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ARTICLE

Being Bullied: Associated Factors in Children and Adolescents 8 to 18 Years Old in 11 European Countries

Filippos Analitis, MPH[a], Mariska Klein Velderman, PhD[b], Ulrike Ravens-Sieberer, PhD[c], Symone Detmar, PhD[b], Michael Erhart, PhD[c], Mike Herdman, MSc[a,d], Silvina Berra, MPH[d,e], Jordi Alonso, MD, PhD[a,d], Luis Rajmil, MD, PhD[a,d,e], and the European Kidscreen Group

[a]Health Services Research Unit, Institut Municipal d'Investigació Mèdica-Hospital del Mar, Barcelona, Spain; [b]Nederlandse Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, Quality of Life, Leiden, Netherlands; [c]Department of Psychosomatics in Children and Adolescents, University Clinic Hamburg-Eppendorf, Germany; [d]Centro de Investigación Biomédica en Red de Epidemiología y Salud Pública, Barcelona, Spain; [e]Catalan Agency for Health Technology Assessment and Research, Barcelona, Spain

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What's Known on This Subject

The variations in prevalence and factors associated with bullying found in previous studies could be caused by differences in study design, the instruments used to measure bullying, or study scope (ie, whether only bullies, only victims, or bullies/victims).

What This Study Adds

This study shows considerable variation in bullying between European countries using a well-validated scale. The study also shows a clear profile of likely bullying victims and suggests that the Kidscreen bullying scale could be useful as a screening tool.

ABSTRACT

OBJECTIVES. To analyze the prevalence of bullying victims among children and adolescents aged 8 to 18 years in 11 European countries and to investigate the associated sociodemographic, physical, and psychosocial factors.

METHODS. Being a bullying victim was measured by using the social acceptance (bullying) scale from the Kidscreen-52, a health-related quality-of-life questionnaire administered to 16 210 children and adolescents aged 8 to 18 and their parents in postal or school-based surveys in 11 European countries. Standardized mean differences (effect size) were computed to measure the percentage of children/adolescents scoring 1 SD below the mean on the Kidscreen bullying scale. Logistic regression models were used to determine which sociodemographic, physical, and psychosocial factors were associated with being bullied.

RESULTS. The percentage of children being bullied was 20.6% for the entire sample, ranging from 10.5% in Hungary to 29.6% in the United Kingdom. In almost all countries the factors most strongly associated with being bullied were younger age, having probable mental health problems, having a low score on the Kidscreen-52 moods and emotions dimensions, and poor social support. Using the grand mean for all countries as the reference category, there was an above-average likelihood of children or adolescents reporting that they had been victims of bullying in 5 countries (Austria, Netherlands, Spain, Switzerland, and the United Kingdom), and a below-average likelihood in 3 countries (France, Greece, Hungary).

CONCLUSIONS. This study indicated considerable variation between countries in the prevalence of those perceiving themselves to be victims of bullying but also revealed a clear profile of those likely to be bullied. The study also suggests that the Kidscreen bullying scale could be useful in identifying potential bullying victims. *Pediatrics* 2009;123:569–577

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Key Words
adolescents, bullying, children, health-related quality of life, school health

Abbreviations
FAS—Family Affluence Scale
PH—physical well-being
SDQ—Strength and Difficulties Questionnaire
PW—psychological well-being
CSHCN—children with special health care needs
OR—odds ratio

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Address correspondence to Luis Rajmil, MD, PhD, Catalan Agency for Health Technology Assessment and Research, Roc Boronat 81-95, 2nd Floor, 08005 Barcelona, Spain. E-mail: lrajmil@imim.es or lrajmil@aatrm.catsalut.net

ACCORDING TO A widely accepted definition of bullying, a child is bullied when he or she is exposed, repeatedly and over time, to negative actions on the part of 1 or more peers. Negative action is when a person intentionally inflicts injury or discomfort on another individual through physical contact, through words, or in other ways.[1] Bullying is a specific type of aggression in which (1) the behavior is intended to harm or disturb, (2) the behavior occurs repeatedly over time, and (3) there is an imbalance of power, with a person or group perceived as more powerful attacking one perceived as less powerful. This asymmetry of power may be physical or psychological, and the aggressive behavior may be verbal, physical, or psychological.[2] Individuals may be bullies (perpetrators), victims, or bullies/victims.

Bullying at school is present in almost all countries but with different prevalence rates. Studies have shown rates from 8% in Germany to 30% in Italy,[3–9] which reflect prevalence of the overall phenomenon (ie, when information

on both bullies and victims is collected). Studies focused solely on the victims of bullying have revealed variation ranging from 5.5% for girls in Sweden[10] to 41.4% for boys in Lithuania[10] and up to 57% in Australia.[11]

Various factors have been associated with being a bully, a victim, or both, including age (with bullying being more frequent in younger individuals),[2,6] having a lower socioeconomic status, and lower parents' educational level. Poor health status,[12–15] increased health care needs,[16] mental health status,[9,16–20] and physical appearance[17,18] have been associated with being bullied, as have loneliness, lack of social interaction, poor social adjustment, poor academic achievement,[2] and sexual orientation.[21,22] No substantial differences according to gender have been observed in terms of the frequency of being bullied.[9,23,24]

Variations in prevalence rates and factors associated with bullying shown in previous studies could be a result of differences in study design and the nature of the sample (eg, age and gender composition), the definition of bullying used and study scope (eg, whether only bullies, only victims, bully/victims, or all of these are studied), as well as the frequency and time frame for the data collected (eg, once, twice, several times, over the previous week, previous month, previous term, etc).[25] Cross-cultural differences in the way the terms used to refer to bullying are interpreted, contextualized, and translated could also be of considerable importance and might lead to different prevalence rates.[26,27]

The European Kidscreen project was designed to develop a standardized health-related quality-of-life questionnaire for children and adolescents 8 to 18 years old and also provided an opportunity to study bullying cross-culturally in several European countries by using a standard methodology. The objectives of this study were to analyze the prevalence of children and adolescents aged 8 to 18 years who perceived being bullied in 11 European countries and to investigate the associated sociodemographic, physical, and psychosocial factors.

METHODS

Participants

The present study was based on the fieldwork of the Kidscreen project, a cross-sectional study conducted in 13 European counties during 2003. In the present study, data from Ireland and Sweden was excluded from the analysis because of unavailability of parents' data. The following countries are the focus of this investigation: Austria, Czech Republic, France, Germany, Greece, Hungary, Poland, Spain, Switzerland, Netherlands, and the United Kingdom. The target population was children and adolescents 8 to 18 years old. The sample was designed to be representative by age, gender, and region.

Study Design

Three approaches to sample selection and administration were followed: (1) telephone sampling followed by a mail survey (Austria, Switzerland, Spain, France, and the Netherlands); (2) school sampling and administration (Greece, Hungary) or school sampling and mail administration (Poland); and (3) multistage random sampling of communities and households (Czech Republic). In the United Kingdom, a combination of telephone and school-sampling methods was used.[28]

Telephone sampling was centralized in Germany and was conducted by using a computer-assisted telephone interview, during which an interactive front-end computer system aids interviewers to ask questions over the telephone with random-digit dialing. The sampling frame was households with a fixed telephone line. Households were contacted by telephone and asked to participate by interviewers who had received study-specific training. If the contacted family member agreed to participate, the questionnaire and other study materials were mailed together with a stamped, addressed envelope for return of the completed questionnaire. Two reminders were sent in cases of nonresponse (after 2 and 5 weeks). In the case of school sampling, sample selection was based on school listings, and schools were randomly selected in each geographical or administrative region, except in Hungary where classrooms (not schools) were randomly selected by region. Children completed the questionnaires in school. Multistage probability sampling was only used in the Czech Republic. Communities were randomly selected from all regions of the country. Households within each selected community were then randomly selected from the local telephone directory. Trained interviewers contacted families with potentially eligible children who had been identified by telephone. If the family agreed to participate in the study, the interviewer provided standardized information and left the questionnaires, which were collected again 2 to 5 days later. All questionnaires were self-administered.

Fieldwork was conducted between May and September 2003. Some data were collected on those who refused to participate. All procedures were conducted following the data-protection requirements of the European Parliament (Directive 95/46/EC of the European Parliament and of the Council of October 24, 1995, on the protection of individuals with regard to the processing of personal data and on the free movement of such data). The ethical and legal requirements in all participating countries were adhered to, and signed informed consent was obtained from all study participants.

Assessments

Being Bullied (Bullying Scale)

Being a bullying victim was measured by using the corresponding scale on the Kidscreen-52 questionnaire. This scale consists of 3 questions: "Have you been afraid of other girls and boys?" "Have other girls and boys made fun of you?" and "Have other girls and boys bullied you?" Responses are on a 5-point Likert scale (never, seldom, sometimes, often, always), and a 1-week recall period is used. The bullying scale of the Kidscreen was developed according to current international recommendations and guidelines for achieving cross-cultural equivalence in patient-reported outcomes measures.[29] The questionnaire was simultaneously developed

through focus groups in all participant countries followed by cognitive debriefings and forward and back translations and harmonization across countries.[30]

The bullying scale showed acceptable levels of reliability. Cronbach's α values by country ranged from .73 in Greece and Hungary to .83 in the United Kingdom. The only country in which Cronbach's α was below the commonly accepted threshold (.70) was France (.61). Corrected item-total correlation coefficients ranged from .38 to .73. The scale's unidimensionality was confirmed by using confirmatory factor analysis. Construct, convergent, and discriminant validity were also acceptable, and no differential item functioning was found according to age, gender, or country.[25] The scale score was standardized to an arbitrary mean of 50 with an SD of 10 on the basis of scores from the European population. Lower scores indicate a greater perception of being bullied.

Other Measurements

Four independent groups of variables were included to analyze their association with being bullied: sociodemographic and family factors, health status, and social support.

Sociodemographic and family data collected included child's age, gender, and socioeconomic status measured by using the Family Affluence Scale (FAS) collected in 8 categories (from 0, the lowest, to 7, the highest FAS category),[31] and parental educational level was measured by using the International Standard Classification of Education.[32] Parents' physical and mental health was measured by using the SF-12.[33]

Physical health was measured by using the physical well-being (PH) dimension of the Kidscreen-52 and by calculating the BMI. The PH dimension of the Kidscreen-52 contains 5 items measuring the child's physical activity and uses a standardized mean of 50 and an SD of 10. Higher scores mean better health. BMI was calculated and analyzed on the basis of International Obesity Task Force recommendations[34] and by using self-reported data on weight and height.

Mental health was measured by using the Strength and Difficulties Questionnaire (SDQ)[35] and psychological well-being (PW) and moods and emotions dimensions of the Kidscreen-52.[24] The SDQ contains 25 items and is widely used as a screening instrument for mental health status. The PW dimension of the Kidscreen-52 contains 6 items and examines positive emotions and satisfaction with life. The moods and emotions dimension contains 7 items and analyzes whether an individual has experienced depressive moods and emotions or stressful feelings in general. On both of these dimensions higher scores mean better health.

Health care needs were measured by using the children with special health care needs (CSHCN) screener. The CSHCN screener contains 5 questions on use or need for health care services because of chronic conditions.[36]

Social support was assessed by using the Oslo Social Support Scale.[32] This scale contains 3 items relating to sense of security and emotional and instrumental support the child receives.

The Appendix shows the source of information (child, parent, or both) for each variable included.

Statistical Analyses

To study prevalence, we stratified children into 2 categories on the basis of their scores on the bullying dimension. Individuals scoring 1 SD below the mean (score $<$ 40) were defined as victims of bullying, and the remainder ($\geq$40) were classified as nonvictims. The suitability of this cut point was tested by examining how well it discriminated between children responding "never" or "seldom" on the 3 items in the bullying scale versus those responding "sometimes" or more. We also used a sensitivity analysis to determine if 40 was the most appropriate cut point in terms of discriminating between these 2 groups.

In the study of factors associated with being bullied, children were classified as having special health care needs if they had at least 1 positive response on the CSHCN screener; the SDQ was stratified into 2 categories (unlikely/possible case and probable case); and scores on the Oslo scale were categorized as "poor social support" ($\leq$6) and moderate/strong social support ($>$6).[37]

Factors associated with being bullied were first examined in a bivariate analysis. For categorical variables, a χ^2 test was used, and for continuous variables, effect sizes were calculated.[38] Variables that had demonstrated collinearity were excluded from the analysis. Multiple logistic regression models were fitted to analyze the association between being bullied and sociodemographic, health status, and social factors. The logistic regression analyses were conducted separately for every country and for the whole sample. For the latter, interaction terms were included in the analysis to examine effect modifications according to country. The data were weighted according to Eurostat census data to correct for nonresponse bias. A 2-tailed P value of $<$.05 was accepted as statistically significant.

RESULTS

The population sample consisted of 16 210 children 8 to 18 years old and their parents. The response rate for child-parent pairs ranged from 24.2% to 72.0%, with an overall response rate of 35.7%. Table 1 shows the sample characteristics. The percentage of children being bullied was 20.6% for the entire sample and ranged from 10.5% in Hungary to 29.6% in the United Kingdom.

Table 2 shows the percentage of children/adolescents being bullied stratified according to sociodemographic, health status, and social factors. In general, percentages of children being bullied were higher in the younger age group, those with a lower economic status and low parental level of education, and in those in the poorest categories of health status and social support.

Logistic regression models showed that in almost all countries the factors most strongly associated with being bullied were younger age (odds ratios [OR] from 2.32 in the United Kingdom to 7.28 in France) (Table 3), having probable mental health problems as measured by the SDQ (ORs from 1.81 in the Netherlands to 3.20 in Po-

TABLE 1 Socio-demographic Characteristics of the Sample and Percentage of Children/Adolescents Scoring <1 SD in Being Bullied (Weighted Data), Kidscreen 2003

Variable	Total ($N = 16210$), *n* (%)[a]	Country, *n* (%)										
		AU	CZ	FR	DE	EL[b]	HU	NL	PL	ES	CH	UK
Gender												
Male	8308 (51.3)	731 (51.0)	819 (51.5)	520 (51.1)	882 (51.3)	600 (51.4)	999 (51.0)	947 (51.2)	854 (51.2)	447 (51.4)	866 (51.4)	640 (51.3)
Female	7901 (48.7)	703 (49.0)	773 (48.5)	497 (48.9)	837 (48.7)	567 (48.6)	960 (49.0)	903 (48.8)	816 (48.8)	423 (48.6)	819 (48.6)	607 (48.7)
Age, y												
8–11	5584 (34.4)	526 (36.7)	557 (35.0)	360 (35.4)	596 (34.7)	NA	690 (35.2)	696 (37.6)	536 (32.1)	295 (34.0)	622 (36.9)	468 (37.5)
12–15	6982 (43.1)	601 (41.9)	599 (37.7)	436 (42.9)	723 (42.0)	804 (68.9)	818 (41.8)	761 (41.1)	703 (42.1)	367 (42.2)	728 (43.2)	557 (44.7)
16–18	3643 (22.5)	308 (21.5)	435 (27.3)	221 (21.7)	400 (23.3)	363 (31.1)	450 (23.0)	393 (21.3)	431 (25.8)	207 (23.8)	335 (19.9)	222 (17.8)
FAS score												
Low	2762 (17.4)	199 (14.0)	778 (49.0)	83 (8.3)	198 (11.6)	399 (36.8)	591 (30.7)	182 (9.9)	617 (37.4)	174 (20.4)	183 (11.1)	111 (9.2)
Medium	7258 (45.7)	708 (50.0)	659 (41.5)	437 (44.0)	821 (48.2)	489 (45.1)	909 (47.2)	898 (49.0)	805 (48.8)	427 (50.0)	761 (46.0)	461 (38.3)
High	5876 (37.0)	509 (35.9)	149 (9.4)	474 (47.7)	683 (40.1)	197 (18.1)	426 (22.1)	754 (41.1)	226 (13.7)	253 (29.6)	710 (42.9)	632 (52.5)
Parental level of education												
Low	3204 (20.0)	64 (4.5)	22 (1.4)	251 (24.7)	250 (14.7)	251 (24.7)	460 (23.7)	202 (11.2)	440 (26.5)	385 (44.8)	103 (6.3)	125 (10.1)
Medium	6484 (40.5)	1060 (74.0)	1060 (66.7)	214 (21.1)	945 (55.8)	364 (35.8)	807 (41.6)	935 (51.8)	832 (50.1)	200 (23.2)	814 (49.8)	395 (32.1)
High	6323 (39.5)	309 (21.5)	507 (31.9)	549 (54.2)	500 (29.6)	400 (39.5)	672 (34.7)	668 (37.0)	390 (23.5)	275 (32.0)	719 (43.9)	712 (57.8)
PCS	49.65	49.85	49.39	50.31	50.23	47.87	49.44	49.02	48.46	49.77	50.11	49.50
MCS	50.58	52.38	51.49	47.73	51.35	50.43	50.10	52.90	50.61	52.20	52.71	50.52
Bullying												
Yes (score < 1 SD)	3293 (20.6)	343 (25.1)	320 (20.2)	117 (11.7)	297 (17.7)	143 (12.4)	206 (10.5)	485 (26.6)	382 (23.0)	202 (23.7)	365 (22.0)	367 (29.6)
No	12698 (79.4)	1027 (74.9)	1263 (79.8)	884 (88.3)	1384 (82.3)	1018 (87.6)	1748 (89.5)	1341 (73.4)	1281 (77.0)	650 (76.3)	1298 (78.0)	874 (70.4)

PCS indicates physical component summary score of SF-12 collected from the parent; MCS, mental component summary score of SF-12 of the parent; AU, Austria; CZ, Czech Republic; FR, France; DE, Germany; EL, Greece; HU, Hungary; NL, Netherlands; PL, Poland; ES, Spain; CH, Switzerland; UK, United Kingdom.

[a] Missing values: FAS = 314 (1.9%); International Standard Classification of Education = 199 (1.2%); bullying = 219 (1.4%).

[b] Did not collect data on 8- to 11-year-old children.

land), having a low score on the Kidscreen-52 moods and emotions dimension, which corresponds to sadness and emotional instability (ORs from 0.89 in the United Kingdom to 0.95 in Greece), and having poor social support (ORs of 1.44 in Germany and 3.20 in Greece).

The logistic regression model (Table 4) for the whole sample confirmed that the most important factors were age, educational level of the parents, BMI, moods and emotion dimension scores on the Kidscreen-52, SDQ score, and poor social support. When using the grand mean for all countries as the reference category, 5 countries had an OR of >1 (Austria, the Netherlands, Spain, Switzerland, and the United Kingdom), and 3 countries (France, Greece, and Hungary) had an OR of <1. There were no statistically significant interactions between countries and sociodemographic variables.

DISCUSSION

In this large, representative sample of children and adolescents from 11 European countries, we found substantial variation according to country in the percentage of those who reported being a victim of bullying but considerable similarities between countries in the factors associated with being bullied. Being younger, having a low level of parental education, being overweight/obese, having psychological/mental problems, and having a lack of social support were consistently associated with a perception of being bullied.

These results should be interpreted cautiously given the study's main limitations such as its cross-sectional design, the relatively low response rate in some countries, and the fact that not all potentially relevant variables were included. Although the associations observed in the multivariate models were consistent and quite strong across several of the countries, the cross-sectional design means it is not possible to determine the directionality of the association. The low response rates in some countries might also have led to a response bias. However, a comparison of the final samples with Eurostat data showed no statistically significant differences in terms of age and gender, which suggests that nonresponse is not likely to have had a strong effect on study results. A comparison of subsamples of responders and nonresponders also showed few differences between the 2 on major characteristics. Moreover, nonresponse bias was corrected by weighting data to restart proportions of gender and age groups according to census data for all countries. A low risk of selection bias is expected, because the models were adjusted for socioeconomic and health-related factors. Nevertheless, results from countries with relatively low response rates should be treated with caution. A more detailed description of the methods and representativeness of the Kidscreen study is presented elsewhere.[39] Finally, although the list of variables tested in the multivariate models was extensive, it was not exhaustive, and factors such as ethnic background[40] and sexual orientation[21,22] were not included, although they have been shown to be associated with bullying and should be included in future studies.

One of the strengths of the present study was the use

TABLE 2 Percentages of Children/Adolescents Scoring < 1 SD in Being Bullied by Country and by Sociodemographic, Physical, Psychosocial Variables

Variable	Total	AU	CZ	FR	DE	EL	HU	NL	PL	ES	CH	UK
Socio-demographic												
Gender												
Male	20.3	25.2	19.6	10.9	18.4	13.7	11.6	26.9	22.1	26.2	24.1[a]	28.9
Female	20.9	24.7	20.9	12.9	17.0	10.9	10.3	26.0	24.1	22.1	19.2	33.9
Age, 3 y												
8–11	26.7[a]	32.5[a]	24.9[a]	14.4[a]	24.3[a]	NA†[b]	13.7[a]	30.9[a]	30.6[a]	34.2[a]	27.9[a]	34.9[a]
12–15	19.9	23.6	21.9	12.1	16.6	13.4	10.5	24.7	24.9	20.5	21.0	27.7
16–18	12.5	14.3	12.0	6.80	9.80	10.2	4.9	22.4	11.1	14.6	12.0	23.0
FAS score												
Low	24.2[a]	22.5	23.5[a]	12.5	22.1	12.7	13.5[a]	34.4[a]	27.3[a]	25.5	26.8	39.3
Medium	20.0	24.7	17.7	12.1	17.2	11.6	10.3	26.2	21.4	23.5	21.6	32.1
High	19.3	26.0	20.2	11.5	16.7	11.5	7.8	24.5	17.8	24.4	19.6	29.2
Parental level of education												
Low	22.5[a]	28.3	40.9[a]	13.6	26.5[a]	14.2	13.4	35.0[a]	26.4[a]	23.8	28.6[a]	33.6
Medium	21.2	23.6	21.8	12.9	17.5	9.0	9.4	27.0	23.2	25.5	23.8	32.9
High	18.9	28.8	15.9	10.8	14.3	12.5	10.7	22.9	19.3	22.7	18.1	29.5
PCS[c]	0.01	0.02	0.08	−0.09	0.06	0.18	0.09	0.04	−0.03	−0.04	0.05	−0.04
MCS[c]	0.14[a]	0.11	0.28[a]	0.34[a]	0.22	−0.06	−0.02	0.09	0.18[a]	0.14	0.17[a]	0.15[a]
Physical/mental												
BMI												
Normal	17.9[a]	23.0[a]	18.7[a]	10.2[a]	16.8[a]	10.5[a]	9.7[a]	24.2[a]	22.3[a]	21.6[a]	20.0[a]	27.2
Overweight/obese	26.5	36.7	28.2	18.4	24.6	16.8	17.6	32.8	31.0	33.3	30.2	29.3
CSHCN screener												
Yes	27.5[a]	36.1[a]	32.5[a]	18.9[a]	27.0[a]	26.5[a]	12.0	35.9[a]	24.5	51.1[a]	34.4[a]	41.8[a]
No	19.5	24.5	18.3	10.0	16.3	11.2	10.6	24.9	23.0	23.2	20.3	29.8
Chronic condition												
Yes	23.7[a]	29.4[a]	29.4[a]	13.8	21.9[a]	14.7	12.1	30.0[a]	25.7[a]	25.8	25.0[a]	34.1
No	19.0	23.1	15.7	10.5	15.1	10.8	10.1	24.7	21.3	22.9	20.3	29.7
PH[c]	0.21[a]	0.27[a]	0.45[a]	0.23[a]	0.27[a]	0.14	0.24[a]	0.24[a]	0.20[a]	0.15	0.14[a]	0.28[a]
PW[c]	0.34[a]	0.42[a]	0.39[a]	0.42[a]	0.34[a]	0.34[a]	0.30[a]	0.58[a]	0.27[a]	0.35[a]	0.28[a]	0.40[a]
Moods/emotions[c]	0.71[a]	0.57[a]	0.63[a]	0.72[a]	0.61[a]	0.58[a]	0.65[a]	0.79[a]	0.65[a]	0.64[a]	0.59[a]	0.79[a]
SDQ												
Unlikely/possible	18.8[a]	24.1[a]	17.9[a]	9.7[a]	15.7[a]	11.0[a]	10.1[a]	24.2[a]	21.5[a]	22.1[a]	20.0[a]	30.1[a]
Probable	43.7	39.4	44.7	34.1	46.2	20.4	21.2	53.3	47.2	52.0	51.9	55.4
Social												
Oslo Social Support Scale												
Poor	34.2[a]	42.7[a]	35.7[a]	21.6[a]	33.3[a]	25.2[a]	23.4[a]	50.4[a]	34.1[a]	35.6[a]	43.9[a]	47.0[a]
Moderate/strong	19.0	22.2	16.4	8.6	15.3	8.8	8.8	24.5	20.1	22.0	18.2	28.0

PCS indicates SF-12 physical component summary; MCS, SF-12 mental component summary; AU, Austria; CZ, Czech Republic; FR, France; DE, Germany; EL, Greece; HU, Hungary; NL, Netherlands; PL, Poland; ES, Spain; CH, Switzerland; UK, United Kingdom.

[a] $P < .05$.

[b] Greece did not collect information on children aged 8 to 11 years.

[c] Continuous variables. Figures indicate standardized mean differences (effect sizes and 95% confidence interval) in bullying between those who scored high and low in that variable.

of a scale to measure bullying from a well-validated instrument with demonstrated reliability.[41] Cross-cultural differences in the way key terms are interpreted between countries, the use of different terms, or subtle nuances introduced through translation could also lead to differences in prevalence rates.[1] Nevertheless, the fact that all of the scales in the Kidscreen questionnaire were also tested for the presence of differential item functioning according to gender, age, and country and were found to be cross-culturally comparable helps to guard against such differences to a large extent.[25] Most of the scales and ad hoc items used to measure bullying have not been subjected to this type of rigorous testing.

Likewise, the use of a 1-SD cut point on the measure is quite a strict definition of being bullied, but it ensured a high level of sensitivity. It is higher than the 0.8 SD from the mean, which is generally accepted as representing a large change in patient-reported outcome measures.[42,43]

The results of this study confirm the findings of at least 1 previous large international study, which showed substantial intercountry variability in being bullied. Due et al[10] examined rates of being bullied in children/adolescents aged 11, 13, and 15 years by using a single item with a Likert-type scale and 5 answer categories. The recall period was the last term, so there are some methodologic differences between the 2 studies. Nevertheless, a country-by-country comparison of the results shows

TABLE 3 Logistic Regression Models of Being Bullied in the Analyzed Countries, Kidscreen 2003

Variable	AU	CZ	FR	DE	EL	HU	NL	PL	ES	CH	UK
Sociodemographic											
Age, y											
8–11	4.66 (2.96–7.32)	3.08 (2.08–4.56)	7.28 (2.31–22.91)	4.93 (3.16–7.70)	—	4.67 (2.67–8.15)	2.48 (1.77–3.48)	6.34 (4.24–9.48)	6.17 (3.60–10.59)	4.64 (3.02–7.13)	2.32 (1.55–3.47)
12–15	2.17 (1.39–3.36)	2.08 (1.43–3.03)	—	2.09 (1.35–3.22)	—	2.68 (1.59–4.51)	1.54 (1.11–2.14)	3.70 (2.54–5.39)	2.28 (1.37–3.80)	2.39 (1.57–3.63)	1.55 (1.04–2.30)
16–18[a]	1.00	1.00	1.00	1.00	—	1.00	1.00	1.00	1.00	1.00	1.00
FAS score											
Low	—	—	—	—	—	1.63 (1.02–2.62)1.63	—	1.67 (1.11–2.52)	—	—	—
Medium	—	—	—	—	—	—	—	—	—	—	—
High[a]	—	—	—	—	—	1.00	—	1.00	—	—	—
Parental level of education											
Low	—	—	—	2.28 (1.47–3.55)	—	—	1.86 (1.26–2.74)	—	—	1.96 (1.16–3.29)	—
Medium	—	1.40 (1.03–1.89)	—	—	—	—	—	—	—	—	—
High[a]	—	1.00	—	1.00	—	—	1.00	—	—	1.00	—
Physical/mental											
BMI											
Normal	1.00	1.00	1.00	1.00	—	—	—	—	—	—	—
Overweight/obese	1.89 (1.25–2.85)	1.48 (1.03–2.13)	2.53 (1.04–6.13)	1.67 (1.10–2.52)	—	—	—	—	—	—	—
CSHCN screener											
Yes	—	1.66 (1.14–2.41)	—	—	—	—	—	—	—	—	—
No	—	1.00	—	—	—	—	—	—	—	—	—
PW	—	0.97 (0.95–0.98)	—	—	—	0.96 (0.95–0.98)	0.97 (0.95–0.98)	0.96 (0.95–0.98)	—	—	—
Moods/emotions	0.92 (0.91–0.94)	—	0.93 (0.89–0.97)	0.93 (0.91–0.94)	0.95 (0.91–0.98)	—	—	—	0.92 (0.90–0.94)	0.93 (0.91–0.94)	0.89 (0.87–0.91)
SDQ											
Unlikely/possible	—	1.00	1.00	1.00	—	1.00	1.00	1.00	1.00	1.00	1.00
Probable	—	2.45 (1.60–3.76)	2.84 (1.25–6.42)	3.03 (1.93–4.75)	—	2.02 (1.17–3.49)	1.81 (1.20–2.74)	3.20 (2.05–4.99)	2.69 (1.39–5.23)	3.05 (1.82–5.11)	2.10 (1.24–3.53)
Social											
Oslo Social Support Scale											
Poor	2.11 (1.43–3.11)	2.21 (1.61–3.03)	2.51 (1.24–5.09)	1.44 (1.00–2.08)	3.20 (2.05–4.99)	2.34 (1.58–3.45)	1.91 (1.27–2.87)	1.77 (1.33–2.36)	—	2.58 (1.83–3.64)	—
Moderate/strong[a]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	—	1.00	—

Logistic regression models for each country are adjusted by all factors included in the table. Only those variables and factors with statistically significant differences are presented. AU indicates Austria; CZ, Czech Republic; FR, France; DE, Germany; EL, Greece; HU, Hungary; NL, Netherlands; PL, Poland; ES, Spain; CH, Switzerland; UK, United Kingdom.

[a] Reference category (in Greece, no data are available for 8- to 11-year-old children).

TABLE 4 Logistic Regression Model of Being Bullied for the Whole Sample, Kidscreen 2003

Sociodemographic Variable	OR	95% CI
Sociodemographic		
Age, y		
8–11	4.86	4.15–5.69
12–15	2.39	2.06–2.77
16–18[a]	1.00	1.00
Parental level of education		
Low	1.44	1.24–1.66
Medium	1.14	1.01–1.29
High[a]	1.00	1.00
Physical/mental		
BMI		
Normal[a]	1.00	1.00
Overweight/obese	1.43	1.24–1.66
Moods/emotions	0.92	0.91–0.93
SDQ		
Unlikely/possible[a]	1.00	1.00
Probable	2.16	1.82–2.57
Oslo Social Support Scale		
Poor[a]	1.54	1.35–1.75
Moderate/strong	1.00	1.00
Countries		
Austria	1.68	1.29–2.02
Czech Republic	0.92	0.72–1.17
France	0.67	0.55–0.83
Germany	0.97	0.84–1.09
Greece	0.50	0.34–0.75
Hungary	0.40	0.30–0.55
Netherlands	1.68	1.38–2.01
Poland	1.13	0.99–1.29
Spain	1.22	1.04–1.42
Switzerland	1.40	1.00–1.65
United Kingdom	1.42	1.22–1.65

CI indicates confidence interval.

[a] In the case of countries, the grand mean for all countries was used as a reference category.

that the prevalence rates in both studies are quite similar, and the overall prevalence rates for being bullied were similar (18.4% in the Due et al study compared with 20.6% in our study). An exception was the United Kingdom, a country in which a lot of antibullying work has been conducted and which had a considerable higher prevalence rate in our study. We have no clear explanation for this difference, although it may be because of some factors including a heightened awareness of bullying, which could encompass "new" forms of bullying such as "cyberbullying," and/or methodologic aspects related to the sampling methods used in the present study in the United Kingdom (combination of telephone and school sampling). These results should be confirmed in future studies.

Differences found between countries in the present study are, perhaps, more reliably attributable to structural factors such as differences in health, social, and school policy and social environment, among others. For example, in Sweden and Ireland (not included in the present analysis), the proportion of children who reported being bullied was 11.8% and 26.1%, respectively. The low prevalence rate, particularly in Sweden, might reflect the successful antibullying campaign that has been conducted in that country over the past years.

The factors most strongly associated with being a bullying victim were younger age, having a probable mental health problem, and having poor social support. Previous studies have indicated younger ages as more susceptible to being victimized. For example, Nansel et al[2] reported ~50% of children being bullied in the 6th grade in US schools compared with ~30% in the 10th grade. The higher prevalences found in that study might be a result of the longer recall period used (1 term). Another study reported that children and adolescents with psychological and mental problems experienced bullying to a greater extent than their "healthy" counterparts.[44] Previous longitudinal studies have also revealed that the association between having mental health problems and being bullied can be bidirectional; in other words, mental health problems and being bullied could be either the cause or the consequence of one another or both.[20]

CONCLUSIONS

This study showed considerable variation in bullying between European countries. Future studies should examine possible factors associated with this variation, such as structural factors, implementation of initiatives to prevent and counter bullying, and the social environment in general. The present study also reveals a clear profile of likely bullying victims and suggests that the Kidscreen bullying scale could play a part in identifying potential bullying victims in high-risk groups.

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REFERENCES

1. Smith PK, Morita Y, Junyer-Tas J, Olweus D, Catalana R, Slee P. *The Nature of School Bullying: A cross national perspective*. London, United Kingdom: Routledge; 1999
2. 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(16):2094–2100
3. Whitney I, Smith P. A survey of the nature and extent of bullying in junior/middle and secondary schools. *Educ Res.* 1993;35(1):3–25
4. Sharp S, Smith P. *Tackling Bullying in Your School: A Practical Handbook for Teachers*. London, United Kingdom: Routledge; 1994
5. Olweus D. *Bullying at School: What We Know and What We Can Do*. Cambridge, Massachusetts: Blackwell Scientific Publications; 1993
6. Glew G, Rivara F, Feudtner C. Bullying: children hurting children. *Pediatr Rev.* 2000;21(6):183–189
7. Baldry AC, Farrington DP. Brief report: types of bullying among Italian school children. *J Adolesc.* 1999;22(3):423–426
8. 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(pt 4): 673–696
9. Kumpulainen K, Rasanen E, Henttonen I. Children involved in bullying: psychological disturbance and the persistence of the involvement. *Child Abuse Negl.* 1999;23(12):1253–1262
10. Due P, Holstein BE, Lynch J, et al. Bullying and symptoms among school-aged children: international comparative cross sectional study in 28 countries. *Eur J Public Health.* 2005;15(2): 128–132
11. Bond L, Wolfe S, Tollit M, Butler H, Patton G. A comparison of the Gatehouse Bullying Scale and the peer relations questionnaire for students in secondary school. *J Sch Health.* 2007; 77(2):75–79
12. Lahteenmaki PM, Huostila J, Hinkka S, Salmi TT. Childhood cancer patients at school. *Eur J Cancer.* 2002;41(2):225–232
13. Conti-Ramsden G, Botting N. Social difficulties and victimization in children with SL1 at 11 years of age. *J Speech Lang Hear Res.* 2004;47(1):145–161
14. Horwood J, Waylen A, Herrick D, Williams C, Wolke D. Common visual defects and peer victimization in children. *Invest Ophthalmol Vis Sci.* 2005;46(4):1177–1181
15. Storch EA, Lewin A, Silverstein JH, et al. Peer victimization and psychosocial adjustment in children with type 1 diabetes. *Clin Pediatr (Phila).* 2004;43(5):467–471
16. Van Cleave J, Davis MM. Bullying and peer victimization among children with special health care needs. *Pediatrics.* 2006; 118(4). Available at: www.pediatrics.org/cgi/content/full/118/4/e1212
17. Juvonen J, Graham S, Schuster MA. Bullying among young adolescents: the strong, the weak, and the troubled. *Pediatrics.* 2003;112(6):1231–1237
18. Olweus D. *Aggression in the Schools: Bullies and Whipping Boys*. Washington, DC: Hemisphere Publishing; 1978
19. van der Wal MF, de Wit CA, Hirasing RA. Psychosocial health among young victims and offenders of direct and indirect bullying. *Pediatrics.* 2003;111(6):1312–1317
20. Fekkes M, Pijpers FI, Fredriks AM, Vogels T, Verloove-Vanhorick SP. Do bullied children get ill, or do ill children get bullied? A prospective cohort study on the relationship between bullying and health-related symptoms. *Pediatrics.* 2006; 117(5):1568–1574
21. Friedman MS, Koeske GF, Silvestre AJ, Korr WS, Sites EW. The impact of gender-role nonconforming behavior, bullying, and social support on suicidality among gay male youth. *J Adolesc Health.* 2006;38(5):621–623
22. 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(5):364–374
23. Dao TK, Kerbs JJ, Rollin SA, et al. The association between bullying dynamics and psychological distress. *J Adolesc Health.* 2006;39(2):277–282
24. Wilkins-Shurmer A, O'Callaghan MJ, Najman JM, Bor W, Williams GM, Anderson MJ. Association of bullying with adolescent health-related quality of life. *J Paediatr Child Health.* 2003;39(6):436–441
25. Solberg ME, Olweus D. Prevalence estimation of school bullying with the Olweus bully/victim questionnaire. *Aggress Behav.* 2003;29(3):239–268
26. Monks CP, Smith PK. Definitions of bullying: age differences in understanding of the term, and the role of experience. *Br J Dev Psychol.* 2006;24(4):801–821
27. Smith PK, Cowie H, Olafsson RF, Liefooghe APD. Definitions of bullying: a comparison of terms used, and age and gender differences in a fourteen-country international comparison. *Child Dev.* 2002;73(4):1119–1133
28. Kidscreen Group. *Manual of the Kidscreen Questionnaires*. Lengerich, Germany: Pabst Science Publishers; 2005
29. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine.* 2000;25(24):3186–3191
30. Detmar SB, Bruil J, Ravens-Sieberer U, Gosch A, Bisegger C. The use of focus groups in the development of the KIDSCREEN HRQL questionnaire. *Qual Life Res.* 2006;15(8):1345–1353
31. Curie C, Samdal O, Boyce W, Smith R. *Health Behaviour in School-Aged Children: A WHO Cross-national Study (HBSC): Research Protocol for the 2001/2002 Survey*. Edinburgh, United Kingdom: Child and Adolescent Health Research Unit, University of Edinburgh; 2001
32. United Nations Educational, Scientific and Cultural Organization. ISCED 1997 International Standard Classification of Education. Available at: www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm. Accessed December 17, 2008
33. Gandek B, Ware JE, Aaronson NK, et al. Cross-validation of item selection and scoring for the SF-12 Health Survey in 9 countries: results from the IQoLA Project. International Quality of Life Assessment. *J Clin Epidemiol.* 1998;51(11):1171–1178
34. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ.* 2000;320(7244): 1240–1243
35. Goodman R. The Strengths and Difficulties Questionnaire: a research note. *J Child Psychol Psychiatry.* 1997;38(5):581–586
36. Bethell CD, Read D, Stein RE, Blumberg SJ, Wells N, Newacheck PW. Identifying children with special health care needs: development and evaluation of a short screening instrument. *Ambul Pediatr.* 2002;2(1):38–48
37. Brevik JI, Dalgard O. *The Health Profile Inventory*. Oslo, Norway: University of Oslo; 1996
38. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates; 1988
39. Berra S, Ravens-Sieberer U, Erhart M, et al. Methods and representativeness of a European survey in children and adolescents: the Kidscreen study. *BMC Public Health.* 2007; 7(147):182–195
40. Peskin MF, Tortolero SR, Markham CM. Bullying and victimization among black and Hispanic adolescents. *Adolescence.* 2006;41(163):467–484
41. Ravens-Sieberer U, Gosch A, Rajmil L, et al. The Kidscreen-52 quality of life measure for children and adolescents: psycho-

metric results from a cross-cultural survey in 13 European countries. *Value Health.* 2007;11(4):645–658
42. Revicki DA, Cella D, Hays RD, Sloan JA, Lenderking WR, Aaronson NK. Responsiveness and minimal important differences for patient reported outcomes. *Health Qual Life Outcomes.* 2006;4:70–74
43. Guyatt G, Schunemann H. How can quality of life researchers make their work more useful to health workers and their patients? *Qual Life Res.* 2007;16(7):1097–105
44. Brunstein KA, Marrocco F, Kleinman M, Schonfeld IS, Gould MS. Bullying, depression, and suicidality in adolescents. *J Am Acad Child Adolesc Psychiatry.* 2007;46(1):40–49

APPENDIX Summary of Independent Variables Used in the Study and Source of Information

Variables	Categories	Source
Sociodemographic and socioeconomic dimension		
Age, y	8–11/12–15/16–18	C/A
Gender	Male/female	C/A
FAS score	Low/medium/high	C/A
International Standard Classification of Education score	Low/medium/high	P
Physical and mental health dimension		
BMI	Normal, overweight/obese	C/A
SF-12 Physical	Continuous variable	P
SF-12 Mental	Continuous variable	P
CSHCN screener	Yes/no	P
PH	Continuous variable	C/A
PW	Continuous variable	C/A
Chronic condition	Yes/no	C/A
SDQ	Low/borderline/noticeable	C/A/P
Mood/emotions	Continuous variable	C/A
Social support dimension		
Oslo Social Support Scale	Low/high	C/A

C/A indicates child/adolescent; P, parent.

Being Bullied: Associated Factors in Children and Adolescents 8 to 18 Years Old in 11 European Countries

Filippos Analitis, Mariska Klein Velderman, Ulrike Ravens-Sieberer, Symone Detmar, Michael Erhart, Mike Herdman, Silvina Berra, Jordi Alonso and Luis Rajmil

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