The
British
Psychological
Society

Bullying among siblings: The role of personality and relational variables

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This study aimed to investigate: (1) the influence of gender, sibling age, and sibling gender on sibling bullying and victimization; (2) the links between personality characteristics, quality of the sibling relationship, and sibling bullying/victimization; (3) the association between sibling and school bullying/victimization, and the direct and indirect associations between personality variables and school bullying/victimization. The sample comprised 195 children (98 boys and 97 girls, aged 10–12 years). Instruments included: a self-report questionnaire for bullying and victimization, the Big Five Questionnaire for Children and the Sibling Inventory of Behaviour. Results highlighted that the presence of an older brother is a risk factor for the emergence of sibling victimization. For both boys and girls, high levels of conflict in the dyad and low levels of empathy were significantly related to sibling bullying and sibling victimization. For males, energy was associated with sibling bullying and indirectly to school bullying; friendliness and high emotional instability were directly associated with school bullying. School victimization was directly associated with emotional instability for both males and females. Finally, both sibling bullying and sibling victimization were associated with bullying and victimization at school. The discussion highlights the role of a multi-contextual approach to understand and prevent bullying.

Bullying has been widely studied in schools (Menesini, 2008; Olweus, 1993; Salmivalli, Lagerspetz, Björkqvist, Osterman, & Kaukiainen, 1996; Smith, Pepler, & Rigby, 2004) but information about the extent and the nature of this problem among siblings in the family context is still scarce. Similarly to peer bullying, sibling bullying can be defined as a specific type of aggression aimed at dominating another person and at causing physical or psychological harm (Olweus, 1999; Smith *et al.*, 1999). Therefore, although

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the phenomenon presents unique characteristics in each setting (such as its group nature in schools, which is often absent in the family), bullying and victimization in the two contexts share several features. In particular, they have in common the *form* (which can be physical, verbal, or relational); the *intentional nature* (a bully deliberately damages the victim); the *persistency* (the attacks are repeated over time); and the *imbalance of power* (the bully is often stronger than the victim, who is not able to react). These characteristics differentiate bullying from conflict or aggression, where roles are not well defined and children may have the same power or strength.

Sibling relationships are often described as emotionally ambivalent, conflictual in some cases and warm in others, or frequently mixed (Brody, 2004). Although it has been recognized that sibling conflict is typical of populations accounting for almost 50% of interactions in young children (Dunn & Kendrick, 1982), recently more attention has been focused on the association between pronounced sibling conflict and children's or adolescents' externalizing and antisocial behaviour outside the family (Criss & Shaw, 2005; Dunn, 2005; Richmond, Stocker, & Rienks, 2005). Among sibling negative behaviours, bullying can be one of the most frequent (Duncan, 1999; Wolke & Samara, 2004).

In the present study, we aimed to investigate whether sibling bullying is related to personal and relational factors. Furthermore, given that an association between sibling and peer experiences exists (Patterson, 1986; Wolke & Samara, 2004), we aimed to analyse the link between sibling bullying and school bullying, and whether personality characteristics can be directly or indirectly related to school bullying.

Sibling relationships

Since the early 80's a growing body of research has described the contributions of the sibling relationship to child and adolescent development. According to Brody (2004), these contributions can be direct, i.e., related to child–sibling interactions, or indirect, i.e., related to one child's impact on parents or significant others and therefore on the sibling. The latter point of view underlines that siblings growing up in the same context are different from each other, and that they can be subject to non-shared experiences in the family and to parental differential treatment (Dunn & Plomin, 1990). Despite the relevance of these concepts, our attention was focused on the sibling micro-system, and on the bidirectional influence between sibling relationship quality and personal adjustment. In this regard, structural characteristics, such as gender composition of the dyad and birth order, can affect sibling relationship quality (Brody, 1996). In relation to gender, we know that in almost all families, sisters are more affectionate and supportive, less conflictual and less antagonistic as compared to brothers (Dunn, 2002; Hetherington & Clingempeel, 1992; Hetherington, Henderson, & Reiss, 1999). Brothers, in contrast, engage in more frequent conflicts with their siblings, and demonstrate hostile and threatening behaviours including physical violence (Brody, 2004). Birth order also influences the relationship between siblings, as the first-born child (or an older sibling) may show more detachment and differentiation from the younger sibling, who, on the other hand, may emphasize communality and affinities with the older sibling (Dunn, 2002; Furman & Buhrmester, 1985). The first-born child receives exclusive attention and care from parents before the sibling is born, and this may lead him/her to identify more easily with authority, and to manifest aggressive and sometimes authoritarian behaviours towards younger siblings (Brunori, 1993; Sulloway, 1996).

Besides these structural characteristics, siblings are different from each other in terms of talents, emotional security, self-confidence, style of life, and mental

abilities (Dunn, 2002). Differences between siblings are usually explained in terms of temperament and personality traits. As for temperament, previous literature agrees on the fact that children who are irritable, impulsive, anxious, who have difficulty adapting to new situations, who show negative mood and low capability to regulate emotions are also more at risk of displaying relational and externalizing problems (Caspi, Roberts, & Shiner, 2005; Sanson, Hemphill, & Smart, 2004). Brody (1998) reported that children with highly active temperaments experienced four times as much sibling conflict than less active children did, and that younger siblings directed more antagonism towards highly active older siblings than to more easy-going brothers or sisters.

In relation to personality characteristics, consistent support has been found for the association between the higher-order structure of personality and social competence (Caspi *et al.*, 2005; Costa & McCrae, 1997). Many aspects of personality predict social competence and are shaped from family and sibling relationships. Agreeable and extraverted children are usually more socially competent concurrently and across time (Asendorpf & van Aken, 2003; Gest, 1997; Shiner, 2000), whereas children with high levels of negative emotionality and low levels of constraint have a variety of social difficulties such as aggressive behaviour, anger, withdrawal, and anxiety.

Although the relationship between personality factors and sibling bullying has not been investigated so far, we have some information on personality characteristics of school bullies and victims. The characteristics of bullying children usually include aggression, a strong need to dominate others and a positive attitude towards violence (Olweus, 1993). Tani, Greenman, Schneider, and Fregoso (2003), using the five-factor model, described both bullies and victims as characterized by high levels of emotional instability and low levels of agreeableness.

In addition, personality variables can affect proximal relationships – specific processes, such as the quality of interaction between siblings, other family members and peers. Regarding the quality of the sibling relationship, Furman and Buhrmester (1985) identified the following four dimensions, referring to the degree and the direction of asymmetry in the relationship: warmth/proximity, relative power/status, conflict, and rivalry. The first dimension is defined by characteristics such as intimacy, empathy, prosocial behaviour, companionship, admiration, and taking care of the other. The dimension of relative status measures the siblings' power dynamic and the balance of the relationship. Conflict and rivalry imply antagonism, competition, and perception of the parents' differential treatment.

Other studies of sibling relationship quality have identified elements of rivalry together with affection and protection (Brody, 1998; Lecce, 2003; Lecce, Pinto, & Primi, 2002; Stocker, 1994). Sibling relationships that are characterized by a balance of affection and conflict can provide a positive context to learn social skills and to understand other people's emotions and perspectives (Brody, 2004; Dunn, 2002; Hetherington, 1988). In contrast, children who experience high levels of conflict and aggressive sibling interactions, without affection and warmth, are more likely to be nominated by their peers as aggressive and are less accepted by their peers (Brody, 2004; MacKinnon-Lewis, Starnes, Volling, & Johnson, 1997).

Sibling and peer bullying

Studies have highlighted a significant link between sibling experiences and peer problems outside the family. Social learning and coercion theories posit that older siblings provide their younger brothers and sisters with modelling and training in the

use of social behaviours, including aggression (Bandura, 1973; Ostrov, Crick, & Stauffacher, 2006; Patterson, 1986). In addition, other studies stress that sibling interaction patterns involving positive or negative social skills can be generalized to relationships outside the family (Parke & Buriel, 1998). Stauffacher and DeHart (2006) spoke about crossing social contexts in the sense that the social behaviour employed in the sibling context can be transferred into other social contexts. This is not simply due to patterns of influence from older to younger siblings, but it may be related to individual differences and to specific social dynamics in the sibling relationship. According to Gass, Jenkins, and Dunn (2007), trans-context effects are mainly found if the relationship is conflict laden or particularly good; in both cases the sibling relationship does have an effect on other significant relationships, either negatively or positively. According to the trans-context hypothesis, sibling relationships are a 'training ground' for both siblings, and not simply for the younger one (Bank, Patterson, & Reid, 1996; Gass *et al.*, 2007; Slomkowski, Rende, Conger, Simons, & Conger, 2001; Stauffacher & DeHart, 2006). Furthermore, it seems that features of sibling relationships significantly predict future individual well-being, even after the role of parents has been controlled (Bank, Burraston, & Snyder, 2004).

Therefore, as regards the relation between sibling and peer bullying, our expectation is that exposure to aggression and bullying in the family context promotes aggressive behaviour with peers (MacKinnon-Lewis *et al.*, 1997). Duncan (1999) examined the prevalence of bullying in American children and its relation to sibling bullying, and found that children who were bullies and victims among peers reported the highest frequency of sibling bullying and sibling victimization. Connolly and O'Moore (2003) observed that bullies among peers, in comparison with control children, were more inhibited in expressing emotions in the family and showed more negative emotions towards their siblings. Ostrov *et al.* (2006) demonstrated that older siblings relational aggression predicted younger siblings use of the same pattern of behaviour with peers. Wolke and Samara (2004) addressed this link, studying victimization in a secondary school in Israel. They reported that preadolescents who were victimized at home had a higher probability of being victimized at school as well. In addition, the unique condition of being victimized by siblings, and particularly the double condition of being victimized at home and at school, had the strongest association with concurrent behaviours and health problems.

On the basis of these considerations, and observing the paucity of studies specific to sibling bullying, the present study aimed to examine individual and relational factors related to sibling bullying and the potential links with school bullying. The first group of factors included personality characteristics, gender of the participants, sibling age, and sibling gender; in the second group we considered three dimensions of sibling relationship quality: empathy, conflict, and companionship. Specifically, the aims of this study were the following: (1) to investigate the influence of child gender, sibling age, and sibling gender on sibling bullying and victimization; (2) to analyse to what extent personality, sibling characteristics, and quality of the sibling relationship are connected to bullying and victimization among siblings; (3) to analyse to what extent bullying and victimization among siblings can be related to bullying and victimization among peers, and whether personality variables have direct and indirect effects on school bullying/victimization through sibling bullying/victimization.

We expected to find higher levels of bullying behaviour among males and among older siblings, and links between bullying and personality characteristics such as emotional instability, low friendliness, and low conscientiousness. We also hypothesized

that children who bully would be less empathic with their siblings and more involved in conflicts (Jolliffe & Farrington, 2004). As for victimization, we predicted that it would be linked to emotional instability (a personality factor), and to conflict and low empathy (qualities of the sibling relationship).

In line with other studies linking sibling and peer relationships (Brody, 1998, 2004; Patterson, 2002; Wolke & Samara, 2004), we tested a model assuming that a primary source of influence on children's peer relations is the experience they have with their siblings. Consequently, we hypothesized that children who were bullies or victims with their siblings might be particularly at risk of exhibiting similar behaviours with peers. Given the importance of experiences with siblings for eliciting and enhancing individual patterns of behaviour, we expected indirect effects between personality characteristics and school bullying.

Method

Sample

From an initial sample of 562 boys and girls, aged 10–12 years, attending middle schools in two cities in Tuscany (Italy), 195 children (98 males and 97 girls) were selected and took part in the study, on the basis of the fact that they all had a sibling no more than 4 years younger or older than themselves. The choice of excluding children with siblings much older or younger than themselves (more than 4 years) was due to the fact that a large age gap may be related to different patterns of relationship and may not be associated with bullying/victimization dynamics (Brody, 1998). Data were collected in six schools near Florence, in central Italy, which covered areas of mixed socio-economic backgrounds and could be considered representative of the child population. School directors, teachers, and parents were contacted to obtain their written consent, which was given for all children. Participants were assured that their responses would be treated as confidential and kept anonymous. Preliminarily, demographic information was acquired about the families through a questionnaire carried out on the whole class, which allowed us to select the pupils with an eligible brother or sister. Fifteen days later, the sample was asked to complete questionnaires on bullying in the family and in the school context, personality characteristics, and sibling relationship quality. The second survey was carried out during the afternoon hours with small groups of students.

Measures

Bullying/victimization questionnaire

After a definition of bullying was given (Fonzi, 1997; Olweus, 1993; Smith *et al.*, 1999), a bullying questionnaire (Wolke & Samara, 2004) was administered. Children were asked the frequency they had bullied or had been victimized at school in the last 6 months. The questionnaire consists of 10 items (5 for bullying and 5 for victimization) corresponding to different methods used in bullying (e.g., hitting/kicking, stealing/damaging belongings, calling names, excluding/ignoring, spreading rumours). The same 10 items were reformulated to assess bullying and victimization at home with the sibling. Participants were told to think about their brother or sister and to name him or her. In case they had more than one sibling, they were asked to select the one closest in age. The response format was on a five-point scale (from *never* to *several times a week*). A confirmatory factor analysis (CFA) was conducted for each scale: following the

indications of Brown and Cudek (1993) and Hu and Bentler (1999), results showed acceptable fit indices for all scales (see Table 1). Although the school bullying scale showed a significant chi-square statistic and a high root mean square error of approximation (RMSEA) index, recommended cut-off points for this measure are .08 (Brown & Cudek, 1993) or .06 (Hu & Bentler, 1999). Considering that the scale showed an acceptable alpha, we decided to maintain it. Overall, standardized factor loadings ranged from .33 to .78 (detailed results for the CFA are available from the authors). The reliability coefficients were as follows: *sibling bullying* ($\alpha = .65$), *school bullying* ($\alpha = .72$), *sibling victimization* ($\alpha = .69$), *school victimization* ($\alpha = .61$). A mean score of the five items was used as a measure of sibling and school bullying and sibling and school victimization.

Table 1. Fit indices of CFA for bullying and victimization scales and sibling relationship quality

	Chi-square	df	p	CFI	RMSEA	WRMR
Sibling bullying	5.31	5	.38	1.00	.02	0.59
Sibling victimization	6.49	5	.26	.98	.04	0.62
School bullying	13.11	5	.02	.91	.08	0.60
School victimization	8.00	5	.16	.94	.06	0.66
Sibling relationship quality	496.61	342	.00	.93	.05	1.13

Big Five Questionnaire for Children

The Big Five Questionnaire for Children (BFQ-C; Barbaranelli, Caprara, & Rabasca, 1998; Barbaranelli, Fida, Paciello, Di Giunta, & Caprara, 2008) was administered to the participants in order to measure personality characteristics. It comprises 65 items, derived from a list of adjectives considered as the most suitable to describe the personality of children and adolescents according to the Big Five model (McCrae & Costa, 1990). The 65 sentences are equally distributed across the five dimensions. Each item is evaluated on a five-point Likert scale, from *almost never* to *nearly always*. The five factors measured by the BFQ-C are the following: (1) *Openness* describes curiosity towards the world and culture, interest in several activities, openness to new experiences, and creativity; (2) *emotional instability* describes characteristics such as anxiety, high vulnerability, and little control of one's own behavioural and emotional reactions; (3) *energy/extraversion* refers to a mode of active, dynamic behaviour, sometimes dominant; (4) *agreeableness/friendliness* describes an altruistic attitude, a tendency to be friendly and cordial; (5) *conscientiousness* refers to self-regulation, expressed in aspects like persistency, tenacity, ability to mobilize, and to direct energies towards a specific aim, responsibility, accuracy, and reliability. In order to evaluate the reliability of the measure in our sample we calculated Cronbach's alpha for each scale: *openness*: $\alpha = .84$; *emotional instability*: $\alpha = .80$; *energy*: $\alpha = .68$; *friendliness*: $\alpha = .84$; *conscientiousness*: $\alpha = .77$.

Sibling Inventory of Behaviour

The Sibling Inventory of Behaviour (Hetherington *et al.*, 1999) was administered to the participants in order to measure sibling relationship quality. Participants were asked to think about the brother or sister they had talked about in the bullying/victimization

questionnaire and to write the name in the upper part of the questionnaire. The self-report instrument consists of two sections: in the first section (SIB; 32 items) children were asked about their brother's or sister's behaviour (e.g., 'Does your brother/your sister demonstrate understanding to you when you have problems?'); the second section (I-SIB; 32 items) asks participants how they perceive themselves in relation to their brother or sister (e.g., 'Do I demonstrate understanding to my brother/sister when he/she has problems?'). Each item was evaluated on a five-point scale, from *never* (1) to *always* (5).

Based on a previous study (Menesini, 2005), 17 items out of 32 were eliminated due to problems of non-normative distribution and cross-loading. Factor analysis yielded three consistent factors both for SIB and I-SIB versions: empathy, conflict, and companionship. The scale *empathy* comprises six items (e.g., 'I -or my brother/sister-demonstrate understanding when my brother/sister –or I- has problems'); the scale *conflict* comprises five items ('I -he/she- often get angry with him/her –me'); the scale *companionship* comprises four items ('I -he/she- propose new things to do together'). In order to evaluate the dimensional structure, we conducted a second order factor analysis, where three second order factors namely 'sibling conflict', 'sibling empathy', and 'sibling companionship' were measured by the correspondent SIB and I-SIB scales, which in turn were measured by observed variables. Fit indices (Table 1) showed acceptable values. Standardized factor loadings ranged from .44 to .90 (detailed results for CFA are available from the authors). The alpha coefficients were as follows: *sibling conflict*: $\alpha = .88$, *sibling empathy*: $\alpha = .88$, and *sibling companionship*: $\alpha = .87$. A mean score was used as a measure of each dimension of the sibling relationship.

Results

In order to investigate the effect of participants' gender, sibling gender, and sibling age on sibling bullying and victimization we performed a 3-way ANOVA – 2 (male vs. female) $\times$ 2 (male sibling vs. female sibling) $\times$ 2 (younger sibling vs. older sibling). For sibling bullying, results showed a significant main effect for gender ($F_{(1,165)} = 5.14$; $p < .05$; $\eta^2 = .03$) and a significant interaction between gender and sibling age ($F_{(1,165)} = 5.18$; $p < .05$; $\eta^2 = .03$). In particular, males reported bullying their siblings more often than did females. In relation to the interaction, results showed that males reported bullying younger siblings more often than older siblings, whereas females reported bullying older siblings more often than younger siblings. No three-way interaction was found. For sibling victimization, results showed a significant main effect of sibling age ($F_{(1,158)} = 13.81$; $p < .001$; $\eta^2 = .08$) and sibling gender ($F_{(1,158)} = 14.26$; $p < .001$; $\eta^2 = .09$). In particular, children with older and male siblings were more often victimized. No three-way interaction was found. Means and standard deviations for bullying and victimization are displayed in Table 2.

In order to investigate how personality, sibling characteristics, and quality of the sibling relationship are related to bullying/victimization among siblings and whether the latter is consequently related to school bullying/victimization (second and third aims), we conducted two path analyses using a multiple group approach to test for gender differences (see Table 3 for correlations among the study variables). Furthermore, the test of indirect effects from personality to school bullying via sibling bullying was conducted. Path analysis is a variant of structural equation modelling, which takes a confirmatory approach (i.e., hypothesis testing) to the multivariate analysis of

Table 2. Means and (standard deviations) of bullying and victimization for males and females on the basis of sibling age and sibling gender

Gender	Sibling age	Sibling gender	Bullying	N	Victimization	N
Male	Younger	Male	0.89 (0.77)	19	0.60 (0.73)	19
		Female	0.86 (0.75)	27	0.43 (0.58)	24
		Total	0.87 (0.75)	46	0.50 (0.65)	43
	Older	Male	0.59 (0.71)	22	1.17 (0.90)	21
		Female	0.69 (0.72)	18	0.58 (0.70)	17
		Total	0.64 (0.71)	40	0.91 (0.86)	38
	Total	Male	0.73 (0.75)	41	0.90 (0.86)	40
		Female	0.79 (0.73)	45	0.49 (0.63)	41
		Total	0.76 (0.74)	86	0.69 (0.78)	81
Female	Younger	Male	0.48 (0.52)	24	0.62 (0.68)	22
		Female	0.31 (0.42)	13	0.29 (0.45)	13
		Total	0.42 (0.49)	37	0.50 (0.62)	35
	Older	Male	0.81 (0.69)	21	1.39 (0.98)	21
		Female	0.46 (0.61)	22	0.63 (0.85)	22
		Total	0.63 (0.67)	43	1.00 (0.98)	43
	Total	Male	0.63 (0.62)	45	0.99 (0.92)	43
		Female	0.41 (0.55)	35	0.50 (0.74)	35
		Total	0.53 (0.60)	80	0.77 (0.87)	78
Total	Younger	Male	0.66 (0.67)	43	0.61 (0.70)	41
		Female	0.68 (0.70)	40	0.38 (0.54)	37
		Total	0.67 (0.68)	83	0.50 (0.63)	78
	Older	Male	0.70 (0.70)	43	1.28 (0.93)	42
		Female	0.57 (0.67)	40	0.61 (0.78)	39
		Total	0.63 (0.68)	83	0.96 (0.92)	81
	Total	Male	0.68 (0.68)	86	0.95 (0.89)	83
		Female	0.62 (0.68)	80	0.49 (0.68)	76
		Total	0.65 (0.68)	166	0.73 (0.82)	159

Note. Differences in *N* are due to missing values.

association between variables (Byrne, 1998). Using this method, the putative causal associations are represented by a series of structural equations (i.e., regression). However, in cross-sectional studies, such as this one, causality cannot be determined: in our study we intended to investigate whether data were consistent with the hypothesized model. As compared to multiple regression, path analysis allows for the analysis of more complex models. In particular, it can simultaneously examine situations in which there are 'chains' of influence, in that variable A influences variable B, which in turn affects variable C. We decided to use path analysis instead of regression analysis because our aim was to assess the structural relations between variables where one was simultaneously an outcome and predictor. Furthermore, this approach allowed us to assess empirically the indirect effects of personality on school bullying via sibling bullying, and to test empirically whether gender moderates the relations specified in the model through the multiple-group approach.

The following steps were conducted: (1) unconstrained multiple-group model across gender, in which the same pattern of structural paths was tested without constraints across groups. (2) Constrained multiple-group model where structural paths were

Table 3. Correlations between variables included in path analyses (boys are above the diagonal, girls are below the diagonal)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Sibling bullying	1.00	.04	.50	.09	−.21	.23	.06	−.29	−.28	−.10	.24	−.19	−.16	.05
2. Sibling victimization	.69	1.00	.24	.32	−.13	.07	.02	−.03	.03	−.23	.26	−.10	.27	−.28
3. School bullying	.27	.39	1.00	.19	−.26	.26	.04	−.37	−.26	−.22	.16	−.22	−.04	.02
4. School victimization	.41	.44	.32	1.00	−.03	.15	−.03	−.03	.02	−.05	.05	.01	−.08	.03
5. Mental openness	−.41	−.26	−.15	−.18	1.00	−.29	.27	.44	.65	.42	−.15	.43	.07	.07
6. Emotional instability	.26	.25	.14	.34	−.34	1.00	.07	−.17	−.20	.03	.27	−.01	−.01	.26
7. Energy	−.35	−.22	−.18	−.10	.31	−.15	1.00	.30	.19	.35	.01	.34	.27	−.02
8. Friendliness	−.26	−.18	−.15	−.01	.43	−.24	.46	1.00	.39	.26	−.03	.30	.20	.05
9. Conscientiousness	−.37	−.23	−.08	−.04	.47	−.04	.24	.52	1.00	.34	−.22	.37	.03	−.04
10. Empathy	−.49	−.47	−.08	−.03	.29	−.18	.26	.30	.34	1.00	−.48	.54	−.13	.13
11. Conflict	.48	.46	.31	.24	−.34	.36	−.11	−.36	−.46	−.48	1.00	−.21	.14	−.05
12. Companionship	−.43	−.43	−.23	−.08	.33	−.26	.32	.31	.29	.66	−.54	1.00	−.07	−.20
13. Sibling's age	.20	.24	.09	−.05	−.17	.09	−.28	−.28	−.13	−.08	.10	−.31	1.00	−.08
14. Sibling's gender	−.16	−.34	−.28	−.10	.25	−.18	.03	.16	.17	.37	−.30	.19	.13	1.00

constrained to be equal across groups. (3) To investigate the indirect effects of personality on school bullying via sibling bullying, we first estimated the significance of the direct and indirect paths. Second, we fixed to 0 the direct paths from personality to school bullying, and compared the fit of these two nested models. The analyses were conducted with MPlus version 4.2 (Muthen & Muthen, 2006) using maximum-likelihood estimation. Model fit was evaluated using the chi-square statistics, the RMSEA and the comparative fit index (CFI). Recommended cut-off points for these measures are .08 (Brown & Cudek, 1993) or .06 (Hu & Bentler, 1999) for RMSEA; .90 (Bollen, 1989) or .95 (Hu & Bentler, 1999) for CFI. In addition to these overall fit indices, the comparison between two nested models is tested through the significance of difference in the χ^2 value.

The final model fit (Model 11) for sibling and school bullying was good, as can be inferred from the values of all fit indices (see Table 4 for all the steps followed in the analysis and relative fit indices). The comparison between the unconstrained (Model 1) and the full-constrained model (Model 2) showed a significant difference between chi-square values. These final paths can represent a moderated mediation where the effects of personality variables on the mediator (sibling bullying) are different across gender. Following indications from the modification indices, Model 3 (partially constrained) showed a non-significant difference between chi-square statistics suggesting that the constraints imposed in Model 3, as compared to Model 1, did not alter the fit of the model significantly. However, since the fit indices were not fully adequate (i.e., a low CFI and a high RMSEA), we decided to follow indications from the modification indices to improve the overall fit. Model 5 showed adequate fit indices and all the tests of the comparison between nested models supported our *post hoc* re-estimations. Finally, from Model 6 to Model 11 we compared models where the direct paths from personality to school bullying were fixed to 0.

The final model (Figure 1) showed that higher levels of sibling conflict and lower levels of sibling empathy contributed to higher levels of sibling bullying in a similar manner for males and females. Sibling bullying and school bullying were also equally associated in both genders. At the same time, gender moderated five structural paths. First, in males but not in females energy was significantly and positively associated with sibling bullying. Second, supporting our previous analyses, sibling age was associated with sibling bullying in males but not in females: males with younger siblings reported higher levels of bullying. Third and fourth, low levels of friendliness and high levels of emotional instability were directly and significantly associated with school bullying in males but not in females. Finally, indirect paths from energy to school bullying via sibling bullying were significant for males. The model explained a high percentage of variance in female sibling bullying, but a more modest percentage for female school bullying (45 and 12%, respectively). In males, percentages of variance explained were 18 and 25% for sibling and school bullying, respectively.

The final model fit (Model 6) for sibling and school victimization was very good, as can be inferred from the values of all fit indices (see Table 4 for all the steps followed in the analysis and relative fit indices). The comparison between the unconstrained (Model 1) and the fully constrained model (Model 2) yielded a non-significant difference between chi-square values, suggesting that gender did not moderate the hypothesized paths. From Model 3 to Model 6, we compared models where the direct paths from personality to school victimization were fixed to 0. The final model (Figure 2) showed that sibling conflict, sibling age, sibling gender, and sibling empathy were associated with sibling victimization in a similar manner for males and females. Higher levels of

Table 4. Fit indices for sibling and school bullying and victimization models

	χ^2	df	p	CFI	RMSEA	SRMR	$\Delta\chi^2$	Δdf	p
Sibling and school bullying									
Model 1 unconstrained	15.65	10	.11	.93	.08	.02			
Model 2 constrained	45.49	26	.01	.77	.09	.06			
Model 3[a]	38.12	25	.05	.84	.08	.05			
Model 4[b]	34.11	24	.08	.88	.07	.05			
Model 5[c]	29.49	23	.17	.92	.06	.04			
Model 6[d]	29.88	24	.19	.93	.05	.04			
Model 7[e]	30.22	25	.22	.94	.05	.04			
Model 8[f]	30.26	26	.26	.95	.04	.04			
Model 9[g]	33.09	27	.19	.93	.05	.04			
Model 10[h]	28.77	26	.33	.97	.04	.03			
Model 11[i]	28.97	27	.36	.98	.03	.03			
Model 2 versus 1							29.84	16	.02
Model 3 versus 1							22.47	15	.09
Model 4 versus 3							4.01	1	.04
Model 5 versus 4							4.62	1	.03
Model 6 versus 5							0.39	1	.53
Model 7 versus 6							0.33	1	.57
Model 8 versus 7							0.04	1	.84
Model 9 versus 8							2.84	1	.09
Model 10 versus 9							4.33	1	.03
Model 11 versus 10							0.20	1	.66
Sibling and school victimization									
Model 1 unconstrained	11.59	10	.29	.97	.05	.02			
Model 2 constrained	17.87	26	.88	1.00	.00	.03			
Model 3[l]	17.94	27	.91	1.00	.00	.03			
Model 4[m]	18.12	28	.92	1.00	.00	.03			
Model 5[n]	18.37	29	.94	1.00	.00	.03			
Model 6[o]	18.78	30	.95	1.00	.00	.03			
Model 2 versus 1							6.28	16	.98
Model 3 versus 2							0.07	1	.40
Model 4 versus 3							0.18	1	.67
Model 5 versus 4							0.24	1	.62
Model 6 versus 5							0.42	1	.52

[a] The path from energy to sibling bullying is free across gender.
[b] The path from sibling's age to sibling bullying is free across gender.
[c] The path from friendliness to school bullying is free across gender.
[d] The path from mental openness to school bullying is fixed to 0 in both genders.
[e] The path from energy to school bullying is fixed to 0 in both genders.
[f] The path from conscientiousness to school bullying is fixed to 0 in both genders.
[g] The path from emotional instability to school bullying is fixed to 0 in both genders.
[h] The path from emotional instability to school bullying is free in males.
[i] The path from friendliness to school bullying is fixed to 0 in females.
[l] The path from mental openness to school victimization is fixed to 0 in both genders.
[m] The path from energy to school victimization is fixed to 0 in both genders.
[n] The path from friendliness to school victimization is fixed to 0 in both genders.
[o] The path from conscientiousness to school victimization is fixed to 0 in both genders.
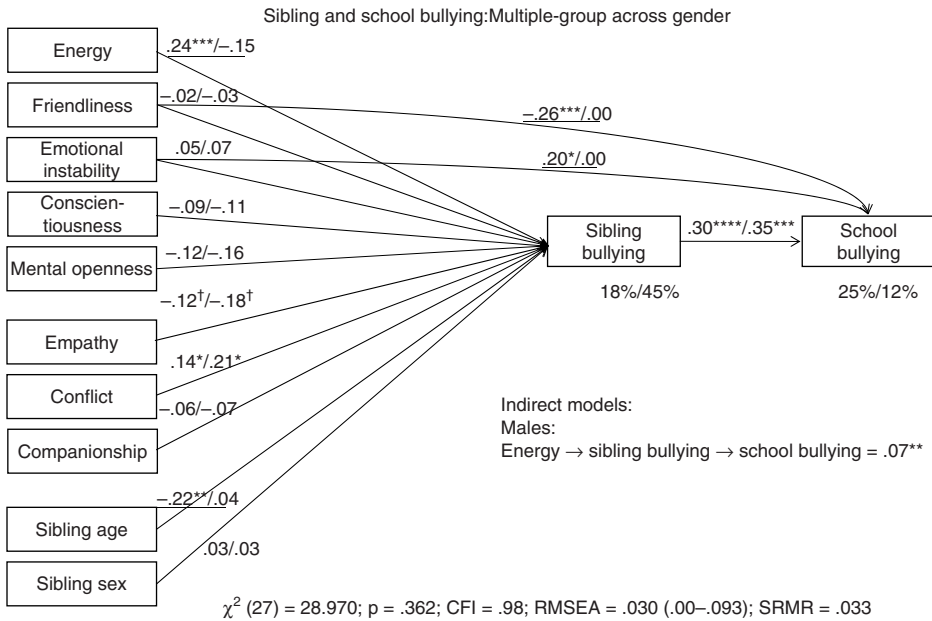
Figure 1. Multiple-group path analysis of sibling and school bullying across genders. *Note.* Values refer to males and females, respectively. The underlined values are different across gender; $^{\dagger}p < .10$; $*p < .05$; $**p < .01$; $***p < .001$.

sibling conflict and lower levels of sibling empathy, as well as having older and male siblings, contributed to higher levels of sibling victimization. Sibling victimization and school victimization were also equally associated in both genders. Finally, a direct path from high levels of emotional instability to school victimization was found for both genders. No direct paths from personality variables to sibling victimization were found, and therefore no indirect paths from personality to school victimization via sibling victimization were found. The model explained a moderate percentage of variance in female sibling and school victimization (34 and 23%, respectively). In males, percentages for victimization at home and in school contexts were 25 and 15%, respectively.

Discussion

The purpose of the present study was to investigate the effects of birth order, gender, personality variables, and relationship quality on sibling bullying/victimization. In addition, we examined the association between sibling and school bullying/ victimization and the direct and indirect effects of personality characteristics on school bullying/victimization.

As regards the first aim, we found that victimization was higher for both boys and girls with an older brother, and that bullying for boys was higher when they had a younger sibling (either a brother or a sister). The presence of an older brother *per se* seems to be a risk factor for the emergence of victimization at home. However, the same cannot be said in the case of girls. Although we found an interactive effect between
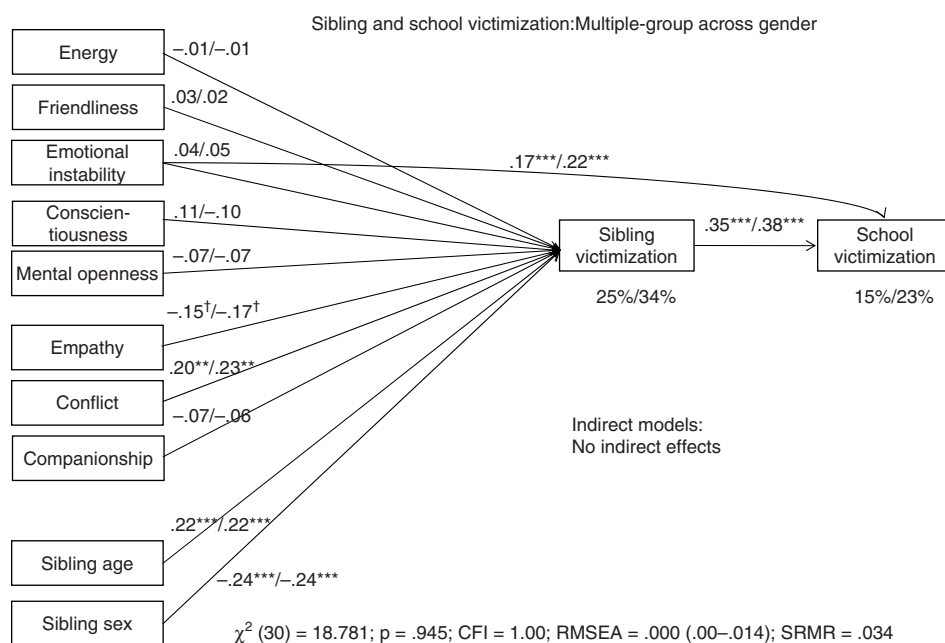
Sibling and school victimization:Multiple-group across gender

Figure 2. Multiple-group path analysis of sibling and school victimization across gender. *Note.* Values refer to males and females, respectively; [†]$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

gender and sibling age in the first analysis of variance, the path analysis clearly indicated that, for girls, bullying is mainly related to the quality of the sibling relationship and not to birth order. Therefore, these results confirm previous research indicating that it is usually older boys who are involved in bullying others (cf. Salmivalli *et al.*, 1996; Smith *et al.*, 1999). It is also likely that older sisters are reared to be responsible and protective towards their younger siblings, which may not be the case for older brothers, who may be more dominant in the sibling relationship and may maintain this role in daily interactions by means of negative and bullying behaviours. The hypothesis of rivalry and jealousy towards younger siblings implying a frequent use of aggressive and hostile behaviours (Volling, McElwain, & Miller, 2002) was only supported for older brothers. Gender may influence the asymmetry of sibling dyads with older brothers assuming dominating roles and older sisters probably assuming more teaching and supportive roles (Brody, Stoneman, & Mackinnon, 1982; McElwain & Volling, 2005). In conclusion, having an older sibling can be both a risk factor and a protective factor (depending on the sibling sex constellation) and future research may highlight this complex function.

In relation to the second goal, we found slightly different paths for boys and girls in the bullying models, but not in the victimization models. High levels of conflict and low levels of empathy were associated with sibling bullying for both boys and girls, while a high degree of energy was associated with sibling bullying only for boys. Therefore, it seems that being a bully at home is linked to sharing a conflictual, competitive, and hostile relationship with siblings, and to being unable to understand others' states of mind and feelings. These findings are in line with extant literature, in that empathy is often considered as a correlate of prosocial behaviour, and inversely associated with aggression (Eisenberg & Miller, 1987; Jolliffe & Farrington, 2004; Kaukiainen *et al.*, 1999)

and bullying (Endresen & Olweus, 2001; Gini, Albiero, Benelli, & Altoè, 2007). The sensibility towards others' feelings makes individuals able to anticipate the negative consequences of their actions. Conversely, those who lack these skills can easily hurt and offend the relationship partner (e.g., a brother or sister) without experiencing regret and negative feelings.

As regards the moderating effect of gender, only bullying boys were found to harass their younger siblings, and to report high levels of energy. We surmise that for boys, the need to dominate may be exacerbated by high levels of activity, thereby fuelling bullying behaviours.

The pattern for sibling victimization was largely similar for boys and girls – victimization was more common in the context of high levels of conflict and low levels of empathy. It is noteworthy that the same characteristics were also found for sibling bullies. On the one hand, this result supports previous findings, claiming that bullies and victims are not so different in emotions or in social-cognitive processes and hostile intent attributions (Camodeca & Goossens, 2005), and that victimization might be closely related to externalizing problems and aggression, and not only to shyness and withdrawal. On the other hand, it is likely that, especially in a home context, the roles of bully and victim are interchangeable, and are played by those boys and girls who are highly hostile and lacking in empathy. This could be a feature marking an important difference between sibling and peer bullying, where the roles of bully versus victim are more clearly defined except in the case of bully/victims (Olweus, 1993; Schwartz, Proctor, & Chien, 2001). Although one previous study (Wolke & Samara, 2004) addressed the double role of bully and victim among siblings, our study did not consider this aspect and further research is needed in this direction.

Regarding the relationship between sibling and peer contexts, sibling bullying and victimization were significantly associated with the corresponding behaviours in the peer context. According to social learning and other trans-context theories (Gass *et al.*, 2007; Patterson, 1986; 2002) several mechanisms can contribute to the development of peer difficulties and antisocial behaviour during childhood and adolescence. Specifically, Bank *et al.* (1996) and Slomkowski *et al.* (2001) have described two of these social processes. The first entails 'training in coercion' resulting from children's exposure to and imitation of sibling coercive interactions, often unchecked and reinforced in the context of parent–child relationships. The second process involves sibling collusion and co-participation in deviant activities especially during adolescence. In addition, children in homes marked by cycles of violence and hostility may lack the necessary supervision and the emotional bonds to be protected against deviant peers. Snyder, Bank, and Burraston (2005) suggested that these developmentally sequential social processes are compatible with one another and operate in a complementary fashion to increase risk and antisocial behaviour.

Although our study does not allow inferences on the direction of causality, similar processes can be assumed in the case of our data: being exposed to older siblings' attacks can represent a training context for learning aggressive and bullying behaviour, which in turn can reinforce the conflict and the level of violence and coercion of the sibling in the dyad, promoting cross-context use of these behaviours.

In summary, for both bullying and victimization, these results provide robust evidence that the type of experience children have with their siblings is related to the developmental tasks they face in school contexts. In light of this, we also tested the direct effects of personality characteristics on school bullying/victimization, and the indirect effects via sibling bullying/victimization. Regarding bullying, we found, only for

boys, significant direct effects of low friendliness and high emotional instability and indirect effects of energy. School victimization was associated with high levels of emotional instability for both genders, while no indirect effects were found.

These findings support the importance of considering personality variables together with relational micro-processes. As reported by Caspi and Shiner (2006), personality differences evoke behaviours from partners that contribute to relationship quality. For example, people who are more emotionally unstable and less friendly are more likely to escalate negative affect during conflict (Graziano, 2004) and more prone to express negative behaviours, which can affect the partner and be detrimental to the relationship (Gottman, 1994). This could partly explain our data: boys with low levels of friendliness and intense emotional instability may be particularly sensitive to conflictual contexts, and therefore can easily escalate towards bullying.

Friendliness could be particularly significant in peer contexts in which it is important to be accepted and to show cordiality and sociability, whereas siblings relationships might not require these qualities. Similarly, being emotionally stable may be more salient with peers than with siblings, because characteristics such as being anxious, having little control over behaviours and emotions and lacking skills in emotion regulation are all mainly relevant in larger and more formal social contexts. We could surmise that, in this respect, families provide a 'protected environment' in which negative personality traits are more accepted and do not necessarily lead to bullying, whereas being unfriendly or emotionally unstable is relevant for involvement in bullying at school, especially for boys.

In addition, for males, the dimension of emotional instability was associated with both bullying and victimization, supporting a recent proposition by Caspi *et al.* (2005), according to which emotional instability comprises two dimensions: anxious distress and anger distress. We could advance the hypothesis that the anger dimension accounts for involvement as a bully, whereas the anxious component is connected to victimization. However, we need to distinguish them more precisely in order to understand their effect on bully/victim dynamics.

Although sibling bullying and victimization were mainly associated with sibling relationship quality variables, and school bullying and victimization mainly with personality traits, we can surmise that siblings and family contexts are important in order to fully understand bullying and victimization in schools, and in order to have a more systemic and complex view of the bullying phenomenon we have to take into account family contexts. Siblings with specific personality characteristics and who experience high levels of conflict and low levels of empathy not sufficiently mitigated by warmth and support, can experience bullying and victimization in their family. We might speculate that this experience represents a training ground for aggressive behaviours, easily transferred to other social contexts such as among peers.

This study has a few limitations, such as a cross-sectional design and the use of only self-reports. Future studies are needed to overcome these limitations, investigating the relationship between personality variables and sibling and school bullying longitudinally, and obtaining judgments also from siblings, peers, or parents about bullying, personality variables, and quality of relationships. Furthermore, as previously noted, we did not consider the role of bully/victims, who may present different personality characteristics. Another limitation is the focus on the sibling subsystem in the family, without considering the role of other family members and the climate of the family. It would also be interesting to enlarge our investigation to more sibling subsystems, in cases of families with more than two children. Our investigation highlighted the

presence of an older versus younger sibling, but we do not know whether having additional brothers or sisters can change dynamics, conflicts, and alliances.

Despite the limitations, this work included strengths, notably the emphasis given to the importance of both family and peer contexts. The present findings clearly support a multi-contextual approach in understanding the development of bullying and victimization, and in providing guidelines for interventions. Implications for interventions seem particularly relevant here, as sibling relationships may serve as a 'training ground' for bullying, deviancy, and aggression via social learning processes or behavioural patterns which can be reinforced across contexts. Therefore, in order to prevent and reduce sibling bullying, parents should attend to sibling relationships, and attempt to mediate and reduce high levels of conflict, especially if they have older sons and if the sibling relationship appears negative and highly hostile. School teachers, on the other hand, will need to adopt a multi-contextual approach to the problem, a 'family – school' focus to understand bullying and to prevent its diffusion. Bullying can start at an early age and greater efforts should be made to prevent and to combat its growth at home in order to reduce bullying and victimization in school.

Acknowledgements

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