the submission of one child, older siblings overwhelmingly emerge as the winners (Dunn & Munn, 1986; Phinney, 1986). This birth order effect may hinge on the power imbalance between older and younger siblings (Perlman, Siddiqui, Ram, & Ross, 2000), as older siblings control both negative and positive features of sibling interactions (Buhrmester & Furman, 1990).

Third, sibling relationships vary widely in affective quality. Overall, children tend to rate relationships with parents and friends quite positively (Buhrmester & Furman, 1987). In contrast, children rate relationships with siblings more negatively than parent-child relationships (Ross, Stein, Trabasso, Woody, & Ross, 2005) and lower in emotional closeness than peer relationships (Raffaelli, 1997). Related to this, sibling conflicts are frequent, often poorly resolved, and can sometimes be highly aggressive or violent (Martin & Ross, 1995; Steinmetz, 1987). Yet, sibling relationship quality varies more widely than in other types of relationships, as sibling interactions are characterized by strong and ambivalent emotions, and positive and negative features of these relationships tend to be orthogonal to one another (Howe & Recchia, 2008). These individual differences in quality are associated with children's conflict strategies. Constructive conflict tactics such as negotiation occur more frequently in positive relationships, as do compromise outcomes. In turn, destructive, contentious tactics occur more frequently in low quality relationships (Howe et al., 2002; Ram & Ross, 2001; Rinaldi & Howe, 1998;

Ross, Ross, Stein, & Trabasso, 2006). Thus, although sibling conflict strategies are typically destructive, they are not inevitably so, and relationship quality is one key correlate of this variability.

In sum, sibling relationships are involuntary, characterized by both reciprocal and complementary features, and widely variable in quality. Each of these relationship features has been linked to the strategies that children use to solve sibling conflicts. However, there are a variety of additional factors that may be associated with individual differences in sibling conflict strategies. Most frequently, sibling conflict strategies and outcomes have been associated with structural variables such as chronological age, birth order, and gender effects (e.g., Buhrmester & Furman, 1990; Dunn & Munn, 1986; Ross et al., 2006). However, a number of other potential sources of variability have been identified in the literature. The present investigation focused on three sets of these correlates. First, children's triadic interactions with other family members were examined by investigating the nature of parental interventions into sibling disputes. Second, characteristics of individual children in the dyad were examined by investigating various features of each sibling's understanding of the social world. Third, features of the conflicts themselves (i.e., issues, culpability, and emotions) were investigated. Links between each of these factors and children's sibling conflict strategies were tested in a series of studies. Below, theory and research are outlined for each of these potential correlates of sibling conflict.

Parent Interventions into Sibling Conflict

Given the frequently destructive nature of sibling conflict, parents worry about their children's fights and are concerned about the best way to intervene (Kramer &

Baron, 1995; Piotrowski, 1999). There are competing arguments in the literature regarding the benefits and drawbacks of parental intervention. On the one hand, it is important for children to develop conflict resolution strategies on their own, as these skills have been found to have numerous later benefits including improved social understanding (Dunn, Creps, & Brown, 1996), relationships with friends (Herrera & Dunn, 1997), and school adjustment (Donelan-McCall & Dunn, 1997). It is argued that parental interventions may deprive children of the opportunity to learn these skills (Brody & Stoneman, 1987; Dreikurs, Gould, & Corsini, 1974). In fact, some researchers have found that parental interventions actually make disputes worse. When mothers are present, conflicts last longer (Kramer, Perozynski, & Chung, 1999; Vuchinich, Emery, & Cassidy, 1988) and children may behave in more combative ways (Corter, Abramovitch, & Pepler, 1983; conversely, see Howe, Fiorentino & Gariepy, 2003).

Yet parental interventions into sibling conflict may have numerous positive results. Parents are especially likely to intervene when conflicts are extended in duration and particularly aggressive (Dunn & Munn, 1986; Perlman & Ross, 1997; Piotrowski, 1999). Interventions under these circumstances, beyond simply keeping children safe, may help to reduce tension (Valsiner & Cairns, 1992) and uphold family rules (Ross, Filyer, Lollis, Perlman, & Martin, 1994). In addition, the proponents of nonintervention assume that siblings will learn and use positive conflict resolution skills on their own, which is not necessarily the case. Given the inherent power differential between siblings, older siblings may not learn that power assertive strategies are an undesirable way to resolve conflicts (Bennett, 1990). In fact, power assertion may be an effective way for them to dominate their younger sibling. Thus, parental socialization of positive conflict

behaviours may be necessary. Indeed, more frequent maternal interventions have been associated with a number of immediate positive changes in conflict behaviours by the children, including conciliation, use of justifications, references to rules, other-oriented reasoning, and equitable resolutions (Dunn & Munn, 1986; Perlman & Ross, 1997; Ross et al., 1994; Siddiqui & Ross, 1999). In addition, after parental interventions, both siblings used fewer power assertive tactics and opposition, and younger siblings were less likely to cry than before interventions (Perlman & Ross, 1997). Thus, parental intervention may have numerous immediate benefits.

Beyond the question of whether parents should intervene into their children's conflicts, some types of interventions may be more constructive than others. A number of studies have assessed the consequences of various types of parental interventions. Generally, when mothers engage in more joint active interaction with their preschool children in the home, siblings fight less frequently four years later (Howe et al., 2003). More specific to conflict intervention, when mothers used more other-oriented reasoning during interventions with their preschoolers, children were more constructive during peer conflicts three years later, whereas self-oriented reasoning had the opposite effect (Herrera & Dunn, 1997). Interestingly, these maternal variables were better predictors of children's later conflict strategies than children's own early conflict style. In addition, Kendrick and Dunn (1983) found that when mothers intervened by restraining and punishing their firstborn sons, these children were more aggressive six months later. In contrast, when mothers intervened in children's conflicts but left the final resolution in the hands of the children, children were more likely to compromise during conflict two years later (Siddiqui & Ross, 1999). Thus, correlational data suggest that the nature of

maternal interventions is related in specific ways to children's later conflict resolution styles.

Further experimental work involving mediation training for parents also provides concrete support for the notion that constructive parental interventions have positive effects on siblings' conflict resolution strategies (Siddiqui & Ross, 2004; Smith & Ross, 2007). Mothers in the mediation group were trained to control the process of negotiation and foster understanding between siblings but to leave the final resolution in the hands of the children. When compared to children of control mothers (who resolved their children's conflicts as they normally would), children exposed to mediation were more likely to discuss emotions and less likely to focus primarily on developing solutions. In addition, second-born children exposed to mediation were more likely to provide reasons and initiate solutions, suggesting that they had been empowered to participate more fully in the conflict resolution process.

The existing body of research is consistent with family systems theory, which suggests that children's sibling relationships are best understood as occurring in a larger family context (e.g., Cox & Paley, 2003; Minuchin, 1985). That is, the above studies suggest that dyadic interactions between siblings are interdependent on their triadic interactions with primary caregivers. Yet, to date, no studies have examined the conditions under which parental interventions are most strongly related to children's conflict resolution processes. In other words, the circumstances in which parental interventions will have the most powerful associations with interactions between siblings are unknown. Grusec and Goodnow (1994) argue that children's internalization of parental disciplinary values depends not only on their ability to understand parents' goals,

but also on the importance or relevance that they attribute to their parents' values. In other words, children's internalization of parental values depends on both their knowledge and their motivations. One likely determinant of children's goals in sibling interactions is the extent to which they like their brother or sister (Stein & Albro, 2001). Following from this, the current proposal is that despite exposure to parental socialization of constructive conflict strategies, children who dislike each other may be less motivated to use these techniques when resolving sibling conflicts independently. In other words, there may be a stronger association between parental interventions and children's conflict strategies when siblings have a positive relationship. In contrast, when parents do not model constructive conflict resolution strategies for their children, siblings will resolve conflicts destructively, regardless of whether they like each other or not. Despite children's best intentions, if they do not have the knowledge and abilities underlying constructive strategies, they will be unable to use these strategies when faced with conflicts. This hypothesis was tested in Study 1.

Children's Understanding of the Psychological World

In addition to variability associated with parental intervention, siblings' individual characteristics may place key constraints on their conflict behaviour. Social constructivist theorists argue that children develop an understanding of the social world through their experiences with familiar others (Carpendale & Lewis, 2004; Dunn, 1988; Turiel, 1998). Through their conflict conversations with familiar others, children may learn about divergent beliefs and goals, as well as moral issues such as justice and fairness. At the same time, children's interpretations of events affect their willingness and ability to engage in particular conflict strategies (Stein & Miller, 1991). Thus, the development of

children's social understanding is grounded in their salient interpersonal experiences and interpretations of those events. As such, this understanding is one likely correlate of their strategies during sibling conflict negotiation.

Normative development in the social-cognitive domain has been well-established. Children develop an understanding of false beliefs around 4 years of age (Wellman, 1990). Yet, beyond the achievement of false belief understanding, there are numerous subsequent refinements of this understanding that occur in middle childhood. First, it is not until about 7 years of age that children are able to infer and explain second-order false beliefs (Astington, Pelletier, & Homer, 2002). That is, rather than simply holding a false belief about reality, children also come to understand that people can be wrong about others' beliefs. In addition to the question of whether holding an incorrect belief is possible, a separate issue is the extent to which this divergent opinion is valid and justifiable. That is, although 4-year-olds can attribute false beliefs, this ability is only a necessary prerequisite to a truly interpretive understanding of mind. Young children can indeed reason that someone can be wrong in their beliefs based on ignorance and misinformation. However, it is only later in development that children begin to understand that two people can endorse wildly divergent but equally plausible interpretations of *identical* information. Michael Chandler and his colleagues (Carpendale & Chandler, 1996; Lalonde & Chandler, 2002) have shown that it is not until about 7 or 8 years of age that children begin to grasp this idea of the mind as an active interpreter of information. Using ambiguous pictures, words, and referential phrases, they have shown that it is not until this age that children believe that two divergent interpretations can be equally valid and justifiable. Building on their work, Ross, Recchia, and Carpendale

(2005) presented children with a number of vignettes depicting interpersonal conflicts in which culpability was ambiguous and could equally plausibly be attributed to either actor. Children were asked about the plausibility and validity of multiple perspectives on this situation; their ability to reason about how characters could arrive at different interpretations of social facts was much better than for the similar task used by Carpendale and Chandler (1996) employing concrete stimuli. As such, it appears that children's understanding of the interpretive character of thinking might be relatively precocious regarding matters of social conflict, given that this domain of reasoning is both more subjective in nature and highly familiar to children.

Interestingly, it is precisely around this age (between 5 and 7 years of age) that children begin to use their knowledge of others' deviant informational assumptions to temper their judgments of those individuals' harmful or unfair behaviour (Wainryb & Ford, 1998). Thus, these children seem to be reconceptualizing the meaning of harmful behavior based on the actor's knowledge underlying those acts, whereas younger children simply consider the harm caused by the behaviour itself. Similarly, children's abilities to use their knowledge of others' past experiences and motivations in predicting their emotional reactions and interpretations of events improve through middle childhood (Gnepp, 1989; Gnepp & Gould, 1985; Pillow, 1991; Yuill, 1984). In a related study, Chandler, Sokol, and Hallett (2001) showed that children with an interpretive understanding of mind tend to judge actions differently than children with only an understanding of false belief. Specifically, children with an understanding of false beliefs judged the "badness" of story characters primarily on the positive or negative outcome of their actions. On the other hand, children with an interpretive understanding of mind

consider the benevolence of the characters' objectives in judging their culpability. Taken together, these studies suggest that children with advanced social understanding are more inclined to consider the intentions, knowledge, and assumptions underlying actions when making judgments.

These abilities are potentially relevant to the domain of social conflict. For children to understand the validity of a position that is inherently in opposition to their own, they need to consider the assumptions and past experiences underlying that position. Yet past research on this topic has been equivocal. Studies have linked an advanced understanding of mind to children's prosocial behavior and social competence, but apparently contradictory associations with antisocial behavior have also been revealed (see Hughes & Leekam, 2004, for a review). One explanation for these divergent findings is that the implications of children's social understanding for their real-life behavior may depend on their social goals and motivations. In conflict, if children wish to promote friendly interactions with others, their ability to reason about others' internal states may be linked to prosocial behaviour and attempts to gain equitable resolutions to interpersonal conflicts. However, if children are not concerned about maintaining positive interactions (or wish to do harm), they may use their interpersonal understanding to manipulate others more successfully and gain the upper hand during conflicts (Sutton, Smith, & Swettenham, 1999). Although these goals and motivations may reflect stable temperamental differences, they may also be related to the qualities of specific relationships. As described above, one correlate of children's interpersonal goals in conflict with a given interaction partner may be the overall quality of their relationship with that individual (Stein & Albro, 2001), and sibling relationships are known to vary

widely in affective quality (Dunn, 2002). As such, this relationship is an excellent context in which to examine the moderating effect of relationship quality on the associations between social understanding and children's conflict behaviour. This hypothesis was tested in Study 2.

Features of Conflicts Themselves

Family styles of conflict resolution and children's unique characteristics are each linked to siblings' conflict strategies. However, at a greater level of specificity, features of the conflicts themselves and how they are interpreted by children are likely implicated in siblings' conflict behaviour. Research based on social domain theory suggests that children's behaviour during conflict is related to the issues of the dispute. That is, children reason differently about moral (i.e., involving harm or unfairness), social-conventional (i.e., rules and customs), and personal (i.e., individual concerns like privacy and preferences) issues (Smetana, 2006), and also behave differently in the context of these different types of conflicts (Turiel, 2008). Specifically, children treat moral transgressions as more serious (Turiel, 2008) and emotionally salient (Nucci & Weber, 1995) than other types of transgressions. In fact, moral issues such as aggression and unfairness are implicated in most sibling conflicts (Raffaelli, 1997; Ross et al., 2006; Wilson, Smith, Ross, & Ross, 2004). However, no studies have examined whether children's observed resolution strategies are related to the conflict issues (i.e., moral, conventional, or personal), and whether children's strategies vary between types of moral conflicts (e.g., fairness, harm).

Second, children often blame their siblings for starting fights (Shantz, 1993; Wilson et al., 2004). However, this is not always the case. When children acknowledge

their own conflict contributions, this may reflect different motivations than blaming their sibling. That is, children's conflict interpretations are jointly determined by their understanding of objective events and interpersonal motivations (Stein, Bernas, Calicchia, & Wright, 1996). As such, children who admit that they are at least partially to blame for their conflicts may engage in more constructive conflict strategies. Surprisingly, this intuitive hypothesis has yet to be tested directly.

Third, goal-based theories of emotions suggest that children's emotions reflect their social motivations (Stein & Levine, 1990). The most common conflict emotions are anger or sadness, as they both occur in aversive contexts when one's goals have been blocked. By definition, conflict involves two protagonists acting on mutually incompatible goals (Shantz & Hartup, 1992; Stein & Miller, 1991). As such, both children's goals are blocked simultaneously. However, Stein and Levine (1990) argue that children are likely to feel anger in some situations, and sadness in others. Specifically, anger occurs when children believe that their blocked goals can be reinstated, thus, it is associated with goal perseverance and focus on the other's oppositional behaviour. In contrast, sadness occurs when children believe that their blocked goal cannot be reinstated, and is associated with goal abandonment and substitution. As a result, sadness is linked to future planning and a willingness to consider new alternatives. In line with this distinction, as compared to anger, sadness has been linked to more constructive conflict behaviour in parent-child conflict (Stein & Albro, 2001), and more constructive motivations in peer conflict (Murphy & Eisenberg, 2002). Yet, this question has not yet been examined empirically for sibling conflict.

In sum, children's observed strategies for solving a particular conflict may vary as a function of the issues that they perceive to be implicated in the fight, their attributions of culpability, and the emotions they report experiencing during the conflict. These associations between descriptions of particular conflicts and observed outcomes were examined in Study 3.

Outline of Studies

Drawing together the diverse bodies of theory and research described above, this series of studies was designed to examine four related issues. First, basic patterns of association between siblings' conflict strategies and children's ages, birth order and gender were investigated. Specifically, associations were tested between these structural variables and: (a) children's observed strategies for resolving conflict during a structured negotiation task (Study 1), parent reports of children's conflict strategies in the home (Study 2), and children's subjective descriptions of their conflicts (Study 3). Second, in Study 1, links were examined between parents' observed strategies for intervening in children's sibling conflicts and siblings' conflict strategies when asked to resolve conflicts on their own. This study also examined whether these associations were moderated by sibling relationship quality. Third, Study 2 tested associations between children's scores on various measures of social understanding and: (a) their reported conflict strategies in the home, as well as (b) their ability to achieve compromise outcomes in the negotiation task. Again, the study examined whether these links were moderated by sibling relationship quality. Finally, Study 3 examined associations between siblings' achievement of compromise solutions in the conflict negotiation task and three features of their conflict descriptions: (a) their reports of the issues implicated

in the dispute, (b) their attributions of culpability, and (c) their descriptions of their own and their sibling's emotions.

Summary of Method

To conduct the series of studies described above, 62 sibling dyads between 4- and 10-years of age were recruited along with their primary caregiver. Families participated in two sessions, either in their home or in a university laboratory. The procedure is outlined in Table 1A. More detailed information concerning the procedure, measures, and coding is presented when applicable in the individual studies. However, the components of the procedure relevant to each study are noted in Table 1A. To summarize, at the beginning of the first session, parents provided informed consent on behalf of themselves and both children. Then, they completed a basic demographics questionnaire while each sibling was privately asked to nominate recurring sibling conflicts for discussion during the study. Once two conflicts had been selected for discussion, each child was interviewed individually about one of the two selected conflicts. Specifically, they were asked to provide a narrative report of the most recent incidence of the dispute, to identify who they thought was at fault for the conflict, and to identify the conflict emotions experienced by self and sibling. Following this interview, children discussed and attempted to resolve the conflict. This negotiation occurred either as a triadic discussion with their primary caregiver, or in a dyadic discussion (in which only the two siblings were present). The order of these negotiations was counterbalanced across sessions. That is, if families engaged in a triadic discussion of the first conflict during the initial session, children discussed the second conflict alone during the follow-up session.

At the end of the first session, all three family members independently completed reports of sibling relationship quality and children were administered a second-order false belief task. The order of these two tasks was counterbalanced for children. In the second session, children were interviewed privately about the second conflict that they nominated at the beginning of the first session. Then, they completed the other negotiation task (i.e., dyadic or triadic discussion, counterbalanced across families). At the end of the second session, parents completed a report of children's sibling conflict strategies in the home (based on Straus, 1979), and children were administered a conflict interpretation task assessing their subjective understanding of culpability (Ross, Recchia, & Carpendale, 2005).

Table 1A

Summary of Procedure

Session 1		Session 2	
<i>Parents</i>	<i>Siblings</i>	<i>Parents</i>	<i>Siblings</i>
Demographics Questionnaire ^{1,2,3}	Conflict Nomination		
	Pre-Negotiation Interviews ^{2,3}		Pre-Negotiation Interviews ^{2,3}
Triadic Negotiation ¹ or Break	Dyadic ^{1,2,3} or Triadic ¹ Negotiation	Triadic Negotiation ¹ or Break	Dyadic ^{1,2,3} or Triadic ¹ Negotiation
Sibling Relationship Appraisal ^{1,2}	(a) Sibling Relationship Appraisal ^{1,2} , (b) Second-Order False Belief Task ² ; (a) and (b) counterbalanced	Sibling Conflict Strategies Scale ²	Conflict Interpretation Task ²

Note. Grey cells denote negotiation tasks that are counterbalanced across sessions.

Numeric superscripts identify the study/studies in which data derived from a given measure are reported. See Appendices for details of interviews, scripts and questionnaires.

Study 1: Sibling Relationship Quality Moderates the Associations between Parental Interventions and Siblings' Independent Conflict Strategies and Outcomes

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 an important context for children to develop understanding about their social worlds, including how to deal with family conflicts (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, Martin, Perlman, Smith, Blackmore, & Hunter, 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). Furthermore, 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 an important research goal and can potentially inform parental interventions into children's conflicts. Not surprisingly, parents are concerned about the best way to intervene into sibling conflict (Piotrowski, 1999). Naturalistic (e.g., Perlman & Ross, 1997) and experimental studies (e.g., Smith & Ross, 2007) provide 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 systems

within the family 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). The purpose of this paper was to examine whether the association between primary caregivers' socialization of constructive conflict strategies and children's positive conflict behaviors would vary 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) argue that children's internalization of parental values depends not only on their understanding of parental messages, but also on their acceptance of the importance/relevance of those values to their behaviour. As such, we propose that despite exposure to parental socialization of constructive conflict resolution strategies, children who dislike each other may be less motivated to use these techniques when faced with disputes. That is, there may be a stronger link between caregivers' interventions and children's conflict strategies when siblings have a positive relationship.

A second goal of this paper 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 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 to 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 had 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 two years later (Siddiqui & Ross, 1999).

Experimental studies provide 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; Ross et al., 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, were more likely to end in compromise or conciliation rather than win-loss or standoff solutions, and that children (rather than parents) developed solutions more frequently. Further, 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 non-overlapping). 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 suggests 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 suggests 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 features of interaction (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 engaged in strategies that incorporated the other's desires or preferences than 6-year-olds interacting with a younger sibling. In turn, 6-year-olds interacting with a younger sibling asked more questions about issues, procedures, and preferences, and guided the toy division task. Martin and Ross (1995) reported that 4-year-olds interacting with a younger sibling in the home 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 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 tend to be more other-oriented and less aggressive. However, it is unclear whether these effects are consistent across childhood, as 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. Further, 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.

This study 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 sibling (4- to 7-year-old). 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, goals) and siblings' joint perspective on the problem, and (c) future planning. These variables have been used previously to examine features of family conflict discussions (Howe et al., 2002; Ross et al., 2006; Siddiqui & Ross, 2004; Smith & Ross, 2007).

Based on 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 positive sibling relationships would be linked to more constructive strategies (Rinaldi & Howe, 2002; Ram & Ross, 2001) 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 yrs. (Older sibling $M = 8.39$ yrs., $range = 6.33$ to 10.75 ; Younger sibling $M = 6.06$, $range = 3.50$ to 8.75). Sixty dyads included a 6- to 8-year-old child (M age = 7.3 yrs.) participating with either an older ($n = 30$) or a younger sibling ($n = 30$), allowing 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 9-year-old child). These families were included in analyses of age that utilized the full sample, but not analyses of birth order. The sample included 33 same-gender (15 female and 18 male) and 29 mixed-gender pairs (16 older male and 13 older female). A subset of 33 dyads were from two-child families; the other 29 families included 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 years ($M = 40.45$). The sample included 8 single-parent families (6 mothers, 1 father, and 1 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 high school completion to post-graduate school ($M = 3.3$ years of post-secondary education). Two families did not participate in the second session as 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 either in their home ($n = 55$) or a university laboratory ($n = 7$). Sessions were conducted an average of 10 days apart, but due to scheduling issues, the number of days between sessions varied (range = 1 to 39).

After a warmup period, each child was interviewed by a research assistant, and was privately asked to nominate at least three recurring conflicts with his/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 any way that they thought was best. They were told that the interviewer would return after 10 minutes, and that they would be given an additional three minutes if this was necessary; all dyadic negotiations were completed (or children stated that they were unable to continue) within 10 minutes. During the triadic negotiation, one family was unable to agree on a solution after 13 minutes. On average, triadic negotiations lasted 5 min., 32 sec. (range = 1 min. 27 sec. to 13 min. 0 sec.) and dyadic negotiations lasted 2 min., 4 sec. (range = 0 min. 19 sec. to 5 min. 20 sec.). 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, 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. Family members' appraisals of sibling relationship quality were assessed 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”, “I am not nice to my brother/sister.”); children indicated which puppet was more like them (+ or – valence), and whether the puppet was a lot (+/-2) or a little like them (+/- 1). The scale included ten questions about self and the same ten 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 (*alphas* for caregiver, older, and younger sibling = .74, .89 and .89, respectively).

Family contributions to conflict negotiations. Each family member’s verbal contributions to the conflict negotiations were coded using the same categories. Frequencies of each of the following variables were computed 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, 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 (i) the older child’s perspective (i.e., conflict goals, emotions, cognitions), (ii) the younger child’s perspective, and (iii) to 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 (*kappas* > .75 for future-orientation and justifications; agreement for identifying references to perspectives = 88%).

Negotiation outcomes. Outcomes of negotiations were coded 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, the researcher intervened in the dyadic negotiation, either because children became too emotional or they claimed that they could not reach a solution. In these situations, outcomes were coded as standoffs.

Results

Statistical significance was assessed using 2-tailed tests and Bonferroni corrections were used for all posthoc tests. Descriptive statistics and preliminary analyses of control variables are presented first, followed by analyses examining age and relative birth order effects on conflict behaviors. Then, analyses were conducted to examine the consistency of siblings' behavior within a context, as well as between contexts. Finally, associations were examined 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 ($.31 < r_s < .44, p_s < .01$). As such, to create a global score for relationship quality and limit the number of analyses, ratings were averaged across the respondents to produce an overall relationship quality score for each dyad ($ICC = .60$; Cronbach's alpha = .63; $M = .69, range = -0.40 - 1.60$). 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 the first author. Frequencies of each outcome in the triadic and dyadic negotiations are presented in Table 1B. In the triadic negotiation, win-loss solutions were infrequent but equally likely to favor the older ($n = 3$) and the younger child ($n = 3$). In the dyadic negotiation, win-loss solutions favored the older ($n = 11$) rather than the younger child ($n = 2$), although the Fisher's exact test was nonsignificant ($p > .30$). Conflicts were scored for whether a compromise was achieved. Compromises occurred more often than expected in triadic negotiations and less often in dyadic negotiations, $\chi^2(1) = 5.28, p < .05$. 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.

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

Associations with age. Hypotheses concerning age were tested by examining associations between each child's age and their own contributions to conflict negotiations. In the triadic negotiation, both children's ages were related to their

justifications for behavior/perspectives ($r_s > .39, p_s < .01$). 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/her own perspective ($r = .36, p < .01$). In the dyadic negotiation, both children's ages were associated with future planning ($r_s > .33, p_s < .05$), justifications for solutions ($r_s > .30, p_s < .05$), and talk about the younger sibling's perspective ($r_s > .26, p_s < .05$). However, only the older sibling's age was associated with references to his/her own perspective ($r = .41, p < .05$). Children's references to a joint conflict perspective were not significantly correlated with age in either negotiation.

Within a dyad, older and younger siblings' ages were strongly correlated ($r = .82$). Thus, an overall dyadic age variable was computed to examine associations between children's ages and caregivers' interventions, as well as triadic and dyadic conflict outcomes. There were no associations between siblings' dyadic age and caregivers' contributions to conflict negotiations. The associations between dyadic age and the likelihood of compromise in the dyadic and triadic negotiation were computed using binary logistic regressions; neither effect was significant. Similarly, dyadic age was not associated with the global measure of sibling relationship quality.

Associations with relative birth order. To test hypotheses regarding birth order effects on 6- to 8-year-olds' conflict contributions, mixed-model ANCOVAs were conducted with relative birth order (6- to 8-year-old with an older or younger sibling) as a between-subjects factor and session (triadic or dyadic negotiation) as a within-subjects factor. Child age (range = 6 to 8) was entered as a covariate. The child's conflict contributions were entered as outcomes. As the analyses focused on relative birth order,

only birth order main effects and interactions between birth order and session are reported, along with means adjusted for values of the covariates.

A main effect of relative birth order on justifications for behaviour/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 ($M = 2.62, SE = .37$) used more of these justifications than those interacting with a younger sibling ($M = .99, SE = .37$). 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 ($M = 3.93, SE = .44$) talked more about their own perspective than focal children interacting with a younger sibling ($M = 2.41, SE = .45$). Notably, the pattern of birth order means was in the opposite direction for children's talk about their sibling's perspective ($M_s = 1.01$ and 1.76 , respectively, *ns* difference). Thus, children interacting with an older sibling did not talk more about perspectives *in general*, but 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 ($.33 < r_s < .75, p_s < .01$). In the triadic negotiation, children's future planning, justifications, and talk about their own perspective were also significantly correlated ($.48 < r_s < .59, p_s < .01$) although the other variables measuring children's references to perspectives were not ($r_s < .24, ns$). Due to the relatively high degree of consistency between the two children's

behaviors and as primary correlates were dyadic (i.e., caregiver interventions, conflict outcomes, relationship quality), children's strategies were averaged 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, principal components exploratory factor analyses with Varimax rotation were conducted 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. Each of the six conflict strategy variables was included in these analyses. In each instance, using an eigenvalues > 1 criterion, a two-factor solution was obtained (see Table 2B). In all cases, the two factors were interpreted as future-oriented strategies (i.e., future planning, justifications for solutions, references to the children's joint perspectives) and past-oriented strategies (i.e., justifying behavior/perspectives, 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 both in reference to 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, $\chi^2(1) = 7.96, p < .01$ (see Table 1B).

Sequential regressions were used to examine how children's conflict strategies and outcomes were associated with 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. Dyadic age, as well as children's triadic negotiation contributions and triadic compromise outcomes were entered in the first step to control for developmental effects and the cross-context consistency in children's behavior reported above. Caregivers' contributions to the triadic negotiation and sibling relationship quality were entered in the second step. Interactions between caregivers' interventions and relationship quality were entered in the third step (see Table 3B).

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 Table 3B notes). 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., $M + 1 SD$), there was a strong association between caregivers' future-orientation in the triadic negotiation and siblings' future-orientation in the dyadic negotiation ($\beta = .72$, $p < .001$). However, when relationship quality was low (i.e., $M - 1 SD$), the association between these variables was weak ($\beta = .13$, *ns*).

A second sequential regression was conducted 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, a sequential binary logistic regression was conducted 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., $M + 1 SD$; odds ratio = 4.65, $p < .05$). However, when relationship quality was low (i.e., $M - 1 SD$), 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 age, relative birth order, and children's conflict behaviours. 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). Interestingly, children's conflict strategies in the dyadic negotiation also became more *constructive* with age; each child's future planning was positively associated with his/her own age. Thus, in contrast to preschoolers (Tesla & Dunn, 1992), age appears to be positively associated with constructive strategies in middle childhood.

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 behaviour/perspectives. However, the younger sibling's age was correlated only with his/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 behaviour/ perspectives. Specifically, 6- to 8-year-olds interacting with an older sibling used more of these justifications in the triadic negotiation than 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 that 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 perceive the younger sibling as the victim more frequently.

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 those interacting with a younger sibling. Siblings may be more motivated to express their point of view when they think the listener will be able to understand and benefit from it (i.e., an older child) than when they will not (i.e., a younger child). Further, given younger siblings' limited sources of power (Perlman et al., 2000), they may have sought to defend their own interests. It should be noted that this finding contrasts with Ram and Ross (2001), who found that younger siblings were more other-oriented. However, our study involved a negotiation of a recurring sibling conflict, whereas their study was based on a toy division task. These contexts differ in various

ways; most notably, a recurring conflict negotiation is based on a history of affectively intense exchanges rather than being an isolated task. As such, a conflict negotiation 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 due to 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, 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, 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, corroborating research 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 positive 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*. Further, 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 that are modeled by their caregivers. However, consistency between caregivers' and siblings' constructive conflict behaviour 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, it is important to note that the variables used to compute the caregivers' past-orientation (justifications for behavior/perspectives, references to each child's individual perspective) are thought to 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 put to use 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, one key question for future research (and an issue of particular interest to parents) is how caregivers can facilitate positive sibling relationships. Along with interventions helping parents deal effectively with sibling conflict (Smith & Ross, 2007), families may benefit from parent programs designed to improve the positive qualities of sibling relationships. 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, non-experimental design is an important limitation, as 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, but rather 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. Further, as we focused on the interventions of the siblings' primary caregiver, regardless of his/her gender, this did not permit us to examine the complementary roles of mothers and fathers in the family (Lamb, 2004). Finally, our sample size was relatively small, and 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 in 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, these 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.

Table 1B

Frequencies and Concordance of Triadic and Dyadic Conflict Negotiation Outcomes (N = 59)

<i>Dyadic Negotiation</i>	<i>Triadic Negotiation</i>				TOTAL
	Compromise	Win-Loss	Unproductive	Standoff	
Compromise	29	1	0	2	32
Win-Loss	10	2	1	0	13
Unproductive	2	1	0	0	3
Standoff	4	2	0	5	11
TOTAL	45	6	1	7	59

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.

Table 2B

Factor Scores for Conflict Contribution Variables in Dyadic and Triadic Contexts (N = 60)

	<i>Caregiver in Triadic Negotiation (68.3% Variance Explained)</i>		<i>Children in Triadic Negotiation (70.8% Variance Explained)</i>		<i>Children in Dyadic Negotiation (69.0% Variance Explained)</i>	
<i>Conflict Variable</i>	<i>Factor 1 (Future)</i>	<i>Factor 2 (Past)</i>	<i>Factor 1 (Future)</i>	<i>Factor 2 (Past)</i>	<i>Factor 1 (Future)</i>	<i>Factor 2 (Past)</i>
Future Planning	.82	.41	.86	.24	.90	.18
Justifications for Behaviour or Perspectives	.18	.56	.03	.80	-.06	.91
Justifications for Solutions	.85	.20	.76	.39	.78	.30
Talk about OS Perspective	.14	.86	.29	.82	.55	.56
Talk about YS Perspective	.00	.91	.15	.80	.60	.59
Talk about Joint Perspective	.74	-.08	.81	-.06	.67	-.10

Note. OS = older sibling; YS = younger sibling. The factor loadings used to interpret the meaning of each factor are bolded (i.e., the strongest factor loadings for each item for each analysis).

Table 3B

Associations between Caregivers' Behavior during Triadic Conflict Discussions, Sibling Relationship Quality, and Children's Behaviour during Dyadic Conflict Discussions (N = 59)

	Dyadic Sibling Future Orientation ¹	Dyadic Sibling Past Orientation ¹	Dyadic Compromise Outcome ²
Step 1	$R^2 = .21^*$	$R^2 = ns$	$\chi^2 = 11.40^*$
	<i>β at last step</i>		<i>Odds ratio at last step</i>
Dyadic Age	.30*		2.21 ^t
Triadic Sibling Factors			
Past Orientation	-.01		.36 ^t
Future Orientation	-.16		1.05
Triadic Compromise	.15		3.08*
Step 2	$R^2 \Delta = .12^*$	$R^2 \Delta = ns$	$\chi^2 = 4.04$
	<i>β at last step</i>		<i>Odds ratio at last step</i>
Triadic Caregiver Factors			
Past Orientation (PPO)	-.06		1.86
Future Orientation (PFO)	.42**		2.11
Relationship Quality (SRQ)	.26* ³		1.80
Step 3	$R^2 \Delta = .08^*$	$R^2 \Delta = ns$	$\chi^2 = 8.62^*$
	<i>β at last step</i>		<i>Odds ratio at last step</i>
PPO X SRQ	-.07		2.50*
PFO X SRQ	.29*		.48 ^t

Note. ^t $p < .10$ * $p < .05$ ** $p < .01$. ¹ Sequential multiple regression; ² Sequential logistic regression. ³The 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 (β at last step = -.30).

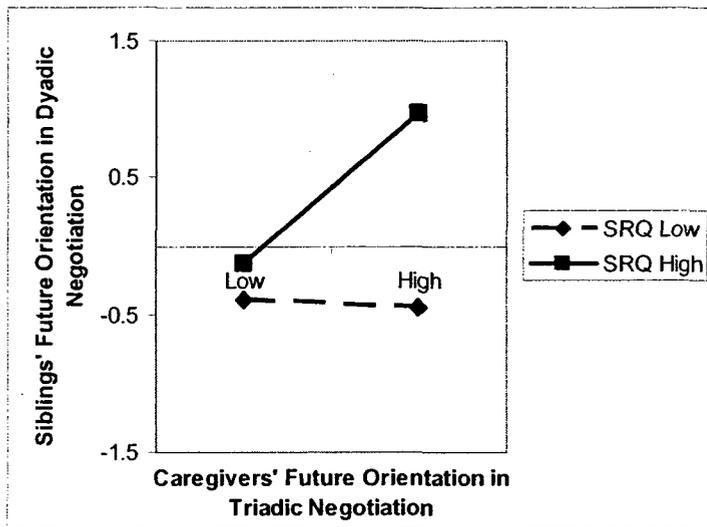


Figure 1A. Sibling relationship quality moderates the association between caregivers' future-orientation in the triadic negotiation and sibling future-orientation in the dyadic negotiation (plotted points = +/- 1 SD on each predictor).

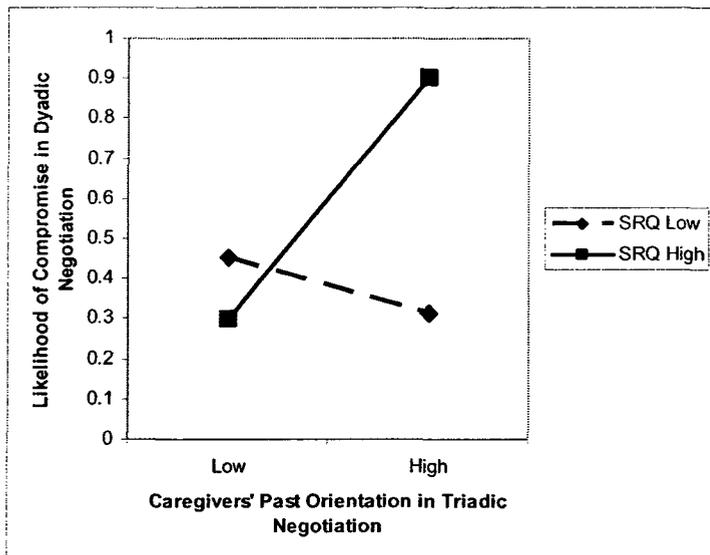


Figure 2A. Sibling relationship quality moderates the association between caregivers' past-orientation in the triadic negotiation and the likelihood of compromise in the dyadic negotiation (plotted points = +/- 1 SD on each predictor).

Moving Beyond Parental Intervention: How are Children's Scores on Measures of Social Understanding Linked to their Sibling Conflict Strategies?

The results of Study 1 confirmed that parental interventions are associated with children's negotiation strategies during a recurring conflict discussion. However, there was a stronger link between parental interventions and children's conflict strategies when sibling relationship quality was high. These findings suggested that children's abilities (i.e., conflict skills socialized by their primary caregiver) and motivations (i.e., the affective qualities of their sibling relationship) each made contributions to their behavior. However, the results also support the intuitive assumption that parental socialization and relationship quality are not the only sources of variability in children's conflict resolution skills. For example, chronological age was associated with both older and younger siblings' resolution strategies during the dyadic negotiation task.

Study 2 extended the findings from Study 1 in two ways. First, more proximal correlates of children's conflict behavior were examined by investigating how children's own cognitive characteristics (i.e., their understanding of the social world) were linked to their conflict strategies. Similar to Study 1, Study 2 tested whether relationship quality moderated associations between children's social understanding and conflict strategies. As such, Study 2 provided converging support for the general proposal that children's conflict strategies are jointly determined by their abilities (i.e., understanding of false beliefs and subjectivity, as well as their consideration of their sibling's unique perspective) and affective motivations. Second, in Study 1, ecological validity was sacrificed to obtain observational measures of children's conflict discussions and increase the likelihood of constructive resolutions. However, these results do not shed light on the

correlates of children's naturalistic conflict strategies in their everyday interactions. As such, Study 2 sought to broaden the measurement of children's conflict strategies by including parental reports of siblings' constructive and destructive conflict strategies in the home. Nevertheless, to complement these measures and provide a point of comparison to Study 1, associations with siblings' achievement of compromise in the dyadic negotiation context were tested. Thus, the results of Study 2 built upon those of Study 1 by (a) explaining variability in children's conflict strategies in the home, and (b) investigating how measures of children's social understanding are uniquely related to siblings' conflict behavior, and (c) examining whether sibling relationship quality moderates associations between social understanding and siblings' conflict strategies.

Study 2: Associations between Social Understanding, Sibling Relationship Quality, and Siblings' Conflict Strategies and Outcomes

The connections between children's understanding of mind and their social behavior are far from straightforward. Advanced social understanding has been linked to children's prosocial behavior and social competence, but apparently contradictory associations with antisocial behavior have also been revealed (see Hughes & Leekam, 2004, for a review). Thus, some researchers have differentiated between clusters of behaviors reflecting "nice" and "nasty" theories of mind (Happé & Frith, 1996; Ronald, Happé, Hughes, & Plomin, 2005). One explanation for these divergent findings is that the implications of children's social understanding for their real-life behavior may depend on their social goals and motivations. When faced with interpersonal conflicts, if children wish to promote friendly interactions, their ability to reason about others' perspectives may be linked to prosocial behaviour and attempts to achieve equitable resolutions. Alternatively, if children are not concerned about maintaining positive interactions (or even actively wish to do harm), they may instead use their interpersonal understanding to manipulate others and gain the upper hand. Although these varying goals can reflect temperamental differences, they may also be related to the qualities of specific relationships. Thus, one determinant of children's interpersonal motivations in conflict with a partner may be the quality of the relationship with that individual (Stein & Albro, 2001).

Nevertheless, no studies have examined whether relationship quality moderates the association between children's social-cognitive skills and their real-life conflict strategies. However, this issue has important implications for the relevance of children's

social understanding to their actual behavior. The sibling relationship is an excellent context in which to examine associations with individual differences in affective quality, given that siblings vary widely on this dimension (e.g., Dunn, 2002). Thus, our goal was to examine relationship quality and social understanding as unique and interactive correlates of children's conflict strategies with their sibling during middle childhood.

Theory and Research on the Links between Social Understanding, Social Goals, and Behavior

Various studies have examined associations between children's understanding of their social worlds and their interpersonal behavior, particularly with peers and friends. Although siblings are relatively overlooked, this literature provides a framework for the present study. Most frequently, positive associations are observed between children's social understanding and socially competent behavior. Specifically, children's understanding of others' mental states has been positively linked to social competence in the classroom (e.g., Baird & Astington, 2004), popularity among peers (Bosacki & Astington, 1999; Slaughter, Dennis, & Pritchard, 2002) and engagement in connected communication with friends (e.g., Slomkowski & Dunn, 1996). Thus, children's social understanding is associated with their prosocial interactions with others.

The connections between antisocial behavior and social understanding are less clear cut. "Hard-to-manage" preschoolers exhibit deficits in mental and emotional understanding (Hughes, Dunn, & White, 1998). Although children with conduct disorder infrequently engage in prosocial behaviors that depend on social understanding, they do engage in antisocial behaviors such as lying and bullying that are equally reliant on an understanding of others (Happé & Frith, 1996). In community samples, preschoolers who

successfully deceived others also aggressively dominated their classmates (Keating & Heltman, 1994). Similarly, proactively aggressive ringleader bullies demonstrate above average understanding of cognitions and emotions (Sutton, Smith, & Swettenham, 1999). Finally, while reactively aggressive children misattribute hostile intentions to others, proactively aggressive children evaluate aggression relatively positively, and focus on instrumental as opposed to relational goals in their interactions (Crick & Dodge, 1996).

Thus, although social understanding is generally associated with prosocial behavior, certain groups of children engaging in antisocial behavior appear to demonstrate intact (or even superior) social understanding. What might explain these apparent contradictions? Ronald et al. (2005) proposed two explanations for the divergence between “nice” and “nasty” clusters of behavior that reflect children’s social understanding (p. 680). First, these two sets of behavior may be developmentally distinct and reflect different underlying abilities. Alternatively, the behaviors may reflect the same underlying social-cognitive skill, but this ability may interact with temperamental characteristics to produce distinct behavioral profiles across individuals.

A related possibility may be that the associations between children’s social understanding and their behavior in a given context may be moderated by their immediate goals and motivations (Arsenio & Lemerise, 2001; Crick & Dodge, 1994). Children’s social goals (e.g., dominance, self-protection, relationship repair) are related to the strategies they use to solve interpersonal conflicts (Rose & Asher, 1999). One important determinant of children’s interaction goals may be the nature of their interpersonal relationship (Stein & Albro, 2001). Accordingly, most studies examining interactions between friends have revealed positive associations between social

understanding and socially competent behavior (e.g., Slomkowski & Dunn, 1996) as opposed to more negative behaviors. Friendships are based on mutual liking, therefore friends are generally motivated to use their social understanding for prosocial ends (Corsaro, 1985). In contrast, sibling relationships are involuntary and highly variable in quality (Dunn, 2002), suggesting this is an ideal context to examine whether relationship quality moderates associations between social understanding and children's conflict behavior.

Sibling Relationships as a Context for Development

Siblings spend considerable time together during childhood, and thus construct a history of shared interactions that can provide considerable insight into one another's perspectives (Dunn, 2002). Children can use this interpersonal knowledge for constructive ends, such as cooperation in play (Howe, Petrakos, & Rinaldi, 1998), but also destructive goals such as teasing (Dunn, 1988). Related to this point, sibling conflicts in early and middle childhood are frequent and often poorly resolved (Howe, Rinaldi, Jennings, & Petrakos, 2002; Siddiqui & Ross, 1999). In fact, compromise and reconciliation occur much less frequently in naturalistic sibling conflicts than submission or a failure to resolve differences. When a conflict ends in submission, typically the older sibling emerges as the victor. This dominance is related to the greater knowledge and abilities enjoyed by older siblings (Perlman, Siddiqui, Ram, & Ross, 2000). Not surprisingly, older and younger siblings use different conflict strategies; Martin and Ross (1995) found that older siblings are more likely to be aggressive, whereas younger siblings are more likely to cry. However, they also suggested that older siblings may be especially aggressive towards a younger victim who does not fight back. Further, Ram

and Ross (2008) found that during a toy division task, younger siblings typically used fewer problem-solving tactics than older siblings. However, this difference was no longer evident when children exchanged detailed information about their goals. Additionally, optimal resolutions were more likely when children had access to the reasoning underlying their sibling's goals.

For our purposes, these findings have two potential implications. First, younger siblings may be able to influence the tenor of their conflict negotiations with their more powerful brothers/sisters, although their sources of power are more limited. Second, the results of Ram and Ross (2008) suggest that younger siblings' strategies are influenced by their understanding of their older sibling's perspective. Indeed, 4-year-old younger siblings' social understanding has been associated with less sibling conflict (Cutting & Dunn, 2006) and more use of other-oriented arguments in conflict (Foote & Holmes-Lonergan, 2003); unfortunately, older siblings' social understanding was not assessed in these studies.

In addition to associations with birth order and social understanding, overall sibling relationship quality is related to children's dyadic conflict strategies and outcomes. Specifically, relationship quality is positively associated with constructive conflict tactics such as negotiation and negatively linked to destructive, contentious tactics (Howe et al., 2002; Ram & Ross, 2001; Rinaldi & Howe, 1998). Further, compromise outcomes during conflict discussions may also be positively associated with sibling relationship quality (Ross, Ross, Stein, & Trabasso, 2006).

The Current Study

To our knowledge, no studies have examined children's social understanding and relationship quality as unique and interactive correlates of their dyadic sibling conflict strategies and outcomes. Our primary goal was to test the hypothesis that relationship quality will moderate associations between social understanding and siblings' dyadic "nice" (i.e., constructive) and "nasty" (i.e., destructive) conflict strategies. Therefore, we asked primary caregivers to rate their children's sibling conflict tactics in the home. To examine the correlates of compromise resolutions, which occur infrequently in a naturalistic setting (Siddiqui & Ross, 1999), we asked children to discuss and attempt to resolve a recurring sibling conflict. Ross et al. (2006) demonstrated that this procedure resulted in a higher rate of compromise resolutions than has been observed during naturalistic interactions.

To assess the global positivity of the sibling relationship, all three family members rated sibling relationship quality. Further, we measured three aspects of children's social understanding appropriate for the sampled age groups. First, we included a standard second-order false belief measure used previously as a correlate of prosocial (Baird & Astington, 2004) and antisocial (Sutton et al., 1999) behavior. Second, we interviewed children regarding their interpretive understanding of hypothetical sibling conflicts. Specifically, we assessed whether children believed that protagonists could disagree and both have a valid point of view (Ross, Recchia, & Carpendale, 2005). We reasoned that children who do not perceive their sibling's conflicting perspective as valid would be unlikely to engage in constructive conflict strategies and to pursue equitable outcomes. Third, to assess children's understanding of their sibling's actual conflict perspective, children provided narratives on two recurring conflicts. These narratives

were coded for references to the perspectives of self and other. Similar strategies have been used successfully to examine young children's understanding of their own and their siblings' goals in conflict (Ross, Siddiqui, Ram, & Ward, 2004), as well as children's descriptions of their roles as victims and perpetrators in narratives of peer conflicts (Wainryb, Brehl, & Matwin, 2005). Arguably, our measure provides direct insight into children's spontaneous consideration of multiple perspectives on the same real event.

We recruited sibling dyads whose ages varied from 4- to 10-years. A large age range was selected to ensure substantial variability in both older and younger siblings' scores on measures of social understanding and to produce findings generalizable across middle childhood. Children's references to conflict perspectives develop across this age range (Wainryb et al., 2005), as does their interpretive understanding of conflict (Ross et al., 2005). Thus, we could consider associations with age across middle childhood, as well as links between social understanding, relationship quality and conflict behaviour with age effects covaried.

A number of hypotheses were derived from the literature. First, we expected that (a) global sibling relationship quality and (b) each measure of social understanding would be positively associated with constructive conflict strategies and compromise outcomes, and negatively associated with destructive strategies. However, we also expected sibling relationship quality to moderate the associations between social understanding and conflict strategies and outcomes. Specifically, we expected that social understanding would be positively associated with constructive conflict strategies and compromise resolutions only when sibling relationship quality was high. Similarly, we expected social

understanding to be negatively associated with destructive conflict tactics only when relationship quality was high.

Method

Participants

Sixty-two sibling dyads¹ and their primary caregivers were recruited via participant databases, newspaper advertisements, and word-of-mouth. Families with two children aged 4 - 10 years were identified and invited to participate in a study of sibling conflict; 78% of the eligible families initially contacted participated, whereas 13% were not interested and 9% were too busy to participate. Sample age and gender characteristics are presented in Table 1C. The older sibling was frequently the firstborn child ($n = 48$), but 14 families had one or more nonparticipating older children (age range = 9 to 19 years). In addition, 15 families had a third younger nonparticipating child (age range = 0 to 4 years). We did not specifically recruit two-child families as our emphasis was on role differences (i.e., older versus younger children within a dyad) rather than birth order effects *per se*.

Primary caregivers were typically mothers ($n = 54$), but also included seven fathers and one legal guardian; there were 8 single-parent families (6 mothers, 1 father, and 1 legal guardian). Primary caregivers ranged in age from 28 to 58 years ($M = 40.45$, $SD = 5.13$). Most families were European-Canadian (75%), but the remaining 25% included participants of Middle Eastern (e.g., Armenian), African (e.g., Egyptian), South American (e.g., Guyanese) and Asian (e.g., Filipino) descent. Parental education ranged from high school to post-graduate school ($M = 3.3$ years post-secondary); parental occupations indicated that families varied broadly in SES. Two families did not

participate in the second session due to medical issues, but their data from the first session were included in analyses. Parents provided written informed consent on their own and their children's behalf; children provided verbal assent. Children received a small toy to thank them for their participation, and each family received a movie gift certificate.

Procedure

Each family participated in two sessions either in their home ($n = 55$) or a university laboratory setting ($n = 7$). A research assistant was assigned to a specific child for both sessions so as to build rapport. All interviews were audiotaped and conflict negotiations were both audio and videotaped. After a warmup period, each child was privately asked to nominate at least three recurring sibling conflicts. Subsequently the two children and their parent were brought together to decide (with guidance from a research assistant) which two conflicts would be discussed. When children had difficulty selecting conflicts, the following selection criteria were applied, in descending order: (a) nominated by both children, (b) fault was relatively ambiguous, and one child was not clearly more responsible, (c) recent occurrence, and (d) affective intensity. In all cases children ultimately agreed on two conflicts to be discussed. Once selected, one of the two conflicts was randomly chosen for discussion during session one; during a private interview, each sibling provided a narrative report of the most recent occurrence of the conflict. At the beginning of the second session, children provided a narrative report for the other nominated conflict. The second session was scheduled, on average, 10 days after the first ($SD = 7.3$ days).

Following their conflict narrative interview, during either the first or second session (counterbalanced across families), children discussed one of the two recurring conflicts. At the end of the first session, all three family members were privately asked to appraise the quality of the children's sibling relationship. Children also completed a measure of their second-order false belief understanding (order of two tasks counterbalanced). At the end of the second session, both children completed a measure of their interpretive understanding of conflict, and parents were asked to report on children's sibling conflict strategies in the home.

Measures and Coding

Conflict narratives. Children provided a narrative report of the most recent occurrence of a recurring conflict, from the beginning to the end. Standard open-ended prompts were used to help children produce a narrative (e.g., "How did it start? What happened next?"). If the interviewer inadvertently asked a leading question, the response was not included in analyses.

Narratives were divided into subject-verb speech clauses for analysis and coded for children's references to their own and their sibling's conflict perspectives (i.e., cognitions, goals, and emotions). We distinguished between the child's perspective as narrator of the story (e.g., "I can't remember what happened.") and the child's perspective as character in the story (e.g., "I thought it was my turn."). Only the latter references were included in analyses. Children's references to joint perspectives (i.e., "We wanted to play with dolls.") were infrequent and not analyzed. Inter-rater reliability was established on 20% of the data (% agreement for identification of references to perspectives = 89%, and Cohen's *kappa* = .90 for the referent of speech). Scores for

children's references to self and others' perspectives were averaged across the two narrative reports. However, 6/244 conflict narratives were missing (three children could not recall a specific conflict episode; two children chose not to answer questions, and there was one equipment failure). Except for one younger sibling, each child provided at least one of the two possible narratives.

Second-order false belief task. To assess children's ability to infer first- and second-order beliefs, children were presented with two puppet plays (Astington, Pelletier, & Homer, 2002). For example, in one scenario, a boy deliberately misleads his female friend by moving a board game from its original location, but unbeknownst to him, she witnesses the event. As such, the boy is mistaken about the girl's belief regarding the board game's current location. After being asked several control questions to ensure that children understood the story, they were asked: (a) whether the boy thinks the girl saw him hide the game (*first-order false belief*) and (b) where the boy thinks the girl will look for the game, and why (*second-order false belief*). Children were scored as passing the first-order false belief question only if they also correctly answered all control questions. Similarly, they were scored as passing the second-order false belief question only if they (a) correctly answered all other questions, including the first-order false belief question, and (b) provided a relevant justification for the correct response (e.g., "He doesn't know she saw him."). Scores were averaged across the two scenarios. Interrater reliability for pass versus fail was established on 20% of the data (Cohen's *kappa* = .97).

Conflict interpretation task. This scale assessed children's understanding of interpretation as it relates to culpability for social conflicts in which fault is ambiguous (Ross et al., 2005). Children were presented with four vignettes and accompanying

pictures. Each story depicted an interpersonal conflict between two siblings; protagonists always held plausible but incompatible perspectives about who was at fault. Both protagonists had equal access to all information in the stories; thus, the incompatibility of their positions was based on different interpretations of the situation and not false beliefs due to ignorance or misinformation. Children indicated who each protagonist would blame for the fight and provided justifications for each perspective. If the child claimed that both characters would blame the same person (e.g., both John and Maggie would blame John), but could not provide justifications for conflicting perspectives even when prompted explicitly, their responses were omitted from analyses. If they identified conflicting perspectives, children were asked why the characters disagreed, whether it made sense to disagree, and why it made sense/did not make sense that they disagreed.

Responses explaining why characters disagreed and why that made sense/did not make sense were coded as adequate (1) or inadequate (0), with higher scores indicating more advanced interpretive understanding of conflict; Cohen's *kappa for* inter-rater reliability = .83. Adequate responses referred to ambiguity of fault or described both conflicting perspectives (e.g., "She wanted to go to the park and he wanted to play blocks."). Inadequate responses included references to only one perspective (e.g. "She should let him play with the puppy because it's his."), "don't know" responses, or irrelevant information. Children were credited for their best answer to each scenario, and an overall score was derived by calculating the proportion of scenarios that included an adequate justification. To summarize, two scores were computed: the proportion of scenarios for which the child (a) claimed that disagreement made sense, and (b) provided an adequate justification for disagreement.

Sibling relationship appraisal. Family members' appraisals of sibling relationship quality were assessed 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."; "I am not nice to my brother/sister."). Children indicated which puppet was more like them (+ or – valence), and whether the puppet was a lot (+/- 2) or a little like them (+/- 1). The scale included ten questions about self and ten about the sibling: order of self vs. other and positive vs. negative was counterbalanced to control for response biases. Parents completed a paper-and-pencil version of the scale and answered each question about both children. Negative items were reverse-scored and 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. The scale had good internal consistency reliabilities for each family member (*alphas* for parent, older sibling, and younger sibling = .74, .89 and .89, respectively).

Sibling conflict strategies scale. Parents completed a questionnaire assessing children's use of constructive (e.g., "Does Jon say he's sorry when he fights with Sarah?") and destructive conflict strategies (e.g., "Does Jon call Sarah bad names when they fight?") during disputes. Some items were drawn from the Conflict Tactics Scale (Straus, 1979), however the current scale also emphasized constructive strategies and consisted of 20 items (10 constructive and 10 destructive strategies, in counterbalanced order). For each item, parents provided separate ratings for each child on a 5-point likert scale (1 = "never" and 5 = "always"). Item analysis revealed that the first item (i.e., how much children stop talking to each other) was poorly correlated with the scale total and

was dropped from the destructive strategies scale. Parent ratings of their two children on each scale were highly correlated (r_s for constructive and destructive scales = .67 and .61, respectively). Thus, ratings for individual children were averaged to produce dyadic scores for the two types of strategies (overall scores could range from 1 to 5 for each scale). Internal consistency reliabilities for the final dyadic constructive and destructive strategies scales were high (Cronbach's α s = .87 and .85, respectively).

Conflict negotiations. Children discussed a recurring conflict and were asked to “try to work it out any way that they thought was best”. Children were told that they had 10 minutes to solve the problem, and all dyads completed the negotiation (or stated that they were unable to continue) within this time (M negotiation length = 2 min. 4 sec.; range = 0 min. 19 sec. to 5 min. 20 sec.). Conflict topics were reliably categorized ($kappa$ = .88) according to domains identified by Smetana (2006). The majority of conflicts surrounded moral issues, specifically coded as physical harm (18%; e.g., hitting, wrestling), psychological harm (15%; e.g., teasing, calling names with malicious intent), or fairness/rights violations (49%; e.g., property violations or disputes over shared resources). The remaining conflicts primarily concerned conventional (5%; e.g., rules in games) or personal issues (13%; e.g., whether to play alone or together), but often also implicated moral concerns (e.g., the older child choosing to play alone unintentionally results in the younger child's feelings being hurt).

Categories of outcomes were derived from previous literature on interpersonal conflict (Stein & Albrow, 2001), specifically negotiation outcomes were coded for compromise solutions. Compromise solutions included procedural (e.g., taking turns) and relationship (e.g., being nicer to one another) agreements in which each party obtained

some of what they wanted. Noncompromise solutions included submissions (i.e., win-loss outcomes in which one party obtained their goals and the other did not), destructive/unproductive outcomes that favored neither party (e.g., wrestling), or standoffs (i.e., failure to resolve differences). The researcher intervened during eight negotiations, either because children became upset or said they could not resolve their differences without assistance. These outcomes were coded as standoffs, regardless of the solution reached with the researcher's assistance. One dyad was excluded from analyses because the older sibling misunderstood the purpose of the task. Interrater reliability for distinctions between the individual outcome categories was established on 20% of the data (Cohen's $kappa = .67$; $kappa$ for presence versus absence of compromise = $.68$).

Results

Descriptive statistics are presented first along with an examination of age, birth order and gender effects. Next, we report correlations between measures of (a) conflict resolution and (b) social understanding. Finally, to test our main hypotheses, a series of regression analyses examined unique and interactive associations between (a) sibling relationship quality, (b) social understanding, and (c) sibling conflict strategies and outcomes. Statistical significance was assessed using two-tailed tests. Bonferroni corrections were used for all posthoc tests.

Descriptive Statistics and Preliminary Analyses

Narrative references to conflict perspectives. To examine birth order and gender effects, a mixed-model ANOVA with birth order (older, younger), and referent (self, other) as within-family factors and each child's gender as between-family factors revealed a main effect of birth order, $F(1, 57) = 8.11, p < .01, \eta^2 = .13$. Older siblings

referred more frequently to perspectives than younger siblings (see Table 2C). Bivariate correlations between children's ages and their own narrative references to perspectives were not significant. With age controlled, there were no associations between older and younger siblings' references to perspectives.

Second-order false belief scores. To examine birth order and gender effects on false belief scores, a mixed-model ANOVA with sibling as a within-family factor and gender as between-family factors, revealed only a main effect of birth order, $F(1, 57) = 4.34, p < .05, \eta^2 = .08$; older siblings obtained higher scores than younger siblings (see Table 2C). Bivariate correlations revealed a correlation between second-order false belief scores and the older sibling's age ($r = .44, p < .01$), but no age effect for younger siblings. With age controlled, the association between older and younger siblings' second-order false belief scores was not significant.

Conflict interpretation scores. Descriptive statistics are presented in Table 2C. To examine birth order and gender effects on conflict interpretation scores, we conducted a mixed-model ANOVA with birth order (older, younger) and question (claims that disagreement makes sense, adequate justification for disagreement) as within-family factors and siblings' gender as between-family factors. The main effects for question and the two-way interaction between birth order and younger gender were qualified by three-way interactions between birth order, younger gender, and older gender, $F(1, 53) = 11.54, p < .01, \eta^2 = .18$, and between birth order, question, and younger gender, $F(1, 53) = 4.47, p < .05, \eta^2 = .08$. An examination of mean differences suggested that the first three-way interaction resulted from a unique pattern for older male, younger female dyads; older brothers obtained higher conflict interpretation scores ($M = .64$) than their younger sisters

($M = .47; p < .05$). The difference between siblings was not significant in the other dyadic gender groups. The second interaction suggested that younger males performed more poorly on the justification question ($M = .49$) than on the question assessing whether disagreements made sense ($M = .78; p < .001$); this difference between questions was nonsignificant for both male and female older siblings and younger females. Correlations revealed that the older child's age was related to claims that disagreements made sense ($r = .35, p < .01$) and adequate justifications for disagreement ($r = .49, p < .001$). For younger siblings, only the association between age and adequate justifications was significant ($r = .38, p < .01$).

Children's proportions of claims that disagreements made sense and their adequate justifications were correlated ($r_s = .30$ and $.42$ for older, younger siblings, respectively, $p_s < .05$). To simplify subsequent analyses, these two measures were standardized and averaged to produce a global estimate of children's interpretive understanding of conflict. With age controlled, the association between older and younger siblings' conflict interpretation scores was not significant.

Sibling relationship quality. The three family members' ratings of sibling relationship quality were moderately positively correlated ($.32 < r_s < .44, p_s < .05$). To create an overall measure of sibling relationship quality and limit the number of analyses, ratings were averaged across all three respondents to produce an overall relationship quality score for each dyad ($M = .69, SD = .53$). To examine gender effects, we conducted a 2 (older sibling gender) x 2 (younger sibling gender) between-family ANOVA and found a main effect of older sibling gender on relationship quality, $F(1, 58) = 6.74, p < .05, \eta^2 = .10$; relationship quality was more positive in dyads with older girls

($M = .88$) than older boys ($M = .54$). There were no associations between either child's age and relationship quality or siblings' age difference and relationship quality.

Dyadic sibling conflict strategies in the home. As described above, overall dyadic scores were computed for constructive ($M = 2.56$, $SD = .45$) and destructive sibling conflict strategies ($M = 2.59$, $SD = .47$) in the home. To examine dyadic gender effects, a mixed-model ANOVA with type of strategy (constructive, destructive) as a within-family factor and gender as between-family factors revealed no significant effects. Similarly, correlations were not significant between either child's age or the siblings' age difference, and their conflict strategies.

Negotiation outcomes. Of the 60 dyadic negotiations that were coded for outcome, 33 dyads agreed on a compromise resolution, whereas 27 did not (13 agreed on a win-loss resolution with the older sibling winning in 11 instances, 11 failed to resolve their differences, and 3 agreed on an unproductive/destructive solution). Binary logistic regressions examining associations with control variables indicated no associations between the likelihood of compromise and: (a) either child's age, (b) the age difference between siblings, (c) either child's gender or (d) dyadic gender composition.

Associations between Social Understanding, Sibling Relationship Quality, and Children's Conflict Strategies and Outcomes

Our primary purpose was to examine the unique and interactive associations of social understanding and sibling relationship quality with children's conflict strategies at home and compromise during conflict negotiations. First, we examined associations between the three outcome variables and between the social understanding measures

followed by regressions to test hypotheses about links between relationship quality, social understanding and conflict strategies.

Associations between measures of conflict resolution. Dyadic constructive and destructive conflict strategies scales were not strongly correlated ($r = -.22, p < .10$). Similarly, when both variables were entered simultaneously as predictors of compromise in a binary logistic regression, the overall equation was not significant, nor was the association with either individual variable.

Associations between measures of social understanding. The older children's second-order false belief scores were positively correlated with their conflict interpretation scores ($r = .37, p < .01$, age controlled). However, the association between the younger child's false belief and conflict interpretation scores was not significant. Similarly, with age controlled, there were no associations between children's references to their own or their sibling's conflict perspectives and their (a) false belief or (b) conflict interpretation scores.

Sibling conflict strategies as a function of relationship quality and social understanding. First, we conducted preliminary analyses with dyadic age (i.e., M of children's ages), siblings' age difference, and gender as simultaneous regression predictors of (a) destructive strategies, (b) constructive strategies, and (c) likelihood of compromise. Only dyadic age was associated with any outcomes, and the addition of the other variables did not change any of the patterns reported below. Thus, to be parsimonious, age gap and gender were dropped from the regressions.

Second, to test our main hypotheses, separate sets of analyses examined the unique and interactive associations with relationship quality and each of the three social

understanding measures. In each case, three analyses were conducted for a total of nine models (three sets of social-cognitive variables by three outcomes). In each case, the first two sequential linear regressions included constructive and destructive conflict strategies as outcomes, respectively. The third examined the likelihood of compromise using sequential binary logistic regressions. For each analysis, dyadic age was entered as a control variable in the first step. Main effects of social understanding variables and relationship quality² were standardized and entered in the second step. Two-way interactions between measures of social understanding and relationship quality were entered in the third step. *Df* varied slightly between analyses (see Table 2C).

The first set of regressions tested whether relationship quality moderated associations between children's narrative references to conflict perspectives and conflict strategies and outcomes (Table 3C). Relationship quality was associated with destructive and constructive conflict strategies in the home, but the former association was qualified by interactions between relationship quality and the younger sibling's references to (a) his/her own perspective and (b) the sibling's perspective. Younger siblings' narrative references to their own perspective were negatively associated with dyadic destructive strategies when relationship quality was high ($\beta = -.44, p < .05$) but not when relationship quality was low ($\beta = .08, ns$; see Figure 1B). The interaction between relationship quality and younger children's references to their older sibling's perspective was in an unexpected direction (Figure 2B); there was a slight positive association between references to the other's perspective and destructive conflict behavior when relationship quality was high ($\beta = .30, p < .10$) and a negative association between these variables when relationship quality was low ($\beta = -.45, p < .05$). Considered another way, there was

a link between relationship quality and destructive conflict behavior only when the younger child referred infrequently to his/her sibling's perspective. A follow-up analysis did not reveal a three-way interaction between these variables. Variability in the likelihood of compromise in conflict negotiations was positively associated with relationship quality and negatively with the older siblings' references to their own conflict perspective.

Next, we examined whether relationship quality moderated associations between children's second-order false belief scores and their conflict strategies and outcomes (Table 4C). Regression analyses revealed a negative association between dyadic age and destructive conflict strategies in the home. As above, both constructive and destructive conflict strategies were associated with relationship quality. Interestingly, the only significant unique association with false belief scores indicated that the younger sibling's second-order false belief scores were negatively associated with constructive conflict strategies. There were no significant interactions.

Finally, we examined whether relationship quality moderated associations between children's conflict interpretation scores and their conflict strategies and outcomes. As above, regression analyses revealed that relationship quality was associated with both destructive and constructive conflict strategies in the home (Table 5C). However, there were no unique associations between children's interpretive understanding of conflict and their conflict strategies, nor did these variables moderate associations with relationship quality. In contrast, compromise outcomes were associated with an interaction between relationship quality and the younger child's interpretive understanding of conflict (Figure 3B). When relationship quality was low, there was a

positive association between the younger sibling's interpretive understanding of conflict and the likelihood of compromise (*odds ratio* = 3.51, $p < .05$). In contrast, there was no association between these variables when relationship quality was high (*odds ratio* = .65, *ns*). Put another way, compromise outcomes were unlikely to occur when the younger child had a poor interpretive understanding of conflict and this was combined with a low quality sibling relationship.

Discussion

Our study is the first to provide support for the hypothesis that relationship quality moderates associations between social understanding and siblings' conflict behaviour. Notably, these relationships were complex, and distinctive patterns of associations were observed for each unique combination of social-cognitive abilities and conflict behaviors.

Overall, sibling relationship quality was the strongest unique correlate of conflict strategies and outcomes. As in other studies (Howe et al., 2002; Ram & Ross, 2001; Rinaldi & Howe, 1998) relationship quality was negatively associated with destructive strategies in the home. Relationship quality was also associated with constructive strategies, although reporter bias may have contributed to this effect (see Footnote 2). Similar to Ross et al. (2006), siblings with a positive relationship were somewhat more likely to achieve compromise resolutions when asked to resolve a recurring conflict. The causal nature of this association is unclear, although children who have a more positive relationship may be more motivated to resolve conflicts in constructive ways. In turn, these relatively prosocial interactions may also promote children's positive regard for one another. In either case, it makes sense that children who like one another will be more likely to resolve conflicts in constructive ways (Stein & Albro, 2001).

Nevertheless, our results provide the novel insight that sibling relationship quality was not associated with children's conflict strategies and outcomes under all circumstances. Specifically, features of the younger child's interpretive understanding of conflict and narrative references to their own and their sibling's conflict perspective each moderated associations between relationship quality and conflict behavior. Apparently, the association between children's social understanding and conflict behaviors depended on sibling relationship quality. Thus, these findings suggest that the unique associations between conflict behaviour, relationship quality and social understanding do not tell the whole story. Further, it is misleading to consider children's social understanding as a monolithic construct, rather than a set of interrelated but distinct abilities.

Specifically, one important difference between second-order false belief and interpretive understanding is the simultaneous veracity of conflicting perspectives (Carpendale & Chandler, 1996; Lalonde & Chandler, 2002). In the case of false beliefs, one protagonist's perspective is correct, and the other's conflicting point of view is mistaken due to ignorance or misinformation. However, when protagonists hold divergent interpretations of one event, both perspectives can be simultaneously valid despite their utter incompatibility. Although second-order false belief understanding and interpretive understanding have relatively similar developmental trajectories, they measure distinct ways of thinking about disagreement. In fact, in our study, although there were modest associations between these measures for older siblings, they appeared to be relatively independent for younger siblings. More importantly, as discussed below, they were associated in distinct ways to children's conflict behavior.

Compared to second-order false belief, conflict interpretive understanding may be especially conducive to developing constructive outcomes, because it reflects an understanding that incompatible perspectives may both be plausible and valid. As such, an interpretive understanding of conflict may make children more inclined to consider outcomes that take both protagonists' perspectives into account. Nevertheless, it is not clear that children will apply their hypothetical interpretive conflict understanding in all circumstances, as it may be much easier to attribute validity to two conflicting perspectives when one is not personally involved in the conflict. In the heat of a dispute, even adults sometimes cannot (or choose not to) acknowledge the legitimacy of their opponent's position. Motivational factors may play a role in how one's social understanding is applied to real-life interactions, and sibling relationship quality may be a key predictor of children's social goals in conflict. Thus, associations between conflict interpretive understanding and behavior were expected to be moderated by relationship quality.

This pattern was revealed for compromise outcomes observed in a dyadic conflict discussion. Overall, compromises occurred in almost half of the negotiations, perhaps because children were explicitly asked to resolve their differences. However, the likelihood of compromise was quite low when sibling relationship quality was low *and* the younger sibling had a below-average interpretive understanding of conflict. That is, when younger siblings did not acknowledge the plausibility of conflicting perspectives and could not adequately explain why hypothetical protagonists would disagree about who was to blame, this was associated with an inability to compromise *if* siblings also had a poor relationship. Even without a solid understanding of the subjective nature of

conflict, it may be that younger children who have a positive relationship give their older sibling the benefit of the doubt and thus engage in constructive tactics or respond to their sibling's prosocial overtures positively, whereas a negative relationship makes them less inclined to do so. Similarly, an advanced interpretive understanding of interpersonal disagreement may be sufficient to motivate children to compromise, even if their overall relationship is less positive. In sum, it was necessary for disadvantageous motivational and social-cognitive factors to be considered in combination to predict the circumstances under which compromise outcomes would be unlikely to occur.

Of course, alternative causal models are possible. For example, children with a positive sibling relationship and who typically engage in compromise negotiations may have more opportunities to gain an understanding that divergent perspectives are plausible. In fact, this understanding appears to be influenced by parental interventions that promote constructive conflict tactics (Smith & Ross, 2007). Nevertheless, the observed pattern suggests that the association between interpretive understanding and sibling conflict strategies (regardless of its causal direction) is moderated by the affective qualities of children's sibling relationships.

As with conflict interpretation, the interactions between relationship quality and children's narrative references to their own and their sibling's conflict perspectives was only significant for younger siblings. Contrary to expectations, relationship quality had the strongest inverse association with destructive strategies when children did *not* appear to grasp their sibling's point of view. Perhaps when siblings had a positive relationship and the younger child did not understand the older sibling's point of view, they may have been more likely to simply acquiesce or respond positively to the older sibling's

proposals, despite the opacity of their brother/sister's perspective. Alternatively, when the relationship between siblings was more antagonistic, they may have been more likely to take a stand against (what they perceived) as their older sibling's unreasonable demands, resulting in more destructive and coercive exchanges. In contrast, but similar to the pattern described above for conflict interpretive understanding, relationship quality appeared to be essentially unrelated to the frequency of dyadic destructive conflict behavior when the younger child was able to successfully articulate their older sibling's conflict perspective. One implication of this finding is that relationship quality may have the strongest association with conflict strategies when aspects of children's social understanding are limited.

In addition, younger siblings' narrative references to their own conflict goals, emotions, and beliefs were associated with fewer dyadic destructive strategies; however, only when the relationship was positive. One possibility is that sympathetic older siblings are potentially willing to consider the younger sibling's perspective when children like each other. However, if the younger child cannot successfully articulate his/her position, developing mutual understanding may be difficult, and they may resort to destructive tactics. In contrast, when children have a negative relationship, knowledge of the other's position may be treated as irrelevant, or even used to manipulate the other successfully.

Our study revealed only a few unmoderated associations between children's social understanding and conflict behavior. However, as noted above, the observed results highlight the importance of considering the specific social-cognitive ability in question. Older siblings' self-referential focus during conflict narratives was negatively related to the likelihood of compromise in dyadic conflict discussions. Ross et al. (2006)

revealed that the outcomes of sibling conflict negotiations were highly related to how these discussions began and that older siblings were especially likely to be responsible for determining how discussions would proceed. Thus, if the older child's position is initially entrenched because he/she is selectively focused on his/her own perspective, compromise outcomes may be more difficult to achieve.

Interestingly, the younger sibling's second-order false belief scores were *negatively* associated with constructive strategies in the home. In studying the association between bullying and social cognition, Arsenio and Lemerise (2001) argue that second-order belief understanding may be particularly relevant to manipulating others. Additionally, experience in teasing and manipulating others may contribute to children's understanding of others' thinking. Teasing is a relatively normative feature of sibling interactions that is linked to the development of social understanding (Dunn, 1988). Thus, younger siblings who possess advanced second-order false belief skills may be simply more adept at aggravating their siblings. The items on the destructive strategies scale are entirely consistent with this explanation (e.g., makes fun, calls bad names). Similarly, second-order false belief skills (i.e., one's sibling may be wrong about what they think) may make younger siblings less inclined to either engage in conciliatory tactics or respond positively to their sibling's problem-solving, resulting in more difficulty resolving conflicts.

In general, we observed more associations between younger siblings' social understanding and siblings' conflict strategies than for the older sibling. This is consistent with Ram and Ross (2008), who found providing knowledge about the other's perspective had a greater influence on younger than older siblings. This finding may

reflect an age difference; our social-cognitive measures may be especially relevant to conflict strategies in 4- to 8-year-olds. In addition, older siblings' social-cognitive abilities were more strongly correlated with age. Thus, with dyadic age controlled, younger siblings' scores may have contributed more unique variability to regression analyses. Alternatively, there may be a qualitative difference between the conflict roles of older and younger siblings, given that it was almost always the younger child who submitted to the conflict goals of their sibling. Clearly, older siblings have greater ability to control conflict negotiations than their younger counterparts due to their superior knowledge and strength (Perlman et al., 2000). As the older sibling's position of power is normative, it may be a particularly remarkable younger sibling who is able to hold his/her own in this context. Put another way, social understanding may be especially important for the child who has a more limited repertoire of conflict tools at his/her disposal. A younger sibling with a better understanding of hypothetical and actual conflicting perspectives and the ability to express his/her own emotions and goals successfully may approach conflict negotiations differently, but also elicit different behaviors from his/her older sibling. Given the inherently dyadic nature of conflict, the effects for the younger sibling are almost certainly associated with differences in the behavior of both children. Future research should examine how relationship quality and social understanding are linked to the specific contingent interaction behaviors of each sibling during conflict.

Limitations of this study included a small sample size, which precluded our ability to detect more complex interaction effects. In addition, the correlational design at one time point prevented any causal interpretations. Future studies should include more refined measures of conflict strategies and outcomes. Our conflict strategies scale was

based on parental reports of a broad range of behaviors. A preferable approach would be to do more detailed assessments of different clusters of strategies that may depend more (e.g., lying) and less (e.g., hitting) on children's social understanding, and to complement parental reports with observations of children's actual behaviors at home. Similarly, our measure of compromise was based on only one discussion of a single recurring conflict, and thus obtaining a more precise assessment across multiple issues is advocated. Finally, the majority of families were middle-income English-speaking Canadians of European descent. The development and features of sibling interactions and social understanding are known to vary across culture and SES (Maynard, 2004; Shatz, Diesendruck, Martinez-Beck, & Akar, 2003). Thus, our results may not be generalizable to other populations and future research should include more diverse samples.

Although children's social understanding is of perennial interest, relatively few studies have examined associations between children's social understanding and their actual behavior in meaningful interpersonal interactions. To our knowledge, this study constitutes a first attempt to examine how qualities of children's interpersonal relationships moderate connections between social understanding and conflict behavior. Experimental and/or longitudinal studies examining these variables in combination (e.g., interventions promoting positive conflict behaviour, relationships and/or children's understanding of their sibling's perspective) will complement our findings by illuminating how destructive aspects of sibling conflict may be minimized. However, our results provide promising initial evidence that examining these moderated associations may be one useful strategy for clarifying the clusters of behavioral correlates that have been variously linked to children's theories of mind.

Table 1C

Age and Gender Characteristics of Sample (N = 62)

Sibling Age	<i>M (SD)</i>	<i>Range</i>
Older Sibling (Years)	8.39 (1.21)	6.33 – 10.75
Younger Sibling (Years)	6.06 (1.14)	3.50 – 8.75
Age Difference between Siblings (Older Age – Younger Age in Years)	2.33 (.70)	.92 – 4.33
Sibling Gender Combination	<i>Frequency</i>	
Older Female, Younger Female	15	
Older Female, Younger Male	13	
Older Male, Younger Female	16	
Older Male, Younger Male	18	

Table 2C

Descriptive Statistics for Measures of Children's Social Understanding

	<i>Older Sibling</i>		<i>Younger Sibling</i>	
	<i>M (SD)</i>	<i>N</i>	<i>M (SD)</i>	<i>N</i>
Narrative References to Conflict				
Perspectives				
Self	1.32 (1.14)	62	1.09 (1.28)	61
Sibling	1.27 (1.06)	62	.72 (.79)	61
Second-Order False Belief				
Scores	.75 (.38)	61	.61 (.42)	53
Conflict Interpretation Scores				
Makes Sense to Disagree	.71 (.34)	59	.59 (.43)	58
Adequate Justification for	.68 (.38)	59	.49 (.41)	58
Disagreement				

Note. Degrees of freedom for younger siblings' second-order false belief scores are reduced because one child did not complete the task and eight children incorrectly answered either a control question or the first-order false belief question for both scenarios. Similarly, for the conflict interpretation task, one older sibling and two younger siblings always claimed that both protagonists would blame the same person for starting fights, and thus their responses were excluded from analyses.

Table 3C

Associations between Children's Narrative References to Conflict Perspectives, Relationship Quality, and Siblings' Dyadic Conflict Strategies and Outcomes

	Destructive Strategies	Constructive Strategies	Compromise Outcome
Step 1	$R^2 = .04$	$R^2 = .01$	$\chi^2 = 1.73$
	<i>β at last step</i>	<i>β at last step</i>	<i>Odds ratio at last step</i>
Dyadic Age	-.09	-.06	2.01 ^t
Step 2	$R^2 \Delta = .31^{**}$	$R^2 \Delta = .15$	$\chi^2 = 14.22^*$
	<i>β at last step</i>	<i>β at last step</i>	<i>Odds ratio at last step</i>
Older Sibling			
Own Perspective	-.15	.07	.41*
Other's Perspective	-.15	.16	1.62
Younger Sibling			
Own Perspective	-.18	-.19	1.26
Other's Perspective	-.08	-.06	1.34
Relationship Quality	-.41**	.34*	2.14*
Step 3	$R^2 \Delta = .10^t$	$R^2 \Delta = .05$	$\chi^2 = 3.09$
	<i>β at last step</i>	<i>β at last step</i>	<i>Odds ratio at last step</i>
Older Self X SRQ	-.09	-.17	1.10
Older Other X SRQ	-.09	.18	1.10
Younger Self X SRQ	-.25*	-.13	2.02
Younger Other X SRQ	.32*	.07	.60

Note. SRQ = sibling relationship quality. Significance levels reported for odds ratios in binary logistic regression are based on statistical significance of the Wald statistic.

^t $p < .10$ * $p < .05$ ** $p < .01$.

Table 4C

Associations between Second-Order False Belief Understanding, Relationship Quality, and Siblings' Dyadic Conflict Strategies and Outcomes

	Destructive Strategies	Constructive Strategies	Compromise Outcome
Step 1	$R^2 = .06^t$	$R^2 = .01$	$\chi^2 = 1.10$
	<i>β at last step</i>	<i>β at last step</i>	<i>Odds ratio at last step</i>
Dyadic Age	-.36*	-.03	1.25
Step 2	$R^2 \Delta = .26^{**}$	$R^2 \Delta = .20^*$	$\chi^2 = 5.01$
	<i>β at last step</i>	<i>β at last step</i>	<i>Odds ratio at last step</i>
Older FB	.12	-.04	1.28
Younger FB	.27 ^t	-.35*	.94
Relationship Quality	-.51*	.37*	1.92 ^t
Step 3	$R^2 \Delta = .01$	$R^2 \Delta = .04$	$\chi^2 = 3.70$
	<i>β at last step</i>	<i>β at last step</i>	<i>Odds ratio at last step</i>
Older FB X SRQ	-.06	.15	1.23
Younger FB X SRQ	-.06	-.13	.52

Note. FB = second-order false belief scores. SRQ = sibling relationship quality.

Significance levels reported for odds ratios in binary logistic regression are based on statistical significance of the Wald statistic.

^t $p < .10$ * $p < .05$ ** $p < .01$.

Table 5C

Associations between Interpretive Understanding of Conflict, Relationship Quality, and Siblings' Dyadic Conflict Strategies and Outcomes

	Destructive Strategies	Constructive Strategies	Compromise Outcome
Step 1	$R^2 = .04$	$R^2 = .01$	$\chi^2 = 1.49$
	β at last step	β at last step	Odds ratio at last step
Dyadic Age	-.21	.00	1.50
Step 2	$R^2 \Delta = .20^{**}$	$R^2 \Delta = .11$	χ^2 step = 9.36*
	β at last step	β at last step	Odds ratio at last step
Older CI	.02	-.16	1.63
Younger CI	-.15	.02	1.51
Relationship Quality	-.39*	.30*	1.66
Step 3	$R^2 \Delta = .01$	$R^2 \Delta = .12$	χ^2 step = 5.85*
	β at last step	β at last step	Odds ratio at last step
Older CI X SRQ	-.10	.08	1.05
Younger CI X SRQ	-.03	-.01	.43*

Note. CI = conflict interpretation score. SRQ = Sibling relationship quality. Significance levels reported for odds ratios in binary logistic regression are based on statistical significance of the Wald statistic.

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

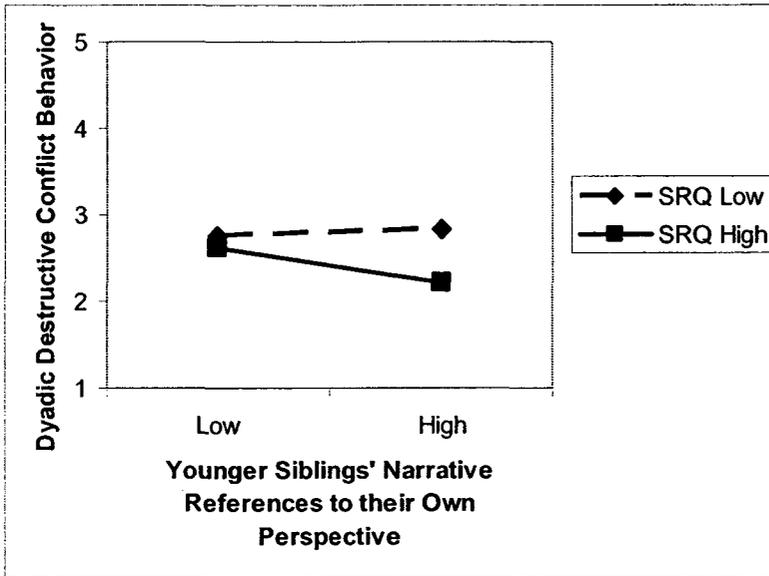


Figure 1B. Sibling relationship quality (SRQ) moderates the association between the younger child's narrative references to his/her own conflict perspective and siblings' dyadic destructive conflict behavior in the home (plotted points = $M \pm 1 SD$).

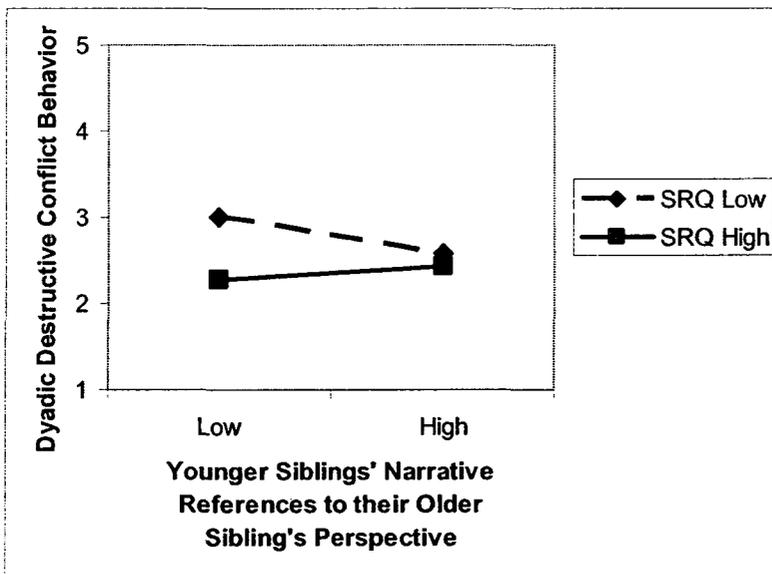


Figure 2B. Sibling relationship quality (SRQ) moderates the association between the younger child's narrative references to his/her sibling's conflict perspective and siblings' dyadic destructive conflict behavior in the home (plotted points = $M \pm 1 SD$).

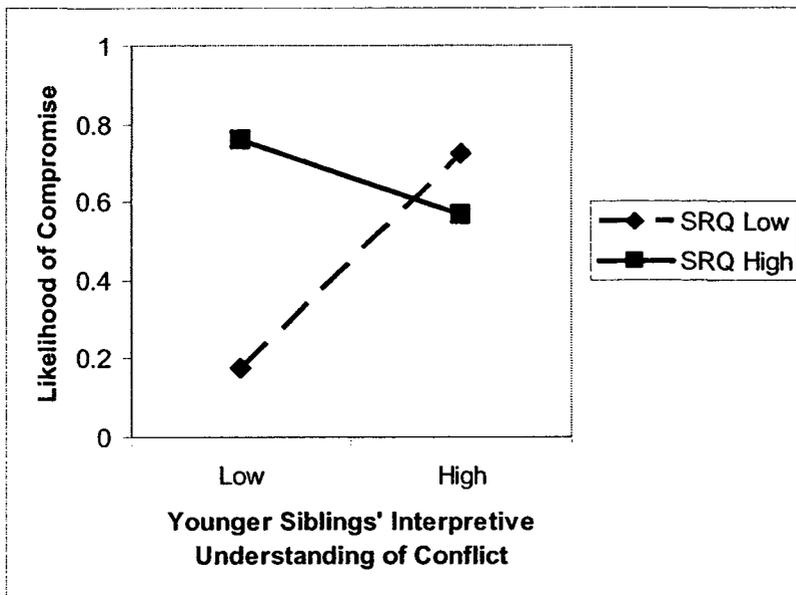


Figure 3B. Sibling relationship quality (SRQ) moderates the association between the younger child's interpretive understanding of conflict and the likelihood of compromise in dyadic conflict negotiations (plotted points = $M \pm 1 SD$).

Footnotes

¹ Preliminary analyses indicated that this sample size was adequate for detecting a medium sized effect (Cohen, 1988).

² The measure of sibling relationship quality was computed by averaging ratings across all three respondents. However, because parents also completed the measure of conflict strategies in the home, reporter effects may have inflated unique associations between these variables. Regression analyses examining parent-reported conflict strategies were conducted a second time using a composite of the older and younger siblings' ratings of relationship quality (i.e., excluding parent ratings). Unique associations between destructive conflict strategies and relationship quality were identical to those reported in the results. However, two of three unique associations with constructive strategies were not significant (those in the regression analyses accounting for children's narrative references to perspectives and conflict interpretation scores, respectively). Thus, positive unique associations between siblings' constructive conflict strategies in the home and relationship quality may have been partly driven by reporter bias, and should be interpreted with caution.

Not All Conflicts are Created Equal: How are Children's Interpretations of Specific Events Associated with their Sibling Conflict Strategies?

The results of Study 2 revealed that children's scores on various measures of their social understanding (i.e., second-order false beliefs, interpretive understanding of conflict, and narrative references to their own and their sibling's perspective) were associated with parental reports of their sibling conflict resolution strategies in the home and their achievement of compromise in a structured laboratory negotiation task. Specifically, when older siblings referred frequently to their own subjective perspective in their conflict narratives, children were less likely to compromise in a subsequent negotiation. Further, the younger siblings' understanding of second-order false belief was associated with siblings' less frequent use of constructive conflict strategies in the home. As in Study 1, previous research (e.g., Rinaldi & Howe, 1998; Ross et al., 2006) linking sibling relationship quality to children's sibling conflict strategies and outcomes was replicated. However, in addition to these main effects, sibling conflict strategies and outcomes were associated with various interactions between social understanding and sibling relationship quality. Specifically, siblings' destructive conflict strategies were especially unlikely when younger siblings made frequent references to their own perspectives in their narratives and this was combined with a high quality sibling relationship. Moreover, relationship quality had a stronger association with destructive sibling conflict strategies when younger siblings referred infrequently to their older sibling's perspective. Finally, compromise was especially infrequent when younger siblings had a poor interpretive understanding of conflict and this was combined with a low quality sibling relationship.

These results suggest that although children's understanding of their social world has direct implications for their conflict behavior, their interpersonal motivations may also play a role in moderating these links. As such, they corroborate the results of Study 1 by revealing that children's affective ties moderate associations between their abilities (i.e., social understanding) and conflict behavior. In addition, they suggest that older and younger siblings each have the potential to make important but different contributions to children's dyadic conflict behavior.

The third study moved away from examining interactions between relatively stable variables such as parenting behaviors, relationship quality, and social understanding. The first two studies make clear that these family and individual characteristics are implicated in children's conflict behavior. However, one unanswered question is how siblings' interpretations of specific conflicts are linked to their resolution strategies. Although there may be stable individual differences in children's conflict strategies, their negotiation strategies for a particular conflict may also be associated with their interpretations of a specific event. Thus, this question formed the focus of Study 3. Specifically, during the prenegotiation interview, each sibling was asked to describe: (a) the issues involved in a given conflict, (b) their attributions of culpability, and (c) their own and their sibling's conflict emotions. Then, associations were tested between older and younger siblings' subjective descriptions of conflict and their achievement of compromise during the subsequent negotiation task. As such, this study focused on the subjective context framing a particular conflict negotiation to examine how children's interpretations of events inform their ability and/or willingness to achieve constructive negotiation outcomes.

Study 3: When Do Siblings Compromise? Associations between Compromise Outcomes and Children's Descriptions of Conflict Issues, Culpability, and Emotion

A research question of perennial interest is how to promote more positive conflict resolution between siblings. Not surprisingly, this is also of concern to parents (Piotrowski, 1999), given the frequently destructive nature of sibling conflict. Naturalistic observations reveal that 4- and 6-year-old siblings fight more than three times per hour, with over 80% of disputes ending either without resolution or with the submission of one child (Siddiqui & Ross, 1999). As such, constructive outcomes such as compromises and conciliation occur infrequently, and understanding the correlates of these positive resolutions is a key research goal.

Various approaches have been used to examine variability in sibling conflict outcomes. Researchers have examined conflict processes as a function of age, birth order, gender, sibling relationship quality, parental intervention strategies, and children's social understanding (Foote & Holmes-Lonergan, 2003; Perlman & Ross, 1997; Rinaldi & Howe, 1998; Ross, Ross, Stein, & Trabasso, 2006; Smith & Ross, 2007). However, to date, although siblings' subjective descriptions and recollections of conflict have been investigated (e.g., Shantz, 1993; Wilson, Smith, Ross, & Ross, 2004), these interpretations of events have not been linked to their observed strategies for resolving specific conflicts. Children's construals of events may place affective and cognitive constraints on their strategies for resolving conflicts, as well as influencing their motivations during conflict negotiations (Stein & Miller, 1991). As such, children's own perspectives on particular fights may be an important but unexplored source of variability in the constructive versus destructive nature of their conflict resolutions.

The goal of this study was to address how children's descriptions of their fights are related to their observed conflict strategies. To examine these links, we asked children to tell us about the issues that they perceived to be at stake in an actual recurring conflict (i.e., moral, social-conventional, and personal concerns), whose fault they thought the fight was, and their own and their sibling's emotions during the conflict. Then, we examined associations between these descriptions and (a) structural qualities of their relationships (i.e., age, birth order, and gender), as well as (b) their willingness and/or ability to achieve compromise outcomes in a subsequent sibling conflict negotiation. Hypotheses concerning these associations are described below and couched in the context of research on each feature of children's conflict descriptions (i.e., issues, culpability, and emotions).

Sibling Conflict Issues

The issues underlying children's sibling conflicts are quite consistent across studies. During middle childhood, when children are asked to nominate sibling conflicts, they most frequently mention issues of property (e.g., taking another's possessions) and entitlement (i.e., fair use of shared resources such as the television), followed by issues of psychological harm, physical harm, and goal interference (Raffaelli, 1997; Ross et al., 2006; Wilson et al., 2004). Thus, most sibling disputes implicate moral issues such as welfare, fairness, and rights. Studies based on social-cognitive domain theory (see Smetana, 2006) reveal that children reason quite differently about moral (i.e., fairness and harm), social-conventional (i.e., contingent on rules, authority, and nonmoral norms), and personal issues (i.e., strictly personal concerns such as privacy and choice of activities). They also behave differently in the context of different types of conflicts (Turiel, 2008).

Specifically, children view moral transgressions as more serious, universal, and punishable than social-conventional or personal issues. Further, regardless of their role as victims or perpetrators in conflicts, children consistently distinguish among the above domains (Turiel, 2002). Thus, we expected siblings to agree about the issues in a given conflict, even if they disagreed on other features of the event (i.e., culpability and emotions).

When different moral transgressions are compared, children view fairness/rights violations, psychological harm, and physical harm as increasingly serious (Smetana, Kelly, & Twentyman, 1984). In line with this, preschool-aged children selectively tattled to their parents about siblings' transgressions concerning physical harm, as compared to psychological harm and rights violations (den Bak & Ross, 1996). Further, in middle childhood, siblings more often mention harm than rights violations in conflict narratives (Wilson et al., 2004), indicating that they treat issues of physical harm as particularly severe. Stein, Bernas, Calicchia, and Wright (1996) argue that if an issue is morally valued, negotiators' clear values surrounding this issue may override other interaction goals or relationship concerns. In fact, Stein and Trabasso (1982) report that young children typically oppose any action that causes harm, regardless of the conditions surrounding it. Based on this inflexibility, we expected siblings to compromise less frequently when conflicts involved physical harm.

Siblings' Attributions of Culpability for Conflict

In past studies, rather than being asked explicitly about who is at fault for their conflicts, children are typically asked to identify who started a conflict and who engaged in more transgressions. Across middle childhood, children overwhelmingly report that

their sibling started fights (Shantz, 1993), even when both siblings are asked to describe the same fight (Wilson et al., 2004). Similarly, in their conflict narratives, children claim that their siblings performed more transgressions, whereas they engaged in more positive behaviour (Ross, Smith, Spielmacher, & Recchia, 2004; Wilson et al., 2004). Thus, we expected siblings to disagree about who was at fault for a conflict, with children most frequently blaming the other.

Children's biased attributions of culpability are not surprising. A willingness to engage in conflict presupposes a perception of one's own stance as uniquely legitimate (Stein & Bernas, 1999). Thus, antagonists show asymmetry in their knowledge of their own and their opponent's position. Yet, arguers frame their conflict interpretations within the context of their interpersonal goals (Stein et al., 1996). Thus, although they are unlikely to claim that they are solely culpable, there may be circumstances in which children accept partial responsibility for a fight. Previous studies may not have adequately captured children's understanding of joint culpability, because asking children about who *started* conflicts implies a choice between two mutually exclusive initial perpetrators. Our proposal is that if siblings are motivated to compromise (e.g., because they have a more positive sibling relationship; Stein et al., 1996), they may be willing to acknowledge that both combatants are mutually to blame. Related to this point, as children age, they increasingly understand that two people can come to divergent conclusions about conflict but that both perspectives have merit (Ross, Recchia, & Carpendale, 2005). Thus, we expected children's tendency to accept partial culpability to increase with age, but independent of age, to be related to compromise.

Siblings' Attributions of Conflict Emotions

Compared to social-conventional or personal issues, moral concerns are evaluated as especially affectively negative (Smetana, 2006). Nucci and Weber (1995) found that preschoolers responded emotionally to moral, but not social-conventional or personal events. As such, children may choose to describe moral events most often in conflict narratives, as these issues are most emotionally salient. Stein and Levine (1990) proposed a goal-based theory of emotions to predict whether anger or sadness will be experienced during conflict. Antagonists may experience particular emotions because of their subjective evaluations of how the conflict will affect their valued goals. Anger and sadness are both precipitated by loss or aversive states, but anger occurs when a blocked goal is seen as obtainable (i.e., it can be reinstated) and sadness occurs when a goal cannot be reinstated. Thus, sadness is associated with goal abandonment or substitution (i.e., forward thinking and solution generation), but anger is associated with perseveration of one's original goal (i.e., backward thinking and blame). This proposal has received empirical support. In conflict negotiations between parents and children, dyads failed to resolve their differences when both negotiators were angry. In contrast, when both were sad, compromises were most likely to occur (Stein & Albro, 2001). Further, Murphy and Eisenberg (2002) found that in middle childhood, children reported constructive goals in peer conflicts if they felt sad, whereas they reported destructive goals if they felt angry. Finally, in research with preadolescent siblings, Raffaelli (1992) found that children who felt angry during a fight reported experiencing negative feelings following the conflict. In contrast, children who felt sad during conflict reported positive emotions once the conflict had ended. This difference may reflect siblings' frustration at their inability to achieve instrumental goals (in the case of anger) versus a sense of relief that the

relationship had been repaired (in the case of sadness). Thus, our hypothesis was that anger would be associated with siblings' failure to compromise, whereas sadness would be associated with compromise resolutions.

We also expected age effects for siblings' attributions of conflict emotions. Hughes and Dunn (2002) found that when children were asked to recount their own experiences of anger and sadness, children at age 4 were equally likely to mention their sibling as a cause of their anger and sadness. In contrast, by age 7, children more often mentioned their sibling as causing them to feel angry than sad. Similarly, by preadolescence, children report more anger and less sadness during sibling conflicts (as compared to peer conflicts; Raffaelli, 1997). Thus, we expected children's attributions of sadness in sibling conflict to decrease with age. Second, a tendency labeled the "happy victimizer" phenomenon has been noted (Arsenio & Kramer, 1992). Specifically, young children often attribute positive emotions to transgressors in conflict (i.e., because the perpetrator achieved his/her goals), although these attributions decrease with age (Arsenio & Lover, 1995). Thus, given children's tendency to see their sibling as the perpetrator of their fights (e.g., Wilson et al., 2004), when asked how their opponent felt during conflict, we expected young children to attribute positive emotions to their sibling.

The Current Study

Although sibling conflict issues, culpability, and emotions have all been examined, their associations with actual conflict outcomes remain unknown. Given the frequently destructive nature of sibling conflict, research on the correlates of more constructive conflict processes is needed. Further, siblings' attributions of culpability have not been assessed directly. Rather, they have been inferred from children's claims

about who started their fights and their narrative references to conflict transgressions. Thus, this study included a more direct examination of siblings' descriptions of culpability for their conflicts.

To examine these questions, we recruited a group of 6- to 8-year-old children participating with either an older or younger sibling; each group was balanced for dyadic gender composition. This sample allowed us to examine effects of age, gender, and birth order on children's conflict descriptions and resolutions. Dyads nominated an actual recurring conflict, and we interviewed each child about a recent conflict episode. Each child provided a conflict narrative; these narratives were coded for the domains that were perceived to be implicated in the event (i.e., moral, social-conventional, and personal issues). Further, each child identified whose fault they thought the fight was, and the emotions experienced by self and sibling during the conflict. Following this, children negotiated and attempted to resolve the conflict. This procedure has been used to examine siblings' conflict resolution strategies, and typically results in relatively high rates of compromise (Ross et al., 2006; Smith & Ross, 2007). In the heat of the moment, siblings rarely resolve conflicts in constructive ways (Siddiqui & Ross, 1999), therefore, this strategy allowed us to examine the correlates of positive resolutions by increasing the likelihood of their occurrence.

Based on the literature, we expected children to agree on the issues at stake in a given conflict (Turiel, 2002), but to disagree about culpability (Wilson et al., 2002). We hypothesized developmental effects for both culpability and emotion. With age, we expected children to be less likely to blame their sibling for fights (Ross et al., 2005), to describe feeling more angry and less sad during conflict (Hughes & Dunn, 2002), and to

attribute happiness to their sibling less frequently (Arsenio & Lover, 1995). We did not advance any specific hypotheses about gender effects. Studies report fewer gender effects during sibling than peer interaction (e.g., DeHart, 1996) or no gender effects for conflict descriptions (e.g. Wilson et al., 2004; Ross et al., 2004). Yet, some research suggests that older boy-younger girl dyads may have especially negative relationships (Aguilar, O'Brien, August, Aoun, & Hektner, 2001), whereas older sisters are perceived positively by siblings (Buhrmester & Furman, 1990). Thus, these effects may be revealed in siblings' conflict descriptions, and gender effects were tested on an exploratory basis.

We expected compromise to occur more often for conflicts for which (a) siblings' narratives did not include references to physical harm (Stein et al., 1996; Stein & Trabasso, 1982), (b) siblings claimed that they were at least partially to blame (Stein et al., 1996), and (c) siblings indicated that they felt sad, rather than angry, during their fights (Stein & Albro, 2001).

Method

Participants

Fifty-eight sibling dyads were recruited via participant databases, newspaper advertisements, and word-of-mouth. Children's ages ranged from 3.50 to 10.75 years (older sibling $M = 8.39$ years, $SD = 1.21$, $range = 6.33$ to 10.75 ; younger sibling $M = 6.06$, $SD = 1.14$, $range = 3.50$ to 8.75). Each dyad included a 6- to 8-year-old child participating with either an older ($n = 30$) or a younger ($n = 28$) sibling. The sample included 32 same-gender (15 female and 17 male) and 26 mixed-gender pairs (15 older male and 11 older female). The older sibling in a dyad was typically the firstborn child ($n = 46$), but in 12 cases, there were one or more nonparticipating older children in the

family (age range = 9 to 17 years). In 15 families, there was also a third younger nonparticipating child (age range = 0 to 4 years).

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. Parental education (i.e., high school completion to postgraduate school) indicated wide variability in SES. Parents provided written informed consent on behalf of both children; children provided verbal assent to the procedures. Children received a small toy to thank them for their participation, and each family received a movie gift certificate.

Procedure

Each family participated either in their home ($n = 52$) or a university laboratory setting ($n = 6$). After a warmup period with the research assistants, each child was privately asked to nominate at least three recurring conflicts with their sibling. Following this, the two children and their primary caregiver came together to decide which conflict would be selected for discussion. The criteria for conflict selection, in descending order, were: (a) nominated by both children, (b) fault was relatively ambiguous, and one child was not clearly more responsible for the problem, (c) recent occurrence, and (d) affective intensity. For example, if no conflicts were nominated by both children, the second criterion was applied to choose a conflict for discussion.

During a private pre-negotiation interview, each sibling provided a narrative report of the most recent occurrence of the selected conflict, identified who they thought was at fault, and identified their own and their sibling's emotions during the conflict. Following this interview, children were asked to discuss and attempt to resolve the

conflict without their caregiver present. Interviews were audiotaped, and conflict negotiations were audio- and videotaped.

Measures and Coding

For all coding, interrater reliability was established on 25% of the data. Cohen's *kappas* for individual variables are presented below.

Narrative references to conflict domains. Children provided a narrative report of the most recent occurrence of a recurring conflict, from the beginning to the end. Standard open-ended prompts were used (e.g., "How did it start? What happened next?"). Narratives were divided into subject-verb clauses for analysis. If the interviewer inadvertently asked a leading question, the response was not included in analyses.

Narratives were coded for children's references to moral, conventional, and personal domains of conflict (Smetana, 2006). Moral conflicts involved universal norms such as welfare, harm, fairness, and rights. In contrast, conventional conflicts reflected shared rules/norms that may vary from one context to another (e.g., politeness, rules specific to a given family). Finally, personal conflicts pertained to strictly personal issues, such as preferences, choice of activities, and privacy. We further differentiated among three types of moral transgressions: (a) physical harm (e.g., hitting, biting), (b) psychological harm (e.g., teasing, calling names with malicious intent), and (c) fairness/rights violations (e.g., taking the other's property, use of shared resources). Categories were not mutually exclusive, as children could refer to multiple domains in the same narrative. Thus, each conflict narrative was coded for the presence or absence of the five possible conflict domains; Cohen's *kappas* > .70.

Fault attributions. Following their conflict narrative, children were asked to indicate who they thought was at fault for the conflict and to justify their response (i.e., “Whose fault do you think this fight is? Why?”). Responses were coded for whether children claimed that the conflict was their own fault (Self), their sibling’s fault (Other), or whether both children were jointly culpable for the conflict (Both); Cohen’s *kappa* = .97.

Emotion attributions. Finally, children were asked to identify their own and their sibling’s emotions during the conflict and to justify their responses (“When you have this fight, how do you feel? Why? How does your brother/sister feel? Why?”). If children had difficulty providing a response spontaneously, they were given a list of options from which to choose (i.e., happy, sad, mad, or okay; presented in random order). Responses were coded for references to anger (i.e., mad, annoyed), sadness (i.e., sad, hurt) and other negative emotions (e.g., guilty, bad, scared), as well as neutral (e.g., okay, nothing), or positive emotions (e.g., victorious, happy, funny). When children referred to multiple emotions, all were coded. As such, categories were not mutually exclusive, but the presence or absence of individual emotion categories was coded separately for self and other; Cohen’s *kappas* > .81.

Conflict negotiations. Children were asked to discuss the recurring conflict and to try to work it out any way that they thought was best. They were told that they would have 10 minutes to solve the problem, and all dyads completed the negotiation (or stated that they were unable to continue) within this time frame (*M* negotiation length = 2 min. 10 sec.; *SD* = 1 min. 27 sec.; range = 0 min. 19 sec. to 5 min. 20 sec.).

Outcomes of children's negotiations were coded for whether siblings achieved compromise solutions. Compromise solutions included procedural (e.g., taking turns) and relationship (e.g., being nicer to one another) agreements that took both children's goals into consideration. Noncompromise solutions included submissions (i.e., win-loss outcomes), destructive/unproductive outcomes that did not clearly favor either party (e.g., wrestling when conflict arose), or standoffs (i.e., failure to resolve differences). In eight conflict discussions, the researcher intervened, either because children became too upset or they claimed that they could not resolve their differences without assistance. In these cases, outcomes were coded as standoffs, regardless of the solution reached with the researcher's assistance. Cohen's *kappa* for presence versus absence of compromise = .68.

Results

Plan of Analysis

As all variables were dichotomous and the design included repeated-measures variables (i.e., two children in a family reported on the same conflict) results were analyzed using hierarchical generalized linear models in HLM (Bryk & Raudenbush, 1992). Data for children at L1 (i.e., the separate conflict descriptions of the older and younger siblings) were nested within dyad at L2. All variables were dichotomous; thus, we used nonlinear modeling with a logit-link function (i.e., using a Bernoulli distribution appropriate for binary outcomes). Analyses did not reveal significant between-dyad variance in intercepts (i.e., values for outcomes when all predictors = 0) or slopes (i.e., associations between predictors and outcomes). As such, all L1 effects were fixed at L2 (i.e., error terms for L1 effects were not included in analyses). Separate analyses were conducted for associations with domains of conflict, fault, and emotions.

Prior to conducting models, we present descriptive statistics for siblings' (a) descriptions of their conflicts and (b) conflict outcomes, as well as concordance between children's conflict reports. Then, we tested hypothesized associations between descriptions of conflicts and compromise outcomes using multi-level modeling, as well as examining whether these effects were moderated by age group (i.e., 6- to 8-year-old with older or younger sibling) and birth order (i.e., older or younger sibling in a dyad). Dyadic gender effects were also included in analyses. The *N* varied slightly between tests because of taping problems, interview error, and the small subset of responses for which children claimed that they did not know who was at fault or could not identify emotions (Tables 1 and 2).

Preliminary Analyses

Narrative references to conflict domains. Descriptive statistics for children's references to conflict domains in their narratives are presented in Table 1D. Consistent with past research, conflicts involving moral concerns such as harm and fairness were more frequent than conflicts involving conventions or personal issues. Specifically, children referred most frequently to fairness/rights violations, followed by psychological harm and physical harm. As expected, concordance rates indicated that older and younger siblings often agreed about the issues involved in a given conflict. As frequencies for references to conventions and personal issues were quite low, these categories were not considered in subsequent models.

Fault attributions. As expected, children infrequently claimed that they themselves were at fault (see Table 1D). Overall, children most often blamed their sibling, but in contrast to previous literature that considered issues of culpability

indirectly (e.g., by asking about who started the fight), siblings also often claimed that both children were jointly at fault. As expected, despite the fact that children agreed on the issues at stake in a given conflict, they did not agree on who was at fault. For the purpose of multi-level models, we examined associations with children's tendency to blame their sibling (i.e., blame other) versus accepting at least partial culpability for their fights (i.e., blame self + both).

Emotion attributions. In describing both their own and their sibling's conflict emotions, children most often claimed that antagonists felt angry or sad (see Table 2D). However, some children claimed that their sibling felt happy, although they rarely ascribed positive emotions to themselves. This effect is consistent with the "happy victimizer" phenomenon. Nevertheless, follow-up chi-square analyses did not reveal age group or birth order differences for this effect. Concordance rates indicated that children did not correctly identify the conflict emotions experienced by their sibling. In only one case (i.e., the younger child's identification of their older sibling's anger) were concordance rates above chance. As frequencies for positive, neutral, and other negative emotions were low, they were not considered further.

Conflict negotiation outcomes. A total of 32 sibling dyads reached a compromise resolution, whereas 26 dyads did not. These frequencies were not significantly different ($t < 1$, *ns*). Of the negotiations that did not end in compromise, 13 were submissions (with the older sibling emerging as the winner in 11 cases), 10 dyads failed to resolve their differences, and three negotiations ended in unproductive/destructive solutions. A binary logistic regression was used to examine the likelihood of compromise as a function of siblings' gender and age group. The only significant unique association was between age

group and the likelihood of compromise, $B = -1.22$, $p < .05$, *odds ratio* = .30; younger dyads were less likely to reach compromise solutions than older dyads. There were no significant two-way interactions between these variables in predicting compromise, nor was the three-way interaction between older and younger siblings' gender and age group significant.

Associations between Conflict Descriptions and Compromise Outcomes

The next set of analyses concerned how children's compromise solutions were associated with their conflict descriptions. We examined associations between compromise and children's descriptions of: (a) domains of conflict, (b) fault, and (c) the emotions of self and other. Age group and birth order were entered as potential between-dyad and within-dyad moderators of these associations, respectively. The main effects of each child's gender were entered as control variables, as was the two-way interaction between older and younger sibling gender. However, due to the relatively small sample size, more complex interactions among gender and the other between-dyad variables (i.e., age group and compromise) were not considered.

Associations with conflict domains. We conducted one set of models for each of the three moral conflict issues (i.e., fairness, psychological harm, and physical harm). In each case, at L1 (i.e., within-dyad effects), we used birth order (i.e., older versus younger) to predict the likelihood of references to each moral domain. At L2 (i.e., between-dyad effects), we examined whether the likelihood of references to particular moral domains was associated with compromise (i.e., yes or no), age group (i.e., 6- to 8-year-olds participating with an older or younger sibling), or the interaction between compromise and age group. Older and younger sibling gender and their two-way

interaction were also entered at L2. We also tested whether between-dyad variables moderated associations between birth order and moral domain references. Reported probabilities for particular combinations of variables are calculated with other effects held constant at the mean.

The model examining links with references to fairness/rights violations revealed an effect of compromise on the intercept, $\gamma = -1.04$, $t(99) = -2.38$, $p < .05$, odds ratio = .35. The probability of narrative references to fairness/rights violations was lower when children compromised (.47) than when they did not (.64). The analysis also revealed a main effect of the younger sibling's gender, $\gamma = -1.55$, $t(99) = -3.37$, $p < .01$, odds ratio = .21, qualified by an interaction between older and younger siblings' gender, $\gamma = 2.26$, $t(99) = 3.76$, $p < .001$, odds ratio = 9.62. When the younger sibling was a girl, probabilities of references to fairness/rights did not differ between same-sex (.57) and mixed-sex dyads (.52). However, fairness/rights issues were more likely for same-sex male dyads (.70) than for mixed-sex dyads including younger boys (.30).

The second model, examining associations with children's references to psychological harm, revealed a marginally significant two-way interaction between older and younger siblings' gender in predicting the intercept, $\gamma = -1.15$, $t(99) = -1.96$, $p < .06$, odds ratio = .32. References to psychological harm were unlikely in same-sex male dyads (.28; probabilities for other gender combinations ranged from .41 to .52). There were no other associations with psychological harm.

The third model examined links with references to physical harm¹. There was a main effect of compromise, $\gamma = .82$, $t(100) = 2.06$, $p < .05$, odds ratio = 2.27, qualified by a two-way interaction between birth order and compromise, $\gamma = 2.08$, $t(100) = 3.36$, $p <$

.01, odds ratio = 7.99. When children compromised, the older sibling was slightly more likely to refer to physical harm (.37) than the younger sibling (.30). However, when they did not, this pattern was reversed: the younger sibling (.16) was more likely to mention physical harm than the older sibling (.03).

There was also a main effect of age group, $\gamma = -2.22$, $t(100) = -4.33$, $p < .001$, odds ratio = .11, such that younger dyads (.45) were more likely to refer to physical harm than older dyads (.06). An association between the younger sibling's gender and physical harm, $\gamma = 1.88$, $t(100) = 4.37$, $p < .001$, odds ratio = 6.58, was qualified by an interaction between birth order and the younger sibling's gender, $\gamma = 2.21$, $t(100) = 2.91$, $p < .01$, odds ratio = 9.12, and a three-way interaction between siblings' gender and birth order, $\gamma = -2.29$, $t(100) = -2.42$, $p < .05$, odds ratio = .10. References to physical harm were uniformly unlikely when the younger sibling was a girl (probabilities ranged from .02 to .15). In turn, both children referred frequently to physical harm in mixed-sex dyads with older sisters (both probabilities = .54). However, in same-sex male dyads, older brothers (.60) referred more to physical harm than younger brothers (.35).

Associations with fault attributions. This model examined the likelihood of children's claims that the fight was their sibling's fault (as opposed to admitting at least partial culpability). The within- and between-dyad predictors were identical to those used in the models predicting conflict domains. The analysis revealed a main effect of compromise on the intercept, $\gamma = -1.98$, $t(97) = -4.16$, $p < .001$, odds ratio = .14, as well as an effect of birth order, $\gamma = -3.75$, $t(97) = -5.88$, $p < .001$. However, these effects were qualified by two-way interactions between compromise and birth order, $\gamma = 2.58$, $t(97) = 3.92$, $p < .001$, odds ratio = 13.20, and birth

order and age group, $\gamma = 1.29$, $t(97) = 1.99$, $p < .05$, odds ratio = 3.65, as well as a three-way interaction between age group, compromise, and birth order, $\gamma = -2.55$, $t(97) = -2.84$, $p < .01$, odds ratio = .08 (see Figure 1C). When children did not compromise, younger siblings in young dyads were more likely to blame the other than their older siblings. In contrast, older and younger siblings in older dyads who did not compromise were equally likely to blame the other. In dyads who achieved compromise, older siblings in younger dyads were more likely to blame the other than (a) their younger siblings in young dyads, and (b) both children in older dyads.

Finally, the analysis revealed a two-way interaction between birth order and older siblings' gender, $\gamma = 2.95$, $t(97) = 4.66$, $p < .001$, odds ratio = 19.08. Older girls (.18) were especially unlikely to blame the other (other probabilities ranged from .52 to .69).

Associations with emotion attributions. To examine links with children's attributions of siblings' emotions, we conducted separate models for anger and sadness. L1 (i.e., within-dyad) predictors included birth order, perspective (self, other), and the interaction between these variables. L2 (i.e., between-dyad predictors) were the same as for the above analyses (compromise, age group, the interaction between these variables, and dyadic gender effects).

The analysis examining anger attributions revealed a marginal main effect of birth order, $\gamma = 1.16$, $t(191) = 1.96$, $p < .06$, odds ratio = 3.20, qualified by an interaction between birth order and age group, $\gamma = 1.96$, $t(191) = 2.68$, $p < .01$, odds ratio = .77. This effect was further qualified by a marginal three-way interaction between age group, compromise, and birth order, $\gamma = -1.86$, $t(191) = -1.94$, $p < .06$, odds ratio = .16 (see Figure 2C). In general, older siblings described more anger than younger siblings.

However, older siblings from younger dyads who did not compromise were unlikely to describe anger compared to (a) older siblings from older dyads who did not compromise and (b) older siblings who compromised, regardless of age group.

The analysis for anger also revealed an interaction between birth order and perspective, $\gamma = -3.42$, $t(191) = -4.05$, $p < .001$, odds ratio = .03. However, this effect was moderated by a three-way interaction between birth order, perspective, and younger siblings' gender, $\gamma = 2.46$, $t(191) = 2.71$, $p < .01$, odds ratio = 11.73. Female younger siblings were more likely to attribute anger to their older sibling (.70) than to themselves (.58). In contrast, male younger children described themselves (.58) as angrier than their older siblings (.40). Regardless of younger siblings' gender, older siblings described themselves (.87 and .71 for older children with younger brothers and sisters, respectively) as angrier than their siblings (.48 and .55, respectively).

Two-way interactions between perspective and (a) older siblings' gender, $\gamma = -1.40$, $t(191) = -2.45$, $p < .05$, odds ratio = .25, and (b) younger siblings' gender, $\gamma = -1.24$, $t(191) = -2.08$, $p < .05$, odds ratio = .29, were moderated by a three-way interaction between perspective and siblings' gender, $\gamma = 1.57$, $t(191) = 1.97$, $p < .05$, odds ratio = 4.79. In mixed-sex dyads, children attributed more anger to self than sibling (probabilities for self and other in older girl dyads = .72 and .60, and older boy dyads = .58 and .48, respectively). The same pattern was found for same-sex male dyads, although the effect size was smaller (probabilities for self and other = .66 and .61, respectively). However, this pattern was reversed for same-sex female dyads; they were more likely to describe their sibling (.74) as angry, compared to self (.55).

The last model examined links with siblings' attributions of sadness¹. Compromise, $\gamma = .73$, $t(197) = 2.28$, $p < .05$, odds ratio = 2.07, and age group, $\gamma = -1.72$, $t(191) = -3.67$, $p < .01$, odds ratio = .18, were each associated with the intercept for sadness. However, these effects were qualified by a three-way interaction between birth order, compromise, and age group, $\gamma = -1.61$, $t(197) = -2.23$, $p < .05$, odds ratio = .20 (see Figure 3C). In general, compromise was more likely when children described sadness during sibling conflicts. However, this effect was larger for younger than older siblings, and especially large in older dyads.

An effect of perspective, $\gamma = -2.64$, $t(197) = -4.91$, $p < .001$, odds ratio = .07, was moderated by interactions between perspective and age group, $\gamma = 2.58$, $t(197) = 3.98$, $p < .001$, odds ratio = 13.23, and perspective and birth order, $\gamma = 3.50$, $t(197) = 8.59$, $p < .001$, odds ratio = 33.05. Younger dyads described more sadness for self (.42) than other (.10), whereas sadness attributions were uniformly low in older dyads (.05 and .10 for self and other, respectively). In turn, younger siblings described themselves (.31) as sadder than their siblings (.12). However, older siblings described their younger siblings (.23) as sadder than themselves (.03).

Finally, this analysis revealed various gender effects. Siblings' gender interacted to predict the intercept, $\gamma = -1.18$, $t(197) = -2.56$, $p < .05$, odds ratio = .31; same-sex male dyads were unlikely to attribute sadness (probability = .05; all other probabilities = .16 to .22). Further, birth order interacted with the older sibling's gender, $\gamma = -.93$, $t(197) = -2.15$, $p < .05$, odds ratio = .62, and the younger sibling's gender, $\gamma = -1.65$, $t(197) = -3.40$, $p < .01$, odds ratio = .19. The younger sibling was more likely to attribute sadness when

their older sibling was a boy (.46) than a girl (.28). Similarly, younger boys (.47) attributed more sadness than younger girls (.29).

Discussion

To our knowledge this is the first study to examine how siblings' observed resolution strategies for an actual conflict are associated with their subjective conflict descriptions. As expected, children's descriptions of domain, culpability, and emotions were each linked to compromise negotiation outcomes. Effects were often qualified by birth order and age group in intriguing ways. Further, our results extend research on associations between age, gender, and children's descriptions of conflict. In particular, we revealed a considerable number of dyadic gender effects on siblings' conflict descriptions. Patterns of results for each feature of children's conflict descriptions (i.e., domains, culpability, and emotions) are discussed in turn.

Conflict Domains

As expected, when siblings nominated recurring conflicts, they overwhelmingly described events that implicated moral concerns such as unfairness and harm. Consistent with previous research (Raffaelli, 1997; Ross et al., 2006; Wilson et al., 2006), over 50% of conflict narratives included references to fairness/rights violations, over 40% to psychological harm, and over 20% to physical harm. In contrast, children rarely mentioned social-conventional or personal issues and, in fact, these references were even less frequent than in similar studies. For instance, Ross et al. (2006) reported that 39% of unresolved conflicts surrounded personal and/or conventional issues. Unique to our study, children described a *recurring* conflict. Observational data suggest that childhood conflicts in everyday interaction rarely involve physical or verbal aggression (Dunn,

Slomkowski, Donelan, & Herrera, 1995; Shantz, 1987). However, not surprisingly, children may selectively report on these events because they are salient, and are treated as especially severe (Turiel, 2008). The prevalence of moral issues in recurring conflicts may also suggest that these events are particularly intractable.

As expected, we found that older and younger siblings agreed upon the issues implicated in a conflict. Although they disagreed about culpability and emotions, they were quite clear on the particular types of moral transgressions in an event (Turiel, 2002). References to moral issues also varied as a function of dyadic gender. References to fairness/rights violations were especially frequent in same-sex male dyads, whereas these dyads did not often describe psychological harm as implicated in their fights. In contrast, physical harm occurred more frequently in dyads that included younger brothers. These findings are consistent with peer research indicating that girls engage in more verbal aggression, whereas boys engage in more physical aggression (e.g., Crick & Grotpeter, 1995) and retaliate more in response to moral transgressions (Nucci & Nucci, 1982). The gender effect for physical harm mirrors findings for sibling-directed physical aggression among preschoolers, but past findings on verbal aggression among siblings are inconsistent (Martin & Ross, 2005). By preadolescence, studies reveal few gender effects for aggression between siblings (Raffaelli, 1992, 1997). The effect for physical harm may have been specific to younger siblings, perhaps because physical aggression decreases by middle childhood (Shantz, 1987), thus attenuating differences between boys and girls.

We expected children to compromise less often surrounding issues of physical harm because their strict values on these violations may preclude a willingness to forgo their original position. However, we found the opposite effect: children were more likely

to compromise when siblings referred to physical harm in their narratives, and less likely to do so when they referred to fairness/rights violations. Thus, children compromised relatively often over moral violations that they perceived as especially serious (Smetana et al., 1984), and particularly when the older sibling's narratives referred to this type of moral violation. Siblings may have been more motivated to resolve issues that were particularly threatening to their sense of self as moral agents (Wainryb, Brehl, & Matwin, 2005). As older siblings typically control the process of conflict negotiation (Ross et al., 2006), their interpretation of events may have been particularly relevant. Alternatively, issues of physical harm may have been easier for siblings to solve in principle, because they could simply agree to be mutually considerate. Our study does not reveal whether their agreed-upon solutions were instituted in practice. In contrast, issues surrounding fairness/rights may have been more intractable, as solutions that considered both children's goals simultaneously may have been more difficult to find for these conflicts.

Children's Attributions of Culpability for Sibling Conflicts

Consistent with the literature (Shantz, 1993; Wilson et al., 2004), children frequently claimed that their sibling was at fault. However, many children also spontaneously claimed that *both* siblings were mutually culpable. Thus, asking children explicitly about culpability appears to be associated with less biased responding than inferring their perceptions of culpability from other measures (e.g., who started the fight). Further, as expected, children did not agree on culpability, suggesting that their attributions were subjective and not based on objective features of events. Rather, differences in fault attributions may have been related to child characteristics and their own interpretations. Older girls were especially unlikely to blame the other, corroborating

research suggesting that older sisters may be especially positive relationship partners (Buhrmester & Furman, 1990), perhaps because they are socialized to be more empathetic than boys (Zahn-Waxler & Robinson, 1995). In turn, the youngest children in our study were most likely to blame the other. However, this was evident only when siblings did not compromise. It is worth noting that the link between compromise and blaming the other was most straightforward for older dyads. That is, in older dyads, older and younger siblings both blamed the other more when they did not compromise. If children are not initially motivated to reach mutually agreeable solutions, they may place blame selectively on their sibling. Affective qualities of children's relationships may be implicated in this association: if children like each other, they may be more inclined to both accept partial blame and reach compromises. Overall, our findings reveal that children's fault interpretations are related to how they resolve their actual arguments. Future researchers will need to clarify the precise mechanisms underlying this link.

Children's Attributions of Conflict Emotions

One strength of this study was that we asked children to identify their sibling's conflict emotions in addition to their own. As expected, the pattern of emotion attributions for self and sibling reflected the "happy victimizer" phenomenon (Arsenio & Kramer, 1992). Children more often attributed positive conflict emotions to their sibling, whereas they typically claimed that they themselves were angrier (except in same-sex female dyads). Ross et al. (2004) found that children perceived their sibling's transgressions as resulting from internal motivations (e.g., "he wanted the toy"), whereas their own transgressions occurred because of the external context (e.g., "we were tired"). This reasoning is consistent with the observed happy victimizer phenomenon, in that

children may have selectively attributed happiness to their brother or sister when their sibling's instrumental goals were achieved during past conflict episodes.

We observed a number of dyadic gender effects for attributions of anger and sadness. Overall, results suggest that girls claimed that they experienced more sadness during conflict (especially in same-sex female dyads), whereas boys claimed to experience more anger (especially when they were older siblings). The gender effect for sadness is in line with peer research. For example, Whitesell and Harter (1996) found that preadolescent girls report more sadness for hypothetical friendship conflicts than boys. Yet, given our relatively small sample, we are hesitant to derive strong conclusions here. Certainly, our results require replication. Nevertheless, our findings highlight the need to consider gender composition as a dyadic construct, rather than a characteristic of individual children (e.g., Maccoby, 2000).

A birth order effect revealed that younger siblings especially described themselves as sad. Older siblings also agreed with this assessment, attributing more sadness to their younger counterparts than to themselves. In contrast, older siblings described themselves as angry. Younger siblings have less control over positive and negative aspects of sibling interactions than their older counterparts (Buhrmester & Furman, 1990). As such, they may feel sad because they do not have the ability to reinstate their blocked goals. In contrast, due to their relative power, older siblings may feel angry as they perceive that their blocked goals are obtainable and can be reinstated (Stein & Levine, 1990). Thus, this birth order effect for sadness corroborates theory on hierarchical features of the sibling relationship (Hinde, 1979).

As expected based on Hughes and Dunn (2002), children in younger dyads described experiencing sadness during conflict more than children in older dyads. This difference may stem from a decrease in the affective importance of the sibling relationship across middle childhood. Up to early childhood, sibling relationships are more intimate and greater sources of companionship than later in middle childhood (Buhrmester & Furman, 1990), although siblings remain sources of antagonism (Furman & Buhrmester, 1985). Thus, the younger children in our sample may have felt sad during their fights because sibling conflicts threatened an important and intimate relationship (Raffaelli, 1992). In contrast, the older children may have been simply irritated by their fights and did not experience a sense of loss as a result of sibling conflict.

Finally, anger and sadness were related to compromise in conflict negotiations, albeit in complex ways. We expected anger to be related to a focus on previous harm and attempts at goal reinstatement (i.e., the submission of one's opponent), rather than compromise (Murphy & Eisenberg, 2002; Stein & Albro, 2001). In fact, our results were inconsistent with this hypothesis. We found that the anger attributions of older siblings from younger dyads best differentiated between negotiations that would end in compromise and those that would not. However, these 6- to 8-year-old children reported *less* anger during conflicts when the dyad subsequently failed to compromise. One explanation for this unexpected finding is that children may not have been motivated to solve problems when the issue was not particularly important to them, and thus these events did not provoke negative emotions. However, this interpretation is speculative; future studies with sufficient power to examine conflict domain, emotions, and fault

attributions simultaneously in one analysis may help to clarify this counterintuitive finding.

In turn, we expected sadness to be related to compromise due to goal abandonment and substitution (Murphy & Eisenberg, 2002; Stein & Albro, 2001). Our results supported this hypothesis. Children who compromised were more likely to report sadness than children who did not. However, the effect was stronger for younger siblings, likely due to a floor effect for older siblings, who generally tended not to attribute sadness. Thus, our findings suggest that experiencing a sense of loss during sibling conflict is associated with subsequent solutions that take into account two previously incompatible perspectives. It would be interesting to determine the variables that mediate this association; as described above, siblings with a more intimate connection may experience more sorrow during conflict because their fights threaten an important relationship (Raffaelli, 1992). Thus, the connection between context-specific sadness and compromise may be explained by more stable affective features of the relationship.

Conclusions

Certainly, the study has several limitations. Children only described and attempted to resolve one recurring conflict. Thus, we are not able to disentangle effects stemming from the conflict itself, each child's characteristics, and the relationship between siblings. Future studies including multiple conflicts for each dyad could potentially prove fruitful. In addition, the sample was small, limiting the power of analyses, especially for detecting gender effects; some of the more complex interactions should be treated with caution and replicated. Further, given the European-Canadian, Anglophone, middle-income characteristics of our sample, results may not be

generalizable to other groups. Finally, our data are based on children with relatively normative sibling relationships; examining these questions in non-normative samples (e.g., in highly aggressive dyads) would be a useful extension of this work.

Our study adds to the literature on siblings by making direct links between children's descriptions of conflict and their actual resolution strategies in a structured negotiation. We found that children compromised more when their narratives included experiences of physical harm, and compromised less when conflicts centered on fairness/rights violations. This finding is heartening in that it reveals siblings' capacity to resolve serious moral conflicts in constructive ways. Using a novel methodology to examine perceived culpability, younger siblings who blamed their opponent for conflict were less likely to compromise. Yet, children also often acknowledged their contributions to conflict. Elucidating other correlates of this sophisticated reasoning about culpability is a direction for future research. One would expect these attributions to be associated with social-cognitive factors such as interpretive understanding of conflict (Ross et al., 2005), but also with affective qualities of their sibling relationship.

We also found evidence that children's attributions of their own and their sibling's emotions were related to whether they compromised. Theory suggests that children's goals may be implicated in these findings (Stein & Levine, 1990). Specifically, children who primarily hold relational goals (e.g., repairing harm done to the relationship) may feel differently about their conflicts and also be more motivated to resolve them constructively than those who have instrumental goals (e.g., obtaining a desired toy). However, the specific pattern of links among children's reports of goals and emotions, and their actual resolution strategies has yet to be examined. Notably, these

findings corroborate experimental research suggesting that parental interventions promoting empathy and balanced views of culpability may be associated with more positive sibling conflict resolution (Smith & Ross, 2007).

Table 1D

Descriptive Statistics for Children's Narrative References to Conflict Domains and Fault Attributions for Sibling Conflicts

	Older	Younger	Concordance
	<i>N</i> (%)	<i>N</i> (%)	% ¹
Domains of Conflict			
Physical Harm	15 (26%)	17 (30%)	87%**
Psychological Harm	23 (40%)	24 (43%)	72%**
Fairness/Rights Violation	30 (53%)	31 (55%)	76%**
Conventional	4 (7%)	0 (0%)	n/a
Personal	6 (11%)	3 (5%)	63% ^a
TOTAL	57	56	
Fault Attributions			
Self	5 (9%)	6 (11%)	55%
Other	26 (46%)	31 (57%)	52%
Both	26 (46%)	17 (32%)	48%
TOTAL	57	54	

Note. ¹Concordance is computed by averaging separate % agreements for presence versus absence of category. Thus, in each case, chance = 50%. ** Pearson $\chi^2(1) > 10, p < .001$.

^aFisher's exact test $p < .05$.

Table 2D

Frequencies and Concordance for Family Members' Attributions of Siblings' Emotions in Conflict

Emotion	Older		Younger		Concordance	
	Self <i>N</i> (%)	Other <i>N</i> (%)	Self <i>N</i> (%)	Other <i>N</i> (%)	Older's Emotions % ¹	Younger's Emotions % ¹
Mad	45 (78%)	28 (53%)	32 (57%)	29 (56%)	67%*	52%
Sad	5 (9%)	15 (28%)	19 (34%)	8 (15%)	52%	61%
Other	3 (5%)	2 (4%)	4 (7%)	3 (6%)	48%	47%
Negative	8 (14%)	3 (6%)	8 (14%)	5 (10%)	53%	61%
Positive	3 (5%)	8 (15%)	3 (5%)	9 (17%)	61%	44%
TOTAL	58	53	56	52		

Note. ¹Concordance is computed by averaging separate % agreements for presence versus absence of a category. Thus, in each case, chance = 50%. * Pearson $\chi^2(1) > 5, p < .05$.

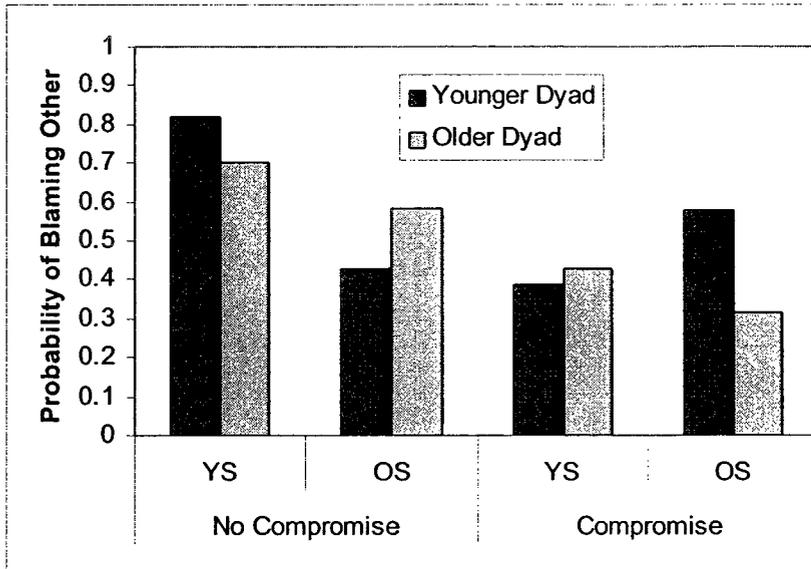


Figure 1C. Siblings' likelihood of blaming the other varies as a function of compromise, birth order and age group. YS = younger sibling; OS = older sibling.

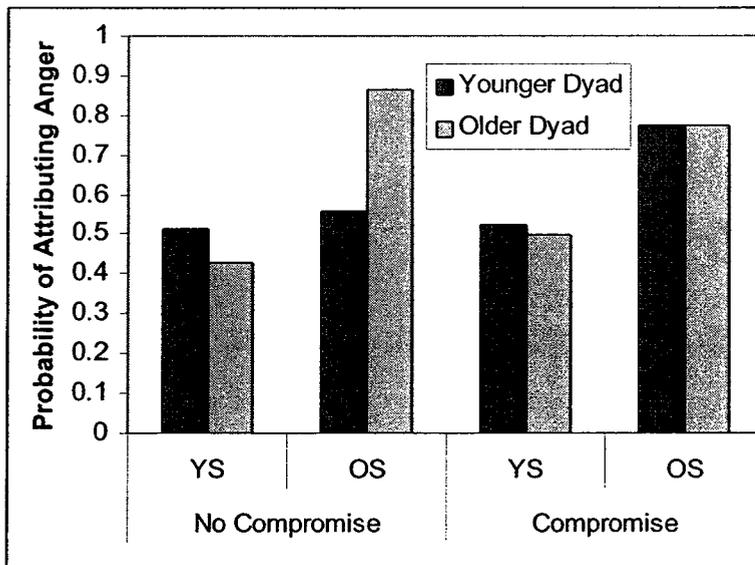


Figure 2C. Siblings' likelihood of describing anger during conflict varies as a function of compromise, birth order, and age group. YS = younger sibling; OS = older sibling.

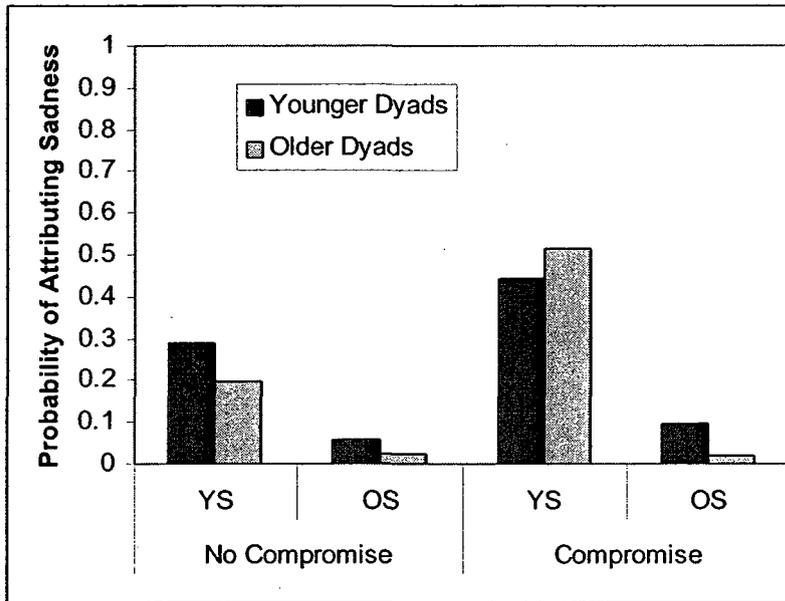


Figure 3C. Siblings' likelihood of describing sadness during conflict varies as a function of compromise, birth order, and age group. YS = younger sibling; OS = older sibling.

Footnote

¹ In two instances, inclusion of higher-order interactions resulted in multicollinearity.

When this was the case, these terms were excluded from the models. For the model predicting physical harm, the three-way interaction between birth order, age group, and compromise was not tested. For the model predicting sadness, L2 variables were not entered as predictors of the birth order by perspective interaction (i.e., various three- and four-way interactions were not tested).

General Discussion

Summary of Results

The general aim of these studies was to explain the sources of variability in siblings' resolution strategies for actual recurring conflicts. Findings suggest that this variability is predictably associated with multiple sets of correlates. Many of the findings replicate consistent patterns in previous research on siblings. First, sibling conflict strategies varied as a function of structural features of children's relationships, including age, birth order, and dyadic gender effects (e.g., Buhrmester & Furman, 1990; Dunn & Munn, 1986; Ross et al., 2006). Second, sibling conflict strategies were associated with the affective qualities of children's relationships (e.g., Ram & Ross, 2001; Rinaldi & Howe, 1998). Third, siblings' conflict strategies were associated with caregivers' observed interventions into children's conflicts (e.g., Siddiqui & Ross, 1999; Smith & Ross, 2007). Fourth, children's scores on measures of social understanding were associated with their sibling conflict strategies (Foote & Holmes-Lonergan, 2003).

In addition to replicating these general patterns, the results described in the preceding studies provide a number of novel insights that add considerably to the literature on sibling conflict. In Study 1, birth order and developmental effects on siblings' conflict strategies were carefully disentangled. This study is among only a few to have tested the unique effects of age and birth order on siblings' observed conflict strategies in middle childhood (but see Phinney, 1986; Martin & Ross, 1995, and Ram & Ross, 2001, for exceptions). Specific connections with both developmental and role effects were revealed. Further, Study 1 moved beyond examining the basic question of how parental interventions are associated with siblings' conflict behavior. Specifically,

the conditions under which parental interventions would have the strongest links to children's concurrent conflict strategies were identified. The results largely supported the proposal that affective qualities of children's sibling relationships would moderate links between (a) parental modeling of constructive conflict strategies, and (b) siblings' use of similarly constructive strategies as observed during a dyadic negotiation task.

Study 2 examined connections between children's social understanding and conflict outcomes. Although these links have been examined for characteristics of friendships and interactions between peers (Baird & Astington, 2004; Slomkowski & Dunn, 1996), this study was one of the first to test associations between children's scores on measures of social understanding and interactions with their siblings. As in Study 1, it was reasoned that sibling relationship quality would be associated with children's interpersonal goals during conflict resolution (Stein & Albro, 2001). As such, it was expected that associations between social understanding and conflict behavior would vary as a function of relationship quality. In other words, children were expected to use their understanding of the social world for different ends, depending on their interaction goals. A particular strength of this study was the inclusion of multiple measures of social understanding. Specifically, measures of children's understanding of second-order false belief as well as the interpretive nature of culpability in interpersonal conflict were included. Further, children's narrative references to their own and their sibling's goals, emotions, and cognitions during conflict were assessed. The results demonstrated that each of these measures of social understanding was associated with children's sibling conflict behavior in a distinctive way. Moreover, the findings revealed that associations between specific measures of social understanding and conflict strategies often depended

on relationship quality, especially for younger siblings. Thus, these results inform the broader literature on the connections between social understanding and real-life interactions, as well as highlighting the links between siblings' social-cognitive skills and their resolution strategies.

Finally, Study 3 was a first attempt to examine how children's interpretations of their recurring conflicts are associated with their willingness and/or ability to achieve compromise outcomes during a structured negotiation task. Although children's subjective perspectives on sibling conflict have been investigated (Shantz, 1993; Wilson et al., 2004), these interpretations have not been linked to siblings' observed resolutions. The current results revealed that siblings were more likely to compromise when their conflict narratives included references to physical harm and they reported experiencing sadness during their fights. In turn, siblings were less likely to compromise when their conflict narratives included references to fairness/rights violations and they did not acknowledge their own partial culpability for their conflicts. Thus, this study confirmed a number of hypothesized links between children's subjective descriptions of conflicts and their observed negotiation outcomes. It is important to note that these results were often moderated by age, birth order, or dyadic gender composition, suggesting a relatively complex pattern of associations.

General Implications

The results of these studies indicate that variability in conflict strategies and outcomes can be explained at multiple levels of analysis. First, siblings' dyadic conflict strategies were associated with their primary caregivers' observed interventions into sibling conflict. Second, variables characterizing features of the sibling dyad itself (i.e.,

relationship quality, age, dyadic gender composition) were associated with children's conflict strategies. Third, characteristics of individual children within the dyad (i.e., various features of their social understanding, specific roles of older and younger children within the dyad) were associated with siblings' dyadic conflict behaviors. Finally, children's interpretations of the characteristics of specific conflicts (i.e., issues, culpability, and emotions) were associated with their conflict resolutions.

These studies have a number of implications for theory. First, the results of Study 1 were consistent with family systems theory (e.g., Cox & Paley, 2003; Minuchin, 1985), which posits that the sibling subsystem of the family cannot be considered in isolation, but is rather fundamentally interdependent with other systems in the family. In this case, dyadic conflict interactions between siblings were related to their triadic interactions with their primary caregiver. Second, the results of Study 2 were in line with the social constructivist notion that children's interpretations of their psychological world (e.g., Can someone be wrong about another person's beliefs? When people disagree, can they both be right?) are fundamentally related to their conversations with familiar others (Carpendale & Lewis, 2004; Dunn, 1988). The finding that children's attributions of fault were related to their achievement of compromise resolutions also provides indirect evidence in support of these connections. Study 3 provided empirical support for both social-cognitive domain theory (Smetana, 2006) and goal-based theories of emotion (Stein & Levine, 1990). Specifically, children's conflict resolutions depended on the specific moral issue under consideration (i.e., whether the conflict involved physical harm versus fairness/rights violations), as well as children's attributions of their own and their sibling's anger and sadness. Finally, Studies 1 and 2 provided support for theories

proposing that children's goals, affective ties, and motivations should be considered in tandem with their parents' socialization of desirable behaviour (Grusec & Goodnow, 1994), as well as their social-cognitive skills and ability to take their sibling's perspective (Arsenio & Lemerise, 2001; Crick & Dodge, 1994). That is, sibling relationship quality moderated links between siblings' conflict strategies and outcomes and (a) parental interventions into sibling conflict, as well as (b) children's scores on various measures of social understanding.

Testing complex relationships among multiple sets of constructs was beyond the scope of the present investigation. That is, links with parental interventions, measures of social understanding, and children's interpretations of conflicts were tested in three separate studies. However, it should be clarified that these three sets of variables were not expected to make entirely independent contributions to the prediction of children's sibling conflict strategies. To the contrary, it is likely that the variance explained in these three studies is at least partially overlapping. For instance, children with a better hypothetical understanding of the interpretive nature of culpability may be more likely to acknowledge their own partial culpability for a specific conflict. Further, these sets of variables may interact to predict siblings' conflict strategies. For example, children who have more sophisticated social-cognitive abilities may benefit more from parental modeling of constructive conflict behavior. In fact, to the extent that interactions between study variables were tested, moderated associations were frequently revealed. In particular, this was evident for the hypothesized moderating effect of sibling relationship quality on other associations. Thus, rather than attempting to find the "best" approach for

explaining variability in conflict behavior, the goal was to highlight three important strategies for explaining this variability and the potential contributions of each approach.

In these studies, an attempt was made to move away from an exclusive focus on the destructive conflict behaviors that predominate in children's naturalistic interactions with siblings. Thus, following from Ross and colleagues (e.g. Ross et al., 2006; Smith & Ross, 2007), these studies included adaptations of structured negotiation tasks, used successfully to examine conflict processes in other relationships. Negotiation tasks have been associated with higher rates of compromise, which occur infrequently in siblings' naturalistic interactions (Siddiqui & Ross, 1999). Similarly, children were asked to reflect on past conflicts prior to negotiation, perhaps also increasing rates of constructive conflict resolution. Given this, these methods permitted an examination of the correlates of more constructive conflict strategies and outcomes. In Study 1, this strategy permitted a replication of previous research (Ross et al., 2006) revealing a meaningful distinction between past-oriented (i.e., blaming the other, dwelling on past transgressions) and future-oriented conversations (i.e., solution generation and planning). In all three studies, the correlates of constructive outcomes that considered both siblings' goals simultaneously (i.e., compromise) were examined. Thus, these studies add to the literature by emphasizing links with constructive behavior, rather than examining only the destructive behaviors that have been the primary focus of past research.

Limitations

The current project sacrifices ecological validity to permit an examination of more constructive conflict strategies and outcomes. Nevertheless, family members may not behave entirely naturally in a laboratory context, which is a drawback of this

methodology. Most likely, negotiation processes and outcomes reflected parents' and siblings' *ideal* as well as *typical* conflict behaviors. Although parental reports of siblings' conflict behaviours were included in Study 2 to gain information about naturalistic behaviors in the home, these reports present their own methodological challenges.

As described above, the relatively small sample size in this study did not permit an examination of complex interactions between study variables, and precluded the ability to detect small effects. Ideally, constructs from all three studies would have been examined together to gain a comprehensive view of the correlates of children's sibling relationships. However, the sample size made this strategy unrealistic. Further, because of the small sample size, it was necessary to group conflict outcomes into general categories of compromise and noncompromise. However, previous studies reveal that children's inability to resolve their differences (i.e., standoffs) and win-loss solutions (i.e., submissions) have different correlates. Further, not all compromises are equally constructive. Literature on adult conflict negotiation (e.g., Pruitt & Carnevale, 1993) differentiates between basic compromises (i.e., each negotiator gains some of what he/she wants) and integrative solutions (i.e., the solution that produces the best possible joint outcomes for negotiators). A larger sample size would have allowed a more refined examination of these different destructive and constructive outcomes.

Related to this point, for each dyad, siblings' conflict strategies as they resolved only one recurring conflict were observed. Similarly, parental interventions during a single triadic negotiation were investigated. As such, it is impossible to differentiate between conflict-specific variability and stable individual differences between families. Clearly, this complicates the interpretation of some of the results.

Study 1 examined associations between primary caregivers' interventions and siblings' conflict strategies. This decision reflected the belief that sibling conflict strategies are most strongly associated with the interventions of the parent with whom they spend the most time interacting. However, in two-parent families, mothers and fathers have been shown to intervene in adolescents' sibling conflicts in different ways (McHale, Updegraff, Tucker, & Crouter, 2000). In general, research on parenting roles of mothers and fathers suggest that they play complementary roles in children's lives (Lamb, 2004). As such, the choice of including data on primary caregivers may have obscured differences between the intervention strategies of mothers and fathers. Unfortunately, the small subsample of fathers does not permit a systematic test of these differences. Similarly, the emphasis on relative roles of older and younger siblings within a dyad did not take account of actual birth order differences within the larger family context. For example, birth order has been linked to children's theory of mind performance (Ruffman, Perner, Naito, Parkin, & Clements, 1998). Some of the families in this sample included nonparticipating older and/or younger additional siblings in the family, potentially contributing unexplained variability to the analyses.

Finally, the studies were based on a sample of English-speaking, primarily Caucasian, middle-income families in a large Canadian urban centre. Clearly, the results may not be generalizable to other linguistic, cultural, or socioeconomic groups. These issues deserve more emphasis than they currently receive in the literature on sibling relationships, considering that studies have demonstrated cultural and economic variability in sibling interactions and relationships (Maynard, 2004; Shatz et al., 2003).

Future Directions

In Study 1, results revealed that sibling relationship quality *moderated* associations between parental interventions and children's independent conflict behaviour. However, research has yet to examine variables that could potentially *mediate* associations between parental interventions and siblings' conflict strategies. It may be that if parents use intervention strategies that help children to understand (a) the subjectivity of their own perspective, (b) their sibling's goals, beliefs, and emotions, and (c) the reasons underlying their sibling's behavior, this promotes children's social understanding. In turn, this understanding may enable children to achieve more positive resolutions, such as compromises, when resolving conflicts with their sibling.

In Study 2, it was found that children's understanding of the social world was associated with global dyadic measures of sibling conflict resolution, and that relationship quality moderated some of these relationships. However, a more detailed analysis of the specific conflict correlates of social-cognitive measures may clarify these overall patterns. To best clarify these processes, microgenetic and dynamic analyses of sibling interactions may be most fruitful. For example, if younger siblings have a sophisticated interpretive understanding of conflict and a positive relationship with their sibling, are they better able to coordinate perspectives during conflict negotiations, and are older siblings more receptive to the ideas of their younger sibling in these circumstances? When are younger siblings most able to influence the behavior of their older brother or sister during conflict negotiations, and similarly, when can they make the strongest contributions to the negotiation outcome? In this sense, Study 2 raises as many questions as it answers, and suggests a number of potential avenues for future research.

In Study 3, it was found that children's interpretations of conflict were associated with their achievement of compromise solutions during negotiation. However, it is unknown how children's independent descriptions of their conflicts are associated with the properties of subsequent conversations about their fights. Put another way, although the results reveal that children's conflict interpretations are associated with compromise, the precise conversational mechanisms that explain connections between children's conflict descriptions and compromise solutions remain unknown. For example, Wainryb, Shaw, and Maianu (1998) found that children are less accepting of people who cause harm because of dissenting moral beliefs than dissenting informational beliefs. Children's conflict interpretations may reflect whether they perceive their sibling's point of view as primarily based on divergent information (e.g., false beliefs, different interpretations of events) or a divergent moral position (e.g., antisocial goals, different moral standards). As such, children's subsequent conversations may reflect greater consideration of the other's position (e.g., more references to their opponent's perspective, offers of compromise) if they believe that their antagonist's divergent perspective is based on dissenting information rather than immoral values.

Sibling relationships are unique in that they are characterized by wide variability in affective quality (Dunn, 2002). Further, although siblings are similar in age, there are inherent developmental and role differences between older and younger children within a dyad. Although twin studies may provide insight into dynamics underlying reciprocal relationships between siblings (e.g., Dunn & Plomin, 1990), in most dyads, the older child has more ability to control both positive and negative features of sibling interactions (Buhrmester & Furman, 1990). Given these distinctive features of sibling relationships, it

is unclear whether the pattern of associations observed for siblings would extend to other relationships, such as children's interactions with friends. Friendships are reciprocal rather than hierarchical, voluntary as opposed to involuntary, and generally of higher quality than sibling relationships (Furman & Buhrmester, 1985). However, no studies have examined the consistency of these associations across key relationship contexts during childhood. For example, how do associations between children's interpretations of conflict and conflict strategies differ for interactions with siblings and friends? It is critical to learn how children's development in the family context is related to their interactions in other significant relationships that become increasingly important later in life (Hartup, 1996).

Finally, because these studies are cross-sectional and examine existing individual differences between families, the results do not permit causal interpretations. Future studies should make greater use of longitudinal and experimental designs to test the mutual causal associations between the constructs investigated here. Examining each of these variables at multiple time points would permit tests of bi-directional and transactive relationships among parents' interventions, sibling relationship quality, the development of social understanding, and siblings' conflict behavior.

Conclusions

Constructive and destructive conflict strategies both have important implications for children's relationships and psychological adjustment. Constructive strategies such as compromise and conciliation are associated with positive relationships and social understanding (Dunn & Munn, 1986; Foote & Holmes-Lonergan, 2003; Rinaldi & Howe, 1998; Ross & Smith, 2007). In contrast, destructive strategies such as aggression may

lead to cycles of coercion and even violence (Gully, Dengerink, Pepping, & Bergstrom, 1981; Patterson, 1984). Further, destructive sibling conflict strategies are associated with later internalizing and externalizing difficulties, higher risks of being victimized by peers, and higher rates of behavior problems and delinquency (Bullock, Bank, & Burraston, 2002; Garcia, Shaw, Winslow, & Yaggi, 2000; Stocker, Burwell, & Briggs, 2002; Wolke & Samara, 2004). As such, identifying the processes associated with more constructive conflict strategies is a valuable research goal, as well as of considerable interest to parents, educators, and policy-makers.

In light of this, the goal of these studies was to expand the existing literature on sibling conflict in three useful directions. The results highlight that children's dyadic behavior during conflict cannot be considered in isolation, and that the family context, the characteristics of individual children, and features of the conflicts themselves may each prove to make important contributions to children's dyadic conflict strategies. Further, the results suggest that children's knowledge, abilities, and motivations should certainly be considered in tandem. By highlighting these issues, it is hoped that this dissertation has raised thought-provoking questions for researchers to address in the years to come.

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Appendix A: Demographics Questionnaire

PARENT INFORMATION SHEET

Family No _____

Name of Child _____ Date of Birth (d/m/yr) _____ Girl ___ Boy ___

Name of Child _____ Date of Birth (d/m/yr) _____ Girl ___ Boy ___

Are there other children in the family? Yes ___ No ___

If yes, please indicate if boy(s) or girl(s) and ages (d/m/yr).

Mother (Biological Mother , Stepmother or Adoptive Mother):

Age _____

Job Description _____

Number of years of post-secondary education _____

Ethnic Background _____

Father (Biological Father , Stepfather or Adoptive Father):

Age _____

Job Description _____

Number of years of post-secondary education _____

Ethnic Background _____

Please list any other family members living in your home (e.g., stepsiblings, grandparents, etc.):

What language(s) do your children speak at home?

English _____

French _____

Other (please specify) _____

Are you interested in being contacted about future research studies?

Yes _____

No _____

Thank you for answering these questions.

Appendix B: Conflict Nomination

Conflict Nomination (Private interviews with both siblings)

Next I want to talk to you about some problems or fights that you have with your brother or sister. Remember, we're doing a school project about the fights that kids have with their brother or sister. You're not going to get in trouble for anything that you tell us.

Can you think of something that you and your (*brother/sister*) often have problems or fights about?

Alright! Good work. Can you think of something else you have fights with your (*brother/sister*) about?

This is the last one. Can you think of one more problem or fight that you sometimes have with your (*brother/sister*)?

Great job. Now we're going to go get your (*brother/sister*) to see which problems or fights (*he/she*) told (*Second Researcher's Name*) about. Then, all of us together will choose two problems for you and (*sibling name*) to talk about.

Appendix C: Pre-Negotiation Interview

Ok, so you and (*sibling's name*) decided that you're going to talk about _____ . Before you do, I want to ask you a few questions about this fight.

1. When was the last time you had this fight? How long ago? _____

2. Can you tell me a story about everything that happened the last time you had this fight, from the beginning to the end?

Appropriate prompts, in the following order:

a) *How did it start?*

b) *Tell me more about that.*

c) *Yeah, what happened next?*

d) *So when you did that, what did he/she do? OR When he/she did that, what did you do?*

e) *Did anything else happen?*

f) *How did it end?*

3. a. Whose **fault** do you think this fight is?

b. Why?

4. a. Whose **fault** does {*sibling name*} think this fight is?

b. Why?

5. a. Whose fault is the fight **really and truly**?

b. Why?

6. a. When you are having this fight, what do you **want**?

b. Why?

7. a. When you are having this fight, what does {*sibling name*} **want**?

b. Why?

8. a. When you are having this fight, how do you **feel**?

b. Why?

{If they mention more than one feeling, ask them which one they feel the most}

9. a. When you are having this fight, how does {*sibling name*} **feel**?

b. Why?

Appendix D: Negotiation Instructions

Dyadic Negotiation

Now {children's names} are going to talk about this problem together and try to come up with a solution – a way to fix the problem so that the fight doesn't happen anymore. You can work out this problem any way you think is best. I'll be waiting for you in the next room. I'll come back in 10 minutes to see if you're finished. If you're not, I'll give you another three minutes to talk about it. If you finish before then, just come out and let me know.

Triadic Negotiation

Now all three of you are going to talk about this problem together and try to come with a solution – a way to fix the problem so that the fight doesn't happen anymore. You can work out this problem any way you think is best. I'll come knock on the door in 10 minutes to see if you're finished. If you're not, I'll give you another three minutes to talk about it. If you finish before then, just come out and let me know.

Appendix E: Sibling Relationship Appraisal (Child Version for Boy with Sister)

I'm going to ask you some questions with these puppets. These 2 puppets we'll pretend are you, but they're each a little different. I'm going to tell you something about each puppet and you tell me which puppet is like you. These 2 puppets we'll pretend are NAME, but they're each a little different. I'm going to tell you something about each puppet and you tell me which puppet is like NAME. Let's practice one about you.

I like spicy food (hold up one puppet) I don't like spicy food (hold up other puppet). Which puppet is like you? And is that a lot like you or a little like you?

Let's practice one about NAME. NAME likes dogs (hold up one puppet). NAME doesn't like dogs (hold up other puppet). Which one is like NAME? And is that a lot like her or a little like her? Okay, let's try some other ones.

Circle appropriate statement	Circle degree of likeness	
1a. FEMALE SIBLING is nice to me. FEMALE SIBLING is not nice to me.	A lot	A little
1b. I am nice to my sister. I am not nice to my sister.	A lot	A little
2a. I do not like my sister. I like my sister.	A lot	A little
2b. FEMALE SIBLING does not like me. FEMALE SIBLING likes me.	A lot	A little
3a. FEMALE SIBLING does not like to do things with me. FEMALE SIBLING likes to do things with me.	A lot	A little
3b. I do not like to do things with my sister. I like to do things with my sister.	A lot	A little
4a. I do not fight with my sister. I fight with my sister.	A lot	A little
4b. FEMALE SIBLING does not fight with me. FEMALE SIBLING fights with me.	A lot	A little
5a. FEMALE SIBLING shares with me. FEMALE SIBLING does not share with me.	A lot	A little
5b. I share with my sister. I do not share with my sister.	A lot	A little
6a. I do not help my sister. I help my sister.	A lot	A little
6b. FEMALE SIBLING does not help me. FEMALE SIBLING helps me.	A lot	A little
7a. FEMALE SIBLING is mean to me. FEMALE SIBLING is not mean to me.	A lot	A little
7b. I am mean to my sister. I am not mean to my sister.	A lot	A little
8a. I have good times with my sister. I do not have good times with my sister.	A lot	A little
8b. FEMALE SIBLING has good times with me. FEMALE SIBLING does not have good times with me.	A lot	A little
9a. FEMALE SIBLING does not try to hurt me. FEMALE SIBLING tries to hurt me.	A lot	A little
9b. I do not try to hurt my sister. I try to hurt my sister.	A lot	A little
10a. I am not a good brother to my sister. I am a good brother to my sister.	A lot	A little
10b. FEMALE SIBLING is not a good sister to me. FEMALE SIBLING is a good sister to me.	A lot	A little

Appendix F: Sibling Relationship Appraisal (Parent Version)

The Affective Relationship Scale

Circle/Check which statement best describes your children.	Does the statement you have chosen describe your child a little or a lot? Circle.
1a. YOUNGER SIB NAME is nice to OLDER SIB NAME YOUNGER SIB NAME is not nice to OLDER SIB NAME.	A little or a lot
1b. OLDER SIB NAME is nice to YOUNGER SIB NAME OLDER SIB NAME is not nice to YOUNGER SIB NAME.	A little or a lot
2a. OLDER SIB NAME does not like YOUNGER SIB NAME. OLDER SIB NAME likes YOUNGER SIB NAME.	A little or a lot
2b. YOUNGER SIB NAME does not like OLDER SIB NAME. YOUNGER SIB NAME likes OLDER SIB NAME.	A little or a lot
3a. YOUNGER SIB NAME does not like to do things with OLDER SIB NAME. YOUNGER SIB NAME likes to do things with OLDER SIB NAME.	A little or a lot
3b. OLDER SIB NAME does not like to do things with YOUNGER SIB NAME. OLDER SIB NAME likes to do things with YOUNGER SIB NAME.	A little or a lot
4a. OLDER SIB NAME does not fight with YOUNGER SIB NAME. OLDER SIB NAME fights with YOUNGER SIB NAME.	A little or a lot
4b. YOUNGER SIB NAME does not fight with OLDER SIB NAME. YOUNGER SIB NAME fights with OLDER SIB NAME.	A little or a lot
5a. YOUNGER SIB NAME shares with OLDER SIB NAME. YOUNGER SIB NAME does not share with OLDER SIB NAME.	A little or a lot
5b. OLDER SIB NAME shares with YOUNGER SIB NAME. OLDER SIB NAME does not share with YOUNGER SIB NAME.	A little or a lot
6a. OLDER SIB NAME does not help YOUNGER SIB NAME. OLDER SIB NAME helps YOUNGER SIB NAME.	A little or a lot
6b. YOUNGER SIB NAME does not help OLDER SIB NAME. YOUNGER SIB NAME helps OLDER SIB NAME.	A little or a lot
7a. YOUNGER SIB NAME is mean to OLDER SIB NAME. YOUNGER SIB NAME is not mean to OLDER SIB NAME.	A little or a lot
7b. OLDER SIB NAME is mean to YOUNGER SIB NAME. OLDER SIB NAME is not mean to YOUNGER SIB NAME.	A little or a lot
8a. OLDER SIB NAME has good times with YOUNGER SIB NAME. OLDER SIB NAME does not have good times with YOUNGER SIB NAME.	A little or a lot
8b. YOUNGER SIB NAME has good times with OLDER SIB NAME. YOUNGER SIB NAME does not have good times with OLDER SIB NAME.	A little or a lot
9a. YOUNGER SIB NAME does not try to hurt OLDER SIB NAME. YOUNGER SIB NAME tries to hurt OLDER SIB NAME.	A little or a lot
9b. OLDER SIB NAME does not try to hurt YOUNGER SIB NAME. OLDER SIB NAME tries to hurt YOUNGER SIB NAME.	A little or a lot
10a. OLDER SIB NAME is not a good OGENDER to YOUNGER SIB NAME. OLDER SIB NAME is a good OGENDER to YOUNGER SIB NAME.	A little or a lot
10b. YOUNGER SIB NAME is not a good YGENDER to OLDER SIB NAME. YOUNGER SIB NAME is a good YGENDER to OLDER SIB NAME.	A little or a lot

Appendix G: Second-Order False Belief Task

SECOND ORDER FALSE BELIEF TASK

Order 1

JOHN/HEATHER/GAME

I'm going to tell you a story. Listen carefully, then I'll ask you some questions, OK?

This is a story about John and his sister Heather (show dolls). John and Heather have a new board game (show game). They are playing with it in John's room. Heather says, "Let's put this away and we can play with it after dinner." Heather puts the game in the closet and goes to set the table for dinner. (move doll under table)

John stays in his room. Then he decides to play a trick on Heather. He takes the game out of the closet and puts it under his bed.

But Heather finishes setting the table and walks by John's door. She sees John hide the game under his bed! John does not see Heather.

After dinner, Heather says to John "I will go and get the game now."

Did Heather see John hide the game under his bed?

Does Heather think the game is under the bed or in the closet?

Does John think that Heather saw him?

Does Jon think Heather will look for the game under the bed or in the closet?

Why does John think this?

LISA/MOM/ICE CREAM

Here's another story. Listen carefully, then I'll ask you some questions, OK?

This is a story about Lisa and her mom. This is Lisa (point to doll) and this is her mom (point to doll). This is a bag of groceries.

Lisa's mom is putting away the groceries just before dinner time. "Can we have ice cream for dessert tonight?" asks Lisa.

Lisa's mom is going to have ice cream but decides to surprise Lisa. She says "I'm sorry, Lisa. I forgot to buy ice cream. We'll have to have fruit for dessert instead. Now you go and wash your hands."

As Lisa turns to go wash her hands, she notices a carton of ice cream in the grocery bag! "Oh," she thinks, Mom is going to surprise me with the ice cream. I will not tell her that I saw it."

Did Lisa see the ice cream?

Does Lisa think they will have ice cream or fruit for dessert?

Does Mom think that Lisa saw the ice cream?

What does Mom think Lisa would say they are going to have for dessert? Ice cream or fruit?

Why does she think this?

Appendix H: Interpretive Understanding of Conflict Task

Example Scenario:

1. *Cathy and Phil are playing dress-up. They decide to pretend that they are the rulers of a magical kingdom.*
2. *Cathy finds a crown in the toy box.*
3. *Cathy puts it on and says: "I am going to be the queen."*
4. *Phil takes the crown off of Cathy's head, puts it on, and says "This is my crown that I got for Christmas last year. You can't wear it because I want to be the prince."*
5. *Cathy tries to grab the crown back. They both get mad and say mean things to each other.*

Questions asked after each scenario:

1a. Whose fault does C1 think the fight is? Why would he/she think that? **Answer:**

1b. Whose fault does C2 think the fight is? Why would he/she think that? **Answer:**

(if they said C1 thought it was C1's fault, then say): Actually, C1 told me the fight was C2's fault, why would he/she think that?

(if they said C2 thought it was C2's fault, then say): Actually, C2 told me the fight was C1's fault, why would he/she think that?

If both perspectives justified, continue to question 2. If not, move on to next story.

2. Now, you said that C1 and C2 don't agree about whose fault it is, right? Why do they disagree like that?

3. Does it make sense that C1 and C2 can disagree about whose fault it is? **If yes:** Why does it make sense? **If no:** Why doesn't it make sense?

4a. How could C1 and C2 solve their problem?

4b. Why is that a good way?

Appendix I: Sibling Conflict Strategies Scale (Parent Report)

WHEN THEY FIGHT, how often do your children perform each of the following behaviours? (Response options = NEVER, RARELY, SOMETIMES, OFTEN, ALWAYS)

- 1a ONAME stops talking to YNAME
- 1b YNAME stops talking to ONAME
- 2a YNAME let ONAME have his/her own way
- 2b ONAME let YNAME have his/her own way
- 3a ONAME solves problems with YNAME
- 3b YNAME solves problems with ONAME
- 4a YNAME calls ONAME bad names
- 4b ONAME calls YNAME bad names
- 5a ONAME makes fun of YNAME
- 5b YNAME makes fun of ONAME
- 6a YNAME asks ONAME what he/she wants
- 6b ONAME asks YNAME what he/she wants
- 7a ONAME hits or kicks YNAME
- 7b YNAME hits or kicks ONAME
- 8a YNAME asks ONAME how he/she feels
- 8b ONAME asks YNAME how he/she feels
- 9a ONAME says nice things to YNAME
- 9b YNAME says nice things to ONAME
- 10a YNAME breaks ONAME's things
- 10b ONAME breaks YNAME's things
- 11a ONAME yells or screams at YNAME
- 11b YNAME yells or screams at ONAME
- 12a YNAME says he/she is sorry to ONAME
- 12b ONAME says he/she is sorry to YNAME
- 13a ONAME makes YNAME cry
- 13b YNAME makes ONAME cry
- 14a YNAME talks calmly to ONAME
- 14b ONAME talks calmly to YNAME
- 15a ONAME asks YNAME how to solve the problem
- 15b YNAME asks ONAME how to solve the problem
- 16a YNAME lies to ONAME
- 16b ONAME lies to YNAME
- 17a ONAME helps YNAME get what he/she wants
- 17b YNAME helps ONAME get what he/she wants
- 18a YNAME tells ONAME that he/she will hurt ONAME
- 18b ONAME tells YNAME that he/she will hurt YNAME
- 19a ONAME blames YNAME
- 19b YNAME blames ONAME
- 20a YNAME tries to find a way for both of them to get what they want
- 20b ONAME tries to find a way for both of them to get what they want