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Bullying in early adolescence and its association with anti-social behaviour, criminality and violence 6 and 10 years later

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ABSTRACT
Background Few longitudinal studies have examined the links between engagement in bullying and later anti-social behaviour for both males and females.
Aims This study aimed to examine the association between adolescent bullying behaviour and subsequent anti-social behaviour, among a community sample of Australian males and females.
Methods Regression analysis was used to examine the relationship between bullying perpetration at age 13–14 and anti-social behaviour, criminal violence and contact with police or courts 6 and 10 years later among approximately 800 young adults participating in a 27-year longitudinal study. The analyses controlled for known risk factors for anti-social behaviour at age 13–14 years.
Results Moderate significant associations were found between bullying perpetration and subsequent anti-social behaviour. Associations were more powerful for males than females, and for short-term than long-term outcomes. Engagement in bullying remained a significant predictor of later anti-social behaviour and contact with police or courts even after other risk factors were accounted for.
Conclusions These findings suggest that bullying in adolescence may be a marker of risk for a continuing pattern of anti-social behaviour, particularly among young males.

Introduction

There is growing concern about the harmful effects that bullying may have on the health and wellbeing of young people (Rigby, 2003). Studies have examined

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the impact of bullying on victims (Arseneault et al., 2010), but less is known about the adverse consequences of bullying on the lives of those who bully (Rigby, 2003). Much of what is currently known is based on cross-sectional research, and few prospective studies have examined the short- and long-term consequences of bullying behaviour (Rigby, 2003; Sourander et al., 2007).

Young people who bully others have been found to be at heightened risk of engaging in subsequent anti-social and criminal behaviour (Farrington, 1993; Olweus, 1994; Sourander et al., 2007), although only a few longitudinal studies have examined this issue. These results are not surprising given that bullying has been viewed as one manifestation of a broader anti-social behavioural style (Olweus, 1994; Sourander et al., 2007). Nevertheless, it should be noted that previous studies have predominantly examined only males. Further research examining the long-term impacts of bullying perpetration for both males and females is needed.

The current paper aimed to redress this research gap by examining the long-term outcomes of bullying perpetration among a community sample of Australian males and females whose development had been followed from infancy into early adulthood. It aimed to examine the association between bullying behaviour at age 13–14 years and anti-social behaviour, criminal violence and self-reported contact with police or courts 6 and 10 years later (at ages 19–20 and 23–24 years). We adjusted for factors in adolescence known to be associated with these outcomes, namely: association with deviant peers, parental monitoring and harsh discipline, parental substance use and parental age, occupational status and highest level of completed education (Loeber et al., 1998; National Crime Prevention, 1999). Gender differences in the relationship between bullying and subsequent anti-social behaviour were also examined.

Method

Participants

Participants were members of the Australian Temperament Project (ATP), a longitudinal study following the psychosocial development of a large cohort of children born in the state of Victoria, Australia, between September 1982 and January 1983 (for more details see Prior et al., 2000). The initial ATP sample comprised 2443 infants (aged 4–8 months) and their parents, who were recruited through Maternal and Child Health Centres during a two-week period in 1983. The participants were recruited from urban (1604 children) and rural (839 children) locations, selected on the advice of the Australian Bureau of Statistics to provide a representative sample of the state of Victoria, Australia (Prior et al., 2000).

Fourteen waves of data have been collected to date, via mail questionnaires, and a fifteenth data collection wave commenced in July 2010. Parents, Maternal
and Child Health nurses, primary school teachers, and from the age of 11 years, the children themselves, have acted as informants.

Two-thirds of the original cohort (67%) participated in the most recent wave, when study members were aged 23 or 24 years. A higher proportion of the families no longer participating are from lower socio-demographic backgrounds or include parents born outside Australia. Nevertheless, there are no significant differences between the retained and no-longer-participating sub-samples on any infancy characteristics.

The findings presented in this paper are taken from the 10th, 13th and 14th waves of the ATP, when the young people in the study were aged 13–14 years (in 1996), 19–20 years (in 2002) and 23–24 years (in 2006), respectively. In total, 1359 young adults participated in Wave 10 (82% of the retained sample, 50% female), 1157 in Wave 13 (75% of the retained sample, 56% female) and 1000 in Wave 14 (67% of the retained sample, 61% female).

Measures

Details of all the independent and dependent variables used in the analyses are summarised in Table A1. Further details are available from the authors upon request.

Statistical analysis

As the outcome variables included both continuous (anti-social behaviour and criminal violence) and binary (contact with police or courts) variables, both OLS regression and logistic regression were used. Two models were constructed and replicated for each of the three behavioural outcomes, and for the two ages at which these outcomes were measured (19–20 and 23–24 years). Model 1 included only bullying at age 13–14 years. In Model 2 control variables for risk factors (see Table A1) were added.

Separate models for males and females were also estimated. These analyses were restricted to the anti-social behaviour scale as the number of females reporting involvement in ‘criminal violence’ (7–8%) and ‘contact with the police or courts’ (1–5%) at each time point was too small for reliable analyses. Cohen’s $d$ effect size criteria (Cohen, 1988) were used to assess the strength of association between variables with 0.20 representing a small, 0.50 a medium and 0.80 a large effect.

Only participants with complete data for all of the variables were included in these analyses, with the exception of the control variables of low monitoring and harsh discipline. To avoid a large reduction in the size of the 2002 sample due to missing data for the low monitoring and harsh discipline measures, a single dummy variable for missing data on the parenting practices scale (from which both these variables were obtained), was used. This missing variable was not
required for the 2006 sample as almost all those who were missing on the parenting practices scale in the 2002 sample were not part of the 2006 sample. Also, due to missing data and non-linear relationships, some of the control variables were transformed into categorical variables.

Results

Approximately 20% of participants reported having bullied or threatened others at age 13–14 years. More males than females reported involvement in bullying (see Table 1). Rates of anti-social behaviour, criminal violence and contact with the police or courts were higher at 19–20 years than at 23–24 years. They were also higher for males than females.

Descriptive statistics for the covariates in the regression models are presented in Table A2.

Anti-social behaviour

A statistically significant relationship was found between bullying at age 13–14 years and anti-social behaviour at later ages (Model 1), with stronger associations at age 19–20 than 23–24 (Table 2). Effect sizes were in the medium range. The relationship remained significant when control variables were included in Model 2, although effect sizes were reduced.

Criminal violence

Unadjusted estimates revealed a significant, small to medium strength association between bullying and criminal violence at 19–20 years (Model 1). However the association was weaker and not statistically significant when control variables were included (Model 2). Bullying at 13–14 years was not significantly associated with criminal violence at 23–24 years.

Contact with police or the courts

Bullying at age 13–14 was associated with an almost three-fold increase in the odds of contact with police or courts at 19–20 years for unadjusted estimates (Model 1) and a close to two-fold increase for adjusted estimates (Model 2). Similarly, unadjusted estimates suggested that adolescent bullies were 2.7 times more likely to experience contact with the police or courts at 23–24 years (Model 1). However this relationship did not remain statistically significant after controlling for other risk factors (Models 2).
Table 1: Self-reported involvement in bullying (at 13–14 years) and anti-social behaviours (at 19–20 and 23–24 years), by gender

<table>
<thead>
<tr>
<th></th>
<th>19–20 years</th>
<th></th>
<th></th>
<th>23–24 years</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
</tr>
<tr>
<td>Bully at 13–14 years</td>
<td>Per cent</td>
<td>27.30</td>
<td>13.99</td>
<td>19.98</td>
<td>24.16</td>
<td>14.22</td>
</tr>
<tr>
<td>Contact with police/courts</td>
<td>13.01</td>
<td>4.59</td>
<td>8.38</td>
<td>6.38</td>
<td>1.31</td>
<td>3.31</td>
</tr>
<tr>
<td>Mean (SD) Anti-social behaviour</td>
<td>1.66 (2.21)</td>
<td>0.68 (1.16)</td>
<td>1.12 (1.78)</td>
<td>0.96 (1.41)</td>
<td>0.49 (0.97)</td>
<td>0.67 (1.18)</td>
</tr>
<tr>
<td>Criminal violence</td>
<td>0.33 (0.57)</td>
<td>0.10 (0.35)</td>
<td>0.20 (0.48)</td>
<td>0.20 (0.46)</td>
<td>0.07 (0.26)</td>
<td>0.12 (0.36)</td>
</tr>
<tr>
<td>N</td>
<td>392</td>
<td>479</td>
<td>871</td>
<td>298</td>
<td>457</td>
<td>755</td>
</tr>
</tbody>
</table>

SD, standard deviation.
Table 2: Effect sizes and odds ratios of the association between bullying perpetration at age 13–14 and anti-social behaviour, criminal violence and contact with police or courts at ages 19–20 and 23–24 (total sample)

<table>
<thead>
<tr>
<th></th>
<th>19–20 years</th>
<th>23–24 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1:</td>
<td>Model 2:</td>
</tr>
<tr>
<td></td>
<td>Bullying included</td>
<td>Family and peer variables added</td>
</tr>
<tr>
<td>Effect size</td>
<td>95% CI</td>
<td>Effect size</td>
</tr>
<tr>
<td>Anti-social behaviour</td>
<td>0.51***</td>
<td>0.35–0.67</td>
</tr>
<tr>
<td>Criminal violence</td>
<td>0.33***</td>
<td>0.17–0.50</td>
</tr>
<tr>
<td>Odds ratio</td>
<td>95% CI</td>
<td>Odds ratio</td>
</tr>
<tr>
<td>Contact with police or courts</td>
<td>2.97***</td>
<td>1.80–4.90</td>
</tr>
</tbody>
</table>

Note: Results for the control variables used in Model 2 are presented in tables A3–A8.

*p ≤ 0.05.

**p ≤ 0.01.

***p ≤ 0.001.

CI, confidence interval.
Gender differences

The relationship between bullying and anti-social behaviour was noticeably stronger for males than females, as evidenced by larger effect sizes at both time-points (see Table 3). Furthermore, after controlling for risk factors in Model 2, bullying remained significantly related to anti-social behaviour for males but not females.

Discussion

This paper examined the relationship between bullying perpetration in early adolescence, and engagement in a range of anti-social outcomes 6 and 10 years later, among a community sample of Australian males and females participating in a 27-year longitudinal study.

Consistent with past research (Farrington, 1993; Olweus, 1994; Sourander et al., 2007), significant associations were found between adolescent bullying behaviour and subsequent anti-social and criminal behaviour. Young people who bullied others at age 13–14 were significantly more likely to be anti-social, engage in violent acts and to have experienced contact with the criminal justice system at 19–20 years. They were also more likely to engage in anti-social acts and have contact with the police and courts for offending at age 23–24. Associations were generally small to medium in size, and were more powerful for short-term than long-term outcomes. However, the effect sizes reported for these relationships may be conservative due to the high skewness of the outcome variables.

Engagement in bullying remained a significant predictor of later anti-social behaviour and contact with the criminal justice system when a range of family and peer risk factors was controlled for (i.e. association with deviant peers, parental monitoring and harsh discipline, parental substance use and parental age, occupational status and highest level of completed education). However, the relationship between involvement in bullying and criminal violence failed to reach significance once these risk factors were included. While this finding may reflect the actual situation, it is also possible that the limited breadth of the criminal violence index used in this study may have contributed to this result. Hence, replication of these findings using a more comprehensive measure of criminal violence would be desirable.

A strength of this paper was that it examined the long-term outcomes of bullying behaviour for both sexes. Adolescent bullying was significantly associated with subsequent anti-social behaviour for both males and females. The relationship between bullying and anti-social behaviour was stronger for males than females, suggesting that engagement in bullying may be a more powerful marker for subsequent anti-social and criminal behaviour for males. This result is not surprising, given that males are more likely to both bully others (Olweus, 1994).
Table 3: Effect sizes of the association between bullying perpetration at age 13–14 and anti-social behaviour at ages 19–20 years and 23–24 years, by gender

<table>
<thead>
<tr>
<th></th>
<th>19–20 years</th>
<th>23–24 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1: Bullying included</td>
<td>Model 1: Bullying included</td>
</tr>
<tr>
<td></td>
<td>Model 2: Family and peer variables added</td>
<td>Model 2: Family and peer variables added</td>
</tr>
<tr>
<td>Effect size</td>
<td>95% CI</td>
<td>Effect size</td>
</tr>
<tr>
<td>Males</td>
<td>0.44**</td>
<td>0.34*</td>
</tr>
<tr>
<td>Females</td>
<td>0.34*</td>
<td>0.30*</td>
</tr>
<tr>
<td></td>
<td>0.22–0.66</td>
<td>0.08–0.60</td>
</tr>
<tr>
<td></td>
<td>0.37**</td>
<td>−0.13–0.60</td>
</tr>
<tr>
<td></td>
<td>−0.12–0.41</td>
<td>0.04–0.57</td>
</tr>
</tbody>
</table>

*p ≤ 0.05.

**p ≤ 0.01.

***p ≤ 0.001.
and engage in anti-social and criminal acts (Moffitt et al., 2001), trends that were replicated in this study.

While this study had a number of strengths, a limitation of this research was that it used a single item to assess engagement in bullying in adolescence. However, more detailed information was not collected as part of the ATP.

Conclusion

Taken together, the findings of the current study add to a growing body of research which suggests that rather than being a harmless activity, bullying is part of a syndrome of norm-breaking behaviours that may have serious and long-lasting effects for perpetrators as well as victims. More specifically, these findings provide further evidence that bullying in adolescence may be a marker of risk for a continuing pattern of anti-social behaviour, particularly for young men. As anti-social behaviour may have deleterious consequences not only for individuals themselves, but also for their families and their wider communities (Scott et al., 2001; Schaeffer et al., 2003), these findings highlight the importance of early intervention efforts targeting bullying.

Acknowledgements

The authors would like to acknowledge Professor Ann Sanson and Diana Smart for the helpful comments they provided on an earlier draft, and the other ATP Principal Investigators: Professors John Toumbourou, Margot Prior and Frank Oberklaid and Dr Craig Olsson, for the contributions they have made to the project. We would also like to sincerely thank the young people and their parents who have participated in the ATP — without their loyalty and support, this research would not have been possible.

The ATP is a multidisciplinary collaboration between researchers from the Australian Institute of Family Studies, the Royal Children's Hospital, the University of Melbourne and Deakin University. Since 2000, the project has been led and managed by the Australian Institute of Family Studies. The ATP has also been supported by various Australian Research Council grants through the study's university collaborators.

References


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Supporting information

Additional supporting information may be found in the online version of this article:

Table A1. Summary of measures.
Table A2. Descriptive statistics for the covariates.
Table A3. Association between bullying perpetration at age 13–14 and anti-social behaviour at age 19–20 (total sample), OLS regression estimates.

Table A4. Association between bullying perpetration at age 13–14 and anti-social behaviour at age 23–24 (total sample), OLS regression estimates.

Table A5. Association between bullying perpetration at age 13–14 and criminal violence at age 19–20 (total sample), OLS regression estimates.

Table A6. Association between bullying perpetration at age 13–14 and criminal violence at age 23–24 (total sample), OLS regression estimates.

Table A7. Odds ratios of the association between bullying perpetration at age 13–14 and contact with police or courts at age 19–20 (total sample).

Table A8. Odds ratios of the association between bullying perpetration at age 13–14 and contact with police or courts at age 23–24 (total sample).

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