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Revisiting the whole-school approach to bullying: Really looking at the whole school

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Abstract

The whole-school approach to bullying prevention is predicated on the assumption that bullying is a systemic problem, and, by implication, that intervention must be directed at the entire school context rather than just at individual bullies and victims. Unfortunately, recent meta-analyses that have looked at various bullying programs from many countries have revealed that whole-school interventions designed to combat bullying have had limited success in reducing bullying. The purpose of the present study was to establish more clearly the precise aspects of school climate that are linked specifically to the problem of bullying. We used hierarchical linear modeling (HLM) to analyse school-level effects in a data set consisting of 18,222 students from across France. For physical and verbal/relational bullying, the final models respectively explain 6% and 16% of the within-school variance, and 48% and 9% of the between-school variance, significant between-school effects, with the climate variables of school security and the quality of student-teacher relationships emerging as the strongest predictors.

Keywords

bullies, bullying, prevention, school climate, student-teacher relationships, victims, whole-school

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Bullying has been defined as a form of aggressive behavior distinguished by repeated acts against weaker victims who cannot easily defend themselves (e.g. Lorion, Feinberg, Settanni, & Faunce, 2004; Olweus, 1993). Bullying behaviors include intentionally-harmful physical, relational, and social aggression in a context of power imbalance between the perpetrator and the target (e.g. Olweus, 1993). Bullying behaviors can be overt (such as direct physical or verbal aggression) or covert (such as secretly encouraging other children to pick on or ignore a specific classmate). Increasingly, researchers are also studying cyberbullying, a form of bullying made possible by technology such as email, text messaging, and social media (e.g. Li, 2006; Slonje & Smith, 2008; Wade & Beran, 2011). Some bullying behaviors can involve as few as two children, often labelled as the bully and the victim. Bullying can also take place within groups and can be witnessed or influenced by other children, bystanders, who are less directly involved (O'Connell, Pepler, & Craig, 1999). Its consequences are severe, especially for those victimized over long periods of time. Bullying is a complex psychosocial problem influenced by myriad variables. Both bullies and victims evidence poorer psychological adjustment than individuals not involved in bullying (Nabuzoka, Ronning, & Handegard, 2009; Nansel et al., 2001). Children who bully tend to be involved in alcohol consumption and smoking, to have poorer academic records than non-involved students, to display a strong need for dominance, and to show little empathy for their victims (Roberts & Morotti, 2000). They also tend to have a higher than normal risk for depression and suicide (e.g. Sourander, Helstelä, Helenius, & Piha, 2000).

Led by the pioneering research of Olweus (1978, 1991, 1993), research on bullying has flourished internationally during the last three decades. Rates of victimization among school children have been reported in numerous studies worldwide. In Olweus' study of 8- to 16-year-old Norwegian students, 9% were identified as victims, 7% as bullies, and 1.6% as both bully and victim (Olweus, 1993). In a US study involving over 15,000 middle-school students, 29.9% reported being moderately to frequently involved in bullying, 13% as bullies, 10.6% as victims, and 6.3% as bully/victims (Nansel et al., 2001). In a recent German study, teachers and peers identified 10% of children as bullies, 17.4% as victims, and 16.5% as bully/victims (Von Marées & Petermann, 2010). Data from Greece showed that 8.2% of middle-school children were identified as victims, 5.8% as bullies, and 1.1% as bully/victims (Sapouna, 2008). Similar rates of involvement in bullying have been reported in studies from countries such as Portugal (Pereira, Mendonça, Neto, Valente, & Smith, 2004), the UK (Whitney & Smith, 1993), Italy (Baldry & Farrington, 1999), Ireland (O'Moore, Kirkham, & Smith, 1997), Taiwan (Wei, Jonson-Reid, & Tsao, 2007), Australia (Rigby, 1997), and Canada (Pepler, Craig, Ziegler, & Charach, 1994). Despite substantial variation across different countries, regions, and research methodologies, Craig and Harel (2004) have reported in a review of international bullying research that roughly one in every three students indicates having been victimized at least once during the previous few months (rates varied between 12% and 69%).

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Gender differences have been obtained in childhood aggression and peer victimization research. Many studies have reported that boys have a greater tendency than girls to engage in aggressive and bullying behaviors (e.g. Li, 2006; Olweus, 1993; Sangwon, Kamphaus, Orpinas, & Kelder, 2010; Von Marées & Petermann, 2010; Whitney & Smith, 1993). According to Craig and Harel (2004), data from all the countries involved in their review suggest that boys are more likely than girls to bully others, but that boys and girls are victimized at about equal rates. Although boys are more involved in bullying overall, some studies have shown that girls were more involved than boys in indirect or relational bullying (Crick & Nelson, 2002; Rivers & Smith, 1994).

Bullying has been increasingly described as a group process that involves and is enabled by many players in addition to the individual bullies and victims (e.g. Craig, Pepler, & Blais, 2007; Salmivalli, 2010). Bullying usually occurs in the presence of peers, who can adopt a variety of roles, such as remaining neutral during a bullying incident, assisting and encouraging the bully, or aiding or consoling the victim (O'Connell et al., 1999; Oh & Hazler, 2009; Tani, Greenman, Schneider, & Fregoso, 2003). Unfortunately, this last role is rarely adopted by children: The actions of peers in the vicinity of bullying incidents typically support the bullying behavior rather than stop it (Oh & Hazler, 2009; Salmivalli, 1999). It has been argued within a social learning perspective that bullies are reinforced for their actions by the attention and encouragement they receive from the on-lookers and that peers are more likely to imitate rather than censure bullies' behavior because they see the rewards that accrue to the bullies (Craig, Pepler, & Atlas, 2000). The social processes underlying bullying are not, however, the exclusive domain of children. Adults in the immediate environment (e.g. teachers) can also have an effect on the bullying process by, for example, being vigilant and intervening when appropriate or, alternatively, overlooking or ignoring bullying when it occurs.

The fact that bullying is very much a group process bolsters the argument for a systemic approach to its correction. Research by Craig et al. (2007) has shown that most students who are victimized feel a sense of helplessness that increases over time. According to the authors, these students need adult help at school in responding to the bullying, including support to the victims, and the modelling of appropriate social behavior. The whole-school approach is predicated on the assumption that bullying is a systemic problem, and, by implication, an intervention must be directed at the entire school context rather than just at individual bullies and victims. During the past two decades, there have been considerable international efforts to implement whole-school interventions to prevent or reduce bullying behaviors. Whole-school bullying programs have been implemented and studied in countries such as Norway (Olweus, 1991), the UK (Smith, 1997; Tattum, 1997), Italy (Gini, 2004), and Finland (Salmivalli, Kärnä, & Poskiparta, 2010). Despite Olweus' early success, recent meta-analyses have revealed that whole-school interventions designed to combat bullying have had very limited success in reducing bullying although they are sometimes useful in increasing understanding and

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awareness of the problem (Ferguson, San Miguel, Kilburn & Sanchez, 2007; Merrell, Gueldner, Ross & Isava, 2008; Rigby, 2004; Smith, Schneider, Smith & Ananiadou, 2004).

The term 'school climate' is used in a very limited sense in the literature discussing the whole-school approach to bullying; the expression usually refers to the school's policy-making regarding bullying itself and its consistent implementation of the policy. The basic intent is to make the school 'bullyproof' by having the school personnel articulate and implement a clear policy against bullying behavior; some authors refer to this as the *direct approach* to anti-bullying intervention (e.g. Galloway & Roland, 2004). The intent of the direct approach is, essentially, to create a school in which bullying is not tolerated, where there is no payoff for bullying, regardless of which staff member is handling it or whether it occurs in the classroom, on the playground, on the way to school or back home. It is not impossible that the dramatic consequences of bullying drive school personnel to a level of communication and cooperation specific to the issue of student violence, a level of cohesion that is not applied to other aspects of the functioning of the school. However, there is also reason to believe that high-quality collegial communication, togetherness and mutual respect are required in order to agree on a clear policy, to communicate it convincingly to parents and children, and to implement it with the consistency that makes it meaningful.

Several theoretical perspectives suggest even more global ways of conceptualizing the effects of general school climate on bully-victim problems. Espelage and Swearer (2004, 2010) have written extensively on the importance of understanding bullying from a social-ecological framework. Pepler, Craig, and colleagues (Craig et al., 2007; Pepler, Craig, Jiang, & Connolly, 2008; Pepler, Jiang, Craig, & Connolly, 2008) describe bullying as a relationship problem in which many actors, adult and children, play a part. From those perspectives, a school characterized by a positive atmosphere, with cohesive interpersonal relationships at all levels, where the teaching staff believe in the students' potential, where academics are taken seriously and where students feel a sense of belonging is a school less prone to bullying. The general upkeep and physical cleanliness of the school grounds may also contribute to more positive student behaviors (Mcloughlin, Kubick, & Lewis, 2002). The present research is designed to evaluate this more global perspective on school climate and bullying.

The effects of school climate on pupil behavior have been compared to the effects of personality on an individual's peers. Just as people with jovial temperaments energize those around them, a positive, cheerful environment has a positive impact on the people who live and work in it (Orpinas & Horne, 2006). Recent research by Zullig, Huebner, and Patton (2011) has shown that school climate variables, such as positive student-teacher relationships, school connectedness, academic support, order and discipline, and academic satisfaction, significantly predict students' school satisfaction. The notion that school climate is linked with pupil attitude and behavior is by no means new, although there has been very little research focusing specifically on differences between schools in school climate,

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broadly conceived, as antecedents of bullying and victimization. Seminal work in this area was conducted in the UK, especially the research by Rutter and colleagues (Rutter, Maughan, Mortimore, Ouston, & Smith, 1979; Mortimore, 1995) showing that school climate makes a difference in the behavior and achievement of pupils even in the most disadvantaged areas of central London. These studies demonstrate that at both the elementary and high-school level, student outcome (including behavior, achievement, and attendance) reflects in a comprehensive manner the quality of the climate of the individual school in terms of communication, togetherness, mutual support, orderliness, 'business-like' emphasis on academics, and care of premises.

Lorion et al. (2004) emphasize the role of teachers in regulating the level of bully-victim problems among their pupils, speculating that teacher behaviors are more important in 'bullyproofing' than an official school policy. Many of the students who participated in their study felt that students who bully are imitating teachers who bully students or even teachers who bully their teaching colleagues. In a more positive work climate, teachers who are not under stress feel more empowered to intervene in bullying incidents, modelling appropriate anti-bullying behaviors for their students. Orpinas and Horne (2006) emphasize several other aspects of the teacher's role in bullying prevention, especially skill in classroom management and in teaching subject matter as well as maintaining high expectations of students. They also underscore the teacher's responsibility to supervise their students at school. They advise teachers to invest in positive relationships with their students and in making their subject matter interesting. Providing some further empirical support for these contentions are the results of a large ($n = 4{,}331$ pupils) study conducted with participants from mid-elementary school through early adolescence by Flaspohler, Elfstrom, Vanderzee, Sink, and Birchmeier (2009), who found that pupils who indicated low levels of support by teachers and peers reported that they were more frequently the victims of bullies. These pupils also reported low levels of satisfaction with life in general. Another study by RasKauskas, Gregory, Harvey, Rifshana, and Evans (2010) found that bullies and bully/victims had the lowest connection to school and the poorest relationships with their teachers.

Aside from the important role of teachers, Orpinas and Horne (2006) emphasize the leadership provided by the school administration, including clarity of policies, provision for staff input and accountability. The strength of the school's academic program is also thought to be linked with the extent of bully-victim problems. As in Rutter et al.'s (1979) research, Orpinas and Horne argue that the enthusiasm and dedication of school staff is reflected in the aesthetic qualities of the classrooms and the school building. There has also been some exploration of the implications of pupils' attachment to the school in relation to bullying. Students with low attachment and commitment to school, for instance, have been shown to display more frequent aggressive behaviors in school than students with a stronger sense of bonding with their school (Farrington, 1991; Jenkins, 1997). In a study involving over 500 early adolescents in the US Midwest, Cunningham (2007) found that

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bullies were characterized by weak emotional attachment to school. Bullies also perceived that teachers will tolerate bullying. Working with over 5,000 early adolescents in the US, Meyer-Adams and Conner (2008) found that liking school and being motivated at school were negative correlates of self-reported victimization by bullies. Totura et al. (2009) found that school-context effects, especially sense of belongingness and perceptions of teacher monitoring of pupil behavior, interacted with individual risk factors in differentiating bullies and victims from the general school population. Importantly, these studies, like most others, focused on the attachment of individual pupils, not on differences among schools.

In a study of 2,327 students within nine middle schools and ten high schools, Wilson (2004) found small but significant links between aggression/victimization and school climate, as defined by variables such as feelings and attitudes toward school, knowledge and fairness of discipline policies, student-teacher relationships, and student-peer relationships. There have been only a few attempts at applying a global perspective on school climate to anti-bullying interventions. Galloway and Roland (2004) maintain that short-term interventions focusing narrowly on bullying are ineffective because they do not promote positive bonds among students. They conducted a preliminary but promising intervention in which teachers were offered professional development in the following areas: Quality of care for individual pupils; implementation of routines and maintaining a focus on academic tasks; monitoring students' behavior and progress; and intervening appropriately when problems occur. Pupils in the schools receiving the intervention reported an 18% reduction in experiences of being victimized by bullies. A more global perspective on school climate has also inspired intervention programs in Spain, particularly, where they are reported to lead to an overall decrease in student reports of bullying. However, the Spanish intervention was not specified clearly enough to establish where to begin: Schools could chose whatever aspect of school climate they wished to work on from a menu with a scope ranging from values education to problem solving to social skills training to parent training to the traditional elements of 'bullyproofing' (Fernández, 2001; Ortega, 1997).

Much less bullying research, both descriptive and applied, has been conducted in neighboring France, where the present study was conducted despite the fact that school violence has been the subject of widespread concern in France as in most other Western countries. Thus, little is known about the specific rates of bullying and victimization in France or about the characteristics of individual French pupils involved in bullying incidents. Nonetheless, systematic data about school violence in general have been collected on a national level since 1994 (Charlot & Emin, 1997; Ministère de l'Éducation Nationale, 2003). Bullying between pupils has not been a central focus of these surveys, which also targeted vandalism and attacks against school personnel. The nationwide surveys revealed that 70% of the incidents of school violence occur at the level of the *collège*, which spans the four years immediately following primary school (i.e. the approximate equivalent of the middle school or junior high school in North America). Most of the acts of violence were found to occur in a small minority of the schools: 50% of the incidents in

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only 10% of the schools, fully one-third in only 5% of the schools (Ministère de l'Éducation Nationale, 2003). These schools are primarily located in underprivileged neighborhoods. Of the incidents reported, 29.3% are severe acts of violence against persons conducted without using a weapon, 23% represent some form of verbal aggression, and 10.9% consist of actual or attempted theft. Rates for all other incidents, including acts of violence with a weapon, are below 5%. These percentages were found to remain very stable over successive school years (Ministère de l'Éducation Nationale, 2003). School principals have reported that 36% of the incidents involve violence between pupils (Ministère de l'Éducation Nationale, 2008), with 8% characterized by verbal aggression. Given the fact that these statistics may be underestimates that do not include incidents not known to the principal, one of the objectives of the present study was to complement the national surveys completed by school personnel with data obtained directly from pupils.

The main purpose of the present study was to identify the precise aspects of school climate that are linked specifically to the problem of bullying. Importantly, the present study features statistical separation of differences at the school level from individual differences among pupils. This provides a more appropriate and rigorous test of the effects of school climate on bully-victim problems than can be accrued from most of the studies we reviewed earlier. We hypothesized that children in schools with more favorable social climates (including stronger student-teacher relationships, better sense of school bonding, and greater staff collaboration) would report fewer bullying episodes.

Method

Participants

The participants were 18,222 students (8,741 boys and 9,481 girls, mean age of 15 years and 4 months, 85% Caucasian with French as first language), 701 teachers, and 478 principals from a nationally representative sample of 478 schools in France. The data obtained from respondents who provided incomplete data (approximately 4% of our sample) were removed by listwise deletion. The participants were part of a larger study of middle-school students' social and emotional experiences by the French Ministry of Education (Dauphin & Trosseille, 2004; Mallet, 2004).

Procedure

Participants were randomly chosen amongst schools that were also randomly chosen from each school district of France. Because of differing school sizes, availability of resources, and problems with data collection in some schools, number of students per school varied. Informed consent was obtained prior to data collection, which took place in the classroom. The students and their parents were informed

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about the purpose of the study before the data collection and they could refuse to participate. Students had up to two hours to answer all questions privately at their desks. They were assured confidentiality of their answers. There were 124 students per school on average (ranging between 11 and 467). Although we would have preferred a higher number of students and teachers per school, hierarchical modeling can estimate models with as low as one participant per school by weighting each school's contribution to the model according to the number of students (Bryk & Raudenbush, 1992).

Measures

Physical and verbal/relational bullying. All variables in this study were measured using a questionnaire developed by Dauphin and Trosseille (2004) for a national study of a random sample of French children, as described in the previous section. Items were averaged for each variable that comprised more than one item. Categories of items were deemed by the authors to be relevant descriptions of the bullying phenomenon in French schools. Students answered three items describing verbal and relational bullying ('Other students have insulted me verbally', 'I have been rejected, isolated or excluded by a group of students', and, 'Other students have said bad things about me behind my back', $\alpha = 0.72$) and three items describing physical bullying ('Other students have physically assaulted me, for example, have pushed me or knocked me down', 'Other students have threatened to hurt me if I did not give them something that they wanted, such as money or objects', and 'Other students have stolen or broken my things', $\alpha = 0.70$) on a five-point scale ranging from 1 (never) to 5 (more than ten times this year). The mean for verbal/relational bullying was 2.04 (SD = 0.85) and the mean for physical bullying was 1.27 (SD = 0.52).

Social climate of the school. Some items assessing the quality of a school's social climate were answered by students and others were answered by teachers. Table 1 presents the descriptive statistics for all school-level variables. The rating scale for each of the items varied from 1 (not at all) to 5 (absolutely). The variable safe school comprised three items that measured the students' perception of the safety of their schools (e.g. 'In my school, I feel safe from outside dangers', $\alpha = 0\ .95$). The variable school bonding comprised five items that measured the quality of students' emotional attachment to their school (e.g. 'I really like being in my school', $\alpha = 0.94$). The variable academic press comprised three items that measured students' motivation for school work (e.g. 'When not in school, most of my time is devoted to school work', $\alpha = 0.79$). Finally, the variable student-teacher relationships comprised five items that measured the quality of student-teacher relationships (e.g. 'In class, students are not allowed to express ideas that are different from those of their teachers', reverse coding, $\alpha = 0.89$).

The variables clean school, staff collaboration and behavior problems in class were obtained from factor analyses conducted on items answered by the teachers.

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Table 1. Descriptive statistics for school-level variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Safe school[a]	1.00												
2. School bonding[a]	0.37***	1.00											
3. Academic press[a]	0.20***	0.67***	1.00										
4. Student-teacher relationships[a]	0.47***	0.49***	0.33***	1.00									
5. School size	−0.12**	0.08	0.07	−0.33***	1.00								
6. School mean SES	0.32***	−0.05	−0.08	−0.12**	0.17***	1.00							
7. French as first language (%)	0.21***	−0.19***	−0.14**	0.15**	−0.04	0.28***	1.00						
8. Academically on track (%)	0.18***	0.05	0.03	−0.05	0.19***	0.25***	0.10*	1.00					
9. Clean school	0.47***	0.27***	0.17***	0.31***	−0.11*	−0.03	0.05	0.15**	1.00				
10. Disciplinary climate	0.33***	0.24***	0.08	0.21***	0.07	0.10*	0.01	0.21***	0.28***	1.00			
11. Staff collaboration	0.19***	0.19***	0.11*	0.20***	0.01	−0.02	0.15**	0.11*	0.15**	0.31***	1.00		
12. Behavior problems in class	−0.36***	−0.14**	−0.16***	−0.31***	0.28***	−0.13*	−0.20***	−0.28***	−0.30***	−0.27***	−0.12**	1.00	
13. School mean academic achievement	0.44***	0.12**	−0.03	0.04	0.25***	0.55***	0.36***	0.45***	0.24***	0.26***	0.09*	−0.30***	1.00
Mean	2.93	3.01	2.51	3.34	124.06	−0.02	0.93	0.68	3.11	1.93	2.39	1.55	250.32
Standard Deviation	0.42	0.27	0.20	0.28	61.68	0.18	0.08	0.14	0.47	0.22	0.27	0.27	19.55
Minimum	1.88	2.00	1.96	2.53	11.00	−0.52	0.48	0.19	1.50	1.29	1.78	1.00	187.07
Maximum	4.30	3.89	3.13	4.27	467.00	0.37	1.00	1.00	4.00	2.33	3.23	2.29	313.53

Note: [a]Aggregated school means for the dependent variables. *N* is 474 schools.
$^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

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The variable clean school comprised two items that measured teachers' satisfaction with the cleanliness of their school [e.g. 'How satisfied are you with the upkeep and cleanliness of the school in general?' ($\alpha = 0.81$)]. The rating scale for each of the items varied from 1 (not satisfied) to 5 (very satisfied). The variable staff collaboration comprised six items that measured to what extent teachers worked well together [e.g. 'How often do teachers at your school work together as a team?' ($\alpha = 0.87$)]. The rating scale for each of the items varied from 1 (never) to 4 (very frequently). The variable behavior problems in class comprised ten items that measured the amount of behavior problems in each teacher's class [e.g. 'How often has there been fighting in your class this year?' ($\alpha = 0.91$)]. The rating scale for each of the items varied from 1 (never) to 4 (very frequently).

The variable academically on track consisted of the percentage of students per school who were considered by their school principal to be at their expected level academically.

Control variables. Some items were considered individual predictors of bullying/victimization and were used as control variables. Table 2 presents the descriptive statistics for all individual-level variables.

Socio-economic status (SES) was estimated from school principals' account of percentage of students in their school who come from mid- to high-income families. In France, asking children or parents to report their occupation or level of income is a very sensitive matter to which there would be objections. Such an attempt would certainly result in a large percentage of missing data.

The variable schoolwork anxiety comprised three items on a five-point rating scale ranging from 1 (not at all) to 5 (absolutely) that measured students' anxiety towards school work and tests [e.g. 'I feel nervous when taking an important test in class' ($\alpha = 0.74$)].

The variable academic difficulties comprised four items on a five-point rating scale ranging from 1 (not at all) to 5 (absolutely) that measured students' perceived difficulties with school work [e.g. 'I often get bad grades in class' ($\alpha = 0.77$)].

The variable friendship quality comprised 16 items on four factors for which children responded about their best friend: (a) Willingness to help [e.g. If you needed help with homework, you would not hesitate to call him/her ($\alpha = 0.83$)]; (b) Closeness [e.g. If she/he had been away for a long time, you would be eager to see her/him again ($\alpha = 0.82$)]; (c) Protection [e.g. If other students tried to cause you harm, he/she would protect you ($\alpha = 0.82$)]; and (d) Conflict [e.g. You and your friend have arguments ($\alpha = 0.89$)]. The rating scale for each of the items varied from 1 (not at all) to 5 (absolutely). This measure was adapted from Mallet and Vrignaud (2000) and validated in a study of over 1,000 French 15-year-old students (Mallet, 2002). As recommended by Savin-Williams and Berndt (1990) and Furman (1996), items were grouped into two dimensions: (a) positive friendship quality ($\alpha = 0.90$) and (b) conflict ($\alpha = 0.89$).

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Table 2. Descriptive statistics for individual-level variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Female	1.00											
2. SES	−0.01	1.00										
3. Schoolwork anxiety	0.19***	−0.01	1.00									
4. Academic difficulties	−0.01	−0.02	0.16***	1.00								
5. Friendship quality	0.37***	0.02	0.15***	0.04***	1.00							
6. Friendship conflict	0.00	0.01	0.08***	0.04***	−0.10***	1.00						
7. Social anxiety	0.18***	0.07***	0.31***	−0.05***	0.07***	0.11***	1.00					
8. Peer acceptance	0.08***	−0.01	−0.06***	−0.09***	0.23***	−0.04***	−0.20***	1.00				
9. French as first language	0.04***	0.09***	0.00	−0.02**	0.03***	−0.05***	0.05***	−0.04***	1.00			
10. Academically on track	0.07***	0.08***	−0.04***	−0.36***	0.05***	−0.01	0.09***	−0.02**	0.08***	1.00		
11. Impulsivity	−0.04***	0.02**	0.19***	0.24***	−0.01	0.19***	0.23***	−0.01	−0.05***	−0.07***	1.00	
12. Academic achievement	0.03***	0.24***	−0.13***	−0.48***	0.03***	−0.04***	0.10***	−0.04***	0.13***	0.37***	−0.10***	1.00
Mean	0.53	0.63	9.13	11.19	14.85	9.06	9.42	6.64	0.93	0.69	2.58	250.32
Standard Deviation	0.50	0.18	3.28	4.09	3.39	4.24	4.85	1.89	0.26	0.46	0.91	49.69
Minimum	0.00	0.11	3.00	4.00	4.00	3.00	4.00	4.00	0.00	0.00	4.00	75.34
Maximum	1.00	1.00	19.00	36.00	36.00	36.00	20.00	20.00	1.00	1.00	20.00	438.91

Note: N is 15,188 students.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

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The variable social anxiety comprised four items on a five-point rating scale ranging from 1 (not at all) to 5 (absolutely) [e.g. I am afraid that other students don't like me ($\alpha = 0.92$)].

The variable peer acceptance comprised two items on a five-point rating scale ranging from 1 (not at all) to 5 (absolutely) that measured students' perceived level of acceptance by their peers [e.g. Other students want me to participate in games or activities with them ($\alpha = 0.71$)].

The variable impulsivity was adapted from Eysenck and Eysenck's (1977) Imp_N factor, which represents an individual's failure to plan actions in advance. This scale comprised four items on a five-point rating scale ranging from 1 (not at all) to 5 (absolutely) [e.g. I am often in trouble because of having done something without thinking ($\alpha = 0.77$)].

The variable academic achievement consisted of each student's results on nationally administered standardized tests.

Data analysis

Hierarchical Linear Modelling. We used hierarchical linear modelling (HLM) to account for the clustered nature of the sample, with students nested within schools (Raudenbush & Bryk, 2002). As a first step, our outcome variables (physical and verbal/relational bullying) were included in the model without any predictors (independent variables). This produced a null model that partitioned the within-school and between-school variance for both physical and verbal/relational bullying. We then added individual-level variables to the model, first separately to determine the absolute effect of each variable on the outcome variables, and then in combination to determine each variable's relative effect. Finally, we added school-level variables in the same way to obtain their absolute and relative effects.

In order to facilitate cross-variable and cross-study comparisons, all non-dichotomous variables were standardized as Z-scores with means of 0 and Standard Deviations (SD) of 1 before conducting the HLM analyses. Thus, the standardized beta coefficients indicated the relative change in the outcome variables that was associated with a one-unit change in the predictors, and were considered measures of effect size (Hedges, 2008). Only variables with statistically significant relative effects were included in the final models.

Results

Although there were differences between schools in reported physical and verbal/relational bullying, between-school differences accounted for only 2% of the variance for both outcome variables, as is very common in HLM analyses (e.g. Larochette, Murphy, & Craig, 2010; LeBlanc, Swisher, Vitaro, & Tremblay, 2008; Ma & Klinger, 2000; McClelland et al., 2007). Individual- and school-level variables were then added to the models to explain within- and between-school variance (see Table 3). For physical bullying, the final model explains 6% of the

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Table 3. HLM effects of student & school variables on physical and verbal/relational bullying

	Physical bullying		Verbal/relational bullying	
Variables	Absolute effect	Relative effect	Absolute effect	Relative effect
Student				
Female	−0.24***(0.02)	−0.26***(0.02)	0.04*(0.02)	0.04**(0.02)
SES	−0.01(0.01)	—	0.01(0.01)	—
Schoolwork anxiety	0.07***(0.01)	0.04***(0.01)	0.14***(0.01)	0.06***(0.01)
Academic difficulties	0.05***(0.01)	—	−0.03***(0.01)	−0.06***(0.01)
Friendship quality	−0.09***(0.01)	−0.02**(0.01)	−0.06***(0.01)	−0.03**(0.01)
Friendship conflict	0.10***(0.01)	0.06***(0.01)	0.16***(0.01)	0.10***(0.01)
Social anxiety	0.10***(0.01)	0.07***(0.01)	0.28***(0.01)	0.18***(0.01)
Peer acceptance	−0.09***(0.01)	−0.08***(0.01)	−0.23***(0.01)	−0.17***(0.01)
French as first language	−0.23***(0.03)	−0.17***(0.03)	0.00(0.03)	—
Academically on track	−0.03(0.02)	—	0.11***(0.02)	—
Impulsivity	0.16***(0.01)	0.11***(0.01)	0.21***(0.01)	0.16***(0.01)
Academic achievement	−0.07***(0.01)	−0.05***(0.01)	0.09***(0.01)	0.06***(0.01)
School				
Student-teacher relationships	−0.16***(0.03)	−0.15***(0.03)	−0.15***(0.03)	−0.15***(0.03)
Safe school	−0.17***(0.03)	−0.16***(0.03)	−0.13***(0.03)	−0.08*(0.04)
School bonding	−0.07*(0.04)	—	−0.07*(0.04)	—
Academic press	−0.02(0.04)	—	−0.10**(0.04)	—
School size	0.01(0.01)	—	−0.01(0.01)	—
School mean SES	−0.01(0.01)	—	−0.01(0.01)	—
French as first language (%)	−0.03*(0.01)	—	−0.01(0.01)	—
Academically on track (%)	−0.04***(0.01)	−0.03**(0.01)	−0.03**(0.01)	—
Clean school	−0.03*(0.02)	—	0.00(0.01)	—
Staff collaboration	−0.03*(0.02)	—	−0.01(0.01)	—
Behavior problems in class	0.03*(0.02)	—	−0.02(0.01)	—
Mean academic achievement	−0.09**(0.03)	—	−0.12***(0.03)	−0.08*(0.04)

Note: Relative effects are estimated based on the final, simplified models. Dashes indicate nonsignificant relative effects. Values in parentheses are the corresponding standard errors for the effect sizes. Pairing the independent variable of school safety with the dependent variable of victimization may be somewhat tautological. Therefore, we repeated the analysis without that independent variable; the change in the results was infinitesimal.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

within-school variance and 48% of the between-school variance, a significant between-school effect ($x^2 = 682.56$, $p < 0.001$). For verbal/relational bullying, the final model explains 16% of the within-school variance and 9% of the between-school variance, also a significant between-school effect ($x^2 = 832.14$, $p < 0.001$).

Table 3 summarizes the absolute and relative effects of each student and school predictor of physical and verbal/relational bullying. The first model examined

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within-school differences by including all of the student predictors. As expected, gender differences were obtained for both verbal/relational and physical bullying. Girls were significantly less involved in physical bullying, but more involved in verbal/relational bullying, than boys. SES was not significantly related to bullying/victimization. However, students who did not have French as their first language reported being victims of physical bullying to a greater extent than others. Students reporting greater social and academic anxiety, impulsivity, and friendship conflict also reported being victims of physical and verbal/relational bullying to a larger extent than other participants. Peer acceptance and positive friendship quality were negatively associated with both verbal/relational and physical bullying. Finally, students with higher academic achievement reported less physical victimization and more verbal/relational victimization than their lower achieving schoolmates.

We then examined the importance of social-climate and other school-level variables in the prediction of between-school variation in verbal/relational and physical bullying, after controlling for individual-level variables. As seen in Table 3, the variables that emerged as significant in the explanation of between-school variance in physical bullying are school security, the quality of student-teacher relationships, and the percentage of academically-on-track students. For verbal/relational bullying, school security, the quality of student-teacher relationships, and mean academic achievement had significant effect sizes. Globally, there was less bullying in schools that are perceived as safer, that have higher achieving students, and that have more positive student-teacher relationships.

The gender differences in both verbal/relational and physical bullying that were found in the present study are similar to other findings in the international bullying literature (e.g. Craig, 1998; Crick & Nelson, 2002; Olweus, 1991; Sapouna, 2008; Von Marées & Petermann, 2010). Because we obtained gender differences, we analysed the interaction of gender with school-level variables in additional analyses. We also performed additional analyses to see whether school-level interactions (e.g. the interaction between teacher-student relationships and mean student achievement) would significantly predict verbal/relational or physical bullying. None of these interaction terms were statistically significant.

Discussion

This investigation of a large, nationally representative sample of French students' academic and social experiences within their schools allows an examination of the impact of individual- and school-level variables on the incidence of verbal/relational and physical bullying. Consistent with previous conceptualizations of bullying as being imbedded within a larger relational or social-ecological perspective (e.g. Espelage & Swearer, 2004, 2010; Pepler, Craig, et al., 2008; Pepler, Jiang, et al., 2008), our results provide some evidence in support of a link between positive social climate within schools and reduced incidence of bullying behaviors. More specifically, there are fewer bullying episodes among students in schools that are

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described as having more positive student-teacher relationships. Although school bonding was a significant absolute predictor of both verbal/relational and physical bullying, it did not remain significant in the final model. Globally, these findings are also consistent with the work of Rutter et al. (1979), among others, who found that positive school climate tends to be associated with greater student academic and behavioral outcome.

Our findings are also consistent with Lorion et al.'s (2004) conclusions that teacher behaviors are instrumental in the fight against bullying, and with RasKauskas et al.'s (2010) findings that student-teacher relationships are important predictors of bullying behavior. In a previous study by Crothers, Kolbert, and Barker (2006), students reported that their preferred anti-bullying intervention featured teacher involvement. Although some promising intervention programs, such as the Finnish KiVa program (Salmivali et al., 2010), address the importance of social relationships within schools and include active participation by teachers in implementing bullying-prevention strategies (for example, classroom discussions, short films related to bullying, group work and role-play exercises led by teachers), we feel that bullying prevention programs would benefit from greater focus on the quality of student-teacher interactions in general.

School psychologists can be instrumental in fostering positive school climate and they should be proactive in this endeavor (Lehr & Christenson, 2002). We encourage school psychologists to visit the classrooms of the schools in which they work in order to derive an understanding of the climate of the schools in which they work, which cannot be achieved completely by working with individual pupils. The school psychologist can also play an active role in disseminating and evaluating bullying-prevention programs and interventions aimed at improving school climate. In a recent survey of California school psychologists' preferred intervention strategies to reduce bullying behaviors (O'Malley, 2009), whole-school 'no tolerance' policies, effective communication, and school climate interventions were endorsed by a majority of school psychologists. Specific interventions that were recommended included incidental teaching of social behavior and classroom social skills training designed to teach positive interaction skills. In at least one study (Hertz-Lazarowitz & Od-Cohen, 1992), classroom and small-group discussions facilitated by school psychologists have been shown to increase positive social climate within the classroom.

Not surprisingly and consistent with previous findings (Boulton, Smith, & Cowie, 2010; Hawker & Boulton, 2000; Pellegrini, Bartini, & Brooks, 1999), our results also demonstrate that students who are well accepted by their peers and who have friendships of higher quality are victimized less frequently than students with better social standing. Conversely, students who reported greater impulsivity, anxiety and friendship conflict also reported greater verbal/relational and physical victimization. Furthermore, our findings provide evidence that higher achieving students are at greater risk of being victims of verbal/relational bullying. Higher achieving students may be particularly at risk in lower achieving schools in which students reported more overall verbal/relational bullying than in higher

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achieving schools. In Peterson and Ray's (2006) study, 67% of gifted 8th-graders reported having been bullied, mostly verbally. Recent research by Rothon, Head, Klineberg, and Stansfeld (2010) suggests that social support from family and friends help protect bullied adolescents against declining academic achievement, but not against mental health issues. Unexpectedly, social climate did not explain as much of the variance in verbal/relational bullying in our study as it did for physical bullying. Further research should attempt to ascertain protective factors against verbal/relational bullying for high achieving students in lower achieving schools.

Limitations

Perhaps because school bullying is such a widespread phenomenon, there was greater variability in the reporting of bullying incidents within individual schools than between schools. Between-school variance accounted for only 2% of the variance in both verbal/relational and physical bullying. Although it is not uncommon to come across greater variance within schools when partitioning between- and within-school variance using hierarchical linear modeling, social climate differences between schools in this study only account for a small portion of the total variance in bullying behaviors. Many other individual- and family-level variables, some measured in this study and some not, remain important predictors of bullying within schools.

Staff collaboration, as reported by the teachers, negatively predicted physical bullying, but the effect was small. Data from teachers may have been more useful with a greater number of respondents. One limitation of this study is that most variables were gathered in self-report format and answered by the students themselves. In addition, the measure of friendship was based on one-sided nominations and may not reflect mutual and reciprocal ties between the students. Despite these limitations, it is our belief that students are well-placed to answer honestly about the social climate of their schools and about their experiences with bullying, which often takes place when teachers are not looking.

Conclusion

Results from this study add to a growing body of international research showing that positive social climate within schools is a protective factor against bullying. School-based initiatives developed to reduce bullying behaviors should incorporate interventions designed to promote positive social interactions between students and teachers in particular, and between all members of the school community.

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