



# Relationship between sibling bullying, family functioning, and problem solving: A structural equation modeling

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## Abstract

In this study, we tested a full structural model in which past involvement in sibling bullying mediates the relationships between, on the one hand, an intrusive parental style during conflicts between siblings and, on the other hand, current individual and family outcomes. The model under study is grounded in the coercion theory and the family system theory. A sample of 200 young adults, and their mothers, took part in the study. Results of structural equation modeling with four latent variables fit well the data. As hypothesized, an intrusive parental style during conflicts between siblings was related to higher levels of sibling bullying (including both perpetration and victimization) in childhood. Furthermore, young adults who were involved in sibling bullying as a child were now displaying less positive social problem-solving behaviors. Finally, past experiences of sibling bullying were related to current unkindness in the family.

**Keywords** Sibling bullying · Problem solving · Intrusive parental style · Family functioning · Structural equation modeling

Handling conflicts and aggressive behaviors between siblings is acknowledged as being one of the most demanding tasks of parenthood (Kramer & Baron, 1995). Many parents express worries about these aggressive behaviors, in addition to wondering how to intervene to improve sibling relationship quality (Kramer & Baron, 1995; Pickering & Sanders, 2017; Tucker & Kazura, 2013). This situation is of great concern given that sibling violence is the most frequent type of family aggression (Eriksen & Jensen, 2009; Tippett & Wolke, 2015).

Recently, in family psychology, sibling bullying has received more attention due to the seriousness of its consequences (Skinner & Kowalski, 2013; Wolke et al., 2015). Involvement in sibling bullying comprises both the *perpetration* of sibling bullying (i.e., acting aggressively toward a sibling) as well as sibling *victimization* (i.e., being abused by a sibling; Dantchev & Wolke, 2019a). Many studies reported a positive association between these two roles in sibling bullying, revealing the reciprocal dimension of this form of abuse (Foody et al., 2019; Menesini et al., 2010; Wolke et al., 2015). Moreover, findings indicated that victims and

aggressors are at higher risks of psychiatric symptoms (Bar-Zomer & Brunstein Klomek, 2018; Coyle et al., 2017; Dantchev & Wolke, 2019a; Dantchev et al., 2018; Foody et al., 2019; Toseeb et al., 2019). Consequently, both roles in sibling bullying should be considered (Dantchev & Wolke, 2019a).

Apart from psychiatric symptoms, little is known about the capacity of sibling bullying during childhood to predict many individual outcomes in early adulthood. Likewise, the contribution of parents to the development of problematic relationships between their children has received little attention in research (but see Bouchard et al., 2019; Dantchev & Wolke, 2019b, and Toseeb et al., 2020 for recent exceptions). The same is true for the study of associations between sibling bullying and family outcomes. Therefore, this study was aimed at testing a model in which past involvement in sibling bullying (i.e., perpetration and victimization) mediates the relationships between, on the one hand, an intrusive parental style during conflicts between siblings and, on the other hand, current social problem solving and unkindness in the family, using young adult and mother reports. Relevant empirical research (on sibling bullying and parental intrusion) and theoretical work, which contributed to this model, are considered next.

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## Sibling Bullying and Negative Individual and Family Outcomes

Sibling bullying is conceptualized as aggressive behaviors between brothers and sisters that occur repeatedly over time to hurt and to dominate (Dantchev et al., 2018). It can occur through acts of verbal (e.g., teasing, name-calling), social (e.g., exclusion), and physical (e.g., hitting) abuse, as well as property damage (Dantchev & Wolke, 2019b; Tippett & Wolke, 2015). Prevalence estimates range from 10 to 85% for perpetration of sibling bullying, and from 15 to 78% for sibling victimization (Wolke et al., 2015). In view of these statistics, it is clear that sibling bullying is far more prevalent than peer bullying (see Hoetger et al., 2015; Johnson et al., 2015; Skinner & Kowalski, 2013; Tanrikulu & Campbell, 2015 for prevalence estimates for peer bullying).

Despite its prevalence, sibling bullying is an overlooked topic in research in comparison to other types of bullying (Dantchev & Wolke, 2019a), in part because it is usually perceived as harmless by society, including parents (Pickering & Sanders, 2017). Nevertheless, over the last decade, the impact of sibling bullying on individual outcomes, such as harming mental and physical health, as well as lowering social and academic competence has received more attention (Buist & Vermande, 2014; Mathis & Mueller, 2015; Toseeb et al., 2019; Tucker et al., 2013, 2015). More specifically, sibling bullying in middle childhood was related to psychosocial problems in early adolescence (Toseeb et al., 2019). In addition, data revealed that children involved in sibling bullying as victim or perpetrator were less prosocial than uninvolved children.

One concept that has not been explored in link with sibling bullying is *social problem solving*, which refers to the process of solving problems as it occurs in the natural environment (D'Zurilla et al., 2004). In accordance with the *behavioral perspective*, involvement in sibling bullying as perpetrator or victim could interfere with the learning of adaptive behaviors or lead to the learning of maladaptive responses. Accordingly, it seems reasonable to postulate that involvement in sibling bullying could be detrimental to the development of problem-solving skills. However, despite its relevance, the relation between sibling bullying and social problem solving has never been investigated.

In like fashion, although a number of studies have examined how family dynamics contribute to sibling bullying (e.g., Tucker et al., 2014), very few studies have documented the association between sibling bullying and family outcomes (see Bar-Zomer & Brunstein Klomek, 2018, for a similar assertion). Nevertheless, one study did reveal that sibling bullying victimization and perpetration during childhood or adolescence were associated

with sibling conflicts in young adulthood (Bouchard et al., 2019). It is unknown, however, whether sibling bullying could be related to the overall quality of the family environment years later. To fill this gap, we investigated one aspect of the emotional climate of the family environment, the level of unkindness in the family, as a family outcome of sibling bullying. This variable refers to “the extent to which family members engage in unkind, cruel acts that reflect selfish disregard for others in the family” (Lee et al., 1997, p. 468).

## Parental Intrusion

Few studies have investigated the role of parents in sibling bullying. First and foremost, results showed that the way parents respond to their children's fights has the potential to influence the quality of sibling relationships (see e.g., McHale et al., 2000; Ross & Lazinski, 2014; Tucker & Kazura, 2013). Accordingly, an intrusive parental style during conflicts between siblings has been associated with higher levels of negativity in adolescent sibling relationships (McHale et al., 2000). *Parental intrusion* implies that parents intervene directly to resolve conflicts between their children (for instance, by punishing them or solving the problem themselves), without including them in the dispute resolution process. More recently, the use of parental intrusion has also been associated with higher levels of sibling bullying perpetration and victimization (Bouchard et al., 2019). These results were obtained when the level of parental intrusion was assessed by offspring. However, recent results have shown that cross-informant associations between child and parent reports of variables such as parental warmth, hostility (Trang & Yates, 2020), or favoritism (Luo et al., 2020) were only modest. As a result, it remains to be investigated whether associations between parental intrusion and sibling bullying can be replicated if the use of this parental intervention style is reported by parents themselves.

## Current Study

In short, recent studies have investigated correlates, antecedents, and outcomes of sibling bullying. Despite these advances, we are not aware of any study that simultaneously investigated the relation between sibling bullying during childhood and individual and family outcomes in early adulthood. Moreover, most of the available research results on sibling bullying are based on youth self-reports only. This situation is not optimal, because it does not include the perspective of other family members which often differed (but see Dantchev & Wolke, 2019b; Toseeb et al., 2018, 2019 for recent exceptions). This study aims to fill these

gaps in the literature. Therefore, using the perspective of the mother and young adult (see Bouchard & Mercier-Nicol, 2020 and Dantchev & Wolke, 2019b for a similar strategy), we tested a model in which the relation between parental intrusion and individual (i.e., social problem solving) and family (i.e., unkindness in the family) outcomes is mediated by the involvement in sibling bullying both as a perpetrator and a victim.

The postulated relationship between parental intrusion and involvement in sibling bullying is in accordance with the *coercion theory* (Patterson, 1986; Patterson et al., 1984). According to this theory, ineffective parenting (e.g., harsh parenting) generates sibling exchanges marked by hostility (see also Toseeb et al., 2020). This type of sibling relationship could pave the way to sibling bullying by reinforcing hostile behaviors. Hence, we hypothesized that:

H1: Higher use of parental intrusion in conflicts among siblings during childhood would be associated with higher levels of sibling bullying.

The postulated relationships between parental intrusion and individual or family outcomes as well as between involvement in sibling bullying and individual or family outcomes fit well with the *family system theory* (Cox & Paley, 1997, 2003). According to this theory, families are organized systems comprised of subsystems and individual family members. These subsystems and individuals are connected and constantly influence each other. The theory posits that family dynamics could have a powerful effect on offspring development. With regard to individual outcomes, in agreement with the family systems theory and the behavioral perspective (as explained earlier), we hypothesized that:

H2: Involvement in sibling bullying during childhood would be associated with less constructive (i.e., more dysfunctional) social problem-solving during adulthood. Finally, with regard to family outcomes and, in agreement with the family system theory, we hypothesized that:

H3: Past experiences of sibling bullying would be associated with current unkindness in the family.

## Method

### Participants

Participants were 200 young adults (62 males, 138 females, and no other) and their mothers. Most of the young adults were Canadian (93.5%) and undergraduate university students (93.9%). Their ages ranged from 18 to 30, with a mean of 20.22 years ( $SD = 2.29$ ). Young adults had, on average, 1.69 siblings ( $SD = 1.07$ ) and they were mostly the first-born

(47.5%) or second-born (38.5%) child. The mean age gap between the first-born child and the second-born child was 1.55 years, while it was 1.98 years between the second-born child and the third-born child (when applicable). Furthermore, 76.2% of young adults had married or cohabiting parents, 20.8% had divorced or separated parents (mostly during their childhood), and 3% had a deceased father (most of whom died during their adolescence or adulthood). Among young adults, 54% lived full time with their parents, whereas 46% lived by themselves of part time with their parents. The mothers' age ranged from 36 to 62, with a mean of 49.31 years ( $SD = 4.60$ ) and they had, on average, 2.54 children ( $SD = 1.75$ ). On average, mothers had completed 14 years of education ( $SD = 3.80$ ). They worked, on average, 36.22 h ( $SD = 8.72$ ) per week in a paid job and had a median annual personal income between \$50,000 and \$59,999. Most mothers (91%) were currently in a romantic relationship and the mean length of this union was 23.51 years ( $SD = 9.12$ ).

### Procedure

Ethical approval for the study was obtained from the institutional ethical committee of the university at which the research was conducted. The following criteria were implemented to select the sample of young adults: having at least one sibling, being 18 to 30 years of age, and having a mother ready to take part in the study. Furthermore, young adults and their mothers had to be able to read and understand French (one of the two official languages in Canada) because the survey was in French only. We recruited young adults through advertising at community colleges and our university, as well as by word of mouth. The study was presented as being about the family of origin and psychological development. For their participation, young adults either received course credits, \$10CAD or a ticket for the draw of a \$100CAD cash prize. Mothers were not compensated for their participation.

Young adults came to the laboratory to complete the survey, whereas mothers completed their survey at home. Young adults first consented and then completed a demographic questionnaire, a measure of sibling bullying during childhood, a questionnaire on social problem solving, and a measure of family profile (in order to assess unkindness in the family). After consenting, mothers completed a demographic questionnaire, a measure of parental sibling conflict intervention styles during their children's childhood (in order to measure parental intrusion), and the same measure of family profile as young adults. For all measures, because there were no existing translations in French, we (the first author and a junior researcher) independently first translated the measures in French and then translated them back in English. After this initial work, we met and compared our work. The discrepancies (i.e., specific differences

in phrasing) were debated until we reached an agreement and the items were edited accordingly.

**Measures**

**Demographic Variables** Young adults provided demographic data on their gender, age, housing situation (i.e., living by themselves or with their parents), nationality, main occupation, level of education, number of siblings, and birth order in the family. The type of family was measured with the following question: “Which of the following items best describes the current situation of your parents?”. There were four possible answers: married; living together without being married; separated or divorced; my father died). Mothers were asked to specify their age, the number of children they have (with their respective ages), their education level, the number of hours they work in a paid job per week, their annual income, their marital status, and the number of years they have been with their current partner (where relevant).

**Parental Intrusion During Childhood** Mothers completed a questionnaire of parental intervention styles based on the work of Milevsky et al. (2011), as well as McHale et al. (2000). They indicated how they reacted when their children fought with each other during their childhood. The questionnaire comprised seven items measuring three intervention styles (non-involvement, coaching, and intrusion), but only intrusion was used in the analyses. The two items assessing intrusion were: “I stepped in and solved the problem” and “I punished them for fighting”. Mothers answered the questionnaire on a five-interval scale (1 = almost never;

2 = occasionally; 3 = quite often; 4 = often; and 5 = almost always). The two items measuring intrusion were averaged to obtain the mother’s intrusion score. Higher scores indicated higher use of intrusion. The correlation between the two items measuring mothers’ intrusion was 0.20,  $p < 0.01$ .

Mothers were also asked to report how the father of the child (or father figure where relevant) reacted when their children fought with each other during their childhood using the same Likert-type scale. The average of the scores for “He stepped in and solved the problem” and “He punished them for fighting” produced the father’s intrusion score, with higher scores reflecting higher intrusion. Four mothers were unable to answer this part of the questionnaire for reasons such as the absence of a father figure or a deceased father. The correlation between the two items measuring fathers’ intrusion was also 0.20,  $p < 0.01$  (see Table 1 for the correlation between mothers’ and fathers’ intrusion scores).

**Bullying Between Siblings During Childhood** Sibling bullying was assessed via young adults’ self-reports. This procedure was chosen because sibling bullying often occurs outside the presence of parents (Toseeb et al., 2019). Hence, parents may often be unaware of the extent of the problem, underestimating the frequency of aggressions among siblings (Dantchev & Wolke, 2019b; Dantchev et al., 2018).

Young adults answered the Sibling Relations Questionnaire (Duncan, 1999), which is an adaptation for siblings of the Peer Relations Questionnaire (Rigby & Slee, 1993). They indicated the frequency of occurrence of various aggressive behaviors with their siblings when they were a child. Sibling was defined as including not only biological brothers and sisters, but also stepsiblings, half-siblings, adoptive, and foster

**Table 1** Correlations Among Study Variables and Descriptive Statistics

Measure	1	2	3	4	5	6	7	8	9	10	11
1. Par. intrusion (M)		.48***	.10	.15*	-.14	.14	-.02	-.01	-.02	.05	.07
2. Par. intrusion (F)			.15*	.17*	-.02	.05	.08	.10	.07	.14*	.02
3. Bul. perpetration				.71***	-.06	.22***	.35***	.15*	.07	.05	-.03
4. Bul. victimization					-.01	.17*	.37***	.25***	.04	.03	-.02
5. Pos. probl. solving						-.52***	-.18*	.00	.20**	-.14	-.01
6. Neg. probl. solving							.20**	.04	-.27***	.13	.03
7. Unkindness (YA)								.40***	.01	.08	.05
8. Unkindness (M)									-.07	.15*	.19**
9. Gender										.00	-.12
10. # of siblings											.22**
11. Family type											
<i>M</i>	2.32	2.18	1.43	1.47	19.31	13.09	12.71	11.59	-	1.69	-
<i>SD</i>	.72	.83	.42	.47	3.04	3.79	6.12	4.63	-	1.07	-

*Note.* For gender, women=0 and men=1. For family type, 0=traditional families (i.e., married parents) and 1=nontraditional families (i.e., cohabiting, divorced, separated, and remarried parents, as well as deceased father). M=mother’s rating. F=father’s rating. YA=Young adult’s rating

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

siblings, as long as participants consider them as brothers and sisters (Morrill et al., 2018). The interest in examining sibling bullying during childhood is based on data showing that victimization rates peak during childhood, between 2 and 9 years (Dantchev & Wolke, 2019b; Tucker et al., 2013).

The 10-item questionnaire measured two dimensions of involvement in sibling bullying: victimization and perpetration. Five items evaluated victimization (e.g., “My sister or brother beat me up”), while 5 items assessed perpetration (e.g., “I hit and pushed around my sister or brother”). Answers were: 1 = never, 2 = once in a while, 3 = often, and 4 = very often. Subscale scores were calculated by averaging items for each subscale. The higher the score, the more respondents reported sibling bullying victimization or perpetration during their childhood. Cronbach alphas were 0.75 for perpetration and 0.78 for victimization.

**Current Social Problem Solving** Young adults answered two subscales of the Social Problem Solving Inventory-Revised Short Form (D’Zurilla et al., 2004; Sorsdahl et al., 2017), measuring positive problem orientation (e.g., “Whenever I have a problem, I believe it can be solved”; 5 items) and negative problem orientation (e.g., “I feel afraid when I have an important problem to solve”; 5 items). Positive problem orientation is a constructive dimension of problem solving that has been related to adaptive functioning and psychological well-being, whereas negative problem orientation is a dysfunctional dimension that has been associated with maladaptive functioning and psychological distress (D’Zurilla et al., 2004). Each item was rated on a 5-point Likert type scale from 1 (not at all true to me) to 5 (extremely true to me). The score for each subscale is the sum of items for the subscale in question. Higher scores for positive problem orientation indicate a more adaptive approach to problem solving, whereas higher scores for negative problem orientation reflect a more maladaptive approach to problem solving. In this study, alphas were respectively 0.69 for the positive problem orientation subscale and 0.78 for the negative problem orientation subscale.

**Current Unkindness in the Family** Young adults and their mothers completed one subscale of the Family Profile II (Lee et al., 1997), measuring current unkindness in the family. Current unkindness in the family was chosen as the measure of current family functioning because, following extensive factor analyses, reliability testing, and regression analyses, the unkindness subscale was shown as the most robust subscale of the Family Profile II (Brent, 1997; Lee et al., 1997). The subscale is composed of 5 items (e.g., “Some family members are verbally abusive with one another”; 5 items). Respondents indicated to what extent each item describes their family using a scale oscillating between 1 (never) and 7 (always). The total score was the sum of all items, with

higher scores reflecting higher levels of unkindness in the family. The unkindness subscale demonstrated acceptable reliability in this study, with alphas of 0.87 for young adults’ ratings and 0.84 for mothers’ ratings.

**Data Analysis** When missing values were present, they were replaced by the participant’s mean score when at least 80% of the items on the subscale were responded. After this procedure, there remained 4 missing values for father’s intrusive style ( $n = 196$ ), 1 missing value for sibling bullying perpetration ( $n = 199$ ), and 1 missing value for sibling bullying victimization ( $n = 199$ ). No data transformations were performed. Correlation matrices were prepared using the pairwise deletion option.

EQS 6.3 was first used to test a full structural model with the maximum-likelihood estimation method, using item parceling (with the mean or the sum of the subscale) to compute the observed variables in the model (Matsunaga, 2008; see Luebbe & Bell, 2014 for the use of the same technique). Several indices were employed to assess the fit of the model. More specifically, an acceptable fit requires a nonsignificant  $\chi^2$  and a relative Satorra-Bentler  $\chi^2$  value ( $\chi^2/df$ ) less than or equal to 2. The Goodness-of-Fit Index (GFI) and the Comparative Fit Index (CFI) must be of at least 0.95. The Standardized Root Mean Square Residual (SRMS) and the robust Root Mean Square Error of Approximation (RMSEA) must be smaller than 0.08 and 0.07, respectively (Hooper et al., 2008). By means of the technique developed by MacKinnon (2008), we next tested a more saturated model that included the full structural model under study, in which we added two direct paths: one from parental intrusion to social problem solving and the other from parental intrusion to unkindness in the family. The two models were compared and conclusions about possible mediation were made (MacKinnon, 2008).

In order to select covariates for the models, correlations were calculated between, on the one hand, demographic variables (i.e., family type: traditional vs. nontraditional, number of siblings, blended family formation (or not), as well as young adult’s gender, birth order in the family, and age) and, on the other hand, sibling bullying victimization or perpetration, negative or positive problem orientation, and ratings of unkindness in the family (Hair et al., 1998). Concerning family type, traditional families (72% of the sample) refer to married parents, whereas nontraditional families (28% of the sample) include cohabiting, separated, divorced, and remarried parents, as well as families with a deceased father. By comparison, concerning the variable blended family formation, a blended family (15% of the sample) is defined as a family comprising a couple and their children from the current and all previous relationships. Significant correlations were observed between gender and the two types of social problem solving. In addition, the number of siblings

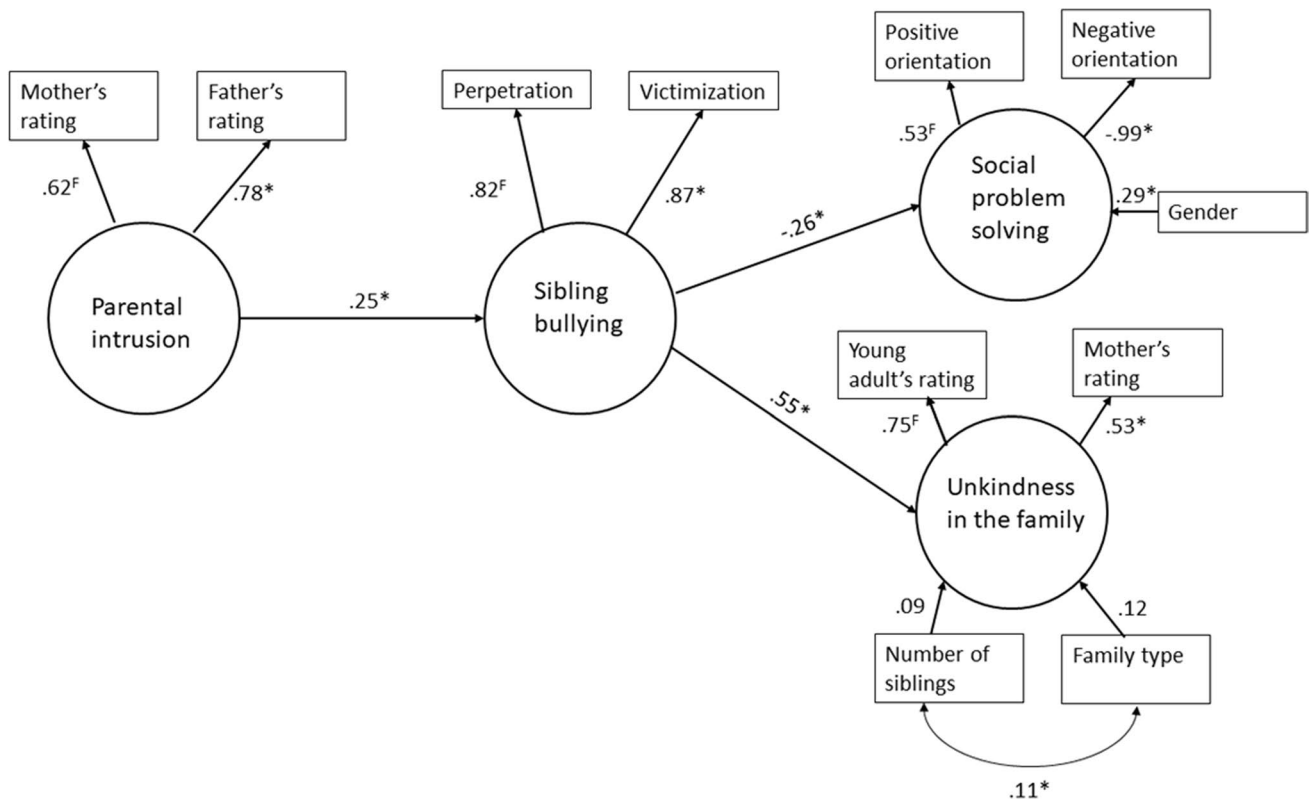
and family type (i.e., nontraditional vs. traditional families) correlated with mother’s rating of unkindness in the family (see Table 1). Consequently, gender, number of siblings, and family type were selected as covariates for this study in order to statistically control for their effect on the predicted variables.

### Results

Table 1 reports means, standard deviations, Pearson bivariate correlations (for pairs of continuous variables), and point-biserial correlations (for pairs of correlations involving young adult’s gender and family type). As shown in Table 1, the mother’s and father’s use of intrusion was significantly and positively associated with the two components of sibling bullying, with the exception of the relationship between mother’s intrusion and sibling bullying perpetration, which was nonsignificant. Furthermore, both sibling bullying components were positively associated with the young adult’s negative problem orientation and unkindness in the family (as measured by mothers and young adults). Gender predicted both positive and negative problem orientations, with

young women having a less positive and a more negative problem orientation than young men. Number of siblings and family type correlated significantly with the mother’s rating of unkindness in the family. This revealed that the more siblings, the higher the level of unkindness in the family was. In addition, nontraditional families were associated with more unkindness in the family than traditional families. Finally, the number of siblings was related to the type of family: nontraditional families were associated with more children.

The hypothesis that involvement in sibling bullying during childhood mediates the association between, on the one hand, parental intrusion during childhood and, on the other hand, current social problem solving and current unkindness in the family, was tested using a structural equation model with latent variables for parental intrusion (the mother’s and father’s ratings), sibling bullying (perpetration and victimization), social problem solving (positive and negative problem orientations), and unkindness in the family (the young adult’s and mother’s ratings). This model fit the data well,  $\chi^2(40) = 49.73, p = 0.14; \chi^2/df = 1.24; GFI = 0.96; CFI = 0.97; SRMR = 0.06; RMSEA = 0.04$ . Results revealed that all paths of the model were significant (see Fig. 1). Coefficients for the measurement model were also significant.



**Fig. 1** Parental intrusion, sibling bullying, individual and family outcomes model. Note. Standardized coefficients are shown. <sup>F</sup> indicates that this factor-loading parameter was fixed to 1 for scaling and, therefore, a significance test is not available. \*  $p < .05$

A more saturated model including the full structural model under study, in which we added two direct paths (one from parental intrusion to social problem solving and the other from parental intrusion to unkindness in the family; not shown in Fig. 1) was next tested (MacKinnon, 2008). Although this model fit the data well,  $\chi^2(38) = 48.11$ ,  $p = 0.13$ ;  $\chi^2/df = 1.27$ ; GFI = 0.96; CFI = 0.97; SRMR = 0.06; RMSEA = 0.04, the direct links predicting social problem solving,  $\beta = -0.11$ ,  $p > 0.05$ , and unkindness in the family,  $\beta = -0.12$ ,  $p > 0.05$ , failed to reach significance. Furthermore, a chi-square comparison test contrasting this saturated model with the original model (without the two direct paths) was nonsignificant,  $\Delta\chi^2(2) = 1.63$ ,  $p = 0.44$ . This indicated that the model with the direct paths did not fit the data any better than the model without them (MacKinnon, 2008). Based on these results, it appears that the effect of parental intrusion on social problem solving and unkindness in the family was mediated by sibling bullying, confirming that parental intrusion relates indirectly, but not directly, to social problem solving and unkindness in the family.

## Discussion

The goal of this retrospective study was to examine whether bullying among siblings mediates the relationships between parental sibling conflict intervention styles and individual or family outcomes years later. The findings of the present study confirm the mediating role of sibling bullying in the relation between parental intrusion, social problem solving, and unkindness in the family, by means of young adult and their mother reports. In addition, the three hypotheses under study were supported. Confirming H1, results showed that higher usage of parental intrusion during conflicts between siblings was associated with higher levels of bullying among siblings, both as a victim and as a perpetrator. Moreover, supporting H2, findings revealed that higher levels of sibling bullying during childhood predicted more dysfunctional problem-solving in adulthood. Finally, corroborating H3, we found that past experiences of sibling bullying predicted current unkindness in the family.

In agreement with results of past studies (Bouchard et al., 2019) and the coercion theory (Patterson, 1986; Patterson et al., 1984), our findings showed that parents' efforts to resolve fights between their children by punishing them or by stepping in to solve the problem themselves were associated with higher levels of sibling bullying. Rather than helping children to get along, this strategy may be associated with more aggression and negativity in sibling relationships (see Grolnick, 2003 and McHale et al., 2000 for similar results). Conversely, previous research has shown that parental coaching (i.e., when parents guide their children toward a solution by helping them to communicate and understand each other)

is associated with less sibling victimization (Bouchard et al., 2019). Our results were observed when parental intrusion was retrospectively reported by mothers (for both parents) and when involvement in sibling bullying was retrospectively reported by one of the children involved in it. It follows that the significant relationship observed between the use of parental intrusion and the extent to which the person was a victim or perpetrator of sibling bullying cannot be explained by common method variance (i.e., the spurious variance attributable to the measurement method rather than to the variables themselves; Podsakoff et al., 2003). We cannot eliminate, however, the possibility that parental intrusion and involvement in sibling bullying may exert a reciprocal influence on one another. Nevertheless, our data contribute to the literature on the role of parents in problematic sibling relationships among their children by addressing limitations of prior studies that relied primarily on self-report measures from a single family member.

This study also found that the more young adults were involved in sibling bullying during their childhood, the less they have a positive and optimistic outlook towards their interpersonal or individual problems as adults. This suggests that victims and perpetrators of sibling bullying during childhood may view their everyday problems as a significant threat to their well-being or believe that they are unsolvable once grown up. This study is the first to demonstrate a link between sibling bullying and subsequent social problem solving. By corroborating that family dynamics predict offspring development, this result is consistent with the family system theory (Cox & Paley, 1997, 2003). In addition, we could hypothesize, consistent with the behavioral perspective, that recurrent conflicts with siblings may inhibit the learning of adaptive problem-solving behaviors in an individual or lead to the learning of maladaptive responses.

The findings that past experiences of sibling bullying are related to current unkindness in the family are in agreement with earlier findings concerning the association between involvement in sibling bullying during childhood or adolescence and sibling conflicts in young adulthood (Bouchard et al., 2019). They are also consistent with the family system theory (Cox & Paley, 1997, 2003), as they suggest interconnections and interdependence between subsystems of the family and individual family members. Indeed, according to this theory, family members are intensely emotionally connected with each other, which could explain why conflicts in one subsystem may negatively affect the whole family system. Our results endorse the fact that sibling bullying is related to the perception that family members have of the emotional climate of the family years later.

Several demographic covariates were included in the analysis to further isolate relationships between parental intrusion, sibling bullying, social problem solving, and unkindness in the family. Only young adults' gender was

a significant predictor in the model; the number of siblings and family type (traditional families vs. nontraditional families) did not reach the threshold of significance. Nevertheless, the mediating role of sibling bullying was confirmed after accounting for the three covariates. Concerning gender, results showed that young women were less likely to view a problem as a challenge and more likely to appraise a problem as a threat when compared to young men. Our results converge with results of numerous studies indicating that women scored higher on negative problem orientation and lower on positive problem orientation (e.g., De La Torre et al., 2010). Our findings have practical application and can be used by clinicians to help them remembering to focus on the development of specific problem-solving skills when treating young women (De La Torre et al., 2010). Although the other two covariates were nonsignificant, results showed that the covariance between the number of siblings and the type of family was significant: nontraditional families were associated with more siblings than traditional families. This result may be explained by the fact that nontraditional families encompass (but are not limited to) families with divorced and remarried parents, which often include a larger number of children than intact families.

As expected, past parental intrusion did not directly predict current social problem solving or current unkindness in the family. Our model built on previous research and identified a specific pathway by which parental intrusion was associated with individual and family outcomes years later. Our results suggest that parents who were intrusive in managing their children's conflict seem to prevent their children from developing problem-solving strategies by increasing their likelihood of being involved in sibling bullying. Parental intrusion, through its relationship with sibling bullying, is also associated with more unkindness in the family years later.

Such knowledge about the relations between parental intervention styles, sibling bullying, and individual and family outcomes has implications for clinical practice. Parental skills programs, proposed in family support centers, community centers, or schools, should include discussions about the undesirable consequences of parental intrusion on sibling bullying, as well as the more desirable consequences of strategies such as parental coaching. These educational sessions are essential because many parents do not acknowledge their contribution to their children's aggressive behaviors (Pickering & Sanders, 2017). These educational sessions should seek to make parents aware of the impact of sibling bullying in childhood on subsequent dysfunctional problem solving and unkindness in the family.

Family therapy could be indicated for families with high levels of sibling bullying. Indeed, family therapy, whether structural (Minuchin, 1974) or intergenerational (Bowen, 1966), aims to return to a more peaceful environment and

balance within the family system. To achieve this, family members must learn to better manage their conflicts and develop communication and problem-solving skills within the family (Bouchard & Mercier-Nicol, 2020). The changes brought about by family therapy would benefit the whole family, including the young adult.

The current study has three main limitations. Firstly, parental intrusion and sibling bullying during childhood were measured retrospectively. Mnemonic biases can be associated with this way of measuring. On a related note, the exact age period, during the young adult's childhood, when the sibling bullying took place is unknown. Secondly, the participants in our study were predominantly middle-class Canadians. Therefore, generalization of our results to people of other cultures or other socio-economic levels should be done with caution. Relatedly, young adults who were part of a two-father family, for instance, were excluded from the study. Thirdly, for reasons of simplicity, mothers answered the parental intrusion questionnaire for both parents. Unfortunately, this methodology may bring some bias in the answers.

Despite these limitations, this study contributes to the literature on two underexplored topics: the role of parents in bullying among siblings and the impact of this bullying on individual and family outcomes years later. Results of this study indicated that intensive use of parental intrusion to address sibling conflicts (i.e., when parents stepped in to solve problems between their children or punished them for fighting) predicted higher levels of sibling bullying. In turn, higher involvement in sibling bullying (including both perpetration and victimization) during childhood predicted less constructive problem solving in adulthood, as well as more dysfunctional family relationships years later. The current study suggests that the involvement in sibling bullying must be considered as a risk factor for poor problem-solving skills and negativity in family relationships. Finally, it appears critical that parents realize their contribution to their children's dysfunctional relationships. Future research could investigate the positive consequences (for instance, in terms of self-confidence and self-assertion) of teaching children problem-solving skills when they are not fighting or when they are playing.

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**Data Availability** The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.



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