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This is the peer reviewed version of the following article:

Hemphill, S. A., Kotevski, A., Herrenkohl, T. I., Bond, L., Kim, M. J., Toumbourou, J. W. and Catalano, R. F. (2011). Longitudinal consequences of adolescent bullying perpetration and victimisation : A study of students in Victoria, Australia. *Criminal Behaviour and Mental Health*, 21(2), pp. 107-116, which has been published in final form at https://doi.org/10.1002/cbm.802.

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Author Manuscript
Crim Behav Ment Health. Author manuscript; available in PMC 2013 September 03.

Published in final edited form as:
Crim Behav Ment Health. 2011 April ; 21(2): 107–116. doi:10.1002/cbm.802.

Longitudinal consequences of adolescent bullying perpetration and victimisation: A study of students in Victoria, Australia

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Abstract

Aims—To examine the associations between self-reported bullying perpetration and victimization in Years 7 and 10 and a range of psychosocial outcomes in Year 11.

Method—This analysis draws on data from the International Youth Development Study (IYDS), a longitudinal study of 5,769 students from Victoria, Australia and Washington State, United States (US) who were recruited through schools in Years 5, 7, and 9 in 2002. Data for the current results are taken from participants in the youngest (Year 5) Victorian cohort of the study.

Results—Rates of bullying victimisation exceeded 30% and up to one in five students had engaged in bullying. Adjusted logistic regression analyses revealed that bullying perpetration and bullying victimisation in Year 7 did not significantly predict psychosocial outcomes in Year 11. Bullying perpetration in Year 10 was associated with an increased likelihood of theft, violent behaviour, and binge drinking. Year 10 bullying victimisation was associated with an increased likelihood of Year 11 depressive symptoms.

Conclusions—Prevention approaches that target bullying perpetration and victimization are necessary. Programs that lessen bullying may also have an impact on other proximally related behaviours, including binge drinking and depression.

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Method

In this paper, data is analysed to examine the extent to which self-reported bullying perpetration and victimization in Years 7 and 10 are associated with various psychosocial outcomes in Year 11. This analysis draws on data from the International Youth Development Study (IYDS), a longitudinal study of 5,769 students from Victoria, Australia and Washington State, United States (US) who were recruited through schools in Years 5, 7, and 9 in 2002. To obtain state representative samples from the two states, a two-stage cluster sampling approach was utilized. In the first stage, within each state and year level, public and private schools containing Years 5, 7, or 9 were randomly selected using a probability proportionate to year-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 are described in McMorris et al. (2007).

Participants & Procedure

Data for the current results are taken from participants in the youngest (Year 5) Victorian cohort of the study. These participants have complete data available from the third (2004, Year 7), fifth (2007, Year 10) and sixth (2008, Year 11) surveys. The original sample consisted of 48% males and 52% females, aged between 11.9 and 14.4 years (M = 12.9 years; SD = 0.4 years) in Year 7.

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 (later known as the Department of Education and Early Childhood Development) for government (public) schools and from the Catholic Education Office for some private schools. Permission to conduct the survey in each school was sought from the principal. Project 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 that were presented prior to administration by study staff. Surveys were group administered in classrooms during a 50- to 60-minute period. Students absent from school were administered surveys later under the supervision of trained school personnel or, in a small percentage of cases, over the telephone by study staff. Students who were no longer attending school were interviewed over the telephone. Ninety-eight percent (n = 907) of surveys were completed in Year 7, 89% (n = 825) were completed in Year 10, and 85% (n = 791) in Year 11. Students who did not complete the study in Year 11 were more likely to be male and in Year 7 scored higher on academic failure, family history of antisocial behaviour, and parent attitudes favourable to drug use than students who completed the Year 11 survey.

Measures

The self-reported measures of bullying perpetration and victimisation, negative consequences of bullying and the risk and protective factors included as covariates were obtained from a modified version of the *Communities that Care* survey which has been found to have acceptable psychometric properties in the US (Arthur et al., 2002; Glaser et al., 2005; Pollard et al., 1999) and has been used previously in Victoria (Bond et al., 2000; Hemphill et al., 2006).

Bullying perpetration and victimisation were both assessed at the third and fifth surveys. For *perpetration*, students were asked if they had taken part in "bullying another student(s) at school recently." *Bullying victimisation* was assessed by asking students if they had been "bullied recently (teased or called names, had rumours spread about you, been deliberately

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left out of things, threatened physically or actually hurt).” Item responses for both items ranged from *no* to *yes, most days* on a 4-point Likert-scale. It is possible that students both engaged in, and were victims of, bullying. In this paper, the outcomes for this combined group were not examined.

Psychosocial outcomes—The seven outcomes in this analysis were measured at the sixth survey (Year 11). Unless otherwise indicated, all items were rated on an 8-point scale ranging from *Never* to *40 or more times. Suspension from school* was assessed by asking students if they had been “suspended from school in the last 12 months?” Other single-item outcomes included whether students had in the past 12 months *carried a weapon,* and *stolen something worth more than $10. Marijuana use* was assessed with the item “In the past 30 days on how many occasions have you used marijuana (pot, weed, grass)?”. *Binge drinking* was measured by asking students how many times in the last 2 weeks they have had five or more drinks in a row rated from 1 (*none*) to 6 (*10 or more times*). Scores on each of these single-item outcomes were dichotomised; students were classified as reporting no involvement in these behaviours in the past 12 months (score of 0) or having engaged in these behaviours at least 1–2 times in the past 12 months (score of 1).

Violent behaviour was measured using a 3-item scale, with response options ranging from 1 (*Never*) to 8 (*40 or more times*). Items included asking students how many times in the past 12 months they had “beat up someone so badly that they probably needed to see a doctor or nurse”. Scores were dichotomised (0 = no involvement in violent behaviour, 1 = having engaged in violent behaviour at least 1–2 times).

Depressive symptoms were measured using the self-report Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995) designed for the quick assessment and screening of core depressive symptomatology or for use in epidemiological research of adolescents. The SMFQ is a 13-item self-report scale, derived from the 30-item Mood and Feelings Questionnaire (MFQ). Each item in the SMFQ consists of a simple statement (e.g., “I didn’t enjoy anything at all” or “I found it hard to think properly or concentrate”). Respondents with a score of 11 were coded 1 (displaying depressive symptoms); all other respondents were coded 0 (not showing depressive symptoms). This cut-off score was established in validation studies (Angold et al., 1995).

Covariates—Seven covariates were included in the analyses (see Table 1 for the internal consistency [Cronbach alpha] coefficients for these scales). These included student *impulsivity* (3 items; e.g., “I answer without thinking about it first”), student *concentration/attention deficits* (2 items; e.g., “I find it hard to keep concentrating on tasks”), *academic failure* (2 items; e.g., “Putting them all together, what were your grades/marks like last year?”), *family history of antisocial behaviour* (10 items: e.g., “Have any of your brothers or sisters ever used marijuana?”), *poor family management* (9 items; e.g., “Would your parents know if you did not come home on time?”), *family conflict* (3 items; e.g., “We argue about the same things in my family over and over”), and *adolescent interaction with antisocial friends* (9 items; e.g., “In the past year (12 months), how many of your best friends have sold illegal drugs?)”. For binge drinking and marijuana use outcomes, *parental attitudes favourable towards drug use* (4 items; e.g., “How wrong do your parents feel it would be for you to use marijuana?”) was included as a covariate.

Analysis

Data analysis was performed with the Stata/IC 11.0 for Windows program (StataCorp, 2009) on cases with complete data. Unadjusted and adjusted logistic regression analyses examined associations between bullying perpetration and victimisation in Year 7 and 10 with a range

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of psychosocial outcomes measured in Year 11. Adjusted logistic regression analyses on the entire sample included the covariates. Although there were significant gender differences in levels of bullying perpetration (Table 1), preliminary analyses revealed no significant gender interaction with bullying perpetration in Years 7 and 10 in predicting outcomes. Thus, the reported analyses combine boys and girls and include gender as a control variable to adjust level differences across gender. Analyses controlled for the clustering of students in schools.

Results

Rates of bullying perpetration and victimisation

One in six Year 7 students and one in five Year 11 student had engaged in bullying perpetration and almost 40% of Year 7 students and over 30% of Year 11 students had been the victims of bullying (Table 1).

Descriptive statistics for covariates and rates of outcome variables

The mean scores on the covariates included in this study were generally around 1.5 to 2 on a 4- or 5-point scale (Table 2, top section). Mean scores increased from Year 7 to Year 10 and variability in scores was generally similar at each time-point.

The rates of psychosocial outcomes in Year 11 varied from 5.7% for carrying a weapon to 49% for binge drinking (Table 2, lower section). Other outcomes with rates above 10% were theft, violent behaviour, and depressive symptoms.

Correlations between covariates

The inter-correlations between the covariates were all below 0.60, and thus, were not at a level at which multi-collinearity is assumed to influence results (Tabachnick & Fidell, 2001).

Unadjusted logistic regressions

Bullying perpetration—Unadjusted logistic regressions were conducted to examine associations between bullying perpetration in Year 7 and 10 with the psychosocial outcomes measured in Year 11 (see Table 3). Logistic regression analyses showed that bullying perpetration in Year 7 was associated with an almost three-fold increase in weapon carrying, and approximately a two-fold increase in theft, violent behaviour, binge drinking, and marijuana use. Bullying perpetration in Year 10 showed stronger associations with Year 11 outcomes. For example, bullying perpetration in Year 10 predicted a four-fold increase in carrying a weapon in Year 11 and over a threefold increase in theft and violent behavior. Weaker but significant associations were found between Year 10 bullying perpetration and outcomes including school suspension, marijuana use, and binge drinking.

Bullying victimisation—There were no significant associations between bullying victimisation in Year 7 and the psychosocial outcomes measured in this study. Year 10 bullying victimisation was associated with a two-fold increase in the likelihood of depressive symptoms and an increased likelihood of carrying a weapon, theft, and violent behaviour in Year 11.

Adjusted logistic regressions

Bullying perpetration—Adjusted analyses revealed that bullying perpetration in Year 7 did not significantly predict psychosocial outcomes in Year 11 (Table 3). Bullying perpetration in Year 10 was associated with a two-fold increase in theft and violent behaviour, and an increased likelihood of binge drinking.

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Bullying victimisation—Adjusted analyses similarly revealed that bullying victimisation in Year 7 did not significantly predict psychosocial outcomes in Year 11. It was found that Year 10 victimisation was associated with an almost two-fold increase in Year 11 depressive symptoms.

Discussion

This longitudinal study of 700 Victorian students is unique in the comprehensive measurement of risk and protective factors and psychosocial outcomes. Rates of bullying victimisation exceeded 30% and up to one in five students had engaged in bullying. Unadjusted analyses showed associations between Year 7 and 10 bullying perpetration and a range of Year 11 outcomes. However in adjusted analyses, no associations were found. For bullying victimisation, all of the associations occurred between Year 10 victimisation and Year 11 outcomes. Bullying victimisation was associated with an almost two-fold increase in the likelihood of depressive symptoms in Year 11. These results are consistent with studies that have shown both bullying perpetration and victimisation are linked with deleterious adolescent outcomes (Crick & Grotpeter, 1995; Crick et al., 2006; Herrenkohl et al., 2009; van der Wal et al., 2003). Overall, the results suggest that there are few long-term associations between bullying perpetration and victimisation and psychosocial outcomes once relevant covariates are taken into account. In the analyses in this paper, 9% of Year 7 and 13% of Year 11 students both bullies and victims. An important question for future research is the longitudinal consequences for students who are both bullies and victims. Another topic for future research is to examine longitudinal consequences for different types (i.e., physical, verbal, cyber) of bullying.

Acknowledgments

The authors are grateful for the financial support of the National Institute on Drug Abuse (R01-DA012140-05) for the International Youth Development Study, the National Institute on Alcoholism and Alcohol Abuse (R01AA017188-01) for analysis of the alcohol data, the Australian National Health and Medical Research Council (NHMRC; project number, 491241) for analysis of the tobacco and cannabis data and the Australian Research Council for follow-up of the Victorian participants from 2006–2008 (DP0663371, DP0887350). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Drug Abuse, National Institute on Alcoholism and Alcohol Abuse, or the National Institutes of Health. Professor Toumbourou is supported by a Victorian Health Promotion Foundation Fellowship. The authors wish to express their appreciation and thanks to project staff and participants for their valuable contribution to the project.

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Table 1

Rates of bullying perpetration and victimisation in the entire sample, boys and girls in Year 7 and Year 10.

	Year 7 *(N = 687)*			Year 10 *(N = 701)*		
	Entire	**Boys**	**Girls**	**Entire**	**Boys**	**Girls**
Perpetration (%)	17.4	22.9**	12.9	22.4	31.1**	15.1
Victimisation (%)	38.4	36.2	40.3	30.8	31.5	30.3

*** $p < .001$ (Chi-square test comparing rates in boys and girls).

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Table 2

Descriptive statistics for covariates in Years 7 and 10 and rates of outcome variables in Year 11.

Covariates	**Year 7 (*N*=687) Mean (SD)**	**Year 10 (*N*=701) Mean (SD)**
Impulsivity Cronbach alpha = .63–.64	1.90 (0.61)	2.12 (0.58)
Concentration deficits Cronbach alpha = .75–.81	2.33 (0.82)	2.65 (0.81)
Academic failure Cronbach alpha = .63–.75	1.84 (0.57)	2.10 (0.68)
Family history of antisocial behavior Cronbach alpha = .69–.73	1.52 (0.60)	1.97 (0.75)
Parental attitudes favourable towards drug use Cronbach alpha = .74–.79	1.26 (0.47)	1.71 (0.60)
Poor family management Cronbach alpha = .83	1.51 (0.47)	1.90 (0.53)
Family conflict Cronbach alpha = .82–.83	1.95 (0.77)	2.22 (0.78)
Adolescent interaction with antisocial friends Cronbach alpha = .78–.90	0.12 (0.33)	0.33 (0.61)
Psychosocial outcomes	Year 11 (*N*=701) %	
Suspension from school	7.7	
Carrying a weapon	5.7	
Theft – stealing more than $10	11.6	
Violent behaviour Cronbach alpha = .79	17.8	
Marijuana use	9.8	
Binge drinking	49.1	
Depressive symptoms Cronbach alpha = .94	28.1	

Note. Cronbach alpha coefficients show the range of values in Year 7 and Year 10.

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Table 3

Unadjusted and adjusted logistic regression analyses of associations between bullying perpetration and victimisation in Years 7 and 10 and Year 11 psychosocial outcomes.

	Year 7 Bullying perpetration (*n*=687)		**Year 7 Bullying victimisation (*n*=687)**		**Year 10 bullying perpetration (*n*=701)**		**Year 10 bullying victimisation (*n*=701)**	
Year 11 Psychosocial outcomes	**Unadjusted OR (95% CI)**	**Adjusted OR (95% CI)**	**Unadjusted OR (95% CI)**	**Adjusted OR (95% CI)**	**Unadjusted OR (95% CI)**	**Adjusted OR (95% CI)**	**Unadjusted OR (95% CI)**	**Adjusted OR (95% CI)**
Suspensions from school	1.79 (0.94, 3.41)	0.93 (0.42, 2.07)	1.25 (0.66, 2.35)	1.15 (0.59, 2.26)	**2.19 (1.23, 3.88)** **	1.00 (0.52, 1.96)	1.35 (0.81, 2.26)	1.12 (0.64, 1.98)
Carrying a weapon	**2.64 (1.35, 5.18)** **	1.42 (0.62, 3.26)	1.41 (0.73, 2.72)	1.27 (0.62, 2.61)	**4.27 (2.23, 8.16)** ***	1.93 (0.97, 3.85)	**1.91 (1.04, 3.52)** *	1.63 (0.86, 3.12)
Theft- stealing more than $10	**1.93 (1.10, 3.40)** *	1.21 (0.64, 2.31)	0.94 (0.57, 1.53)	0.87 (0.51, 1.50)	**3.50 (2.21, 5.56)** ***	**2.21 (1.27, 3.85)** **	**1.85 (1.14, 2.98)** *	1.63 (0.94, 2.81)
Violent behaviour	**1.74 (1.12, 2.72)** *	1.17 (0.71, 1.93)	1.21 (0.80, 1.82)	1.18 (0.76, 1.81)	**3.65 (2.31, 5.76)** ***	**2.21 (1.27, 3.85)** **	**1.57 (1.05, 2.38)** *	1.44 (0.91, 2.26)
Marijuana use	**2.32 (1.37, 3.92)** **	1.48 (0.76, 2.89)	0.93 (0.54, 1.62)	0.99 (0.55, 1.78)	**2.66 (1.55, 4.58)** ***	1.42 (0.76, 2.64)	1.41 (0.83, 2.40)	1.35 (0.72, 2.53)
Binge drinking	**1.76 (1.21, 2.55)** **	1.13 (0.76, 1.68)	0.86 (0.63, 1.17)	0.84 (0.76, 1.68)	**2.58 (1.80, 3.68)** ***	**1.67 (1.12, 2.50)** *	1.17 (0.84, 1.64)	1.08 (0.75, 1.55)
Depressive symptoms	1.10 (0.71,1.72)	0.97(0.58, 1.63)	1.14 (0.85, 1.54)	0.89 (0.64, 1.24)	1.53 (0.99, 2.36)	1.39 (0.85, 2.27)	**2.03 (1.48, 2.79)** ***	**1.84 (1.30, 2.59)** **

Note.

* $p < .05$

** $p < .01$

*** $p < .001$.

The adjusted analyses for school suspension, carrying a weapon, theft, violent behaviour and depressive symptoms control for covariates entered into the logistic regression analyses in the following order 1) gender, 2) student impulsivity, concentration/attention deficits, 3) adolescent interaction with antisocial friends, 4) family history of antisocial behaviour, poor family management, family conflict, and 5) academic failure.

The adjusted analyses for binge drinking and marijuana use control for the same covariates, entered in the same order, as for other psychosocial outcomes as well as parental attitudes favourable to drug use (entered at step 4).

For Year 7, the association between bullying perpetration and the psychosocial outcomes became statistically non-significant at step 1 (gender) for violent behaviour, step 2 (student characteristics entered) for carrying a weapon, theft, and binge drinking, and at step 3 (interaction with antisocial friends entered) for marijuana use.

For Year 10 the association between bullying perpetration and the psychosocial outcomes became statistically non-significant at step 2 (student characteristics entered) for school suspension, at step 3 (interaction with antisocial friends entered) for marijuana use and at step 5 (academic failure entered) for carrying a weapon.

For Year 10 the association between bullying victimisation and the psychosocial outcomes became statistically non-significant at step 2 (student characteristics entered) for carrying a weapon and violent behaviour, and at step 4 (family variables entered) for theft.