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Predictors of Traditional and Cyber-Bullying Victimization: A Longitudinal Study of Australian Secondary School Students

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Abstract

The purpose of the present article is to compare the individual, peer, family, and school risk and protective factors for both traditional and cyber-bullying victimization. This article draws on data from 673 students from Victoria, Australia, to examine Grade 7 (aged 12-13 years) predictors of traditional and cyber-bullying victimization in Grade 9 (aged 14-15 years). Participants completed a modified version of the *Communities That Care* youth survey. There were few similarities and important differences in the predictors of traditional and cyber-bullying victimization. For Grade 9 cyber-bullying victimization, in the fully adjusted model, having been a victim of traditional bullying in Grade 7 and emotional control in Grade 7 were predictors. For Grade 9 traditional bullying victimization, predictors were Grade 7 traditional bullying victimization, association with antisocial peers, and family conflict, with family attachment and emotional control marginally statistically significant. The use of evidence-based bullying prevention programs is supported to reduce experiences of both traditional and cyber-bullying

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victimization, as is the implementation of programs to assist students to regulate their emotions effectively. In addition, traditional bullying victimization may be reduced by addressing association with antisocial friends, family conflict, and bonding to families.

Keywords
bullying, cyber-bullying, adolescents, predictors, longitudinal study

Traditional (non-technology based) and cyber-bullying victimization are serious concerns world-wide. These concerns arise due, in part, to the extensive negative impact of bullying victimization on the psychological, emotional, and social health of victims (Spears, Slee, Owens, & Johnson, 2009). In addition, the rates of bullying victimization are high. A U.S. national survey showed that 32% of students aged 12 to 18 years reported being bullied at school, with rates of cyber-bullying victimization much lower (3.7%; National Center for Educational Statistics: Institute of Education Sciences, 2011). A national Australian study of 8- to 14-year-olds found that rates of being bullied including cyber-bullying ranged from nearly 24% to 29%, with 6% of boys and 9% of girls in Grade 9 cyber-bullied (Cross et al., 2009). For Grade 9 students in Victoria, Australia, rates of traditional bullying and cyber-bullying victimization were 28% and 14%, respectively (Hemphill, Tollit, & Kotevski, 2012). While it is important to know the extent of traditional and cyber-bullying victimization, another vital area of research is to examine the factors that influence the development of victimization. There are a number of studies of the longitudinal predictors of traditional bullying victimization, demonstrating a range of student, family, peer group, and school predictors. Research on predictors of the relatively new phenomenon of cyber-bullying victimization is growing. To date, there have been few studies that contrast the longitudinal predictors of traditional and cyber-bullying victimization; the present study seeks to fill this gap. Such knowledge can inform the development of prevention strategies for both traditional and cyber-bullying victimization.

Traditional bullying has three main features: (a) aggressive acts by a perpetrator(s) toward a victim with intent to harm, (b) these acts are repeated over time, and (c) there is a power imbalance between perpetrators and victims, with victims often being unable to easily defend themselves from perpetrators (Olweus, 1993). Cyber-bullying can be defined as "any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict

harm or discomfort on others" (Tokunaga, 2010, p. 278). Hence, cyber-bullying has been described by some as an extension of traditional bullying, with similar defining features to traditional bullying. Traditional and cyber-bullying can be covert (e.g., exclusion, spreading rumors) or overt (e.g., verbal and physical abuse) in nature.

The unique features of cyber-bullying compared with traditional bullying are the ability of the perpetrator to remain anonymous (Patchin & Hinduja, 2006) and to bully large numbers of people relatively effortlessly, irrespective of the time of day or geographic location (Kowalski, Giumetti, Schroeder, & Lattanner, 2014). Through cyber-bullying, it is also possible for the perpetrator to reach a much larger audience online than in the school setting (Kowalski et al., 2014). Some students who are bullied in cyber-space also experience traditional bullying (Hemphill et al., 2012; Katzer, Fetchenhauer, & Belschak, 2009).

The advent of cyber-bullying has focused attention on the challenges of measuring bullying, particularly when trying to capture the repetitious nature and power imbalances reflected in current definitions (Dooley, Pyzalski, & Cross, 2009; Grigg, 2010). Menesini et al. (2012) concluded that intentionality and power imbalance were essential features of cyber-bullying; however, it is unclear whether repetition is a core feature of cyber-bullying.

Predictors of Traditional and Cyber-Bullying Victimization

The authors know of only two studies that have compared the predictors of cyber-bullying and traditional bullying victimization (Casas, Del Rey, & Ortega-Ruiz, 2013; Katzer et al., 2009). Casas et al. (2013) showed that empathy and perceived school climate were predictors of both cyber-bullying and traditional bullying. Katzer et al. (2009) reported similarities (e.g., negative self-concept, characteristics of the parent–child relationship) and differences in the predictors of Internet chat room victimization and victimization at school (e.g., popularity, bullying behavior). Hence, in the current article, the research presented on the predictors of cyber-bullying and traditional bullying victimization was informed by previous studies that have examined predictors of traditional and cyber-bullying victimization separately. Predictors are referred to as prospective "risk" or "protective" factors. A *risk factor* increases the likelihood of a person developing poor outcomes or problematic behaviors such as bullying victimization (Hawkins, Catalano, & Miller, 1992; National Crime Prevention, 1999). *Protective factors* both directly decrease the likelihood of bullying victimization (Jessor, Turbin, &

Costa, 1998; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995) and mediate or moderate the influence of risk factors (Garmezy, 1985; Rutter, 1985). For example, a protective factor may interact with a risk factor to reduce the association of the risk factor with bullying victimization (moderation) or a risk factor may be indirectly related to bullying victimization through a protective factor (mediation). Risk and protective factors can be organized according to their influence in different socialization settings (student, family, peer group, school, and community) across development, recognizing different contextual influences at different developmental periods (Catalano & Hawkins, 1996).

School Factors

School factors, such as poor school climate (students' sense of belonging to school and respect for and fair treatment of students by school staff), are associated with traditional bullying victimization (Cook, Williams, Guerra, Kim, & Sadek, 2010) and cyber-bullying victimization (Williams & Guerra, 2007). It is possible that negative school climates also increase vulnerability to online victimization among the schools' students (Kowalski et al., 2014). Students who are bullied are generally unhappier at primary school compared with their peers (Arseneault et al., 2006). This is not surprising given that traditional bullying often occurs between peers at school; hence, students may generalize their negative bullying experiences to negative feelings toward school.

School suspension has been shown to increase the likelihood of violent (Hemphill et al., 2009) and antisocial behavior (Hemphill, Toumbourou, Herrenkohl, McMorris, & Catalano, 2006) at 12-month follow-up independently of other established risk factors such as family conflict, poor family management, having antisocial friends, school grades, and students' favorable attitudes to antisocial behavior. Ybarra, Diener-West, and Leaf (2007) found that young people who had been "harassed" online were more likely to have received two or more suspensions or detentions and to have truanted school in the past year. It is possible that students who have been suspended from school may be treated differently by other students when they return (Quin & Hemphill, 2014) and could therefore be vulnerable to traditional and/or cyber-bullying. In addition, when students are suspended from school, they often report spending their time using the Internet (Quin & Hemphill, 2014), which may lead them to be more vulnerable to cyber-bullying victimization. In the present study, associations between school suspension and cyber- and traditional bullying victimization were examined.

Peer and Individual Factors

Peer factors influence being bullied, given that bullying in schools can be conceptualized as a social-relationship issue (Pepler, Smith, & Rigby, 2004; Spears et al., 2009). In a meta-analysis of student and contextual predictors of bullying across 153 studies, peer status ("quality of relationships children and adolescents have with their peers"; Cook et al., 2010, p. 67) was the strongest predictor of being bullied (Cook et al., 2010). Peer rejection and being disliked by peers have also been associated with being bullied (Beran & Violato, 2004) and negative support from peers has been linked to cyber-bullying (Williams & Guerra, 2007). In contrast, perceived social support from peers is associated with lower rates of cyber-bullying victimization (Ubertini, 2011).

Some studies have shown that having poor social skills and low social competence are associated with being bullied, particularly when students also experience low self-regard (Cook et al., 2010; Egan & Perry, 1998). These students may also have a history of bullying others themselves (Casas et al., 2013). It might be expected that students with skills in emotional control (e.g., controlling one's temper when someone is angry at him or her), similar in concept to emotional self-regulation, will be less likely to be bullied by others (Mahady Wilton, Craig, & Pepler, 2001; Schwartz, Proctor, & Chien, 2001). Likewise, students with a strong sense of morals who tend to do the "right thing" (e.g., it is not acceptable to beat someone up if they start the fight) may be less likely to be victims of bullying (Hymel, Rocke-Henderson, & Bonanno, 2005). These constructs are measured in the present study.

It is a well-established finding that association with antisocial peers increases the risk of violence and antisocial behavior (Hawkins et al., 2000; Hemphill et al., 2009; Herrenkohl et al., 2000). Online peers can readily become bystanders for cyber-bullying, and similar to the offline world, these negative peer interactions can result in increased levels of cyber-bullying through the development of a group culture that rewards bullying behavior (Dodge, Dishion, & Lansford, 2006), for example, posts on social networking sites.

For individual-level factors, participating in traditional bullying is associated with a greater likelihood of engaging in cyber-bullying (Juvonen & Gross, 2008), and being a victim of traditional bullying is linked with being a perpetrator of online harassment (Ybarra & Mitchell, 2004b). There have been mixed research findings regarding whether there is a link between academic performance and being bullied (Swearer, Espelage, Vaillancourt, & Hymel, 2010). The current study examined potential associations between school disengagement (academic failure, low school commitment) and traditional and cyber-bullying victimization.

Family Factors

Family influences shape a variety of students' behaviors and experiences, including bullying. Children residing in home environments characterized by violence and marital conflict (Baldry, 2003; Beran & Violato, 2004), and children who are maltreated at home (Shields & Cicchetti, 2001) are more likely to be bullied by their peers at school. Having a parent with mental health problems (e.g., depression; Beran & Violato, 2004) has also been linked to being bullied at school. Studies show that parental knowledge about their children's whereabouts and discussions about online behavior are associated with lower frequencies of cyber-bullying victimization (Taiariol, 2010; Wade & Beran, 2011).

However, many of the studies reviewed in this section are limited by cross-sectional designs. Longitudinal studies are required to establish the temporal ordering of predictors relative to traditional and cyber-bullying victimization as the outcomes. Such data provide stronger evidence for factors that could be targeted for the prevention of traditional and cyber-bullying victimization.

The Present Study

Very few studies have assessed predictors of traditional versus cyber-bullying victimization using longitudinal data. Further exploration of the predictors of traditional versus cyber-bullying victimization across a range of risk factors (individual, peer group, school, and family) is therefore warranted as a preliminary to developing preventive responses. The main research question of the present article is whether the longitudinal predictors of cyber-bullying victimization are the same as those of traditional bullying victimization. The authors expect that the predictors of traditional and cyber-bullying will be the same and that predictors will include peer group, family, school, and student characteristics.

Method

Participants

This article draws on data from the International Youth Development Study (IYDS), a longitudinal study of the development of students from the state of Victoria, Australia, and the U.S. state of Washington, who were recruited through schools in Grades 5, 7, and 9 in 2002. To obtain representative samples from the two states, a two-stage cluster sampling approach was utilized.

In the first stage, within each state and grade level, public and private schools containing Grades 5, 7, or 9 were randomly selected using a probability proportionate to grade-level size sampling procedure (Kish, 1965). A target classroom within each school was randomly selected in the second stage. Further details about recruitment and participation rates were described in McMorris, Hemphill, Toumbourou, Catalano, and Patton (2007).

Data for the present study were taken from participants in the Victorian Grade 5 cohort ($n = 927$) who had complete data available in 2004 and 2006 when in the seventh and ninth grades, respectively ($n = 673$; 73% of the original sample). No data were collected from this sample in 2005 (Grade 8). Data were not collected for other IYDS cohorts due to funding constraints. Participants consisted of 356 females (52.9%) with an average age in the sample of 13.0 years ($SD = 0.4$ years) in seventh grade and 15.2 years ($SD = 0.4$ years) in the ninth grade.

Measures

Traditional and cyber-bullying victimization. In the present article, traditional and cyber-bullying victimization are measured using examples of behaviors. This more general framing of bullying dynamics is similar to that used elsewhere (Hamburger, Basile, & Vivolo, 2011). *Traditional bullying victimization* was measured by asking students whether they had "been bullied recently (teased or called names, had rumors spread about you, been deliberately left out of things, threatened physically or hurt)?" Item responses were on a 4-point rating scale of *no; yes, less than once a week; yes, about once a week*; and *yes, most days*. This item was based on questions asked in the Gatehouse Bullying Scale (Bond, Thomas, Toumbourou, Patton, & Catalano, 2000; Bond, Wolfe, Tollit, Butler, & Patton, 2007). *Cyber-bullying victimization* was assessed for the first time in Grade 9 using an item developed by the authors to be similar to the traditional bullying victimization question and to be consistent with the wording of other behavioral items in the survey. This item asked Grade 9 students whether in the past 12 months they had "been bullied by another student who has used technology such as mobile phones, the Internet, computers, answering machines, or cameras?" Item responses were the same as for the traditional bullying victimization item. A dichotomous measure was created separately for both cyber- and traditional bullying victimization. Students reporting no involvement in bullying victimization were given a score of 0, and students reporting any bullying victimization (less than once a week or more) were given a score of 1.

Risk and protective factors. The self-reported measures of individual, family, peer group, and school risk factors in Grade 7 were obtained from a modified version of the *Communities That Care* survey, which has acceptable internal consistency for the scales measured and has demonstrated predictive validity in the United States (Arthur, Hawkins, Pollard, Catalano, & Baglioni, 2002; Glaser, Van Horn, Arthur, Hawkins, & Catalano, 2005) and in Victoria (Hemphill et al., 2011). The means, standard deviations, number of items, item responses, example items, and Cronbach's alphas are listed in Table 1. Due to the positively skewed distribution of scores for traditional bullying victimization and perpetration, interaction with antisocial friends, and school suspension, scores on these measures were dichotomized for the analyses (1 = *risk factor present*, 0 = *risk factor absent*).

Student honesty. Drawn from early studies on the development and validity of the *Communities That Care* youth survey (Arthur et al., 2002), items were included to assess whether students answered the survey questions honestly. Students were categorized as dishonest if they reported any of the following: (a) that they were *not honest at all* when filling out the survey; (b) that they had used a fake drug in their lifetime or in the past 30 days; or (c) that they had used illicit drugs on more than 120 occasions in the past 30 days. A single, dichotomous measure of honesty was calculated using these items.

Procedure

Permission to conduct the research in Victorian schools was obtained from the Royal Children's Hospital Ethics in Human Research Committee, the Human Research Ethics Committee at The University of Melbourne, the Department of Education and Training for government-operated schools, and the Catholic Education Office for catholic schools. Then, permission was sought from school principals. Parents provided written consent for their children to participate in the study, and students provided assent on the day of the survey. In 2006, the Department of Education and Training (government-operated schools) required passive parental consent for their child's continued participation in the study. Research staff administered surveys in each year of the study between May and November. The pen-and-paper survey was voluntary and included instructions on how to answer the questions and further assurances of confidentiality. Surveys were group administered in classrooms during a 50- to 60-min period. Students who were no longer attending school were interviewed over the telephone (3% of surveys in 2004 and 4% of surveys in 2006) and students received small thank you gifts on survey completion (e.g., a highlighter, a book voucher).

Table 1. Descriptive Statistics (Means, Standard Deviations, Percentages) on Grade 7 Risk and Protective Factors and Grade 9 Traditional and Cyber-Bullying Victimization (N = 673).

Variable	*M* (*SD*)	No. of Scale Items	Response Options	Cronbach's Alpha
Grade 7 predictor (continuous measures)				
Individual-level risk factors				
Relational aggression (e.g., "How many times in the past 12 months have you told lies about a student to make other kids not like them?")	1.46 (.83)	2	1-8 (*never to 40 times or more*)	.62
Academic failure (e.g., "What were your grades like last year?")	1.86 (.56)	2	1-4 (*very poor to very good*)	.61
Low school commitment (e.g., "How interesting are most of your school subjects to you?")	2.02 (.59)	7	1-5 (*very interesting to very boring*)	.80
Individual-level protective factors				
Emotional control (e.g., "I am always able to keep my feelings under control.")	2.84 (.68)	4	1-4 (*definitely no to definitely yes*)	.79
Belief in the moral order (e.g., "It is important to be honest with your parents, even if they become upset or you get punished.")	3.37 (.60)	4	1-4 (*definitely no to definitely yes*)	.74
Family-level risk factors				
Poor family management (e.g., "Would your parent know if you did not come home on time?")	1.51 (.48)	9	1-4 (*definitely no to definitely yes*)	.83
Family conflict (e.g., "People in my family have serious arguments.")	1.94 (.76)	3	1-4 (*definitely no to definitely yes*)	.82
Family-level protective factor				
Family attachment (e.g., "Do you feel very close to your father?")	3.20 (.63)	4	1-4 (*definitely no to definitely yes*)	.77
Grade 7 predictor (categorical measures)				
Individual-level risk factors				
Traditional bullying victimization (e.g., "Have you been teased or called names, had rumors spread about you?")	38.34	1	0-1 *(no to yes once a week)*	NA

(continued)

Table 1. (continued)

Variable	*M* (*SD*)	No. of Scale Items	Response Options	Cronbach's Alpha
Traditional bullying perpetration (e.g., "Have you taken part in bullying another student at school recently?")	17.09	1	0-1 *(no to yes once a week)*	NA
Peer group risk factor				
Interaction with antisocial friends (e.g., "In the past 12 months, how many of your best friends have sold illegal drugs?")	34.47	8	0-1 (*no friends to one or more friends*)	NA
School-level risk factor				
School suspension (e.g., "In the past 12 months have you been suspended from school?")	5.05	1	0-1 (*no suspensions to one or more*)	NA

Grade 9 traditional and cyber-bullying victimization for total sample, boys, and girls

	Total Sample		Cyber-Victimization		Traditional Victimization	
	Cyber	Traditional	Boys	Girls	Boys	Girls
Been bullied	16.9 (*n* = 114)	32.5 (*n* = 219)	12.3 (*n* = 39)	21.1* (*n* = 75)	29.3 (*n* = 93)	35.4 (*n* = 126)
Never been bullied	83.1 (*n* = 559)	67.5 (*n* = 454)	87.7 (*n* = 278)	78.9 (*n* = 281)	70.7 (*n* = 224)	64.6 (*n* = 230)

*p = .002.

The survey was completed by 98% of the students in 2004 (n = 907) and 87% in 2006 (n = 805).

Statistical Analysis

Data analysis was performed with the Stata/IC 11.0 for Windows program (StataCorp, 2009) for participants with complete data on all variables analyzed in this article. Results presented here include only students (N = 673) who were "honest." First, unadjusted logistic regression analyses were conducted to examine prospective associations between each of the Grade 7 risk and protective factors and Grade 9 traditional and cyber-bullying victimization. Next, adjusted logistic regression models were run to investigate prospective associations between individual, peer group, family, and school-level

factors and the two types of bullying victimization (cyber and traditional), controlling for prior traditional bullying victimization. All analyses in the present study controlled for age, gender, and the clustering of students in schools. Interactions between gender and risk/protective factors for each form of bullying victimization were tested. Statistically significant interaction terms were included in the fully adjusted models and Pseudo R^2 values for these models were compared with models without the interaction terms included. Changes in the Pseudo R^2 were minimal, that is, < .02 (Cohen, Cohen, West, & Aiken, 2003); hence, for model parsimony, the fully adjusted models without interaction terms are reported.

Results

Rates of Bullying Victimization

The lower section of Table 1 shows the distribution of Grade 9 traditional and cyber-bullying victimization. Seventeen percent of students reported that they had been cyber-bullied, and 33% of students had been victims of traditional bullying. Further analyses revealed that 12% of students had been victims of traditional *and* cyber-bullying. Cyber-bullying victimization was more prevalent in girls than boys, $\chi^2(1) = 9.16$, $p = .002$. However, there were no gender differences for traditional bullying victimization, $\chi^2(1) = 2.80$, $p = .094$.

Correlations Between All Risk Factors and Bullying Victimization Variables

Intercorrelations between all risk factors and traditional and cyber-bullying variables were generally moderate and below .40. Given that no correlations approached .80, bivariate associations did not indicate problems with multicollinearity (Tabachnick & Fidell, 2001).

Partially and Fully Adjusted Logistic Regression Analyses for Cyber-Bullying Victimization

As shown in Table 2, Grade 7 traditional bullying victimization was associated with over a twofold increase in odds for cyber-bullying victimization, while prior bullying perpetration, interaction with antisocial friends, and family conflict were associated with an increased likelihood of cyber-bullying victimization. Emotional control was a protective factor for cyber-bullying victimization.

Table 2. Partially Adjusted and Fully Adjusted Logistic Regression Analyses Comparing Grade 7 Risk and Protective Factors for Grade 9 Cyber- and Traditional Bullying Victimization (N = 673).

	Grade 9 Cyber-Bullying Victimization				Grade 9 Traditional Bullying Victimization			
Grade 7 Predictors	Partially Adjusted OR (95% CI)	*p*	Fully Adjusted OR (95% CI)	*p*	Partially Adjusted OR (95% CI)	*p*	Fully Adjusted OR (95% CI)	*p*
Individual-level risk factors								
Traditional victimization	**2.2 [1.4, 3.3]**	**<.0001**	**1.9 [1.2, 3.0]**	**.004**	**3.5 [2.4, 5.1]**	**<.0001**	**3.2 [2.1, 4.8]**	**<.0001**
Relational aggression	1.2 [1.0, 1.6]	.056	1.2 [0.9, 1.5]	.285	1.1 [0.9, 1.3]	.263	1.1 [0.9, 1.3]	.467
Traditional perpetration	**1.9 [1.2, 3.1]**	**.011**	1.4 [0.8, 2.5]	.301	1.4 [0.9, 2.0]	.116	0.9 [0.6, 1.4]	.631
Academic failure	1.2 [0.8, 1.7]	.309	1.1 [0.8, 1.6]	.591	1.2 [0.9, 1.6]	.287	1.1 [0.8, 1.6]	.591
Low school commitment	1.2 [0.9, 1.7]	.296	0.7 [0.4, 1.1]	.134	1.2 [0.9, 1.5]	.243	0.7 [0.5, 1.0]	.070
Individual-level protective factors								
Emotional control	**0.6 [0.5, 0.8]**	**.001**	**0.7 [0.5, 0.9]**	**.004**	**0.7 [0.5, 0.9]**	**.002**	0.8 [0.6, 1.0][a]	.051
Belief in the moral order	0.7 [0.6, 1.0]	.050	1.0 [0.6, 1.7]	.890	0.8 [0.6, 1.0]	.092	1.1 [0.7, 1.6]	.768
Peer group risk factor								
Has antisocial friends	**1.6 [1.1, 2.3]**	**.014**	1.4 [0.9, 2.1]	.113	**1.7 [1.2, 2.4]**	**.002**	**1.6 [1.1, 2.3]**	**.007**
Family-level risk factors								
Poor family management	1.3 [0.9, 1.9]	.246	1.0 [0.6, 1.6]	.851	1.2 [0.9, 1.7]	.233	1.0 [0.6, 1.5]	.868
Family conflict	**1.3 [1.0, 1.6]**	**.025**	1.0 [0.8, 1.4]	.864	**1.6 [1.3, 1.9]**	**<.0001**	**1.3 [1.0, 1.6]**	**.037**
Family-level protective factor								
Family attachment	0.7 [0.5, 1.0]	.056	0.8 [0.5, 1.2]	.304	**0.6 [0.5, 0.8]**	**.001**	0.7 [0.5, 1.0]	.058
School-level risk factor								
School suspension	0.7 [0.3, 2.0]	.563	0.5 [0.2, 1.4]	.118	0.8 [0.4, 1.5]	.460	0.5 [0.2, 1.2]	.129

Note. The partially adjusted analyses control for gender, age, and the clustering of students in schools. The fully adjusted analyses control for gender, age, the clustering of students in schools, and all the Grade 7 risk factors in the table. The final models are presented here (contact lead author for further details about other stages of the modeling). It was not possible to control for Grade 7 cyber-bullying victimization because these measures were not collected until students were in Grade 9. OR = odds ratio; CI = confidence interval.

[a]Reduction in association with bullying victimization outcomes following the inclusion of the variable, interaction with antisocial friends, into the fully adjusted model.

The overall model for the fully adjusted logistic regression analysis was statistically significant, Wald $\chi^2(14) = 63.96$, $p < .001$. Fully adjusted logistic regression analyses revealed that traditional bullying victimization in Grade 7 was associated with an almost twofold increase in Grade 9 cyber-bullying victimization (see Table 2). Emotional control in Year 7 reduced the odds of being cyber-bullied in Year 9 by 30%. The remaining risk and protective factors were not statistically significantly associated with cyber-bullying victimization in Year 9 in the fully adjusted model (Table 2, Model 2).

Partially and Fully Adjusted Logistic Regression Analyses for Traditional Bullying Victimization

Traditional bullying victimization shared similar predictors to cyber-bullying victimization in the unadjusted analysis. School suspension, academic failure, and low commitment to school were not risk factors for either cyber-bullying or traditional bullying victimization. The overall model for the fully adjusted logistic regression analysis was statistically significant, Wald $\chi^2(14) = 77.25$, $p < .001$. Fully adjusted logistic regression analyses showed that Grade 7 traditional bullying victimization was associated with over a threefold increase in traditional bullying victimization in Grade 9. Interacting with antisocial friends also predicted an approximately one-and-a-half-fold increase in traditional bullying victimization. Family conflict predicted traditional bullying victimization, with family attachment and emotional control marginally significant predictors in the fully adjusted analyses.

Discussion

The present study is one of very few to examine whether the longitudinal predictors of cyber-bullying victimization are the same as those of traditional bullying victimization and to investigate associations with a range of risk and protective factors in the individual, peer group, family, and school contexts. The results of the present study show only a single common predictor for traditional and cyber-bullying victimization in the fully adjusted model, students having previously been victims of traditional bullying. For traditional bullying victimization, additional predictors were interaction with antisocial peers and family conflict. Emotional control was a predictor for cyber-bullying victimization. Hence, contrary to our hypotheses and the results of Casas et al. (2013), we found differences in the predictors of traditional and cyber-bullying victimization.

Predictors of Cyber-Bullying and Traditional Bullying Victimization

Consistent with previous research, students who had previously been bullied were more likely to be bullied again in the future, showing the persistence of this problem over time for some young people (Arseneault, Bowes, & Shakoor, 2010; Sourander, Helstela, Helenius, & Piha, 2000). This finding further demonstrates how difficult it can be for students to change their status within the peer group once they have been victimized previously. Future longitudinal studies that aim to alter the peer group status of victims of bullying are needed to find ways to allow victims to become accepted by their peers and reduce re-victimization. Given the additional finding of this study that emotional control (akin to emotional self-regulation) was a protective factor for cyber-bullying victimization and marginally significant for traditional bullying victimization, future research could study whether teaching young people skills in emotional control changes a victim's status in the peer group.

In the present study, family conflict was a predictor of traditional bullying victimization. This finding is consistent with previous research that has shown that children living in home environments characterized by violence and marital conflict (Baldry, 2003; Beran & Violato, 2004) and children who are maltreated at home (Shields & Cicchetti, 2001) are more likely to be bullied by their peers at school. Parents may inadvertently be placing their children at risk for being bullied by the parents' own behavior at home. In addition, attachment to the family was a marginally significant protective factor against traditional bullying victimization. Hence, having strong connections within a well-functioning family may be important to reduce the likelihood of victimization, possibly because children are more likely to report bullying to parents they trust and with whom they have a close bond.

One protective factor, emotional control, was identified for cyber-bullying victimization and was marginally significant for traditional bullying victimization. Previous studies have demonstrated a link between emotional dysregulation and bullying victimization (Mahady Wilton et al., 2001; McLaughlin, Hatzenbuehler, & Hilt, 2009; Schwartz et al., 2001) and the current study's finding is also consistent with studies showing associations between having poor social skills and low social competence and being bullied, particularly when students also experience low self-regard (Cook et al., 2010; Egan & Perry, 1998). Having the skills to control emotions in cyberspace may be particularly important given the speed by which information can be exchanged; that is, the ability to not retaliate with anger, fear, or sadness to being bullied (to control one's emotions) may reduce reinforcement of bullying perpetration.

Surprisingly, in this study, academic failure and low school commitment were not predictors of traditional or cyber-bullying victimization. However, in previous studies of traditional bullying, there have been mixed research findings regarding whether there is a link between academic performance and being bullied (Swearer et al., 2010). It is possible that the experience of traditional or cyber-bullying may subsequently reduce academic performance and commitment to school rather than these variables preceding experiences of bullying victimization.

In this study, the only indicator of school-level risk factors, school suspension, was not associated with traditional or cyber-bullying victimization. This suggests that students who have been suspended from school do not become targets for traditional or cyber-bullying after their return to school and also that suspended students having more time online does not increase their exposure to cyber-victimization. Other studies have reported strong links between school risk factors such as school climate (not measured in this study) and traditional bullying victimization; hence, future studies are needed to examine whether these factors are also associated with cyber-bullying victimization.

Rates of Traditional and Cyber-Bullying Victimization

The rates of traditional and cyber-bullying victimization in the present study were higher than those reported recently in Australia (Cross et al., 2009). For example, Cross et al. (2009) found 6% of boys and 9% of girls in Year 9 had been cyber-bullied compared with 12% and 21%, respectively, in the present study. These are several possible explanations for the differences in the results of these two studies. First, Cross et al. (2009) focused on covert bullying, defined as any bullying that occurred out of the sight of adults. However, in the current study, bullying was defined broadly and could include bullying that was seen by adults. Second, the two studies used different measures to assess bullying (i.e., in the present study a broad range of behaviors was assessed by a single item using different response options). In addition, the results presented in this study are for Victorian students, whereas Cross et al. (2009) surveyed students Australia-wide. However, at the time of recruitment, the students in the current study were selected to be representative of the state of Victoria. Further research is needed to confirm this higher prevalence of bullying in Australian students, using bullying measures with demonstrated psychometric properties.

The results of the present study did not find gender differences for traditional bullying victimization (although there was a trend in the expected direction), contrary to previous research showing that more females are

victims of traditional bullying than males (Espelage, Mebane, & Swearer, 2004). However, the current study found that more females than males reported being a victim of cyber-bullying. This is consistent with the findings of Sourander et al. (2010) but differs from Li (2006) who found no gender differences in rates of cyber-bullying victimization. Further studies are needed to establish whether the gender differences typically found for traditional bullying victimization are also found for cyber-bullying victimization.

In the present study, a relatively small minority (12%) of students had been victims of both traditional and cyber-bullying. Overall, this result suggests that most students who were victims of cyber-bullying in 2006 were not also victims of traditional bullying. This finding is in contrast to recent studies of cyber-bullying and traditional bullying (Hemphill et al., 2012; Kowalski et al., 2014; Raskauskas & Stoltz, 2007; Smith et al., 2008) that have shown victims of cyber-bullying were also victims of traditional bullying. Kowalski et al. (2014) suggested that the extent of overlap between cyber-bullying and traditional bullying perpetration may depend on the specific kind of bullying in which young people engage and how well it maps from traditional bullying settings to cyber-space. In the current study, it was not possible to investigate whether particular examples of bullying victimization tended to occur in both traditional and cyber-settings; future research with more detailed measures of bullying victimization should investigate these possibilities.

Implications of Findings for Practice and Policy

Potential implications for the prevention of traditional and cyber-bullying victimization are that addressing students' experiences of bullying victimization in early secondary school (a time when rates of bullying are high in Australia; Cross et al., 2009) are important to prevent further victimization during mid- to late-secondary school. There are established bullying prevention programs such as the Olweus Bullying Prevention program (see http://www.olweus.org/public/bullying_prevention_program.page) for use in schools. Programs that are effective in reducing bullying are universal (i.e., target all students) and include school-wide (e.g., policy development, management of the physical environment, raising awareness of bullying as an issue) and classroom components (positive behavior management, social skills training for students; Hemphill & Smith, 2010). However, in the Australian context, schools have a range of bullying prevention programs to choose from, not all of which are evidence-based. Researchers need to find better ways of communicating with schools about which programs are likely to be effective at reducing bullying victimization and perpetration.

The current results showed that young people who experienced traditional bullying victimization were more likely to interact with antisocial friends. This finding suggests either that some young people in a group of antisocial friends may be scape-goats for the group (Schuster, 1999) or that there is a group culture supporting bullying (Duffy & Nesdale, 2009). Addressing this behavior may require matching prosocial peers with one child who bullies others (Dodge et al., 2006) to promote positive interactions among peers.

Two family factors were identified for traditional bullying victimization. First, students who were victims of traditional bullying were more likely to live in families experiencing conflict. Second, attachment to family was a marginally significant protective factor. These findings emphasize the influence families have on adolescent experiences. Therefore, an important focus of prevention programs is to assist families to resolve disagreements without using aggression, encourage parents of adolescents to remain connected to their adolescent children (Turner & Saunders, 2006), and help parents develop the skills to interact in positive ways with their adolescent children. The use of evidence-based universal programs for parenting adolescents such as Teen Triple P (Ralph & Saunders, 2003) is therefore warranted to reduce traditional bullying victimization.

It is surprising in the present study that family risk and protective factors were not related to cyber-bullying victimization in the fully adjusted model. Cyber-bullying can occur at anytime and anywhere, including within the family home; hence, it seemed likely that family risk and protective factors would be important. Further longitudinal research is required to tease out the importance of family factors in the prediction of cyber-bullying victimization.

Emotional control predicted cyber-bullying victimization and was marginally significant for traditional bullying victimization. Being able to control emotions in stressful, difficult, or heated situations may be particularly important online when messages and posts can be made so rapidly. Having the skills to wait and reconsider one's actions so that a student does not become a victim of cyber-bullying seems likely to be important. Emotional control has been studied previously in Australia as a protective factor for antisocial behavior (Prior, Sanson, Smart, & Oberklaid, 2000; Vassallo et al., 2002). However, the results presented here suggest skills in emotional control may also be important in protecting against victimization, at least in the online environment. There is a range of evidence-based programs (e.g., Olweus Bullying Prevention program) to teach students effective social, interactional, and problem-solving skills that would assist all students to find ways to better control their emotions in stressful situations.

Strengths and Limitations of the Study

The present study has a number of strengths. It draws on data collected as part of an ongoing longitudinal study of students with rich longitudinal data on risk and protective factors. It therefore provides an opportunity to examine the prospective predictors of traditional and cyber-bullying victimization, using a state-representative sample.

The current study has several limitations. First, a generic, single item was used to measure traditional and cyber-bullying victimization, and cyber-bullying victimization was measured for the first time in 2006. It is important that studies like this one are replicated in the future using more sophisticated measures of traditional and cyber-bullying victimization. There are access factors that are likely to be particularly relevant to the longitudinal prediction of cyber-bullying victimization. These include access to technology, amount of time a student spends using the Internet and electronic communication technologies, competence in using technology and the behavior of onlookers in the cyber-environment (Li, 2007; Ybarra & Mitchell, 2004a). These measures were not available in the current study but are clearly needed in future research. Third, the present study examined the associations between earlier risk and protective factors with subsequent experiences of being bullied. Research is also needed to investigate associations from early bullying victimization to subsequent risk and protective factor exposure, as well as reciprocal relationships between bullying victimization and risk and protective factors.

Conclusion

The present study is unique in examining the longitudinal predictors of traditional and cyber-bullying victimization using comprehensive measures of risk and protective factors. The results of this study demonstrate that the predictors of cyber-bullying victimization differ from those for traditional bullying victimization. Only one common predictor, previously being bullied offline, was identified. The use of evidence-based bullying prevention programs to teach skills in emotional control and to reduce experiences of both cyber- and traditional bullying victimization is supported by the results of the present study. In addition, traditional bullying victimization may be reduced by addressing association with antisocial friends, family conflict, and bonding to families. Given that there are relatively few longitudinal studies comparing the predictors of cyber- and traditional bullying victimization, further research on this topic is warranted.

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Supplementary Materials

The International Youth Development Study (IYDS) has protocols in place through which research materials related to this paper may be accessed. In the first instance, the Principal Investigators should be contacted.

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