

Abstract

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Bullying at school has far-reaching impacts on adolescent well-being and health. The aim of this study was to examine trends in bullying at school according to socioeconomic adversities among Finnish adolescents from 2000 to 2015. A population-based school survey was conducted biennially among 14–16-year-old Finns between 2000 and 2015 ($n = 761,278$). Distributions for bullying, being bullied and socioeconomic adversities were calculated. Associations between bullying involvement, time and socioeconomic adversities were studied using binomial logistic regression with results shown by odds ratios with 95% confidence intervals. At the population level, the likelihoods of bullying and being bullied varied only slightly between 2000 and 2015. Bullying and being bullied were associated with socioeconomic adversities (low parental education, not living with both parents and parental unemployment in the past year). Unlike in the general population, the likelihoods of bullying and being bullied increased markedly among adolescents with most socioeconomic adversities. The increased socioeconomic differences in bullying involvement observed in this study add to the mounting evidence of polarization of adolescent health and well-being. Socioeconomic adversities should be considered in the prevention of bullying at school. In addition, socio-political measures are needed to decrease socioeconomic inequalities among Finnish adolescents.

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Keywords

bullying; schools; adolescent; epidemiology; surveys and questionnaires; population surveillance; socioeconomic factors

Introduction

Bullying is defined as intentional harm-doing that is carried out repeatedly over time and involves a power imbalance between perpetrator and victim (Olweus, 1994). According to the WHO survey Health Behavior in School-aged Children involving 40 European countries, 26 % of all young people reported having been involved in bullying during the past two months (Craig et al., 2009). In recent decades, the prevalences of bullying and being bullied have remained the same or even decreased in many European and North American countries (Chester et al., 2015; Cooc & Gee, 2014a; Finkelhor et al., 2014; Molcho et al., 2009; Perlus, Brooks-Russell, Wang, & Iannotti, 2014; Vieno et al., 2015). This study aims to examine socioeconomic trends in bullying at school among Finnish adolescents between 2000 and 2015.

Bullying at school is a significant cause of psychological, physical and social suffering. Bullying victimization is a major risk factors of mental health disorders, such as depression, anxiety disorders and substance use problems (Kaltiala-Heino, Fröjd, & Marttunen, 2009; Reijntjes, Kamphuis, Prinzie, & Telch, 2010). Also bullying perpetration is associated with the development of mental health problems, such as personality disorders (Copeland, Wolke, Angold, & Costello, 2013; Kaltiala-Heino et al., 2009). Both victims and perpetrators of bullying suffer from physical health problems, such as headaches and accidental injuries, more than adolescents not involved in bullying (Srabstein,

McCarter, Shao, & Huang, 2006). In addition, bullying perpetration also predicts criminality later in adolescence (Barker, Arseneault, Brendgen, Fontaine, & Maughan, 2008).

Some risk factors for bullying have been identified in the scientific literature. Boys are more often involved than girls in bullying both as perpetrators (de Oliveira et al., 2016; D. E. Jansen, Veenstra, Ormel, Verhulst, & Reijneveld, 2011; Vieno et al., 2015) and victims (Aho, Gren-Landell, & Svedin, 2016; Cooc & Gee, 2014b; de Oliveira et al., 2015; Pernille Due et al., 2009; Hong et al., 2016; Menrath et al., 2015; Nordhagen, Nielsen, Stigum, & Kohler, 2005; Vieno et al., 2015). Age and developmental stage are associated with the means of bullying: physical bullying is most often seen among young children, whereas verbal bullying becomes more common along with the development of verbal skills. As social skills improve and socialization proceeds, the more subtle indirect forms of bullying become dominant. (Bjorkqvist, Österman, & Kaukiainen, 1992.)

In addition to sex and age, socioeconomic status (SES) has been examined as a risk factor for bullying involvement. SES is an aggregate concept comprising resource-based (such as material and social resources) and prestige-based (individual's rank or status) indicators of socioeconomic position, which can be measured at both individual, household, and neighborhood levels (Krieger, Williams, & Moss, 1997). It can be assessed through individual measures, such as education, income, or occupation (Galobardes, Shaw, Lawlor, Lynch, & Davey Smith, 2006; Galobardes, Shaw, Lawlor, Lynch, & Davey Smith, 2006), but also through composite measures that provide an overall index of socioeconomic level. Of the SES indicators, low parental education has been associated with bullying perpetration and victimization in several studies (de Oliveira et al., 2015; D. E. Jansen et al., 2011; Jansen et al., 2012; Nordhagen et al., 2005). Living with both parents, on the other hand, has been observed to protect adolescents against bullying involvement (Aho et al., 2016; Jablonska & Lindberg, 2007; Nordhagen et al., 2005), whereas living in a single-parent family or a blended family have been observed to be risk factors for bullying involvement (Jablonska & Lindberg, 2007; Nordhagen et al., 2005). In addition, parental unemployment has been associated with bullying victimization (Delfabbro et al., 2006). However, not all studies observed the association between SES and bullying involvement, and the scientific evidence is stronger on the association between SES and bullying victimization than SES and bullying perpetration (Tippett & Wolke, 2014). The results vary according to how SES is measured, and there is no consensus over whether single SES indicators or an overall index of SES is associated with bullying involvement.

Socioeconomic disparities have increased in many countries around the world in recent decades (Keraudren & Rizzo, 2010; Rotko, Aho, Mustonen, & Linnanmäki, 2007). The Nordic countries,

including Finland, have traditionally been considered to be welfare states where socioeconomic inequalities are minimal. However, in the past decades, socioeconomic disparities have increased significantly in Finland as well: for instance, child poverty has tripled from 1995 to 2008 (Rotko et al., 2007). Scientific evidence suggests that socioeconomic disparities have also increased in the area of health and well-being over the same time period: Frederick et al (2014) found that socioeconomic disparities in the prevalence of overweight have increased in the US since 2002. Torikka et al (2014; 2017) observed that the differences in the prevalences of depression, heavy drinking and drunkenness between socioeconomic groups increased among Finnish adolescents from 2000 to 2011. Therefore it can be hypothesized that socioeconomic inequalities have increased in bullying involvement as well. However, no studies have so far been conducted on the subject. The aim of this study was to examine trends in bullying at school among Finnish adolescents between 2000 and 2015 and differences in these trends according to the socioeconomic adversities. Our research questions were:

- (1) Did the prevalences of bullying and being bullied change between 2000 and 2015?
- (2) Are bullying and being bullied at school associated with socioeconomic adversities (low parental education, not living with both parents and parental unemployment)?
- (3) Did the trends in bullying and being bullied at school differ according to the socioeconomic adversities?

Methods

Data and participants

The School Health Promotion Study of the National Institute for Health and Welfare is a survey that examines the health, health behavior and school experiences of Finnish adolescents. The survey has been conducted biennially since 1996 among 8th and 9th graders with pooled 2-year-data (2000–2001, 2002–2003, 2004–2005, 2006–2007, 2008–2009, 2010–2011, 2012–2013, 2014–2015). The data was collected anonymously during a school lesson under the supervision of a teacher, who did not interfere with the responses. Participants were informed about the voluntary nature of the study in both oral and written form, and returning the survey was considered consent to participate. The survey took about 30–45 minutes to complete. After this, the surveys were put in an envelope, sealed and returned directly to the research center. The timing of the study, sampling and data collection methods were held constant in each

survey. More information on the study is included in the appendix. Altogether, 761,278 (50,404–109,127 biennially) 8th and 9th graders participated in the survey. The 8th graders were 14–15 years old and the 9th graders 15–16 years old at the time of the surveys. The biennial cohorts covered between 43–82% of the whole age cohort of the country. This study was approved by the ethics committee of Pirkanmaa Hospital District and the National Institute of Health and Welfare.

Data collection tool

The questionnaire contained the following brief definition of bullying: 'In this questionnaire, bullying refers to the harassment of one pupil by another pupil or a group of pupils either verbally or physically. Teasing a pupil repeatedly in ways he or she does not like is also considered bullying. An argument between two roughly equal pupils is not considered bullying.' Bullying and being bullied were elicited using two questions derived from a World Health Organization study on youth health (King, Wold, Tudor-Smith, & Harel, 1996): 'How often have you been bullied at school in this SEMESTER?' and 'How often have you participated in bullying other students in this SEMESTER?' The response alternatives were 'several times a week', 'about once a week', 'less frequently' and 'not at all. These bullying victimization and perpetration measures have been shown to possess good validity and reliability for measuring bullying involvement (Roberson & Renshaw, 2017). For the analyses, two dichotomized bullying involvement variables 'frequently bullying others' and 'frequently bullied' were created, in which the response alternatives 'several times a week' and 'about once a week' were considered frequent bullying involvement.

The socioeconomic variables recorded were sex, parental education, parental unemployment in the past year and family structure. Parental education was elicited as follows: 'What is the highest education qualification your father/mother has achieved?' The response options in the 2000 questionnaire were 'basic school/vocational school/high school and/or vocational school/university or polytechnic'. The response options varied slightly over time: for instance, in the 2013 questionnaire there was a response option 'no education', which was removed from the 2015 questionnaire. For the analyses, parental education was dichotomized as parental basic education only (including the response option 'no education') versus other. Parental unemployment was elicited as follows: 'Have your parents been unemployed or laid off work during the past YEAR?' The response options were the same in all questionnaires: 'neither/one parent/both parents'. Family structure was elicited as follows: 'My family consists of...' The

response options in the 2000 questionnaire were 'mother and father/mother and stepfather/father and stepmother/mother only/father only/spouse/other caregiver'. The response options varied slightly over time. For the analyses, family structure was dichotomized as living with both parents – always included as the first response option – versus other. In this article, all three variables are referred to as socioeconomic adversities. In addition, a variable 'cumulative socioeconomic adversity' was created, in which all three socioeconomic variables were combined, with a score of 0 indicating no socioeconomic adversities (living with both parents, no parental unemployment and at least one parent with higher than basic education) and a score of 4 stood for having all socioeconomic adversities studied (not living with both parents, both parents unemployed, both parents with basic education only).

Statistical analysis

All statistical analyses were conducted using the SPSS software (version 24). Distributions of bullying involvement and socioeconomic adversities for both sexes during the time period 2000–2015 are presented in Table 1. Bivariate associations were studied using binomial logistic regression with the results shown as odds ratios with 95% confidence intervals. Frequent bullying victimization and perpetration were entered as dependent variables. In the first model, categorical time periods (2000–2001, 2002–2003, 2004–2005, 2006–2007, 2008–2009, 2010–2011, 2012–2013, 2014–2015) were entered as an independent factor using the time period 2000–2001 as a reference category (Table 2). In the second model, family structure (living with both parents/other), parental unemployment in the past year (neither/one parent/both parents) and parental education (both parents basic education only/other) were entered one at a time, each as an independent factor (Table 4). In the third model, cumulative socioeconomic adversity was entered as an independent factor and associations were calculated separately for each time period (Tables 5 and 6).

Results

The overall prevalence of being frequently bullied was 5.9% for girls and 8.6% for boys; the prevalence of frequently bullying others was 2.8% for girls and 9.4% for boys (Table 1). The prevalences of being frequently bullied and frequently bullying others varied only slightly over time: they remained at the same level or slightly above the level in 2000–2001, except for frequently bullying others, which decreased below the 2000–2001 level since 2012–2013 for both sexes (Table 2).

(Insert tables 1–3 about here!)

The proportion of adolescents not living with both parents increased towards the end of the study. The proportion of low parental education and parental unemployment varied only slightly over time. (Table 3) Both being frequently bullied and frequently bullying others were more common among girls and boys not living with both parents than among those who did. Being frequently bullied and frequently bullying others were also positively associated with parental unemployment. Involvement in bullying at school was most common among girls and boys whose both parents had been unemployed and least common among those whose parents had not been unemployed in the past year. Involvement in bullying at school was also more common when both parents had only basic education than when at least one parent had higher than basic education. (Table 4)

(Insert table 4 about here!)

Differences in the prevalence of involvement in bullying at school according to cumulative socioeconomic adversity increased markedly among both sexes over the entire study period (Tables 5–6). The difference in being frequently bullied between girls not living with both parents, with both parents unemployed, and with parents having basic education only, and girls living with both parents, with no parental unemployment, and at least one parent with higher than basic education increased from 2000–2001 (OR = 4.1, 95 % CI 2.3–7.5) to 2015–2014 (OR = 19.3, 95 % CI 12.6–29.5). Similarly for boys, the difference in being frequently bullied increased from 2000–2001 (OR = 7.6, 95 % CI 5.1–11.3) to 2014–2015 (OR = 18.1, 95 % CI 13.5–24.3). In addition, the difference in frequently bullying others increased both for girls (OR = 8.6, 95 % CI 4.7–15.6 in 2000–2001; OR = 76.6, 95 % CI 47.2–124.4 in 2014–2015) and for boys (OR = 6.3, 95 % CI 4.2–9.2 in 2000–2001; OR = 27.6, 95 % CI 20.5–37.2 in 2014–2015).

(Insert tables 5–6 about here!)

Discussion

In this study, we observed that involvement in bullying at school, both as a victim and as a perpetrator, was associated with socioeconomic adversities among 14–16-year-old Finnish adolescents. Frequent subjection to bullying and being bullied at school were more common among adolescents not living with both parents than among those who did. Bullying and being bullied were also positively associated with parental unemployment in the past year and were more common among adolescents

whose parents had only basic education than among those with at least one parent with higher than basic education. The most important, and novel, finding was that although the overall prevalences of bullying and being bullied did not change markedly over the study period, among those with the most socioeconomic adversities, they increased significantly.

Bullying and being bullied were more common among adolescents not living with both parents than among those in intact families. The result is in line with previous studies (Aho et al., 2016; Jablonska & Lindberg, 2007; D. E. Jansen et al., 2011; P. W. Jansen et al., 2012; Nordhagen et al., 2005; Turner, Finkelhor, & Ormrod, 2007). According to a North American meta-analysis (Amato & Keith, 1991), the rates of conduct problems and difficulties with psychological adaptation are higher among children of divorced parents than among those of non-divorced parents. Similarly, the rates of psychological problems are higher among adolescents living in stepfamilies than those living in intact families, although the individual variation is considerable (Amato, 1994). Bullying perpetration can be a manifestation of a conduct disorder or an externalizing symptom itself (WHO, 1992). On the other hand, externalizing and internalizing problems have been shown to predict bullying victimization (Boulton & Smith, 1994; Fekkes, Pijpers, Fredriks, Vogels, & Verloove-Vanhorick, 2006; Hodges & Perry, 1999; Sourander, Helstelä, Helenius, & Piha, 2000). In addition, single parents have less time and financial resources than co-habiting parents in general, which can partly explain the increased likelihood of bullying involvement among children of single parents (Barker et al., 2008; Due et al., 2009; Hong et al., 2016; Schumann, Craig, & Rosu, 2014; Shetgiri, 2013; Shetgiri, Lin, Avila, & Flores, 2012).

Bullying victimization and perpetration were more common among adolescents whose parents had only basic education than among those with at least one parent with higher than basic education. Similar observations have been made in earlier studies (de Oliveira et al., 2015; Fu, Land, & Lamb, 2013; D. E. Jansen et al., 2011; P. W. Jansen et al., 2012; Nordhagen et al., 2005). Parental education reflects informational and financial resources, values, norms and problem-solving skills in the family (Braveman et al., 2005; Bruna Galobardes et al., 2006). Bullying and being bullied were also more common the more parental unemployment there had been in the family in the past year. The finding is in line with in previous studies (Magklara et al., 2012; Stalmach, Tabak, & Radiukiewicz, 2014). Parental unemployment is associated with economic hardship in the family, parental stress, and adolescent psychosocial problems (Kim & Hagquist, 2017), (Baum, Fleming, & Reddy, 1986), which are risk factors of bullying involvement (Alizadeh Maralani, Mirnasab, & Hashemi, 2016; Barker, Boivin, et al., 2008; Boulton & Smith, 1994; P. Due, Damsgaard, Lund, & Holstein, 2009; Fekkes et

al., 2006; Garaigordobil & Machimbarrena, 2017; Hodges & Perry, 1999; Hong et al., 2016; Schumann et al., 2014; Sourander et al., 2000).

The more socioeconomic adversities an adolescent had, the more likely they were to be either bullies or victims. But above all, the gap in bullying involvement between adolescents with most and least socioeconomic adversities increased significantly from 2000 to 2015. To our knowledge, this is the first study to examine differences in trends in bullying at school according to the socioeconomic adversities. Torikka et al (2014, 2017) observed similarly that socioeconomic differences in depression and alcohol consumption increased among Finnish adolescents from 2000 to 2011. These differences reflect a more pervasive phenomenon in society: although the overall level of health and well-being has constantly risen, this increase has not been evenly distributed among the population. Socioeconomic health disparities among adolescents have also increased in many other European and North American countries in the past few decades (Elgar et al., 2015). The causes of increased socioeconomic disparities are multidimensional and not completely known. Since the economic depression in the 1990s, the economic development of the lowest income group has lagged behind other income groups. Additionally, the purchasing power of welfare benefits has decreased (Moisio, 2009). The association between socioeconomic status and health is mediated by health-related behavior, living conditions, and the consumption of health services (Palosuo, Koskinen, Lahelma, & Prättälä, 2007). In addition to causing individual suffering, socioeconomic health disparities are a major burden on public health and economy (Koskinen, Seppo; Martelin, 2007).

The causes of socioeconomic health disparities are rooted in society, and therefore socio-political decision-making plays a major role in decreasing them. Ensuring everyone's right to adequate social security, education, work, and social and health services are important ways to decrease socioeconomic disparities in health and well-being, including bullying at school. Reducing socioeconomic health disparities decreases overall suffering, helps to ensure the adequacy of public services and is also cost-effective (Rotko et al., 2007).

Limitations

This study has several strengths. It was based on uniquely large and nationally representative data large enough for analysing time trends ($n = 761,278$) in health and behavioral outcomes. The school sample of this age group was comprehensive as basic education is compulsory for everyone under the age of 16 in Finland. To our knowledge, no corresponding material can be found elsewhere. The sampling and timing of the study were held constant over the study years, likewise the elicitation of

bullying and being bullied at school.

This study has also some limitations. Self-report data is susceptible to errors, such as recall bias and invalid responding. Parental education especially may be difficult for an adolescent to recall, which may have caused the proportion of missing responses to that question to be higher than on other questions. However, the proportions of missing responses to all questions were small, and even high levels of non-response are not likely to have an effect on associations between phenomena (Van Loon et al., 2003). Invalid responding is another source of error in studies relying on self-report data. Social desirability may result in too low reporting of problem behaviors (Fisher and Katz, 2008), and adolescents may also find it funny to exaggerate their symptoms and problem behaviors in survey studies (Robinson-Cimpian, 2014). Such influences on bullying involvement were not controlled for in this study, but there is no reason to assume that either social desirability or exaggerating problems would have a biasing effect on the trends.

Conclusion

Socioeconomic disparities in bullying at school increased among Finnish adolescents from 2000 to 2015. Although the overall likelihoods of bullying and victimization did not change markedly, they increased significantly among adolescents with most socioeconomic adversities. Socioeconomic adversities should be considered in the prevention of bullying at school. In addition, socio-political actions are needed to decrease socioeconomic inequalities among Finnish adolescents.

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Table 1. Involvement in bullying at school and socioeconomic characteristics among Finnish boys and girls in the 8th and 9th grades of comprehensive school. (%)

	Boys (n = 381527)	Girls (n = 376814)	p
Age (mean (sd))	15.4 (0.7)	15.3 (0.6)	<0.001
Frequently bullied			<0.001
Yes	8.6	5.9	
No	90.8	93.8	
Missing*	0.5	0.3	
Frequently bullying others			<0.001
Yes	9.4	2.8	
No	90.1	96.9	
Missing*	0.5	0.3	
Lives with both parents			<0.001
Yes	74.4	73.7	
No	23.3	25.1	
Missing*	2.3	1.2	
Both parents only basic education			<0.001
Yes	5.6	5.9	
No	86.8	87.5	
Missing*	7.6	6.6	
Parental unemployment past year			<0.001
No	70.9	69.9	
One parent	23.6	25.6	
Both parents	3.2	3.3	
Missing*	2.3	1.2	

*'Missing' = No information was received on this question.

Table 2. Involvement in bullying at school over time among Finnish boys and girls in the 8th and 9th grades of comprehensive school. (OR (95 % CI))*

	2002–2003	2004–2005	2006–2007	2008–2009	2010–2011	2012–2013	2014–2015
BOYS							
Frequently bullied	1.1 (1.1–1.2)	1.2 (1.1–1.2)	1.3 (1.2–1.3)	1.4 (1.3–1.4)	1.5 (1.4–1.5)	1.3 (1.2–1.3)	1.1 (1.0–1.1)
Frequently bullying others	1.0 (0.9–1.0)	0.9 (0.9–1.0)	1.0 (1.0–1.0)	1.1 (1.1–1.2)	1.0 (1.0–1.1)	0.6 (0.6–0.7)	0.6 (0.5–0.6)
GIRLS							
Frequently bullied	1.0 (0.9–1.1)	1.0 (1.0–1.1)	1.1 (1.0–1.2)	1.1 (1.1–1.2)	1.3 (1.2–1.4)	1.3 (1.2–1.4)	1.2 (1.1–1.3)
Frequently bullying others	1.0 (1.0–1.1)	1.0 (1.0–1.1)	1.1 (1.1–1.2)	1.4 (1.3–1.5)	1.4 (1.3–1.5)	0.7 (0.7–0.8)	0.5 (0.5–0.6)

*Time period 2000–2001 used as a reference category.

Table 3. Proportion of socioeconomic adversities over time among Finnish boys and girls in the 8th and 9th grades of comprehensive school. (%)

	2000–2001	2002–2003	2004–2005	2006–2007	2008–2009	2010–2011	2012–2013	2014–2015
BOYS								
Not living with both parents								
Yes	21.5	21.0	21.9	21.9	21.8	20.7	30.1	31.9
No	75.5	76.8	76.4	76.2	76.3	77.6	66.1	65.5
Missing*	3.1	2.2	1.7	1.9	1.9	1.6	3.8	2.6
Both parents low education								
Yes	8.0	6.8	5.7	4.8	3.7	5.8	5.2	4.6
No	83.2	86.4	87.5	87.8	88.4	88.0	84.1	89.7
Missing*	8.8	6.8	6.8	7.4	7.8	6.2	10.7	5.7
Parental unemployment								
No	66.5	70.9	72.4	75.7	73.0	68.8	70.1	66.3
One parent	26.4	23.4	22.7	19.6	22.0	26.1	24.1	26.8
Both parents	3.9	3.2	2.9	2.6	3.0	3.6	3.2	3.9
Missing*	3.1	2.5	2.0	2.1	2.0	1.6	2.6	3.0
GIRLS								
Not living with both parents								
Yes	22.9	22.9	23.8	23.8	23.4	22.3	32.2	33.4
No	98.4	75.8	75.2	75.2	75.5	76.8	65.8	65.8
Missing*	1.6	1.3	0.9	1.0	1.1	0.9	2.1	0.8
Both parents low education								
No	8.6	6.9	5.9	5.1	3.9	7.1	5.3	3.9
Yes	82.7	86.3	88.1	88.8	89.5	87.3	86.5	92.4
Missing*	8.7	6.8	6.0	6.2	6.6	5.6	8.2	3.7
Parental unemployment								
No	65.8	69.8	71.0	74.7	72.2	67.6	69.4	65.6
One parent	28.3	25.4	24.9	21.7	23.8	27.7	26.1	29.3
Both parents	4.3	3.3	3.0	2.5	2.8	3.7	3.2	3.9
Missing*	1.6	1.4	1.1	1.1	1.1	0.9	1.3	1.2

*'Missing' = No information was received on this question.

Table 4. Involvement in bullying at school by socioeconomic adversities among Finnish boys and girls in the 8th and 9th grades of comprehensive school. (OR (95 % CI))

	Frequently bullied	Frequently bullying others
BOYS		
Family structure		
Both parents	ref*	ref*
Not living with both parents	1.4 (1.3–1.4)	1.5 (1.5–1.6)
Both parents with low education		
No	ref*	ref*
Yes	1.6 (1.5–1.7)	1.7 (1.6–1.8)
Parental unemployment		
Neither parent	ref*	ref*
One parent	1.3 (1.3–1.3)	1.3 (1.2–1.3)
Both parents	2.8 (2.7–3.0)	3.1 (2.9–3.2)
GIRLS		
Family structure		
Both parents	ref*	ref*
Not living with both parents	1.5 (1.4–1.5)	1.7 (1.7–1.8)
Both parents with low education		
No	ref*	ref*
Yes	1.6 (1.5–1.7)	1.8 (1.7–2.0)
Parental unemployment		
Neither parent	ref*	ref*
One parent	1.4 (1.4–1.5)	1.4 (1.3–1.5)
Both parents	2.6 (2.4–2.7)	3.4 (3.2–3.7)

*Ref = reference category.

Table 5. Being frequently bullied over time by cumulative socioeconomic adversity among Finnish boys and girls in the 8th and 9th grades of comprehensive school. (OR (95% CI))* **

	2000–2001	2002–2003	2004–2005	2006–2007	2008–2009	2010–2011	2012–2013	2014–2015
BOYS								
Number of sociodemographic adversities								
1	1.3 (1.2–1.4)	1.2 (1.1–1.3)	1.2 (1.2–1.3)	1.3 (1.2–1.4)	1.3 (1.2–1.3)	1.3 (1.2–1.4)	1.3 (1.2–1.4)	1.5 (1.3–1.7)
2	1.5 (1.3–1.7)	1.5 (1.4–1.7)	1.6 (1.4–1.7)	1.8 (1.7–2.0)	1.8 (1.6–2.0)	1.7 (1.5–1.8)	1.6 (1.5–1.8)	2.1 (1.9–2.5)
3	2.9 (2.4–3.4)	2.0 (1.6–2.4)	2.5 (2.1–3.0)	3.5 (2.9–4.2)	2.5 (2.1–3.1)	2.5 (2.1–3.0)	2.5 (2.0–3.0)	4.8 (3.8–6.1)
4	7.6 (5.1–11.3)	7.4 (5.2–10.7)	8.9 (6.2–12.9)	8.6 (6.1–12.3)	8.4 (6.0–11.8)	9.9 (7.3–13.4)	12.1 (9.2–15.8)	18.1 (13.5–24.3)
GIRLS								
Number of sociodemographic adversities								
1	1.3 (1.2–1.4)	1.5 (1.4–1.7)	1.4 (1.3–1.5)	1.5 (1.4–1.7)	1.4 (1.3–1.5)	1.3 (1.2–1.5)	1.4 (1.2–1.5)	1.3 (1.1–1.4)
2	1.7 (1.5–1.9)	1.7 (1.5–1.9)	1.7 (1.6–2.0)	2.0 (1.8–2.2)	1.8 (1.6–2.0)	1.7 (1.6–1.9)	2.0 (1.8–2.2)	1.9 (1.6–2.3)
3	2.1 (1.7–2.7)	2.9 (2.4–3.6)	2.7 (2.2–3.4)	3.0 (2.4–3.7)	2.3 (1.8–2.9)	2.6 (2.1–3.1)	2.6 (2.1–3.2)	2.1 (1.5–2.8)
4	4.1 (2.3–7.5)	4.1 (2.3–7.3)	10.2 (6.5–16.0)	9.9 (6.4–15.2)	9.9 (6.6–14.9)	15.1 (11.1–20.7)	9.2 (6.6–12.8)	19.3 (12.6–29.5)

*Socioeconomic adversities: low parental education, not living with both parents and parental unemployment in the past year (one or both parents).

**Adolescents in the same time period living with both parents, with at least one parent with higher than basic education and both parents employed used as a reference category.

Table 6. Frequently bullying others over time by cumulative socioeconomic adversity among Finnish boys and girls in the 8th and 9th grades of comprehensive school. (OR (95 % CI))* **

	2000–2001	2002–2003	2004–2005	2006–2007	2008–2009	2010–2011	2012–2013	2014–2015
BOYS								
Number of sociodemographic adversities								
1	1.3 (1.2–1.3)	1.3 (1.2–1.4)	1.3 (1.2–1.4)	1.3 (1.2–1.4)	1.2 (1.2–1.3)	1.3 (1.2–1.4)	1.4 (1.3–1.5)	1.3 (1.1–1.5)
2	1.7 (1.5–1.8)	1.7 (1.5–1.8)	1.6 (1.5–1.8)	1.9 (1.8–2.1)	1.8 (1.7–2.0)	1.9 (1.8–2.1)	2.0 (1.7–2.2)	1.9 (1.7–2.3)
3	3.0 (2.5–3.6)	2.7 (2.3–3.2)	3.3 (2.8–3.9)	3.5 (3.0–4.2)	2.9 (2.4–3.5)	3.1 (2.6–3.7)	3.3 (2.7–4.1)	4.6 (3.6–5.9)
4	6.3 (4.2–9.2)	10.1 (7.1–14.3)	9.9 (6.8–14.2)	11.9 (8.4–16.9)	13.7 (9.8–19.1)	13.5 (10.1–18.3)	16.7 (12.7–21.9)	27.6 (20.5–37.2)
GIRLS								
Number of sociodemographic adversities								
1	1.3 (1.1–1.5)	1.5 (1.3–1.7)	1.6 (1.4–1.8)	1.4 (1.3–1.6)	1.6 (1.4–1.7)	1.4 (1.2–1.5)	1.4 (1.2–1.7)	2.0 (1.5–2.7)
2	1.8 (1.5–2.1)	2.2 (1.9–2.6)	1.9 (1.6–2.3)	2.0 (1.7–2.3)	2.2 (1.9–2.5)	2.1 (1.8–2.4)	2.0 (1.7–2.5)	2.5 (1.8–3.5)
3	2.6 (1.9–3.5)	3.6 (2.8–4.7)	3.2 (2.4–4.3)	3.5 (2.7–4.7)	3.4 (2.7–4.5)	3.5 (2.8–4.4)	3.6 (2.7–4.9)	4.4 (2.7–7.2)
4	8.6 (4.7–15.6)	8.0 (4.4–14.5)	28.4 (18.3–44.2)	22.8 (14.9–34.8)	22.4 (14.9–33.6)	23.5 (17.0–32.4)	25.7 (17.8–37.0)	76.6 (47.2–124.4)

*Socioeconomic adversities: low parental education, not living with both parents and parental unemployment in the past year (one or both parents).

**Adolescents in the same time period living with both parents, with at least one parent with higher than basic education and both parents employed used as a reference category.