

PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Do Bullied Children Get Ill, or Do Ill Children Get Bullied? A Prospective Cohort Study on the Relationship Between Bullying and Health-Related Symptoms

Minne Fekkes, Frans I.M. Pijpers, A. Miranda Fredriks, Ton Vogels and S. Pauline Verloove-Vanhorick

Pediatrics 2006;117;1568-1574

DOI: 10.1542/peds.2005-0187

This information is current as of August 5, 2006

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://www.pediatrics.org/cgi/content/full/117/5/1568>

PEDIATRICS is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. PEDIATRICS is owned, published, and trademarked by the American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007. Copyright © 2006 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 0031-4005. Online ISSN: 1098-4275.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



Do Bullied Children Get Ill, or Do Ill Children Get Bullied? A Prospective Cohort Study on the Relationship Between Bullying and Health-Related Symptoms

Minne Fekkes, MSc, PhD^a, Frans I. M. Pijpers, MD, PhD^b, A. Miranda Fredriks, MD, PhD^c, Ton Vogels, MSc^a, S. Pauline Verloove-Vanhorick, MD, PhD^{a,d}

^aNetherlands Organization of Applied Scientific Research (TNO), Quality of Life, Leiden, Netherlands; ^bGGD Amsterdam, Amsterdam, Netherlands; ^cDepartment of Psychiatry, University Medical Center Utrecht, Utrecht, Netherlands; ^dDepartment of Pediatrics and Child Health, Leiden University Medical Center, Leiden, Netherlands

The authors have indicated they have no financial relationships relevant to this article to disclose.

ABSTRACT

OBJECTIVES. A number of studies have shown that victimization from bullying behavior is associated with substantial adverse effects on physical and psychological health, but it is unclear which comes first, the victimization or the health-related symptoms. In our present study, we investigated whether victimization precedes psychosomatic and psychosocial symptoms or whether these symptoms precede victimization.

DESIGN. Six-month cohort study with baseline measurements taken in the fall of 1999 and follow-up measurements in the spring of 2000.

SETTING. Eighteen elementary schools in the Netherlands.

PARTICIPANTS. The study included 1118 children aged 9 to 11 years, who participated by filling out a questionnaire on both occasions of data collection.

OUTCOME MEASURES. A self-administered questionnaire measured victimization from bullying, as well as a wide variety of psychosocial and psychosomatic symptoms, including depression, anxiety, bedwetting, headaches, sleeping problems, abdominal pain, poor appetite, and feelings of tension or tiredness.

RESULTS. Victims of bullying had significantly higher chances of developing new psychosomatic and psychosocial problems compared with children who were not bullied. In contrast, some psychosocial, but not physical, health symptoms preceded bullying victimization. Children with depressive symptoms had a significantly higher chance of being newly victimized, as did children with anxiety.

CONCLUSIONS. Many psychosomatic and psychosocial health problems follow an episode of bullying victimization. These findings stress the importance for doctors and health practitioners to establish whether bullying plays a contributing role in

www.pediatrics.org/cgi/doi/10.1542/peds.2005-0187

doi:10.1542/peds.2005-0187

Key Words

bullying, school health, psychosocial, peer victimization, longitudinal study

Abbreviation

CI—confidence interval

Accepted for publication Oct 24, 2005

Address correspondence to Minne Fekkes, MSc, PhD, Netherlands Organization of Applied Scientific Research, Quality of Life, PO Box 2215, 2301 CE Leiden, Netherlands. E-mail: m.fekkes@pgg.tno.nl

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275). Copyright © 2006 by the American Academy of Pediatrics

the etiology of such symptoms. Furthermore, our results indicate that children with depressive symptoms and anxiety are at increased risk of being victimized. Because victimization could have an adverse effect on children's attempts to cope with depression or anxiety, it is important to consider teaching these children skills that could make them less vulnerable to bullying behavior.

STUDIES IN MANY countries have shown that a substantial number of elementary and high school students are bullied regularly by their peers. Numbers vary depending on country and definition: 30% of children in Italy report having been bullied at least sometimes, 24% in England (once a week or more), 17% in the United States (once a week or more), 19% in the Netherlands (a few times a month or more), 16% in Finland (once a week or more), and 8% in Germany (once a week or more).¹⁻⁵ Other studies have shown a significant relationship between victimization and symptoms such as headache, stomach ache, bedwetting, anxiety, and depression.⁶⁻¹³ However, most of these studies included only cross-sectional data, indicating an association but no direct causality.

Under question is whether these health symptoms precede the victimization or whether victimization precedes the onset of these health problems. Some researchers have suggested that the stress caused by bullying can lead to an increase in health symptoms.¹⁴ However, it has also been hypothesized that children with health problems, such as depression or anxiety, are more vulnerable to being bullied by other children.^{15,16}

Only a few studies have prospectively investigated bullying and its affect on health of the victim. In 1 study, Kochenderfer and Ladd¹⁷ found that victimized children tend to experience more loneliness and become more school avoidant after they were victimized by their peers. Bond et al⁶ found that secondary school students who were bullied had a higher risk of depression and anxiety during the next school year, especially girls. In regard to health problems precipitating victimization, Bond et al⁶ found no evidence that depression or anxiety increased the risk for later victimization. The substantial reports of bullied children and the associations between victimization and health symptoms have prompted several recent comments emphasizing the importance of addressing the phenomenon of bullying.¹⁸⁻²⁰

To our knowledge, no longitudinal studies have investigated the relationship between bullying and specific psychosomatic health problems, such as abdominal pain, bedwetting, and headache. Knowing whether bullying victimization precedes these health symptoms or whether these health symptoms precede bullying could help in the prevention of victimization, as well as help in the prevention of these health symptoms.

Many general practitioners, pediatricians, and other

health care professionals are likely to see children who have been bullied or who display psychosomatic symptoms. Therefore, it is important for these practitioners to know which symptoms create a higher risk for children to become bullied and which symptoms result from being bullied.

Our study involved a group of elementary school children in the Netherlands. In the beginning and end of the school year, we presented them with a survey to measure bullying behavior, as well as a large number of psychosomatic and mental health symptoms. With these prospective data we aimed to address the following questions: (1) does bully victimization at the beginning of the school year increase the risk of developing health-related problems later in the same school year, and (2) do health-related problems at the beginning of the school year increase the risk of becoming a bully victim later in the same school year?

METHODS

The study population was derived from 18 Dutch elementary schools that participated as a control group in a longitudinal study on bullying and the implementation and effectiveness of an antibullying policy at schools. Children from the upper 3 grades (aged 9–11 years) participated by filling out a questionnaire. The questionnaires were completed in classrooms under examination-like conditions in October and November of 1999 and May of 2000. The questionnaire contained items on bullying, psychosomatic variables, depression, and several other health, demographic, and social variables.

Before data collection, all school boards of the participating schools were informed about the study and all of the school boards gave written informed consent for participation. The design of the study was approved by the medical ethics committee at TNO.

Bullying

In the questionnaire, bullying was designated in accordance with the internationally used definition by Olweus²¹ as follows:

"The following questions are about bullying. Bullying is, for example: when another student or students say nasty and unpleasant things, or call somebody names; ignore or exclude somebody, like not allowing him or her to participate in play; take away, destroy or hide another student's stuff; hit, push or shove another student around; tell lies, spread rumors, or send mean notes. We don't call it bullying when two students of about equal strength or power argue or fight."

Victimization was assessed with a question from the Dutch version of the Olweus Bully/Victim Questionnaire.²²⁻²⁴ This is a well-documented and validated questionnaire that is used in many studies on bullying.^{24,25} Being bullied was assessed with the question, "How often did other children bully you in recent months,

since summer break?" (For the follow-up measurement: "since winter break"). Children could answer with the following options: "I am not bullied," "one or two times," "a few times a month," "every week," "two or three times a week," or "almost every day."

Options for answering the item were slightly modified from the original questionnaire: the original category "sometimes" was changed to "a few times a month." The last category "almost every day" was also added. These adjustments were made to create a more consistent range of frequency options. A student was considered a victim if he or she reported being bullied "a few times a month" or more frequently. Measuring victimization with this 1 item and using this cutoff point is considered a valid way of dividing students into victims and non-victims. Studies have shown that this creates 2 groups clearly differing on related variables.²⁵

Health Symptoms and Anxiety

Items to measure health symptoms and anxiety were based on items from the KIVPA, a Dutch instrument to measure psychosocial problems among children. The KIVPA has been validated with other instruments, including the Youth Self Report, and is used in the Dutch youth health care system to screen for psychosocial problems.²⁶

Children were presented with a series of health symptoms (ie, anxiety, abdominal pain, sleeping problems, headache, feeling tense, feeling tired, and poor appetite) and asked to report for each symptom the frequency with which they experienced it: never, sometimes, or often during the last 4 weeks, for example, "Did you feel anxious?" and "Did you have a headache?" Each health symptom was dichotomized into no health problem ("never" or "sometimes") versus a health problem ("often"). Bedwetting was assessed by asking the students if they wetted their bed at least once during the last 4 weeks. Cronbach's α for all of the measured KIVPA items together was .72.

Depression

Depression was evaluated with the Short Depression Inventory for Children.^{13,27,28} This 9-item questionnaire is used to screen for depressive symptoms among children. The questionnaire has shown very good psychometric properties and is extensively evaluated among Dutch elementary school children. Respondents can answer for each item if it is true or not true. An item example is: "The last couple weeks I felt down." All of the items answered as "true" are summed up, resulting in a 0 to 9 score. A score of ≥ 7 is considered a strong indication for depression. Respondents with scores ≥ 7 were classified as depressed. Cronbach's α of the Short Depression Inventory for Children was .75.

Statistical Analysis

All of the analyses were performed with SPSS/PC, version 11 (SPSS Inc, Chicago, IL). Descriptive univariate statistics were used to study the prevalence of bully behavior.

The first objective of the study was to determine whether bully victimization at the beginning of the school year would enhance the risk of developing health problems later in the same year. Therefore, we excluded for each analysis those children with a specific symptom at baseline measurement to enable us to study the development of that symptom during the course of the school year. For example, to study the incidence of headaches after a period of victimization, we included only those children who were categorized as having "no" headaches at the beginning of the school year. We divided this group into those who were and those who were not victimized at the beginning of the school year, and we looked at the incidence of headache during the school year for both groups. Consequently, odds ratios were calculated. The variables age, gender, and number of friends were included as confounding variables, because these are known to be related to outcome variables, like depression and bullying behavior. Multiple logistic regression was used to control for confounding variables and to calculate odds ratios with 95% confidence intervals (CIs).

Our second objective was to answer whether health problems at the beginning of the school year increase the risk of becoming a bully victim later in the year. For this analysis, we excluded those children who had been victimized at the baseline measurement. This enabled us to study the incidence of new victimization during the school year among those children who had a specific health symptom present at the beginning of the school year and those who did not. Again, multiple logistic regression was used to control the confounding variables age, gender, and number of friends and to calculate odds ratios with 95% CIs.

This method of analysis bears the disadvantage that a reduced number of children would be included. However, if those bullied children with a specific health symptom at the baseline measurement were to be included, it would be harder to study the sequence between bullying and health symptoms. By only including those children with either victimization or a specific health problem at the baseline measurement, we could investigate the "which comes first" question, that is, if victimization were to precede the development of new symptoms and/or if specific health problems were to precede the development of new victimization.

A result was considered significant with a $P < .05$. No adjustment for multiple comparisons, such as the Bonferroni correction, was done, because this would result in an increase in type II errors, that is, finding a true difference and not considering this significant.²⁹ How-

ever, not using this correction increased the possibility for a type I error, meaning that there could be a difference that is seemingly significant but actually because of chance (ie, a type I error).

RESULTS

Of a total sample of 1597 children, 1552 (97%) participated at the first measurement at the beginning of the school year. A total of 1118 (70%) children filled out the questionnaire both at the beginning and end of the school year, providing data for this analysis. Student *t* test analyses indicated that for the 433 children who did not participate at the second measurement, there were no significant differences on any of the demographic or outcome variables of the first measurement. The main reason for nonresponse at the second measurement was that 3 schools (310 students) had insufficient time within their curriculum for a second measurement.

Half (49.7%) of the students in the sample were boys, with a mean age of 10 years (SD 1.1). At the beginning of the school year, 14.6% of the students were being bullied, and at the end of the school year, 17.2% of the students were being bullied.

We calculated the risk of developing specific health

problems during the school year. Table 1 gives the incidence of new symptoms for children who were bullied and those who were not at the beginning of the school year. Children who were bullied at the beginning of the year had a significantly higher risk of developing new health symptoms during the course of the school year. Odds ratios were particularly high for depression (4.18), anxiety (3.01), bedwetting (4.71), abdominal pain (2.37), and feeling tense (3.04).

A possible interaction effect with relation to gender was investigated by adding the interaction “bullying × gender” term to the model. For most of the risks of developing health problems, there were no significant differences between boys and girls. Only for the effects of bullying on the development of abdominal pain did the interaction-term significantly improve the model ($\chi^2 = 9.59$; $P = .002$). Being bullied had a strong relation to the development of abdominal pain for girls (odds ratio: 4.98; CI: 2.17–11.43; $P < .001$), whereas there was no such relationship for boys (odds: 0.34; CI: 0.04–2.66; $P = .305$).

We also calculated the risk of new victimization in relation to somatic and psychological health symptoms. Table 2 presents odds ratios for getting bullied at the end of the school year for children who were not bullied at

TABLE 1 Incidence of Health Symptoms During the School Year Among Children Who Were Bullied and Those Who Were Not Bullied at the Beginning of the School Year

Symptom	T1: Being Bullied at Beginning of the School Year (Only Children Without the Specific Health Symptom)	T2: Incidence of Health Symptoms at the End of the School Year, % (n/N)	Odds Ratio (95% CI) ^a	P
Depression	Not bullied	2.1 (19/899)	1.00	.001
	Bullied	7.9 (11/139)	4.18 (1.87–9.36)	
Anxiety	Not bullied	6.3 (54/854)	1.00	<.001
	Bullied	19.3 (23/119)	3.01 (1.72–5.25)	
Abdominal pain	Not bullied	3.9 (35/893)	1.00	.016
	Bullied	9.4 (13/138)	2.37 (1.17–4.82)	
Sleeping problems	Not bullied	11.6 (86/743)	1.00	.024
	Bullied	22.0 (22/100)	1.91 (1.09–3.34)	
Headache	Not bullied	6.2 (55/888)	1.00	.070
	Bullied	11.3 (16/141)	1.77 (0.96–3.30)	
Feeling tense	Not bullied	5.3 (46/860)	1.00	<.001
	Bullied	14.5 (19/131)	3.04 (1.64–5.65)	
Bedwetting	Not bullied	0.7 (6/917)	1.00	.010
	Bullied	4.7 (7/149)	4.71 (1.46–15.23)	
Feeling tired	Not bullied	3.0 (27/913)	1.00	.048
	Bullied	6.8 (10/146)	2.23 (1.01–4.93)	
Poor appetite	Not bullied	7.2 (62/864)	1.00	.006
	Bullied	15.0 (20/133)	2.21 (1.25–3.90)	

N (range): 842–1066.

^aOdds ratios adjusted for variables of gender, age, and having friends.

TABLE 2 Incidence of Bullying During the School Year Among Children With and Those Without a Specific Health Symptom at the Beginning of the School Year

T1 Presence of Specific Symptom at the Beginning of the School Year (Only Children Who Were Not Bullied)	T2 Incidence of Bullying at the End of the School Year, % (n/N)	Odds Ratio (95% CI) ^a	P
Depression			
No	10.2 (98/902)	1.00	
Yes	29.2 (7/24)	3.41 (1.34–8.69)	.010
Anxiety			
No	10.6 (90/851)	1.00	
Yes	20.0 (19/95)	1.96 (1.11–3.46)	.020
Abdominal pain			
No	11.3 (101/891)	1.00	
Yes	14.3 (8/56)	1.40 (0.63–3.12)	.407
Sleeping problems			
No	11.2 (83/741)	1.00	
Yes	12.6 (26/206)	1.10 (0.68–1.79)	.699
Headache			
No	11.2 (99/885)	1.00	
Yes	16.9 (10/59)	1.74 (0.85–3.59)	.132
Feeling tense			
No	11.4 (98/859)	1.00	
Yes	12.5 (11/88)	1.25 (0.64–2.46)	.516
Bedwetting			
No	11.3 (104/918)	1.00	
Yes	19.2 (5/26)	1.99 (0.72–5.49)	.181
Feeling tired			
No	11.3 (103/912)	1.00	
Yes	17.6 (6/34)	1.66 (0.67–4.11)	.273
Poor appetite			
No	10.8 (93/861)	1.00	
Yes	18.6 (16/86)	2.11 (1.16–3.81)	.014

N (range) = 926–947.

^aOdds ratios adjusted for variables of gender, age, and having friends.

the beginning of the school year. Children who were depressed, anxious, or reported poor appetite at the beginning of the school year were at higher risk of being bullied at the end of the school year. Children with other symptoms, such as headache, abdominal pain, and bedwetting, were not at apparently higher risk of being bullied.

A possible interaction effect with relation to gender was investigated by adding the interaction “health symptom × gender” term to the model. For most of the symptoms there were no significant differences between boys and girls. Only for the effect of sleeping problems on the development of bullying did the interaction term significantly improve the model ($\chi^2 = 4.54$; $P = .03$). Sleeping problems had a stronger relation to being bullied for boys than for girls, but for neither boys nor girls was this relationship significant.

DISCUSSION

We studied the relationship between victimization and health symptoms among a group of elementary school children. The data indicate that children who are regularly bullied at the beginning of a school year have a higher risk of developing new health-related symptoms

during the year. This supports the hypothesis that the stress of victimization causes the development of somatic and psychological health problems.

However, our study also showed that children who are depressed or anxious at the beginning of the school year are at enhanced risk of becoming new victims of bullying later that year. Various possibilities might explain this. Anxious or depressed behavior could make a child seem more vulnerable to aggressive peers and thereby make the child an easy target for victimization. Other studies have found that victimized children exhibit characteristics of vulnerability, such as subassertive behavior, that make them attractive targets for aggressive children.³⁰ Less assertive behavior by anxious or depressed children could make them easier targets because they are less likely, or less expected by the bullies, to stand up for themselves when they are victimized. Therefore, bullies may fear less retaliation from anxious or depressed children and be more prone to pick these children as their victims. An alternative explanation may be that some children who are anxious or depressed are more inclined to define some of their experiences as having been bullied, whereas other children would not perceive these experiences as victimization.

Other studies have supported the suspicion that depression or anxiety could follow an episode of bullying.⁶ Our study confirms this and further shows that a large number of other health symptoms may also result from a period of being bullied. Bond et al⁶ found that especially victimized girls are at higher risk of anxiety and depression, but they found no evidence that being anxious or depressed was predictive for a higher risk of being victimized. This latter result differs from that of our study. However, because the children in our study were younger than those of Bond et al,⁶ our study sample may have had an inherently higher incidence of new bullying cases. In older children, bullying victimization gradually decreases, making it more difficult to show a relationship between preexisting symptoms and later onset of victimization. Our results are consistent with the findings from a recent study by Nishina et al,³¹ which also found that psychosocial maladjustment (eg, depression and anxiety) both preceded and followed peer victimization. Furthermore, their data showed, in line with our results, that physical symptoms only followed a period of victimization and, unlike psychological symptoms, did not precede victimization.

Some of the strengths of our study are the wide variety of symptoms measured and the longitudinal data used for the analysis. There are some methodologic considerations. Data provided for this study are based on self-reports of children. This carries a potential risk that some children may be prone to report more problems in general, and, therefore, some results might overstate the associations between variables. Actual effect sizes may, as a result, be smaller than those produced by our data.

It could also be that especially depressed children may have the tendency to experience things more negatively and report more often other health problems or negative experiences. In this light, it should be noted that associations of depression with victimization were particularly high. However, because our analyses included only children who reported either health symptoms or bullying victimization, but not both, at the baseline measurement, children prone to report many symptoms may have been more likely to be excluded from analysis.

Because there was no correction made for multiple comparisons, there is a higher change for a type I error among the results. However, the patterns and high number of significant results make it unlikely that overall conclusions are compromised by this type of error.

Our findings might have implications for future research and intervention strategies. We found that depression and anxiety make a child more at risk to become victimized and that other, especially more physical, symptoms do not elevate the risk for victimization. It has been suggested that children may consider it socially unacceptable to bully and to be mean to those children who display physical illness,³¹ and it may be possible that children consider it more permissible to bully those who

are psychologically fragile and nonassertive. Future research could focus on this hypothesis and try to identify and preempt those situations in which children are more or less inclined to bully other children. This may have implications for preventive interventions, because children generally may need to learn that it is just as inappropriate to bully those who are psychologically vulnerable as those who are not physically capable of defending themselves.

Future studies on the relationship between victimization and health-related symptoms may also look into possible confounding variables, such as ethnicity, social background, and level of education. With regard to high school students, it may be relevant to study the subgroup of gay and lesbian youth. Several studies have indicated that these youth are at higher risk for victimization and experience higher incidences of psychosocial problems, such as depression and suicidal ideation.³²⁻³⁴ Investigating this subgroup may give insight into the relationship between victimization and psychosocial problems with regard to sexual orientation and may help develop strategies to lower the high levels of victimization and psychosocial health problems for this specific group.

With regard to health care professionals, our findings have several implications. Our results indicate that victimization causes an increase in health problems, such as headache, abdominal pain, anxiety, and depression. For doctors and health practitioners, these findings stress the importance of asking whether a child is bullied and establishing whether bullying plays a contributing role when a child exhibits such symptoms.

Our finding that victimization precedes the development of a substantial number of health problems suggests that prevention of bullying behavior in schools could decrease the number of children with such problems. Several studies have shown that school-based interventions can reduce bullying.³⁵ Doctors and other health care professionals may take an active approach in working together with schools to assist schools with the implementation of antibully policies. Cooperation between schools and health care professionals could also help with the identification of children who are being bullied.^{18-20,36,37} In some European countries, like the Netherlands, municipal child health services (eg, school doctors and school nurses) have a legally assigned task to assist schools with their health policies and to help detect children with psychosocial problems.^{26,38}

Our results further indicate that children with psychosocial health symptoms, like depression and anxiety, are at increased risk of being victimized. Because victimization could have an adverse effect on children's attempts to cope with depression or anxiety, it is important to consider teaching these children social skills that would make them less vulnerable to bullying behavior. Rigby and Slee³⁹ found that suicidal ideation was especially frequent among bullied children who had little

social support. Therefore, children with anxiety or depression and additional possible risk factors for victimization, such as having few friends, being unpopular, or being subassertive, should be referred to a psychologist or be trained in social skills to prevent bully victimization.

ACKNOWLEDGMENT

This study was financially supported by ZorgOnderzoek Nederland (grant 22000061).

REFERENCES

- Kumpulainen K, Rasanen E, Henttonen I. Children involved in bullying: psychological disturbance and the persistence of the involvement. *Child Abuse Negl.* 1999;23:1253–1262
- Nansel TR, Overpeck M, Pilla RS, Ruan WJ, Simons-Morton B, Scheidt P. Bullying behaviors among US youth: prevalence and association with psychosocial adjustment. *JAMA.* 2001;285:2094–2100
- Wolke D, Woods S, Stanford K, Schulz H. Bullying and victimization of primary school children in England and Germany: prevalence and school factors. *Br J Psychol.* 2001;92:673–696
- Baldry AC, Farrington DP. Types of bullying among Italian school children. *J Adolesc.* 1999;22:423–426
- Junger-Tas J, Van Kesteren JN: *Bullying and Delinquency in a Dutch School Population.* The Hague, Netherlands: Kugler Publications; 1999
- Bond L, Carlin JB, Thomas L, Rubin K, Patton G. Does bullying cause emotional problems? A prospective study of young teenagers. *BMJ.* 2001;323:480–484
- Forero R, McLellan L, Rissel C, Bauman A. Bullying behaviour and psychosocial health among school students in New South Wales, Australia: cross sectional survey. *BMJ.* 1999;319:344–348
- Kumpulainen K, Rasanen E, Henttonen I, et al. Bullying and psychiatric symptoms among elementary school-age children. *Child Abuse Negl.* 1998;22:705–717
- Salmon G, James A, Smith DM. Bullying in schools: self reported anxiety, depression, and self esteem in secondary school children. *BMJ.* 1998;317:924–925
- Williams K, Chambers M, Logan S, Robinson D. Association of common health symptoms with bullying in primary school children. *BMJ.* 1996;313:17–19
- Wolke D, Woods S, Bloomfield L, Karstadt L. Bullying involvement in primary school and common health problems. *Arch Dis Child.* 2001;85:197–201
- Fekkes M, Pijpers FI, Verloove-Vanhorick SP. Bullying behavior and associations with psychosomatic complaints and depression in victims. *J Pediatr.* 2004;144:17–22
- van der Wal MF, de Wit CA, Hirasing RA. Psychosocial health among young victims and offenders of direct and indirect bullying. *Pediatrics.* 2003;111:1312–1317
- Boivin M, Hymel S, Bukowski WM. The role of social withdrawal, peer rejection and victimisation by peers in predicting loneliness and depressed mood in childhood. *Dev Psychopathol.* 1995;7:765–785
- Hodges EV, Malone MJ, Perry DG. Individual risk and social risk as interacting determinants of victimization in the peer group. *Dev Psychol.* 1997;33:1032–1039
- Schwartz D, Dodge KA, Coie JD. The emergence of chronic peer victimization in boys' play groups. *Child Dev.* 1993;64:1755–1772
- Kochenderfer BJ, Ladd GW. Peer victimization: cause or consequence of school maladjustment? *Child Dev.* 1996;67:1305–1317
- Goldbloom R. Children's inhumanity to children. *J Pediatr.* 2004;144:3–4
- Spivak H, Prothrow-Stith D. The need to address bullying—an important component of violence prevention. *JAMA.* 2001;285:2131–2132
- Spivak H. Bullying: why all the fuss? *Pediatrics.* 2003;112:1421–1422
- Olweus D: Norway. In: Smith PK, Morita Y, Junger-Tas J, Olweus D, Catalano R, Slee P, eds. *The Nature of School Bullying.* London, United Kingdom/New York, NY: Routledge; 1999:28–48
- Mooy T: *Pesten in Het Onderwijs.* Nijmegen, The Netherlands: ITS; 1992
- Liebrand J, Van IJzerdoorn H, Van Lieshout C. *KRVL Klasgenoten Relatie Vragenlijst Junior.* Nijmegen, Netherlands: Vakgroep Ontwikkelingspsychologie, Katholieke Universiteit Nijmegen; 1991
- Olweus, D. Bullying at school: basic facts and effects of a school based intervention program. *J Child Psychol Psychiatry.* 1994;35:1171–1190
- Solberg M, Olweus D. Prevalence estimation of school bullying with the Olweus Bully/Victim Questionnaire. *Aggress Behav.* 2003;29:239–268
- Reijneveld SA, Vogels AG, Brugman E, van Ede J, Verhulst FC, Verloove-Vanhorick SP. Early detection of psychosocial problems in adolescents: how useful is the Dutch short indicative questionnaire (KIVPA)? *Eur J Public Health.* 2003;13:152–159
- de Wit CAM: *Depressie Vragenlijst Voor Kinderen. Handleiding en Testmateriaal.* Amersfoort, Netherlands: Acco; 1987
- Kroesbergen HT, De Wit CAM, Stijnen TH. Detection of depressive complaints in children. *Eur J Public Health.* 1996;6:29–34
- Perneger TV. What's wrong with Bonferroni adjustments. *BMJ.* 1998;316:1236–1238
- Crick NR, Casas JF, Ku HC. Relational and physical forms of peer victimization in preschool. *Dev Psychol.* 1999;35:376–385
- Nishina A, Juvonen J, Witkow MR. Sticks and stones may break my bones, but names will make me feel sick: the psychosocial, somatic, and scholastic consequences of peer harassment. *J Clin Child Adolesc Psych.* 2005;34:37–48
- Bontempo DE, D'Augelli AR. Effects of at-school victimization and sexual orientation on lesbian, gay, or bisexual youths' health risk behavior. *J Adolesc Health.* 2002;30:364–374
- Lock J, Steiner H. Gay, lesbian, and bisexual youth risks for emotional, physical, and social problems: results from a community-based survey. *J Am Acad Child Adolesc Psychiatry.* 1999;38:297–304
- Faulkner AH, Cranston K. Correlates of same-sex sexual behavior in a random sample of Massachusetts high school students. *Am J Public Health.* 1998;88:262–266
- Smith PK, Ananiadou K, Cowie H. Interventions to reduce school bullying. *Can J Psychiatry.* 2003;48:591–599
- Barnett S, Duncan P, O'Connor KG. Pediatricians' response to the demand for school health programming. *Pediatrics.* 1999;103(4). Available at: www.pediatrics.org/cgi/content/full/103/4/e45
- Rivara FP, Farrington DP. Prevention of violence. Role of the pediatrician. *Arch Pediatr Adolesc Med.* 1995;149:421–429
- Brugman E, Reijneveld SA, Verhulst FC, Verloove-Vanhorick SP. Identification and management of psychosocial problems by preventive child health care. *Arch Pediatr Adolesc Med.* 2001;155:462–469
- Rigby K, Slee P. Suicidal ideation among adolescent school children, involvement in bully-victim problems, and perceived social support. *Suicide Life Threat Behav.* 1999;29:119–130

Do Bullied Children Get Ill, or Do Ill Children Get Bullied? A Prospective Cohort Study on the Relationship Between Bullying and Health-Related Symptoms

Minne Fekkes, Frans I.M. Pijpers, A. Miranda Fredriks, Ton Vogels and S. Pauline Verloove-Vanhorick

Pediatrics 2006;117;1568-1574

DOI: 10.1542/peds.2005-0187

This information is current as of August 5, 2006

Updated Information & Services

including high-resolution figures, can be found at:
<http://www.pediatrics.org/cgi/content/full/117/5/1568>

References

This article cites 33 articles, 15 of which you can access for free at:
<http://www.pediatrics.org/cgi/content/full/117/5/1568#BIBL>

Subspecialty Collections

This article, along with others on similar topics, appears in the following collection(s):

Office Practice

http://www.pediatrics.org/cgi/collection/office_practice

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
<http://www.pediatrics.org/misc/Permissions.shtml>

Reprints

Information about ordering reprints can be found online:
<http://www.pediatrics.org/misc/reprints.shtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

