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Deliberate self-harm within an international community sample of young people: comparative findings from the Child & Adolescent Self-harm in Europe (CASE) Study

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Background: Deliberate self-harm among young people is an important focus of policy and practice internationally. Nonetheless, there is little reliable comparative international information on its extent or characteristics. We have conducted a seven-country comparative community study of deliberate self-harm among young people. **Method:** Over 30,000 mainly 15- and 16-year-olds completed anonymous questionnaires at school in Australia, Belgium, England, Hungary, Ireland, the Netherlands and Norway. Study criteria were developed to identify episodes of self-harm; the prevalence of self-harm acts and thoughts, methods used, repetition, reasons given, premeditation, setting for the act, associations with alcohol and drugs, hospitalisation, and whether other people knew, were examined. **Results:** Self-harm was more than twice as common among females as males and, in four of the seven countries, at least one in ten females had harmed herself in the previous year. Additional young people had thought of harming themselves without doing so. More males and females in all countries except Hungary cut themselves than used any other method, most acts took place at home, and alcohol and illegal drugs were not usually involved. The most common reasons given were 'to get relief from a terrible state of mind' followed by 'to die', although there were differences between those cutting themselves and those taking overdoses. About half the young people decided to harm themselves in the hour before doing so, and many did not attend hospital or tell anyone else. Just over half those who had harmed themselves during the previous year reported more than one episode over their lifetime. **Conclusions:** Deliberate self-harm is a widespread yet often hidden problem in adolescents, especially females, which shows both similarities and differences internationally. **Keywords:** Adolescence, cross-cultural, self-harm, gender differences, motives.

Deliberate self-harm among young people attracts increasing attention in many Western countries and has become an important focus of social policy and professional practice. In the UK, it is one of the top five reasons for acute medical admissions (NHS Centre for Reviews and Dissemination, 1998), and the issue is highlighted in the National Suicide Prevention Strategy for England (Department of Health, 2002), addressed by the National Service Framework for Mental Health (Department of Health, 1999), and provides the focus for a National Institute for Clinical Excellence (NICE, 2004) guideline. The development of practice guidelines for deliberate self-harm are also a priority of the Irish National Strategy for Action on Suicide Prevention, the national youth strategy for suicide prevention in Australia, and the Belgian and Norwegian action plans for suicide prevention.

Nonetheless, there is little reliable information on the prevalence of deliberate self-harm among adolescents within individual countries and no comparative data to enable international comparisons. Awareness of the extent of the problem, when self-harm is likely to occur, who is most at risk and the level of support required is, however, important. Single episodes frequently lead to repetition (Hawton, Fagg, Simkin, Bale, & Bond, 2000), and self-harm may often be a precursor to completed suicide (Sakinofsky, 2000; Owens, Horrocks, & House, 2002).

Conflicting information about the prevalence of deliberate self-harm among young people has arisen from studies based on different types of population. For example, while estimates from a hospital admission monitoring study in England indicate that around 300 per 100,000 (.3%) males aged between 15 and 24 years, and 700 per 100,000 (.7%) females of the same age, carry out episodes of self-harm each year (Hawton et al., 2000), a general population

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study carried out in the same country found that almost 5% of males and 8% of females aged between 13 and 15 years said they had tried to harm, hurt or kill themselves (Meltzer, Harrington, Goodman, & Jenkins, 2001). In part, definitions of self-harm differ according to the extent to which samples include young people with and without suicidal intent. Differences also arise from methodologies employed: even findings from community-based surveys are not necessarily compatible, as the wording of questions about self-harm, and whether or not information is collected anonymously, appear to influence responses (De Wilde & Kienhorst, 1994).

This paper is the first report from the Child & Adolescent Self-harm in Europe (CASE) Study, a seven-country collaborative investigation of deliberate self-harm. The CASE Study is unprecedented in developing a rigorous methodology to identify deliberate self-harm among young people within the community, and conducting large-scale parallel surveys in schools within the study countries. In this paper we describe the research method and present findings for the prevalence of self-harm and self-harm thoughts. We also examine, for the most recent episode of self-harm, the methods used, previous self-harm episodes, the reasons given for self-harm including whether or not the young person said they wanted to die, associations between reasons and methods and repetition, the degree to which the act was premeditated or impulsive, where it took place, whether it resulted in referral to hospital, whether anybody else knew what had happened, and whether it occurred in association with alcohol or drugs. Finally we compare the characteristics of the young people whose last episode of self-harm involved self-cutting with those who took overdoses. National papers based on sub-sets of the total dataset have already been published for Australia (De Leo & Heller, 2004), England (Hawton, Rodham, Evans, & Weatherall, 2002; Rodham, Hawton, & Evans, 2004), The Netherlands (De Wilde, 2005), Hungary (Fekete & Osvath, 2005) and Norway (Ystgaard, Reinholdt, Husby, & Mehlum, 2003).

Methods

The main focus of the CASE Study (and the aspect reported on here) is the Schools Survey. The methodology was developed collaboratively between the principal investigators from the coordinating and national centres and adopted across participating countries. Research ethics committees and school authorities, as necessary, approved the study in each country. The study was conducted in six European countries – Belgium, England, Hungary, Ireland, the Netherlands and Norway – and in Australia. The coordinating centre was the National Children's Bureau in London, UK.

Sample

The Schools Survey was a cross-sectional study that aimed to include 4,000 school pupils, aged 15 and 16 years, in each country to provide sufficient power to conduct analyses separately by gender. Schools were sampled to be as locally and nationally representative as possible. Response rates were generally high (Australia 92%; Belgium 93%; England 81%; Hungary 93%; Ireland 85%; the Netherlands 96%; and Norway 91%). Non-responders were either absent, opted out or returned spoiled questionnaires. A total of 30,477 young people were included in the international Schools Survey dataset. Overall, 51.3% of the sample was male and 48.7% female. The age and gender distributions of the sample, with and without age weighting, are shown by country in Table 1.

The Lifestyle & Coping Questionnaire

A standard questionnaire was developed in English, piloted and then administered anonymously (after translation and back-translation for the non-English-speaking countries) to school pupils in each participating country. It included items on: self-harm behaviour; health and lifestyle; life events and problems; personal and psychological characteristics (including personal problems requiring professional help, anxiety and depression, self-esteem, impulsivity, and coping behaviour); and attitudes towards self-harm among young people.

The present paper focuses on the identification of deliberate self-harm (see below), the timing of the last episode (in the past month, the past year or more than a year ago), the methods used (see below) and the reasons given from eight options provided (derived from Bancroft et al. (1979) and listed in Figure 3). Repetition was indicated for respondents who said they had harmed themselves 'more than once', and premeditation was recorded according to the time interval (from 'less than an hour' to 'a month or more') between starting to think about the episode in question and carrying it out. Young people were regarded as at home when they harmed themselves, and under the influence of alcohol and/or illegal drugs, if this is what they said in response to direct questions in these areas. The 'hidden' group of self-harmers comprised those who said they had not gone to hospital following their most recent self-harm episode and/or indicated that nobody else knew about it. Finally, self-harm thoughts were recorded if respondents said they had, during the past month or the past year, seriously thought about taking an overdose or trying to harm themselves without actually doing so.

Procedure

The questionnaire was administered in a classroom setting in all participating schools by either a researcher or a class teacher. Training was offered for this role. Consenting pupils completed the questionnaire on their own and anonymously during a single lesson within 30 minutes, and were assured of confidentiality and anonymity. Parents had the opportunity to complete an opt-out form if they objected to their child participating.

Table 1 Age and gender distribution of the national samples

	14-year-olds		15-year-olds		16-year-olds		17-year-olds		Total in weighted sample**
	M	F	M	F	M	F	M	F	
Australia	155 (*199*)*	139 (*178*)	695 (*890*)	661 (*846*)	919 (*714*)	865 (*672*)	165 (*128*)	126 (*98*)	3725 1934M 1791F
Belgium	197 (*252*)	114 (*146*)	749 (*960*)	892 (*1143*)	973 (*755*)	877 (*680*)	330 (*256*)	264 (*205*)	4396 2249M 2147F
England	57 (*85*)	88 (*132*)	1325 (*1979*)	1183 (*1767*)	1824 (*1107*)	1473 (*894*)	10 (*6*)	26 (*16*)	5987 3216M 2771F
Hungary	54 (*39*)	38 (*27*)	1011 (*724*)	834 (*597*)	1118 (*1371*)	1009 (*1237*)	188 (*230*)	118 (*145*)	4370 2371M 1999F
Ireland	0 (*0*)	6 (*3*)	807 (*424*)	874 (*459*)	732 (*1008*)	734 (*1011*)	335 (*461*)	318 (*438*)	3804 1873M 1931F
Netherlands	73 (*88*)	96 (*116*)	778 (*938*)	987 (*1190*)	1092 (*913*)	1116 (*933*)	121 (*101*)	94 (*79*)	4356 2063M 2293F
Norway	10 (*2*)	0 (*0*)	812 (*156*)	879 (*169*)	991 (*1629*)	950 (*1561*)	109 (*179*)	86 (*142*)	3838 1922M 1916F
TOTAL	546 (*665*)	481 (*602*)	6177 (*6071*)	6310 (*6171*)	7649 (*7497*)	7024 (*6988*)	1258 (*1361*)	1032 (*1123*)	30476 15628M 14848F

*The numbers in italics and brackets are those in the original unweighted dataset.
**The following numbers of pupils did not indicate their gender: Australia (12); Belgium (10); England (7); Ireland (6); and the Netherlands (21).

Definition of deliberate self-harm and classification of responses

Strict criteria were developed for a classification of deliberate self-harm, and depended on responses to two key questions. The first was: *'Have you ever deliberately taken an overdose (e.g., of pills or other medication) or tried to harm yourself in some other way (such as cut yourself)?'* and the response options were 'no', 'yes, once' and 'yes, more than once'. The second, which related to the last time the young person took an overdose or tried to harm him or herself, was an open-ended question to *'Describe what you did to yourself on that occasion. Please give as much detail as you can – for example, the name of the drug taken in an overdose.'*

The criteria for self-harm were: *An act with a non-fatal outcome in which an individual deliberately did one or more of the following:*

- *Initiated behaviour (for example, self-cutting, jumping from a height), which they intended to cause self-harm.*
- *Ingested a substance in excess of the prescribed or generally recognised therapeutic dose.*
- *Ingested a recreational or illicit drug that was an act that the person regarded as self-harm.*
- *Ingested a non-ingestible substance or object.*

The respondent met the study criteria for self-harm if it appeared that at least one of these acts had occurred. A manual of coding rules was drawn up (available from the authors) to assist in making a judgement, and all coders were trained in using it. Young people met the study criteria for self-harm only if they responded to the two questions outlined above; judgements were in no way dependent on their motives for self-harm other than that the act appeared deliberate. Final decisions on cases meeting the study criteria for deliberate self-harm were based on independent assessments by more than one rater in each centre. The study coordinators checked each team's decisions about all descriptions of self-harm.

Methods described by young people were: self-cutting, hanging or strangulation, suffocation, jumping or throwing self, electrocution, self-battery, alcohol, burning, inhalation/sniffing, starvation, stopping of medication, shooting, drowning, freezing, driving; overdose; consuming a recreational drug when regarded as self-harm by the young person themselves; and swallowing a non-ingestible substance or object. Categories were subsequently combined into: self-cutting, overdose, other single method, and multiple methods.

Treatment of data

National datasets were cleaned by the national centres and verified by the coordinating centre. These were merged to form one large international dataset prior to analysis. Ten pupils from the Australian sample and 222 from the Norwegian sample, who were aged 18 years or above, and 116 pupils who did not indicate their gender, were excluded from the survey for the purposes of analysis. Datasets were weighted by age for 14- and 15-year-olds, and for 16- and 17-year-olds, to take account of differing age profiles in national samples. Percentages of males and females were very

similar within each age group and for each country and accordingly gender was not taken into account in age standardisation.

Data were managed using SPSS for Windows (2002). Logistic regression analyses, entering age as a factor in the model to correct for the (limited) dissimilarities between the samples, were used to calculate odds-ratios comparing each country with the other six in relation to the prevalence of self-harm and thoughts of self-harm. Chi-square tests were used to assess the bivariate associations between pairs of the following variables: gender, country, methods of self-harm, reasons for self-harm, premeditation, whether the act took place at home, hospital presentation, someone knowing of the act, involvement of alcohol and drugs, and previous history of self-harm. Finally, hierarchical logistic regression models were estimated to identify the characteristics associated with episodes of male and female adolescent self-harm involving the methods self-cutting only and drug overdose only. Age and country were included in the first block of variables. The second block of variables included reasons for self-harm, premeditation, hospital presentation, someone knowing of the act, whether the act took place at home, and previous history of self-harm.

Results

Prevalence of self-harm

Table 2 presents information on all self-reported deliberate self-harm episodes, and those meeting the study criteria, by gender and country and according to whether episodes were reported for the past month, the past year or lifetime. Overall, 8.9% of females and 2.6% of males reported an episode meeting the study criteria in the past year, and 13.5% and 4.3% respectively reported an episode sometime in their lifetime. Not surprisingly, in all countries and for both genders, the prevalence of self-harm increased as the time period became greater: young people were about four times as likely to report an episode of deliberate self-harm within their lifetime as an episode during the past month

Table 2 Prevalence of self-harm meeting study criteria, and self-harm thoughts but no self-harm, by country and gender, corrected for age

	Males			Females		
	%	OR*	95% CI	%	OR*	95% CI
Self-harm meeting study criteria, lifetime						
Overall prevalence:	*4.3*			*13.5*		
Australia	3.1	.73	.56–.95	17.0	1.40	1.22–1.60
Belgium	6.5	1.78	1.47–2.16	15.3	1.22	1.07–1.39
England	4.8			16.7	1.42	1.26–1.60
Hungary	3.4	.71	.55–.91	10.3	.69	.59–.81
Ireland	4.4			13.9		
Netherlands	2.4	.54	.41–.72	5.7	.36	.30–.44
Norway	5.0			16.4	1.19	1.04–1.37
Self-harm meeting study criteria, last year						
Overall prevalence:	*2.6*			*8.9*		
Australia	1.7	.65	.46–.93	11.7	1.45	1.23–1.70
Belgium	4.2	1.89	1.34–2.14	10.5	1.23	1.06–1.44
England	3.2	1.36	1.08–1.71	11.1	1.32	1.15–1.51
Hungary	1.7	.59	.46–.91	6.2	.61	.50–.75
Ireland	2.4			8.8		
Netherlands	1.6	.59	.42–.85	3.6	.35	.28–.44
Norway	2.9			10.6	1.29	1.10–1.52
Self-harm meeting study criteria, last month						
Overall prevalence:	*1.0*			*2.6*		
Australia	.6			3.6	1.49	1.14–1.97
Belgium	1.4	1.52	1.03–2.27	3.2		
England	1.2			3.7	1.60	1.27–2.02
Hungary	.9			1.6	.57	.39–.84
Ireland	1.3			2.3		
Netherlands	.5	.49	.27–.91	1.1	.40	.27–.60
Norway	.9			2.4		
Self-harm thoughts						
Overall prevalence:	*9.9*			*21.5*		
Australia	8.6	.84	.71–1.00	21.7		
Belgium	1.7			20.9		
England	8.8	.86	.75–.99	23.8	1.17	1.06–1.30
Hungary	17.5	2.27	2.01–2.57	33.2	2.02	1.82–2.24
Ireland	11.8	1.22	1.04–1.42	21.9		
Netherlands	4.6	.40	.32–.49	10.9	.40	.35–.46
Norway	6.9	1.18	1.09–1.27	18.9	1.19	.80–.94

*OR: compares odds of each respective country versus the overall prevalence in other countries.

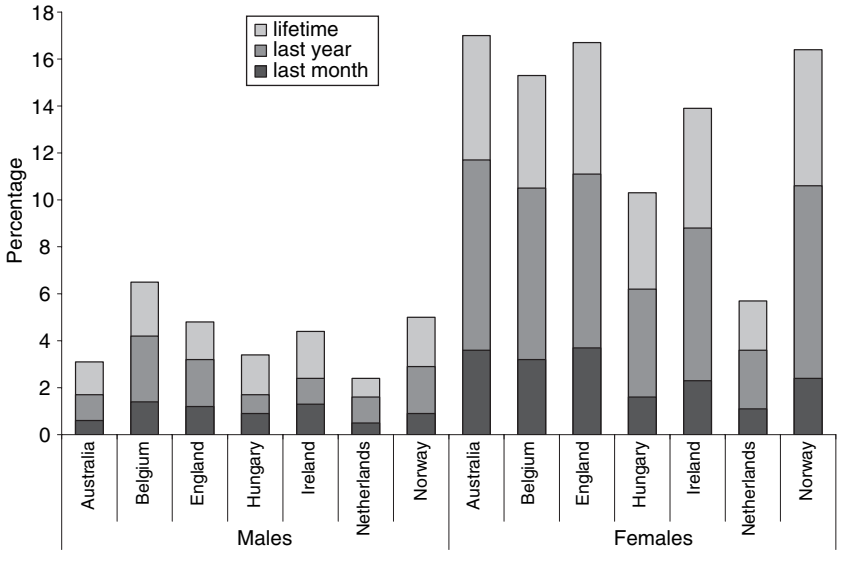

Figure 1 The prevalence of deliberate self-harm meeting study criteria during the last month, the last year, and over the lifetime, by gender, corrected for age

(the past month prevalence was, in each case, greater than one-twelfth of the past year prevalence due to repetition – see below). Overall, females were more than twice as likely as males to report episodes in the last month, and over three times as likely to report episodes in the last year or over their lifetime (see Figure 1). These rates may underestimate the true prevalence of self-harm as self-harmers might show greater school absence than non self-harmers and may be less likely to respond to questions on self-harm. In addition, their parents might be more likely to prevent their participation in the study.

Some international differences were found. Based on the study criteria for self-harm in the past year, prevalence rates for females ranged from 3.6% (the Netherlands) to 11.8% (Australia) with four of the seven countries reporting a rate of at least 10.4 %. For males, rates were between 1.7% (Hungary and the Netherlands) and 4.3% (Belgium). England, Ireland and Norway did not differ significantly from the other countries on male lifetime prevalence. Furthermore, Ireland did not differ significantly from the rest on any prevalence rate.

Thoughts of self-harm

More than one in five females and almost one in ten males had, in addition, thought about harming themselves but not done so (Table 2). This means that, for the sample as a whole, 12.5% of males and 30.4% of females either met the study criteria for at least one episode of self-harm in the previous year or said they had thought about harming themselves.

When individual countries were examined, the proportions of females who said they had thought about harming themselves within the previous year but had not done so varied between 10.2% (the Netherlands) and 33.2% (Hungary). In males the variation was from 4.6% (the Netherlands) to 17.5% (Hungary) (Table 2). It is interesting to note, for males, that while low rates of self-harm episodes were mirrored by low rates of self-harm thoughts in the Netherlands, they were accompanied by high rates of self-harm thoughts in Hungary.

Self-harm methods

Overall, well over half (55.9%) of self-harm episodes in the previous year meeting the study criteria involved self-cutting only, 22.3% overdose only, 11.7% another single method, and the remaining 10.7% multiple methods. There were marked gender differences (chi square = 115.82, df = 3, $p < .001$: Figure 2). Females were more likely than males to report self-cutting only (59.5% compared with 44.3%) and overdose only (23.1% versus 19.5%), but less likely to have used another single method such as self-battery, jumping, and hanging (6.4% compared with 26.0%).

Method of self-harm varied significantly by country (chi square = 151.89, df = 18, $p < .001$), although self-cutting remained the most common method of deliberate self-harm among both males and females in all settings except Hungary, where taking an overdose was more often reported. The most discrepant countries were Hungary and Norway where self-cutting occurred in 24.6% and 71.4% of episodes respectively while overdose accounted for 49.3% and 9.8% of episodes.

Repeated self-harm

Just over half the young people who met study criteria for an episode of deliberate self-harm during the previous year reported more than one episode over their lifetime. There were no marked gender

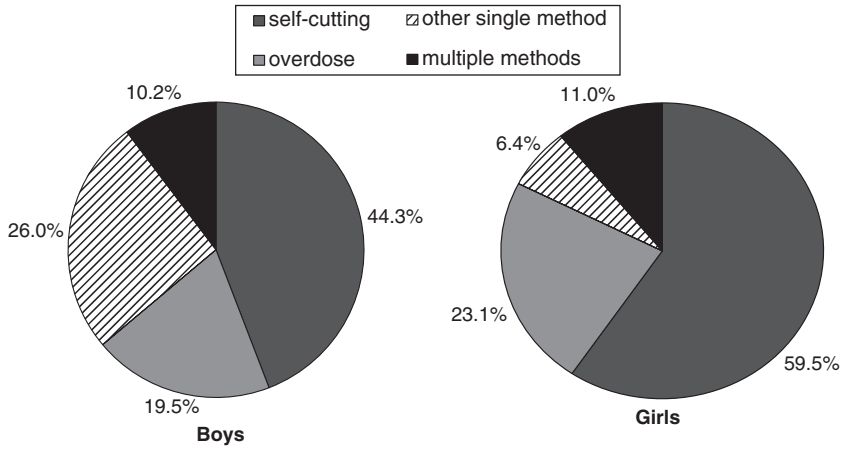

Figure 2 Methods of self-harm (based on self-harm in past year meeting study criteria), by gender, corrected for age

differences (55.4% of females and 53.2% of males reported repeated self-harm). However, whether the young person had previously self-harmed varied according to the method of self-harm used in their most recent episode (chi square = 29.61, df = 3, $p < .001$). Repeated deliberate self-harm was associated with acts involving multiple methods of harm (63.0%) and self-cutting only (58.8%) rather than drug overdose (44.9%) or other single methods (46.6%). International differences also emerged (chi square = 16.47, df = 6, $p < .05$). Repetition was least common in Hungary (44.4%), average in Australia, Belgium, England and the Netherlands (between 51.3% and 55.7%), and high in Ireland (60.2%) and Norway (62.4%).

Reasons for self-harm

Figure 3 shows the frequency with which each of the reasons (of eight possibilities) was chosen to explain self-harm in the previous year. 'I wanted to get relief from a terrible state of mind' was selected by 70.9%, 'I wanted to die' by 59%, and 'I wanted to punish myself' by 43.6%. Multiple reasons were commonly selected, and it was rare for only one reason to be given for a particular self-harm episode. Thus 'I wanted to get relief from a terrible state of mind' was given as the only reason by just 6.3%, 'I wanted to die' by 3.7%, and 'I wanted to punish myself' by 2.2% (see Figure 3). Generally speaking, young people were least likely to say they harmed themselves to frighten someone, get their own back, or get attention.

Females (88.3%) were more likely than males (72.6%) to give multiple reasons for self-harm episodes (chi square = 50.19, df = 3, $p < .001$). As a result, almost all reasons were cited more often by females. This was most notable for 'I wanted to get relief from a terrible state of mind' which was selected by 62.7% of males compared with 73.4% of females (chi square = 15.64, df = 1, $p < .001$).

Reasons given for self-harm were related to the method used. For females, both 'I wanted to die' (chi square = 32.62, df = 3, $p < .001$) and 'I wanted to punish myself' (chi square = 39.68, df = 3, $p < .001$) showed variation. The first of these was least often mentioned for episodes involving self-cutting only (53.9%), more often mentioned for other single methods (59.5%) and overdose only (65.6%), and most often mentioned where multiple methods had been used (78.9%). The second, by contrast, was most strongly linked to self-cutting only (52.3%) and

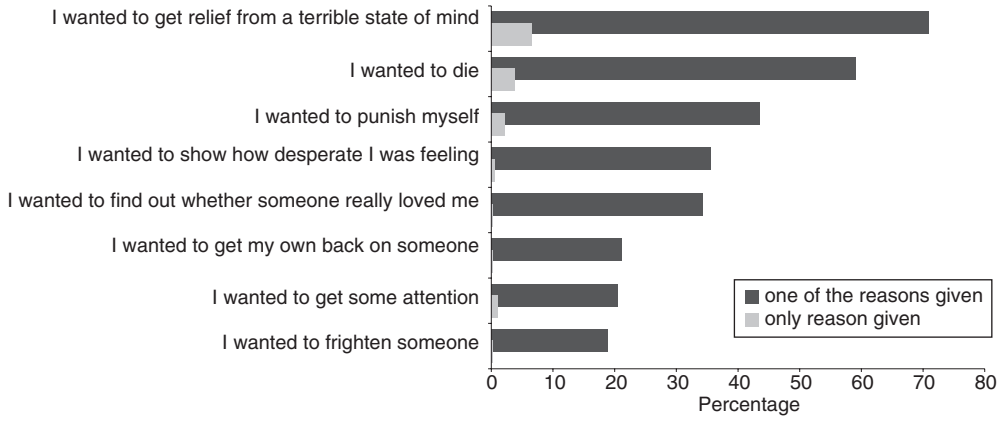

Figure 3 Reasons for self-harm (based on self-harm in past year meeting study criteria), corrected for age

other single methods (46.6%) and less related to overdose only (30.5%) and multiple methods (36.8%). For males, the greatest variation occurred for those who said 'I wanted to find out whether someone really loved me' (chi square = 8.57, df = 3, $p < .05$). This reason was more often given for episodes involving overdose only (42.6%) and multiple methods (41.9%) than for self-cutting only (26.2%) and other single methods (26.2%).

There was, on the whole, a high level of consistency in reasons given across countries. Apart from males in Australia and the Netherlands, where the ranking of the top two choices was reversed, pupils were most likely to say they had harmed themselves 'to get relief from a terrible state of mind' followed by 'to die'.

Significant associations were also found between repetition and some reasons for self-harm. In particular, the three most frequently cited reasons overall were more often cited by adolescents with a previous history of deliberate self-harm: 'I wanted to get relief from a terrible state of mind' (76.7% versus 63.5%, chi-square = 31.65, df = 1, $p < .001$); 'I wanted to die' (65.6% versus 50.7%, chi-square = 33.55, df = 1, $p < .001$); and 'I wanted to punish myself' (50.4% versus 34.8%, chi-square = 36.41, df = 1, $p < .001$). On the other hand, those with a previous history of self-harm were less likely than those with no such history to have wanted to get their own back on someone (19.1% versus 24.0%, chi-square = 5.09, df = 1, $p < .05$).

Premeditation

Overall, almost half (48.0%) of all young people who self-harmed in the previous year said that they had decided to do so within an hour of the episode in question, 22.7% decided more than an hour but less than a week beforehand, and 29.3% made the decision more than a week before. There was a limited, but statistically significant, gender difference in this time interval (chi square = 8.83, df = 2, $p < .05$). Half of the males (50.5%), but 47.0 % of the females, said they decided to harm themselves within an hour of doing so. However, one in three males (32.2%) compared to 28.3% of females made their decision more than a week before the act.

Premeditation also varied according to the method of self-harm (chi square = 33.80, df = 6, $p < .001$). Acts involving a single method other than cutting or overdose were mostly impulsive (thought about for less than an hour) (57.8%). This was the case for half (51.9%) of self-cutting episodes and almost 40% of those involving drug overdose only (38.2%) and multiple methods (39.6%).

The degree of premeditation varied significantly by country (chi square = 52.13, df = 12, $p < .001$). Impulsive acts (where the decision was made within an hour) accounted for two-thirds (65.9%) of self-harm episodes in Hungary, more than half in Belgium (56.5%) and the Netherlands (55.6%), almost half in Ireland (45.4%) and England (44.3%), and approximately four in ten in Norway (40.6%) and Australia (38.5%).

The setting for the episode

The vast majority of self-harm episodes (83.3%) occurred at home, and this was even more true for females (86.8%) than males (71.8%) (chi square = 41.67, df = 1, $p < .001$). However, method of self-harm was also influential (chi square = 91.90, df = 3, $p < .001$): only a small majority (54.9%) of acts involving a single method other than self-cutting or overdose took place at home compared with between 85.3% and 86.8% of acts involving other means.

There were significant international differences in where self-harm was likely to take place (chi square = 44.71, df = 6, $p < .001$). Home was the setting for more than nine in ten (91.8%) self-harm episodes in Ireland, less than three-quarters of those in Norway (72.5%) and Hungary (73.3%), and between 83.9% and 87.6% of those in other countries.

The role of alcohol and drugs

Information on alcohol and illegal drug use at the time of the most recent self-harm episode was available for 73.3% and 71.2% of self-harmers respectively. Among these, one in five self-harm episodes (19.9%) occurred under the influence of alcohol, and one in eight (12.8%) under the influence of illegal drugs. In both cases this was more likely for males than females. For alcohol, this applied to 32.8% of males and 15.6% of females (chi square = 42.28, df = 1, $p < .001$), and for illegal drugs to 26.2% of males and 8.2% of females (chi square = 65.50, df = 1, $p < .001$).

Method of self-harm was associated with the simultaneous use of alcohol (chi square = 62.06, df = 3, $p < .001$) and illegal drugs (chi square = 63.35, df = 3, $p < .001$). These substances were most strongly associated with multiple methods (where 33.3% and 29.2% of young people were under the influence of alcohol and illegal drugs respectively) and other single methods (36.3% and 19.3%). While overdose took an intermediate position (21.5% and 17.0%), just 12.7% and 6.6% of self-cutting episodes involved alcohol and illegal drugs respectively.

The involvement of alcohol, but not illegal drugs, varied internationally (chi square = 16.94, df = 6, $p < .01$). Alcohol least often accompanied self-harm episodes among the Dutch-speaking samples (12.1% in the Netherlands, 14.7% in Belgium), was more common in Ireland (18.9%) and England (19.5%), and was most prevalent in the remaining countries (25.0% in Norway, 25.4% in Australia, and 26.8% in Hungary).

A 'hidden' behaviour?

Overall, only 12.4% of most recent self-harm episodes led to hospital presentation. Nonetheless, there was a significant gender difference with 18.0% of males, compared with 10.7% of females, attending hospital (chi square = 14.40, df = 1, $p < .001$). There was also a three-fold difference in the rate of hospital presentation association with method of self-harm (chi square = 58.16, df = 3, $p < .001$). Just 6.9% of acts that involved self-cutting only presented to hospital as compared with 17.9% of episodes involving multiple methods, 18.1% involving drug overdoses, and 22.9% involving another single method. Internationally, the proportion of acts resulting in hospital presentation ranged from 8.5% in Ireland to 18.2% in Hungary.

In only three-quarters of cases (75.5%) did the young self-harmer indicate that somebody else knew. There were no significant differences according to gender or the method of self-harm. There was, however, significant international variation (chi square = 54.38, df = 6, $p < .001$). Somebody else was most likely to be aware of the self-harm episode in Hungary (89.1%), followed by England (81.7%), Ireland (80.1%), Australia (77.4%), Norway (70.6%), Belgium (67.0%) and the Netherlands (60.2%).

Factors associated with self-cutting only and taking overdoses only

In order to be able to compare the profiles of young people who self-cut and those who took an overdose during their most recent episode of self-harm, hierarchical logistic regression models, which made adjustments for significant country effects, were estimated to show the characteristics associated with these two groups of self-harmers. The findings are presented in Table 3. These show that, among males, those who used self-cutting only were less likely than others to say they wanted to show how desperate they were feeling, and were less likely to go to hospital following the episode. Their act was also more likely to have taken place at home and they more commonly said they had previously harmed themselves. Among females, self-cutters were less likely than others to say they wanted to die or show how desperate they were feeling, but were more likely to say they wanted to punish themselves. Their self-cutting act was more likely to have occurred at home, to have become known to someone else, and to show a lack of premeditation. They were also, like their male counterparts, less likely to be treated in hospital. Among those who took overdoses only, males were particularly likely to be motivated by wanting to

Table 3 Characteristics associated with adolescent deliberate self-harm in the past year involving self-cutting only and drug overdose only

		Males				Females			
		Self-cutting only		Drug overdose only		Self-cutting only		Drug overdose only	
Variable	Category	OR[3]	95% CI[4]	OR	95% CI	OR	95% CI	OR	95% CI
To get relief from terrible state of mind	Yes[1]	1.01	(.48–2.12)	.77	(.28–2.11)	.76	(.52–1.11)	1.19	(.76–1.85)
	Yes[2]	1.24	(.38–4.09)	1.11	(.20–6.36)	.76	(.37–1.56)	1.18	(.48–2.89)
To die	Yes[1]	.51	(.24–1.05)	1.65	(.60–4.55)	.57**	(.40–.81)	1.30	(.85–1.98)
	Yes[2]	1.88	(.35–10.14)	1.70	(.24–11.84)	.56	(.23–1.4)	1.24	(.43–3.59)
To punish myself	Yes[1]	.85	(.45–1.62)	.42	(.17–1.00)	1.45*	(1.04–2.03)	.69	(.46–1.03)
To show how desperate I was feeling	Yes[1]	.47*	(.22–.97)	3.43**	(1.46–8.09)	.66*	(.47–.93)	1.38	(.92–2.07)
To find out if someone really loved me	Yes[1]	.79	(.37–1.69)	1.60	(.63–4.04)	1.02	(.71–1.47)	.91	(.59–1.39)
To get my own back on someone	Yes[1]	1.49	(.66–3.36)	.53	(.19–1.47)	.97	(.65–1.47)	.90	(.55–1.48)
To get some attention	Yes[1]	1.29	(.52–3.23)	.30	(.09–1.03)	1.03	(.67–1.57)	1.18	(.74–1.90)
To frighten someone	Yes[1]	.44	(.18–1.11)	1.55	(.52–4.61)	.80	(.51–1.26)	1.78*	(1.08–2.93)
Premeditation (reference: '>1 week')	<1 hr	.84	(.41–1.75)	.58	(.23–1.51)	1.67**	(1.16–2.42)	.57*	(.37–.89)
	>1 hr & <1 wk	1.56	(.64–3.82)	1.10	(.37–3.29)	.81	(.53–1.23)	1.15	(.72–1.85)
Hospital presentation (reference: 'no')	Yes	.20***	(.08–.54)	1.20	(.43–3.38)	.46**	(.28–.75)	2.10**	(1.25–3.50)
Someone knew (reference: 'no')	Yes	.82	(.40–1.68)	1.11	(.44–2.83)	1.58*	(1.10–2.26)	.67	(.44–1.02)
Act took place at home (reference: 'no')	Yes	2.40*	(1.19–4.83)	1.71	(.69–4.23)	2.04**	(1.28–3.26)	1.14	(.65–1.99)
Had previously self-harmed (reference: 'no')	Yes	1.99*	(1.10–3.59)	.48	(.22–1.05)	1.22	(.88–1.69)	.69	(.47–1.00)

[1]one of several reasons given; [2]only reason given; [3]Odds Ratio; [4]95% Confidence Interval.
*$p < .05$, **$p < .01$, ***$p < .001$.
For all 'Reasons for episode of deliberate self-harm', the reference group is those who did not select the reason.

show how desperate they were feeling, while females were especially likely to say they wanted to frighten someone. Females were also more likely to go to hospital as a consequence of their act and, like the males, showed a lack of premeditation prior to their act.

Discussion

This paper is the first international report from the CASE Study, a seven-country multi-centre investigation of deliberate self-harm among adolescents in the community. It utilises a more robust definition of self-harm than reported in previous studies, and identical measures have been used in each centre. The central finding is that young people around the age of 15 or 16 years in all seven countries experienced high rates of deliberate self-harm and self-harm thoughts. In four of the seven countries more than three in ten females had either met the study criteria for self-harm in the previous year or said they had thought about harming themselves, and in two further countries rates were nearly as high. Rates of repetition were also high: more than half the young people with self-harm episodes during the previous year had already harmed themselves on a previous occasion. In common with other findings (Evans, Hawton, Rodham, & Deeks, 2005), self-harm behaviour was far more common in females than males. For only the minority was it undertaken under the influence of either alcohol or illegal drugs.

The CASE Study was carried out with representative groups of mainly 15- and 16-year-olds at school. It confirms earlier findings (e.g., Groholt, Ekeberg, Wichstrom, & Haldorsen, 2000; Kann et al., 2000) that the true rate of self-harm is considerably higher than reported by studies based on hospital samples, and clearly demonstrates that many young people harm themselves, usually at home, but do not attend hospitals or tell anybody, even their friends. Indeed, around one in four males and one in five females who self-harm comprise what is, in effect, a 'hidden' population. Crouch and Wright (2004) reported that six adolescents with a history of self-harm regarded secrecy as the hallmark of a 'genuine self-harmer', and other writers have also highlighted the private nature of much self-harm (e.g., Spandler, 1996; Sakinofsky, 2000). While this study confirms the notion of a hidden population of young self-harmers, it does not support the idea that secrecy is a key characteristic of deliberate self-harm.

Our findings further endorse how the prevalence and methods of self-harm vary between community and hospital samples. In contrast with the preponderance of self-poisoning reported for hospital samples (Hawton et al., 2000), the present community-based investigation demonstrated that self-cutting was more common than taking an overdose in all study countries except Hungary. This reinforces how, generally speaking, those who adopt more lethal forms of self-harm are more likely to attend hospital as a consequence. Differences between young self-harmers in the present study who do and do not attend hospital are explored further elsewhere (Ystgaard et al., 2007).

We were also able to demonstrate that our community sample comprised what could be regarded as two main sub-groups: those who in their most recent episode self-cut only, and those who took an overdose only. Differences emerged between these groups in relation to motives for the episode, hospital presentation, previous self-harm episodes, the impulsivity of the act, where it took place, and whether or not somebody else knew.

Study countries were remarkably similar in rates of deliberate self-harm and self-harm thoughts, the preponderance of females engaging in self-harm behaviours, and the methods used and reasons given. However, there were some differences, with those for Hungary being most marked. It is the only country where overdosing was the dominant method of self-harm, for both males and females, and had the highest proportion of females (but not males) who said they wanted to die. Impulsive acts of self-harm were also particularly common among females. In addition it had the highest rates of young people who reported hospital attendance following self-harm and the lowest rates of repetition. It has been suggested that self-destructive problem-solving, reflected in suicidal ideation, has a historical presence within Hungarian culture (Fekete & Osvath, 2005). It could be hypothesised that self-harm more closely and consistently resembles what is conventionally defined as attempted suicide in Hungary than in the other six study countries. Nonetheless, as with international differences in suicide rates among young people (Madge, 1999), reasons for variations in patterns of self-harm are largely speculative.

The present study confirms earlier findings that self-harm phenomena, whether acts or thoughts, are considerably more common among females than males. It also raises the question of whether females and males may be becoming increasingly similar in methods used. For instance, the finding that self-cutting was, overall, most common amongst both males and females is novel as self-cutting is often regarded as being largely confined to females. Nonetheless, males continue to be more likely to choose more violent methods than females: while overdose was, after self-cutting, the most common method used by females (except in the Netherlands), an 'other single method', including jumping, self-battery and hanging, was next most likely for males (except in Hungary). Also, self-harm acts by females were slightly more likely to remain 'hidden'. In general, the likelihood of gender differences in self-harm behaviour should be taken into account in the development of prevention and intervention strategies.

Most fundamentally, the study findings raise questions about the nature of self-harm itself. First, they suggest that thinking about self-harm is not a direct substitute for carrying it out. While thoughts of self-harm were common across the sample, particularly among females and within certain countries, they were least prevalent in the Netherlands and most prevalent in Hungary, the two countries with the lowest rates of deliberate self-harm. These findings held for both males and females. Further research to explore the phenomenon of self-harm thoughts, and the factors that prevent these leading to deliberate self-harm, is warranted.

Second, there is the issue of why young people harm themselves and the extent to which their behaviour is suicidal or a means of coping. There is considerable debate on this issue (e.g., Simeon & Favazza, 2001; De Leo, Burgis, Bertolote, Kerkhof, & Bille-Brahe, 2004), compounded by a confusion in terminology (e.g., between deliberate self-harm, attempted suicide, parasuicide, and so on) and the practical impossibility in empirical studies, particularly those in the community, to distinguish between suicidal and non-suicidal sub-samples. Muehlenkamp and Gutierrez (2004) suggested differences depend on attitudes to life and death, but our findings indicate more complex mechanisms. Although wanting to die or get relief from a terrible state of mind were the two reasons most likely to be given by both males and females in all countries, some young people gave both reasons simultaneously. Nonetheless, we were able to demonstrate that females who self-cut on their most recent episode of self-harm were significantly less likely than others to say that they had wanted to die. More research is called for to further examine and clarify the distinctions between young people who harm themselves with and without suicidal intent.

Third, there is the question of why some young people carry out isolated episodes of deliberate self-harm while others display repeated self-harm behaviour. Perhaps unsurprisingly, the likelihood of repetition (one as opposed to more than one episode) was linked with both methods of and reasons for self-harm. Within the international dataset as a whole, both males and females who had cut themselves were more likely than those who had taken overdoses to have repeat episodes, and young people with repeat episodes were most likely to say they harmed themselves to punish themselves. These findings reinforce the heterogeneity of deliberate self-harm and the importance of treating young self-harmers as individuals with their own personalised patterns of behaviour.

These central findings are unlikely to be substantially affected by any limitations of the study inherent in the collection of self-report data within a multi-centre study. Great pains were taken to minimise bias, by adopting a comparable methodology across countries and by establishing common criteria for the assessment of self-harm. The information on self-harm thoughts is likely to be less reliable than data on deliberate self-harm episodes as this was based on what young people said and not subject to the same rigorous criteria and analysis. O'Sullivan and Fitzgerald (1998) report that estimates of suicidal ideation remain contentious and this must also be true of thoughts about self-harm.

Conclusion

Deliberate self-harm in adolescents is an international problem of a considerable scale. Nonetheless, it can be hard to identify. The majority of young people who harm themselves do not attend hospital as a result and many remain 'hidden' within the community. Most are motivated by a wish to escape from a terrible state of mind, although almost as many say they have a wish to die. About half of all those who harm themselves do so repeatedly. The overwhelming message from these findings is that much more attention needs to be paid to identifying young people who are suffering from emotional and mental health difficulties in order to prevent self-harm through school-based and other initiatives, and to provide young self-harmers with appropriate care and support. As rates and patterns of deliberate self-harm vary between countries, services will need to be dictated by both general and national considerations.

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