

Victimisation and suicide ideation in the TRAILS study: specific vulnerabilities of victims

Catherine M. Herba,¹ Robert F. Ferdinand,^{1,2} Theo Stijnen,³ René Veenstra,^{4,5} Albertine J. Oldehinkel,^{2,1} Johan Ormel,² and Frank C. Verhulst¹

¹Department of Child and Adolescent Psychiatry, Erasmus University Medical Center/Sophia Children's Hospital, Rotterdam, Netherlands; ²Department of Psychiatry and Graduate School of Behavioral and Cognitive Neurosciences, University Medical Center Groningen, Netherlands; ³Department of Medical Statistics and Bioinformatics, Leiden University Medical Center, Netherlands; ⁴Department of Sociology, University of Groningen and Interuniversity Center for Social Science Theory and Methodology, Netherlands; ⁵Department of Psychology, University of Turku, Finland

Background: Scientific studies have provided some support for a link between being a victim of bullying and suicide ideation. We examine whether (1) parental psychopathology and (2) feelings of rejection (at home and at school) exacerbate vulnerability to suicide ideation in victims of bullying (pure victims and bully-victims). **Method:** Data were from a population-based cohort study of Dutch children ($n = 1526$, mean age = 12.29 years). Using peer nominations, three groups were established: (1) victim only; (2) bully-victims (children who are victims and who also bully others); (3) uninvolved. Self-report data on suicide ideation were obtained using two items from the Youth Self-Report (Achenbach, 1991). Parental internalising and externalising disorders were assessed, as were self-reported feelings of rejection at home and social well-being among classmates. **Results:** The association between victimisation and suicide ideation was moderated by parental internalising disorders (but not externalising disorders) and feelings of rejection at home. Victims (but not bully-victims) with parents with internalising disorders reported elevated levels of suicide ideation compared to children uninvolved in bullying. Victims feeling more rejected at home also reported more suicide ideation. There were no overall sex differences in suicide ideation. Surprisingly, bully-victims did not report higher levels of suicide ideation compared to children uninvolved in bullying. **Conclusions:** Parental internalising disorders and feelings of rejection at home confer a specific vulnerability for suicide ideation among victims of bullying. **Keywords:** Bullying, peer relationships, risk factors, suicidal behaviour, suicide ideation, victimisation. **Abbreviations:** TRAILS: TRacking Adolescents' Individual Lives Survey; YSR: Youth Self Report; EMBU-C: Swedish acronym for 'My memories of upbringing'.

Recent media reports of children driven to suicide following bullying at school have highlighted the serious negative mental health consequences of bullying. Although these cases are very rare compared to the rates of children bullied at school, they highlight the need for awareness among parents/caregivers, teachers, and doctors. Using data from a prospective longitudinal cohort study of children and adolescents in the Netherlands, we addressed whether being a victim of bullying at school is associated with suicide ideation, and whether some children may be particularly vulnerable due to the impact of factors such as parental psychopathology, feelings of being rejected at home, feelings of well-being among classmates, and sex.

Emerging literature on victimisation and bullying increasingly recognises a subset of children, who are both victimised and victimise others (i.e., bully others) (Arseneault et al., 2006; Fekkes, Pijpers, & Verloove-Vanhorick, 2004; Juvonen, Graham, & Schuster, 2003; Kim, Koh, & Leventhal, 2005; Nansel et al., 2001; van der Wal, de Wit, & Hirasing, 2003; Veenstra et al., 2005). We refer to this group

as bully-victims. Bullying has generally been described as peer-related aggression, involving an imbalance of power, repeated over time, which can be subcategorised according to whether the aggression is physical, verbal (i.e., insulting, offensive remarks), or psychological (i.e., spreading nasty rumours, social exclusion, malicious text messages) (Hawker & Boulton, 2000; Nansel et al., 2001). Rates of involvement in bullying (as a bully, victim, or both) in school-age children vary depending on the culture/country in which it is investigated and assessment methods, but generally lie between 3 and 30% (Forero, McLellan, Rissel, & Bauman, 1999; Nansel et al., 2001; Smith et al., 1999).

Much of the research on the negative effects of being victimised by bullying highlights psychosocial consequences such as depression, anxiety, and psychosomatic symptoms (Arseneault et al., 2006; Fekkes et al., 2004; Forero et al., 1999; Hawker & Boulton, 2000; Juvonen et al., 2003; Nansel et al., 2001). However, the issue of suicide ideation in children exposed to bullying, particularly in relation to identifying children who might be particularly vulnerable, has largely been neglected.

Conflict of interest statement: No conflicts declared.

© 2008 The Authors

Journal compilation © 2008 Association for Child and Adolescent Mental Health.

Published by Blackwell Publishing, 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA

Victimisation and suicide ideation

Suicide ideation (thoughts of harming or killing oneself) lies on a continuum of suicide behaviour, may be a precursor to suicide attempt (Bridge, Goldstein, & Brent, 2006; Brunstein Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Groholt, Ekeberg, Wichstrom, & Haldorsen, 2000; Wichstrom, 2000), and can be persistent over time (Fergusson, Horwood, Ridder, & Beautrais, 2005a).

A handful of studies have specifically investigated the links between victimisation and suicide ideation (Baldry & Winkel, 2003; Brunstein Klomek et al., 2007; Kaltiala-Heino, Rimpela, Marttunen, Rimpela, & Rantanen, 1999; Kim et al., 2005; Park, Schepp, Jang, & Koo, 2006; Rigby & Slee, 1999; van der Wal et al., 2003). These studies have generally supported the view that being victimised by bullying is associated with higher rates of suicide ideation. However, a major limitation of many of these studies is the problem of shared methods variance, due to their use of self-report data to ascertain both victimisation/bully status and suicide ideation. Consequently, reports of children on whether they are bullied, and how often, may become confounded with their reports on suicide ideation. Only two studies (Kim et al., 2005; Rigby & Slee, 1999) have used peer nomination rather than self-report data to establish victimisation when investigating the association between victimisation and suicide ideation. Kim et al. (2005) reported that victims, particularly bully-victims, were at increased risk for suicide ideation and self-harm. Female victims were also at greater risk for suicide ideation compared to males, suggesting that females may react to bullying with a more acute onset of suicide ideation.

Vulnerability factors

Fergusson, Beautrais, and Horwood (2003) demonstrated that a range of factors encompassing family, personality and peer relationships influence depressed adolescents' vulnerability to suicide ideation and attempt. Following from this, we sought to determine whether certain factors might increase vulnerability to suicide ideation among victims of bullying. Research indicates that victims and bully-victims have elevated rates of familial psychopathology; bully-victims have increased vulnerability to parental externalising disorder, whereas victims have increased vulnerability to parental internalising disorder (Veenstra et al., 2005). A recent study has also indicated that there is some genetic influence on characteristics making some children vulnerable to being victimised (Ball et al., 2008). Parental internalising or externalising disorders might therefore impact differentially on bully-victims compared to victims-only in relation to children uninvolved in bullying. Bully-victims may also come from homes characterised by hostility and rejection (Bowers,

Smith, & Binney, 1994). Independent of the effects of bullying, familial psychopathology (such as parental alcohol abuse and maternal mental health) and children's perceptions of their family environment have been associated with elevated levels of suicide ideation (Garber, Little, Hilsman, & Weaver, 1998; Park et al., 2006; Wagner, 1997). Parental internalising and externalising disorders may also be associated with suicide ideation for different reasons (i.e., victims with higher levels of parental internalising disorder may also be more at risk for depression and suicide ideation; whereas victims (particularly bully-victims) with higher parental externalising disorder may be more impulsive and prone to alcohol abuse which also might lead to elevated suicidal behaviour). Two studies have examined the combined impact of victimisation and perceptions of a negative home environment in relation to suicide ideation (Baldry & Winkel, 2003; Rigby & Slee, 1999). Peer attachment and affiliations are also associated with suicide behaviours (Fergusson et al., 2003). However the more specific issue as to whether certain subgroups of children victimised by bullying (victims, bully-victims), when exposed to these vulnerability factors, may be particularly at risk for suicide ideation remains unclear. We extend this research by examining whether any association between victimisation and suicide ideation is moderated by family (parental psychopathology and rejection at home) and peer (social well-being) factors, and whether this might differ for victims versus bully-victims.

Another potential moderating variable is sex. Sex could impact differently on both suicide ideation and victimisation; boys tend to be bully-victims, whereas girls tend to be passive victims (Veenstra et al., 2005). Furthermore, suicide ideation is more common among girls, and suicidal behaviour is more common among older children and adolescents compared to younger children (see Gould, Greenberg, Velting, & Shaffer, 2003).

Using data from a large-scale study, we extend the literature by simultaneously examining the impact of three factors that are likely to affect an individual's vulnerability to the negative consequences of bullying: (1) parental psychopathology; (2) feelings of rejection at home; and (3) social well-being among classmates. Victimisation/bully status was assessed using peer-nomination data, thereby avoiding the problem of shared methods variance. We predicted that:

1. Victims and bully-victims would have elevated suicide ideation compared to children uninvolved in bullying.
2. The association between victimisation and suicide ideation would be moderated by vulnerability factors (i.e., parental psychopathology, rejection at home, and peer relations). Such vulnerability factors may make it more difficult for victims to cope with their experiences of being bullied, thus leading to elevated suicide ideation.

3. Girls would report higher rates of suicide ideation compared to boys. We also expect female victims to report higher levels of suicide ideation compared to male victims (Kim et al., 2005).

Method

Participants

Participants were part of the TRAILS study (TRacking Adolescents' Individual Lives Survey), a large-scale prospective cohort study following preadolescents every two or three years until at least the age of 21 years. This study uses data from the first two assessment waves in parallel in order to maximise the power of the study. The first assessment wave (T1) ran from March 2001 to July 2002 (mean age (SD) = 11.09 (.55)); the second wave (T2) (mean age (SD) = 13.56 (.53)) ran from September 2003 to December 2004. Children participating in the TRAILS study were recruited from five municipalities (rural and urban) in northern Netherlands. There were two steps to the recruitment procedure: (1) municipalities were requested to pass on names and addresses for inhabitants born between 1 October 1989 and 30 September 1990 (first two municipalities) and between 1 October 1990 and 30 September 1991 (last three municipalities); (2) primary schools within these municipalities were approached (of 135 schools approached, 122 agreed to participate). School participation was necessary for participants to be approached by TRAILS. Further details regarding the recruitment of TRAILS participants, family history of TRAILS participants, how victimisation status was established, as well as those correlates associated with victimisation and bullying in the TRAILS sample are available in previous papers (de Winter et al., 2005; Oldehinkel, Hartman, de Winter, Veenstra, & Ormel, 2004; Oldehinkel, Veenstra, Ormel, de Winter, & Verhulst, 2006; Ormel et al., 2005; Veenstra, Lindenberg, Oldehinkel, de Winter, & Ormel, 2006; Veenstra et al., 2005, 2007). The survey was approved by the national ethical committee 'Centrale Commissie Mensgebonden Onderzoek'. Informed consent was obtained from all parents after the nature of the study had been fully explained.

A total sample of 2230 children participated in TRAILS. Peer nominations were used to establish victimisation/bully status (described below), which subsequently determined which data were available at each assessment wave. Peer nomination data were available on 1065 children at T1 and 1078 children at T2; 617 children had peer nomination data at both T1 and T2; 704 children did not have any peer nomination data. This yielded a total sample of 1526 children for whom peer nomination data were available. To determine whether participants with peer nomination data ($n = 1526$) differed from those without ($n = 704$), a logistic regression analysis was conducted including the following predictors: sex, parental internalising disorders, parental externalising disorders, feelings of rejection at home, and suicide ideation. A lack of peer nomination data was more common in boys than girls (OR = 1.29, 95% C.I. = 1.07, 1.55, $p = .01$), and those with parental externalising disorders (OR = 1.79, 95% C.I. = 1.44, 2.23, $p < .001$). No

significant differences emerged for parental internalising disorders ($p = .85$), feelings of rejection at home ($p = .21$), or suicide ideation ($p = .30$) at either T1 or T2.

Since our hypotheses focused on victimisation, we did not analyse data for bullies-only. This left us with 926 children at T1 (384 boys, 542 girls) and 928 children at T2 (509 girls, 419 boys); 428 of these children had peer nomination data at T1 and T2.

Measures

Victimisation/Bully status. Children were presented with a list of their classmates and were required to rate them on the following dimensions: (1) Bullying: 'By whom are you bullied?' (2) Victimisation: 'Whom do you bully?' No definition of bullying was provided to the children. Children understand the term bullying very well in the Netherlands and a recent publication has shown that the perspectives of bullies and victims were comparable (Veenstra et al., 2007). There was no limit to the number of children that could be nominated in response to these questions, nor were children required to nominate anyone. Ratings generated data for the relationship between two children, for each child in the study. To account for differences in the number of participating children per class, the proportion of nominations was used. Data were rank ordered, yielding four groups of children: bullies (in the upper quartile on bullying), victims (in the upper quartile on victimisation), bully-victims (in the upper quartile on both), and those uninvolved in bullying (see Table 1). This paper focuses on three of these four groups: victims, bully-victims, and those uninvolved in bullying.

Suicide ideation. Two items from the Youth Self-Report (YSR) (Achenbach, 1991) were used to assess suicide ideation: items 18 ('I deliberately try to hurt or kill myself') and 91 ('I think about killing myself'). Other studies examining adolescent suicide ideation have assessed suicide ideation in a similar manner, using the endorsement of at least one of these YSR items as indicative of suicide ideation (Baldry & Winkel, 2003; Dhossche, Ferdinand, van der Ende, Hofstra, & Verhulst, 2002; Kim et al., 2005; Steinhausen, Bosiger, & Metzke, 2006).

Moderating variables

Rejection at home. The EMBU-C (Swedish acronym for 'My Memories of Upbringing'; Markus, Lindhout, Boer, Hoogendijk, & Arrindell, 2003) was used to examine children's perception of upbringing and their parents' rearing practices. The EMBU-C consists of 47 items examining four aspects of parent-rearing practices (Rejection, Overprotection, Emotional Warmth, and Favouring Subject). Each item, scored on a four-point scale (1 = never; 2 = sometimes; 3 = often; 4 = yes, almost always), is rated by children for both their father and mother. Only the Rejection scale (consisting of 12 items characterised by hostility, punishment, derogation, and blaming the child) was included in the present analyses, and was based on a total score for both parents (internal consistency: .84 for fathers,

Table 1 Descriptive data for each assessment wave

	Time 1			Time 2		
	Bully-victims (<i>N</i> = 110)	Victims (<i>N</i> = 164)	Control (uninvolved) (<i>N</i> = 652)	Bully-victims (<i>N</i> = 108)	Victims (<i>N</i> = 127)	Control (uninvolved) (<i>N</i> = 693)
Age (years); Mean (s.d.)	10.98(.39) (<i>R</i> = 10.0–12.0)	11.04(.50) (<i>R</i> = 10.0–12.0)	11.06(.54) (<i>R</i> = 10.0–12.0)	13.54(.51) (<i>R</i> = 12.5–14.6)	13.56(.50) (<i>R</i> = 12.4–14.6)	13.51(.52) (<i>R</i> = 12.4–15.0)
Sex (% Male)	66.4	31.7	39.7	78.7	42.5	40.4
Suicide ideation (%Yes)	8.5	9.2	10.0	6.9	11.7	8.6
Rejection at home (T1)	1.55 (.34)	1.46 (.29)	1.46 (.29)	1.51 (.31)	1.51 (.30)	1.44 (.29)
Parental internalising	.43 (.70)	.62 (.82)	.55 (.79)	.56 (.78)	.45 (.69)	.53 (.78)
Parental externalising	.19 (.45)	.11 (.31)	.08 (.30)	.13 (.40)	.07 (.26)	.11 (.34)
Social well-being among classmates	3.25 (.74)	3.34 (.73)	3.49 (.64)	3.28 (.61)	3.26 (.57)	3.50 (.57)
YSR internalising	.36 (.26)	.42 (.26)	.37 (.24)	.29 (.22)	.41 (.28)	.34 (.24)
YSR externalising	.32 (.18)	.26 (.18)	.25 (.18)	.31 (.22)	.27 (.18)	.26 (.18)
CBCL internalising	.19 (.14)	.29 (.21)	.24 (.19)	.22 (.20)	.19 (.20)	.19 (.17)
CBCL externalising	.25 (.21)	.24 (.17)	.20 (.17)	.25 (.23)	.15 (.15)	.14 (.16)

Note. Range of variables for whole sample: Rejection at home: 1.00–3.47; Parental internalising: .00–3.88; Parental externalising: .00–2.16; Social well-being among classmates: 1.00–5.00; YSR internalising: .00–1.43; YSR externalising: .00–1.34; CBCL internalising: .00–1.29; CBCL externalising: .00–1.23.

.83 for mothers; correlation between answers for both parents = .67) (see Oldehinkel, Veenstra, Ormel, de Winter, & Verhulst, 2006; Veenstra, Lindenberg, Oldehinkel, de Winter, & Ormel, 2006).

Social well-being among classmates. Children's self-reports of social well-being among classmates was assessed using two scales based on the Social Production Function Theory (Nieboer, Lindenberg, Boomstra, & Van Bruggen, 2005). Responses were scored on a Likert scale ranging from (1) never to (5) always. Higher scores indicated more positive feelings of well-being among classmates (therefore less feelings of rejection in school). Data were available at T1 and T2. Internal consistency was good at T1 (Cronbach's alpha = .89, 10 items) and T2 (Cronbach's alpha = .86, 10 items).

Parental psychopathology. Lifetime parental psychopathology was assessed using the TRAILS Family History Interview at T1. This was administered at the parent interview at T1 to the parental informant (normally the child's mother), who was interviewed about their own history and about the child's other biological parent. Five dimensions of parental psychopathology were assessed: depression, anxiety, substance abuse, persistent antisocial behaviour, and psychosis. A description of DSM-IV symptoms characterising each of these dimensions was presented to the parental informant through a vignette. The parent was then asked about lifetime occurrence, professional treatment and medication. Based on the interview, for each dimension, parents could be allocated to one of three categories: (0) probably never had an episode, (1) probably yes, (2) probably yes with treatment and/or medication (or police contact in the case of antisocial behaviour). Prevalence rates for parental depression, anxiety disorders, substance dependence, and antisocial behaviour were comparable to CIDI-DSM-IV lifetime rates (with the exception of paternal anxiety and substance abuse which were lower) (see Ormel et al., 2005). Indices of

parental internalising and externalising disorders (based on the number of lifetime disorders) were calculated separately; the construction of these familial vulnerability indices was based on a twin modelling study investigating genetic risk factors for common psychiatric and substance use disorders conducted by Kendler, Prescott, Myers, and Neale (2003). Paternal and maternal indices were combined. Internalising disorders comprised of anxiety and depression; externalising disorders comprised of substance dependence and antisocial behaviour. These indices for parental internalising and externalising disorders have been reported in other studies using the TRAILS sample (Oldehinkel et al., 2006; Ormel et al., 2005; Veenstra et al., 2005).

Socio-economic status (SES). A composite scale for SES was calculated, based on data related to income level, educational level of the father and mother, and occupational level of both parents based on the International Standard Classification for Occupations (Ganzeboom & Treiman, 1996). Data from these measures were standardised and combined into one scale (internal consistency = .84). This measure has been reported elsewhere (Veenstra et al., 2005).

Statistical analyses

Data were analysed within SAS for Windows (version 9.1) using logistic regression according to the generalised estimating equation (GEE) approach to examine the influence of victimisation and moderating factors (sex, SES, parental internalising and/or externalising disorders, rejection at home, and social well-being among classmates) upon suicide ideation. In principle, we could have run two separate analyses (one for each assessment wave). However, a more powerful approach is to use logistic regression for repeated outcome data according to the GEE approach (for each participant, the dependent variable of suicide ideation is measured

at both T1 and T2). For part of the sample, peer nomination data were available from one assessment wave (either T1 or T2), and for another part, peer nomination data were available for both waves. The GEE method we use takes into account that data from the same person are dependent. Data for all children who have peer nomination data for bully status at T1, T2, or both T1 and T2 can be used by combining the file as if they were two cross-sectional studies, while correcting for double counts (children with peer nomination data at both T1 and T2). The GEE approach gives a lower weight to correlated outcomes (of children with data from T1 and T2). The analyses conducted always assess whether victimisation is associated with *current* suicide ideation (whether victimisation at T1 is associated with suicide ideation at T1; whether victimisation at T2 is associated with suicide ideation at T2, and for those children who have peer nomination data at T1 and T2, corresponding suicide ideation for that time point is assessed, but corrections are made for the fact that we have two data points for that particular participant). This approach has been described elsewhere (Fitzmaurice, Laird, & Ware, 2004), and has been applied to examine depression in adolescence and mental health outcome in a cohort study (Fergusson, Horwood, Ridder, & Beautrais, 2005b).

We first tested the association between victimisation (main predictor; bully-victims vs. uninvolved and victims vs. uninvolved) and suicide ideation (outcome variable) using a logistic regression.

To examine the effect of moderating variables (parental psychopathology, feelings of rejection, social well-being, and sex) upon victimisation in the prediction of suicide ideation, a maximum model was specified, predicting the dependent variable of suicide ideation (absent = 0 or present = 1 on item 18 and/or 91). Main effects of time (T1 vs. T2; within-subjects factor), victimisation (bully-victim, victim, or uninvolved), sex, SES, parental psychopathology (internalising and externalising disorders), rejection at home (EMBU-C Rejection scale), and social well-being among classmates were included. Five additional interaction terms were included to examine predicted moderating effects outlined in our hypotheses: sex*victimisation, parental internalising disorders*victimisation, parental externalising disorders*victimisation, rejection at home*victimisation, and social well-being among classmates*victimisation. A backward selection procedure was employed to identify a parsimonious model. Relevant two-way interaction terms were identified by consecutively dropping interaction terms from the model until all remaining terms tested significant at the 5% level. Interactions were tested using the Wald χ^2 statistic. Once a model with relevant significant interactions was identified, main effects involved in significant interactions were always kept in the model. Main effects not involved in significant interactions were examined, and those that were not deemed to be necessary for theoretical reasons were evaluated for exclusion from the model (i.e., parental internalising or externalising disorder, rejection at home, social well-being among classmates, and SES). Variables kept in the model for theoretical reasons included (regardless of whether they were significant or involved in a higher-order interaction): sex, and the within-subjects variable time (T1 versus T2).

Results

Study population

Descriptive data are presented in Table 1.

Main effects

Our first hypothesis, of a straightforward association between victimisation and suicide ideation, was not supported. Compared to children uninvolved in bullying, those rated as bully-victims ($p = .39$) or as victims ($p = .85$) did not report increased levels of suicide ideation (see Table 2).

A series of logistic regression analyses was conducted to examine which other variables predict suicide ideation. Results are presented in Table 2. Lower SES ($p = .02$), lower levels of social well-being among classmates ($p < .001$), greater feelings of rejection at home ($p < .001$), and higher levels of parental internalising disorders ($p = .02$) were each significantly associated with suicide ideation. Sex and parental externalising disorder were not significant predictors of suicide ideation.

Model including moderating effects

We then sought to examine whether certain variables (such as parental psychopathology, feelings of rejection at home, social well-being among classmates, and sex) might moderate the relationship between victimisation and suicide ideation. The interactions between victimisation and parental internalising disorders (Wald $\chi^2 = 5.90$, $df = 2$, $p = .05$), and between victimisation and rejection at home (Wald $\chi^2 = 5.90$, $df = 2$, $p = .05$) were both significant. The interactions victimisation*parental externalising disorders, victimisation*sex, and victimisation*social well-being among classmates, and the main effects of SES, and parental externalising disorder, were all non-significant ($p > .05$) and were therefore excluded from the final model. The main effects of sex and

Table 2 Main effects of victimisation and moderating variables in predicting suicide ideation

Predictors	Outcome: Suicide ideation OR (95% C.I.)	Significance
<i>Victimisation</i>		
Bully- victims vs. uninvolved	.80 (.48, 1.33)	P = .39
Victims vs. uninvolved	1.04 (.68, 1.61)	P = .85
<i>Moderating variables</i>		
Sex	1.10 (.88, 1.38)	P = .41
SES	.84 (.72, .97)	P = .02
Rejection at home	6.42 (4.72, 8.73)	P < .001
Social well-being among classmates	.64 (.54, .76)	P < .001
Parental internalising disorder	1.18 (1.03, 1.36)	P = .02
Parental externalising disorder	1.19 (.93, 1.52)	P = .16

Table 3 Effects of victimisation and moderating variables in predicting suicide ideation; final model including significant interaction terms.

Predictors	Outcome: Suicide ideation OR (95% C.I.)	Significance
<i>Moderating variables</i>		
Sex	1.12 (.78, 1.61)	.55
Rejection at home	6.47 (3.64, 11.48)	<.001
Parental internalising disorder	1.03 (.80, 1.33)	.82
Social well-being among classmates	.67 (.52, .88)	.003
<i>Victimisation</i>		
Bully-victims vs. uninvolved	.20 (.02, 2.34)	.20
Victims vs. uninvolved	.04 (.003, .46)	.01
<i>Victimisation*Parental internalising disorder (p = .05); Comparison group is uninvolved children</i>		
Bully-victims*Parental internalising disorder	.97 (.45, 2.06)	.93
Victims*Parental internalising disorder	1.93 (1.13, 3.28)	.02
<i>Victimisation*Rejection at home (p = .05); Comparison group is uninvolved children</i>		
Bully-victims*Rejection at home	2.03 (.51, 8.07)	.31
Victims*Rejection at home	5.50 (1.32, 22.90)	.02

assessment wave (T1 vs. T2) were not significant ($p > .10$). Compared to children uninvolved in bullying, the interaction between parental internalising disorders and victimisation was significant for victims ($p = .02$), but not for bully-victims (.93). Compared to uninvolved children, the interaction between rejection at home and victimisation was significant for victims ($p = .02$), but not for bully-victims (.31). Results are presented in Table 3, and illustrated graphically in Figure 1. Victims of bullying without parental internalising disorders (i.e., x -axis values closer to 0) were similar to those uninvolved in bullying to report suicide ideation (OR = 1). Victims with median or high scores for rejection at home demonstrated a steeply rising OR for suicide ideation, particularly as their index of parental internalising disorders increased (i.e., increasing x -axis values; reaching ORs close to 8). Compared to uninvolved children, victims with high scores on rejection at home (EMBU-C Rejection = 75th percentile), or victims with greater parental internalising disorder were most at risk for suicide ideation.

Discussion

Using data from a large-scale cohort study, we sought to examine whether being victimised by bul-

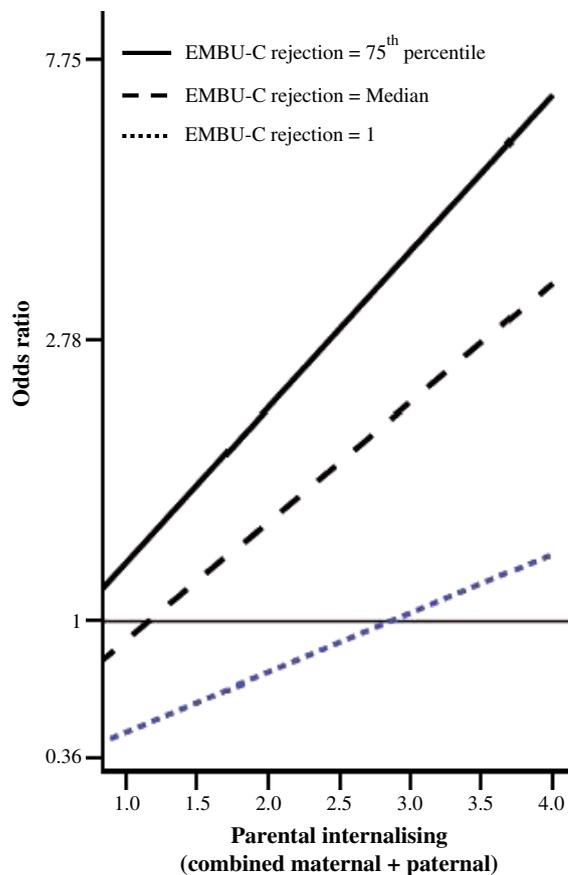


Figure 1 Odds ratios (OR) for suicide ideation among victims compared to children uninvolved in bullying are presented graphically in Figure 1. Because significant interaction terms in the final model involved an interaction between a continuous variable (parental internalising disorders, rejection at home) and victimisation, interaction terms cannot be examined independently of one another. This figure allows for a model that takes account of both interaction terms simultaneously when examining our effects of interest (victim vs. uninvolved). The (logarithmic) y-axis represents the OR: increasing OR indicates increased suicide ideation in victims compared to those uninvolved in bullying. The horizontal line at 1 (OR = 1) indicates where victims do not differ from uninvolved children. Values below 1 indicate that victims have a lower incidence of suicide ideation compared to those uninvolved in bullying; values above 1 indicate higher levels of suicide ideation compared to uninvolved children. The x-axis represents level of parental internalising disorders: increasing values indicate more parental internalising disorders (anxiety, depression). The three trajectories represent the calculated OR if rejection at home is at a minimum (value of 1), median, or high (75th percentile). Figure 1 demonstrates that parental internalising disorder and rejection at home affects suicide ideation in victims; as the index for parental internalising disorders increases, the OR for suicide ideation among victims compared to uninvolved children increases. Victims feeling more rejected at home have elevated suicide ideation compared to uninvolved children.

lying was associated with elevated levels of suicide ideation, and whether some children may be particularly vulnerable due to parental psychopathology,

feelings of rejection at home, and feelings of rejection among classmates (i.e., lack of social well-being). Our study differed from previous research through using a peer nomination method to establish victimisation, and by including these vulnerability factors.

Our first hypothesis, of a straightforward association between being victimised by bullying and suicide ideation, was not supported by our data. Previous work has indicated that the relationship between being victimised by bullying and suicide ideation may be particularly strong for bully-victims (Brunstein Klomek et al., 2007; Kaltiala-Heino et al., 1999; Kim et al., 2005). We therefore predicted that victims of bullying (pure victims and possibly to an even greater extent bully-victims) would report elevated levels of suicide ideation compared to children uninvolved in bullying. We also predicted that feeling rejected at home (thereby lacking crucial parental support) would make victims more vulnerable to the effects of bullying (i.e., suicide ideation) compared to children uninvolved in bullying or victims who do not feel rejected at home. Bully-victims in particular, due to their already increased internalising and externalising difficulties, might be highly vulnerable to effects of familial influences such as parental psychopathology and feeling rejected at home. Higher levels of parental psychopathology, and feeling rejected at home, coupled with emotional and behavioural difficulties, could render these children less able to cope with the stresses of being bullied, and therefore vulnerable to suicide ideation. Our findings partially supported this hypothesis through elevated suicide ideation in victims compared to uninvolved children, but not in bully-victims compared to uninvolved children. This association was moderated by parental internalising disorders and rejection at home. Parental externalising disorder did not moderate the effect of victimisation.

Victims with more parental internalising disorders (depression and anxiety) had significantly higher levels of suicide ideation compared to similar children with no parental psychopathology or those uninvolved in bullying. Given that this index of parental psychopathology was highly important in predicting suicide ideation for victims (see Figure 1), it is unexpected that it did not predict suicide ideation among bully-victims. Surprisingly, bully-victims, previously reported to be socially ostracised both at home and by peers (see Juvonen et al., 2003) did not appear to demonstrate higher levels of suicide ideation with greater levels of rejection at home. We can only speculate on the reasons for this, but perhaps children who are both bullied and bully others are more behaviourally disturbed and lack insight into their social situation, which may protect them from the negative consequences of bullying. We examined this possibility by comparing scores for internalising and externalising symptoms (both self- and parent-rated) for bully-victims, victims, and

uninvolved children. Overall, internalising symptoms (self-rated and parent-rated) were significantly higher in victims compared to uninvolved children or compared to bully-victims; bully-victims did not significantly differ from uninvolved children. Furthermore, externalising symptoms (self-rated and parent-rated) were significantly higher in bully-victims compared to victims or uninvolved children. Perhaps the elevated levels of externalising symptoms but lower levels of internalising symptoms among bully-victims protects them from the negative consequences of victimisation. Whereas victims, given their higher levels of internalising symptoms, may be more likely to internalise their victimisation experiences, which, coupled with feelings of rejection at home and parental internalising problems, could exacerbate their vulnerability leading to suicide ideation. The very nature of suicide ideation (thinking about harming oneself) could be more typical for pure victims than bully-victims, who rather express their frustration by harming others.

Alternatively, most studies indicating the worst outcome among bully-victims (with the exception of Kim et al., 2005) use self-reports to establish bully status. Perhaps elevated suicide ideation among bully-victims in these studies could be due to methods bias, such that bully-victims rate both their bully status and suicide ideation. Rather, we used peer nominations to establish bully status. Overall, reports of previous studies that bully-victims are the worst off in terms of suicide ideation were not supported by our findings.

Our final hypothesis was that girls would have higher levels of suicide ideation compared to boys, particularly female victims of bullying (as reported by Kim et al., 2005). This hypothesis was not supported by our data. The main effect of sex was not significant for suicide ideation. However, when we examined the two time points separately, there was a significant effect of sex ($p = .03$); at T2, girls had significantly higher levels of suicide ideation compared to boys. This would also be consistent with age-related patterns of depression, where sex differences are expected to emerge only in adolescence. We found no evidence for a specific vulnerability among female victims; the interaction between sex and bully-status and the main effect of sex failed to reach significance. One possible explanation for the discrepancy in findings between our study and the study by Kim and colleagues relates to cultural differences. Kim et al. (2005) examined victimisation and suicide ideation in Korean schoolchildren, whereas our study related to Dutch schoolchildren. Perhaps cultural differences, particularly in relation to how males and females may be socialised, might impact on how girls respond to being bullied. However, it should also be noted that nearly two-thirds of bully-victims were male, whereas less than one-third of victims-only were male. Although the impact of sex was always taken into account in analyses, it is

possible that a male preponderance of bully-victims compared to victims-only could have affected results. Veenstra et al. (2005) also reported this female preponderance among victims on a subset of the children we included (i.e., those with peer nomination data at T1). They noted that in contrast to other studies, our sample of girls were more likely to be passive victims. They noted that this gender pattern was likely due to using the top 25% of peer nomination ratings as a cutoff point for bullying and victimisation: when more stringent criteria were applied, they did not find gender differences among victims.

Strengths and limitations

A major strength of this study is that data are based on large numbers of participants, spanning preadolescence and early adolescence, and the inclusion of vulnerability factors. Unlike the majority of other studies examining bullying and suicide ideation (with the exception of Kim et al., 2005; Rigby & Slee, 1999), we used peer nominations to establish bully status. This method helps to avoid the problem of shared methods variance where children who report being bullied may also report that they have suicidal thoughts. Despite these strengths, we were faced with some limitations. Firstly, peer nomination data were collected on a subsample of participants at T1 or T2 (although we did have data for nearly 500 children with peer nomination data at T1 and T2). We used the logistic regression with GEE approach to best maximise these data by pooling the two assessment waves together, accounting for those with overlapping data at T1 and T2. Furthermore, it is possible that because peer nominations were conducted within the child's classroom, we may have underestimated bullying occurring between age-groups (i.e., an older child from a different class bullying a younger child). It is also possible that the relatively young age of our sample (particularly at T1) may affect the interpretation of our findings (as briefly discussed earlier in relation to gender differences in suicide ideation). Secondly, suicide ideation was assessed using only two items from the YSR. While this method has been reported and published in other studies (Baldry & Winkel, 2003; Kim et al., 2005; Steinhausen et al., 2006), a more detailed examination of suicide ideation might be included in future investigations. It is also conceivable that an individual may report that they 'try to hurt or kill themselves' (i.e., item 18 of the YSR) without having suicidal thoughts. A final limitation is that the particular nature (i.e., physical, verbal, psychological), frequency, and persistence of bullying were not taken into account in this study. It is likely that the risk of suicide ideation, attempt and even completion, increases as one is the victim of more frequent and persistent bullying. Our study was not designed to examine the issue of persistence or stability in

victimisation status; however, it is possible that grouping for victimisation was not completely stable and in fact did change between T1 and T2 for a subset of our participants. The analyses conducted always assessed whether victimisation status (and associated moderators) were associated with *current* suicide ideation (i.e., whether victimisation status at T1 is associated with suicide ideation at T1; whether victimisation status at T2 is associated with suicide ideation at T2; and for those children who have victimisation status assessed at T1 and T2, the corresponding suicide ideation for that time point is assessed, but corrections are made for the fact that we have two data points for that particular participant). We briefly examined the stability of grouping in the subset of children with peer nomination data available at T1 and T2 ($n = 478$), and identified four main groups of children: (1) children who were uninvolved in bullying both at T1 and T2 ($n = 271$); (2) children who were victims (either as pure victims or bully-victims) at T1, but became uninvolved at T2 ($n = 107$); (3) children who remained victims (either as pure victims or bully-victims) at both T1 and T2 ($n = 35$); (4) children uninvolved in bullying at T1 who became victims at T2 ($n = 65$). The largest pattern in change was for children victimised at T1 to become uninvolved in bullying at T2. Children who were uninvolved at T1 and T2 did not significantly differ on any of the predictor variables to children who were uninvolved at T1 but became victims at T2. Compared to children who were uninvolved at T1 and T2, those who remained victims at T1 and T2 were more likely to be from a lower SES background (OR = .54, 95%CI = .33, .88, $p = .01$), and were approximately four times more likely to be boys rather than girls (OR = 4.20, 95%CI = 1.89, 9.33, $p < .001$).

Conclusions

Victims of bullying have an increased risk for suicide ideation if their parents have internalising disorders or if they feel rejected at home. This does not extend to bully-victims. Familial factors play an important role in moderating the association between victimisation and suicide ideation. Victimised children who report feeling rejected at home, or whose parents have suffered from internalising disorders, are more likely than uninvolved children to report suicide ideation. It is likely that the influence of these familial factors may render some children unable to cope with the stress of being bullied. Contrary to previous research, we found no evidence that bully-victims suffered the most in terms of suicide ideation. Our findings strongly suggest that teachers and health care professionals must also consider the influence of familial factors such as parental psychopathology and familial home environment when examining the consequences of bullying.

Acknowledgments

This research is part of the TRacking Adolescents' Individual Lives Survey (TRAILS). Participating centres include various Departments of the University of Groningen, the Erasmus University Medical Center Rotterdam, the Radboud University of Nijmegen, University of Utrecht, and the Trimbos Institute the Netherlands. TRAILS is financially supported by grants from the Netherlands Organisation for Scientific Research (GB-MW 940-38-011, GB-MAGW 480-01-006, GB-MAGW 457-03-018, NWO 175.010.2003.005, ZonMw 100-001-001, ZonMw 60-60600-98-018), the Ministry of Justice (WODC), and by the participating centres.

Correspondence to

Catherine Herba, Department of Child and Adolescent Psychiatry, Erasmus University Medical Center/Sophia Children's Hospital, Rotterdam, PO Box 2060, 3000CB Rotterdam, Netherlands; Email: c.herba@erasmusmc.nl

References

- Achenbach, T.M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Arseneault, L., Walsh, E., Trzesniewski, K., Newcombe, R., Caspi, A., & Moffitt, T.E. (2006). Bullying victimization uniquely contributes to adjustment problems in young children: A nationally representative cohort study. *Pediatrics*, *118*, 130-138.
- Baldry, A.C., & Winkel, F.W. (2003). Direct and vicarious victimization at school and at home as risk factors for suicidal cognition among Italian adolescents. *Journal of Adolescence*, *26*, 703-716.
- Ball, H.A., Arseneault, L., Taylor, A., Maughan, B., Caspi, A., & Moffitt, T.E. (2008). Genetic and environmental influences on victims, bullies, and bully-victims in childhood. *Journal of Child Psychology and Psychiatry*, *49*, 104-112.
- Bowers, L., Smith, P.K., & Binney, V. (1994). Perceived family relationships of bullies, victims, and bully/victims in middle childhood. *Journal of Social and Personal Relationships*, *11*, 215-232.
- Bridge, J.A., Goldstein, T.R., & Brent, D.A. (2006). Adolescent suicide and suicidal behavior. *Journal of Child Psychology and Psychiatry*, *47*, 372-394.
- Brunstein Klomek, A., Marrocco, F., Kleinman, M., Schonfeld, I.S., & Gould, M.S. (2007). Bullying, depression, and suicidality in adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, *46*, 40-49.
- de Winter, A.F., Oldehinkel, A.J., Veenstra, R., Brunekreef, J.A., Verhulst, F.C., & Ormel, J. (2005). Evaluation of non-response bias in mental health determinants and outcomes in a large sample of pre-adolescents. *European Journal of Epidemiology*, *20*, 173-181.
- Dhossche, D., Ferdinand, R., van der Ende, J., Hofstra, M.B., & Verhulst, F. (2002). Diagnostic outcome of adolescent self-reported suicidal ideation at 8-year follow-up. *Journal of Affective Disorders*, *72*, 273-279.
- Fekkes, M., Pijpers, F.I., & Verloove-Vanhorick, S.P. (2004). Bullying behavior and associations with psychosomatic complaints and depression in victims. *Journal of Pediatrics*, *144*, 17-22.
- Fergusson, D.M., Beautrais, A.L., & Horwood, L.J. (2003). Vulnerability and resiliency to suicidal behaviours in young people. *Psychological Medicine*, *33*, 61-71.
- Fergusson, D.M., Horwood, L.J., Ridder, E.M., & Beautrais, A.L. (2005b). Subthreshold depression in adolescence and mental health outcomes in adulthood. *Archives of General Psychiatry*, *62*, 66-72.
- Fergusson, D.M., Horwood, L.J., Ridder, E.M., & Beautrais, A.L. (2005a). Suicidal behaviour in adolescence and subsequent mental health outcomes in young adulthood. *Psychological Medicine*, *35*, 983-993.
- Fitzmaurice, G.M., Laird, N.M., & Ware, J.H. (2004). *Applied longitudinal analysis*. Hoboken, NJ: John Wiley & Sons, Inc.
- Forero, R., McLellan, L., Rissel, C., & Bauman, A. (1999). Bullying behaviour and psychosocial health among school students in New South Wales, Australia: Cross sectional survey. *British Medical Journal*, *319*, 344-348.
- Ganzeboom, H.B.G., & Treiman, D.J. (1996). Internationally comparable measures of occupational status for the 1988 International Standard Classification of Occupations. *Social Science Research*, *25*, 201-239.
- Garber, J., Little, S., Hilsman, R., & Weaver, K.R. (1998). Family predictors of suicidal symptoms in young adolescents. *Journal of Adolescence*, *21*, 445-457.
- Gould, M.S., Greenberg, T., Velting, D.M., & Shaffer, D. (2003). Youth suicide risk and preventive interventions: A review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, *42*, 386-405.
- Groholt, B., Ekeberg, O., Wichstrom, L., & Haldorsen, T. (2000). Young suicide attempters: A comparison between a clinical and an epidemiological sample. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*, 868-875.
- Hawker, D.S., & Boulton, M.J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry*, *41*, 441-455.
- Juvonen, J., Graham, S., & Schuster, M.A. (2003). Bullying among young adolescents: The strong, the weak, and the troubled. *Pediatrics*, *112*, 1231-1237.
- Kaltiala-Heino, R., Rimpela, M., Marttunen, M., Rimpela, A., & Rantanen, P. (1999). Bullying, depression, and suicidal ideation in Finnish adolescents: School survey. *British Medical Journal*, *319*, 348-351.
- Kendler, K.S., Prescott, C.A., Myers, J., & Neale, M.C. (2003). The structure of genetic and environmental risk factors for common psychiatric and substance use disorders in men and women. *Archives of General Psychiatry*, *60*, 929-937.

- Kim, Y.S., Koh, Y.J., & Leventhal, B. (2005). School bullying and suicidal risk in Korean middle school students. *Pediatrics*, *115*, 357–363.
- Markus, M.T., Lindhout, I.E., Boer, F., Hoogendijk, T.H.G., & Arrindell, W.A. (2003). Factors of perceived parental rearing styles: The EMBU-C examined in a sample of Dutch primary school children. *Personality and Individual Differences*, *34*, 503–519.
- Nansel, T.R., Overpeck, M., Pilla, R.S., Ruan, W.J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association*, *285*, 2094–2100.
- Nieboer, A., Lindenberg, S., Boomsma, A., & Van Bruggen, A.C.. (2005). Dimensions of well-being and their measurement: The SPF-IL scale. *Social Indicators Research*, *73*, 1–45.
- Oldehinkel, A.J., Hartman, C.A., de Winter, A.F., Veenstra, R., & Ormel, J. (2004). Temperament profiles associated with internalizing and externalizing problems in preadolescence. *Development and Psychopathology*, *16*, 421–440.
- Oldehinkel, A.J., Veenstra, R., Ormel, J., de Winter, A.F., & Verhulst, F.C. (2006). Temperament, parenting, and depressive symptoms in a population sample of preadolescents. *Journal of Child Psychology and Psychiatry*, *47*, 684–695.
- Ormel, J., Oldehinkel, A.J., Ferdinand, R.F., Hartman, C.A., de Winter, A.F., Veenstra, R., et al. (2005). Internalizing and externalizing problems in adolescence: General and dimension-specific effects of familial loadings and preadolescent temperament traits. *Psychological Medicine*, *35*, 1825–1835.
- Park, H.S., Schepp, K.G., Jang, E.H., & Koo, H.Y. (2006). Predictors of suicidal ideation among high school students by gender in South Korea. *Journal of School Health*, *76*, 181–188.
- Rigby, K., & Slee, P. (1999). Suicidal ideation among adolescent school children, involvement in bullying victim problems, and perceived social support. *Suicide and Life Threatening Behavior*, *29*, 119–130.
- Smith, P.K., Morita, J., Junger-Tas, J., Olweus, D., Catalano, R., & Slee, P. (1999). *The nature of peer bullying. A cross-national perspective*. New York: Routledge Press.
- Steinhausen, H.C., Bosiger, R., & Metzke, C.W. (2006). Stability, correlates, and outcome of adolescent suicidal risk. *Journal of Child Psychology and Psychiatry*, *47*, 713–722.
- van der Wal, M.F., de Wit, C.A., & Hirasing, R.A. (2003). Psychosocial health among young victims and offenders of direct and indirect bullying. *Pediatrics*, *111*, 1312–1317.
- Veenstra, R., Lindenberg, S., Oldehinkel, A.J., de Winter, A.F., & Ormel, J. (2006). Temperament, environment, and antisocial behavior in a population sample of preadolescent boys and girls. *International Journal of Behavioral Development*, *30*, 422–432.
- Veenstra, R., Lindenberg, S., Oldehinkel, A.J., de Winter, A.F., Verhulst, F.C., & Ormel, J. (2005). Bullying and victimization in elementary schools: A comparison of bullies, victims, bully/victims, and uninvolved preadolescents. *Developmental Psychology*, *41*, 672–682.
- Veenstra, R., Lindenberg, S., Zijlstra, B.J., de Winter, A.F., Verhulst, F.C., & Ormel, J. (2007). The dyadic nature of bullying and victimization: Testing a dual-perspective theory. *Child Development*, *78*, 1843–54.
- Wagner, B.M. (1997). Family risk factors for child and adolescent suicidal behavior. *Psychological Bulletin*, *121*, 246–298.
- Wichstrom, L. (2000). Predictors of adolescent suicide attempts: A nationally representative longitudinal study of Norwegian adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, *39*, 603–610.

Manuscript accepted 16 January 2008