



Adolescents Exposed to Suicidal Behavior of Others: Prevalence of Self-Harm and Associated Psychological, Lifestyle, and Life Event Factors

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Exposure to suicidal behavior of others was examined among 3,881 Irish adolescents in the Child and Adolescent Self-harm in Europe (CASE) study. One third of the sample had been exposed to suicidal behavior, and exposed adolescents were eight times more likely to also report own self-harm. Exposed adolescents shared many risk factors with those reporting own self-harm. Those reporting both exposure and own self-harm presented the most maladaptive profile on psychological, life event, and lifestyle domains, but neither anxiety nor depression distinguished this group. Exposed adolescents are burdened by a wide range of risk factors and in need of support.

Self-harm includes a range of behaviors associated with different levels of medical severity and intent (including suicidal intent) and is recognized worldwide as a major public health problem (World Health

Organisation, 2002). A history of self-harm is a major risk factor for repeated self-harm and subsequent suicide (Hawton, Saunders, & O'Connor, 2012; O'Connor, Rasmussen, & Hawton, 2009). In Ireland, the highest rates of hospital-treated self-harm in females are among 15- to 19-year-old girls, with high rates also reported among boys in this age group (National Suicide Research Foundation, 2012). A population-based study reported that 9.1% of Irish adolescents surveyed had harmed themselves at some point, of whom 45.9% reported repeated episodes. Self-harm was significantly more common among girls than boys, with self-cutting and overdose the most common methods (Morey, Corcoran, Arensman, & Perry, 2008).

There is evidence of the clustering of self-harm, and this has been found to be a particularly distinctive feature among adolescents (Hawton, Bergen, et al., 2012). In particular, associations between exposure to self-harm of a family member or friend and reporting own self-harm have been widely

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reported (Bearman & Moody, 2004; De Leo, & Heller, 2004; Hawton, Rodham, Evans, & Weatherall, 2002; Ystgaard, Reinholdt, Husby, & Mehlum, 2003). In a prospective study, self-harm by a family member was found to be predictive of repeat self-harm (but not first episode; O'Connor et al., 2009). In the Irish Child and Adolescent Self-harm in Europe (CASE) study (on which the present study is also based), knowledge of self-harm of a friend was associated with self-harm in both genders, while knowledge of self-harm of a family member was associated with own self-harm for girls only (McMahon et al., 2010). Having had a friend who died by suicide or had attempted suicide has been reported to increase the likelihood of suicidal ideation and suicide attempts (Bearman & Moody, 2004). However, findings on associations between the suicide of a family member or friend and own self-harm have been mixed, possibly reflecting the relative rarity of suicide (Evans, Hawton, & Rodham, 2004). The potential mechanisms by which contagion of suicidal behavior among peers and family members takes place have been the subject of increasing attention (Hawton, Saunders, et al., 2012; Purington & Whitlock, 2010).

Adolescent self-harm is associated with risk factors such as depression, anxiety, impulsivity, self-esteem, and emotion-oriented coping, as well as negative life events and lifestyle factors such as drug use (Hawton, Saunders, et al., 2012; Madge et al., 2008; McMahon et al., 2013). On the other hand, resilience is a construct that has received little attention in the psychiatry and psychopathology literature due to a long-standing focus on disease and pathology (Bonanno, 2004). Resilience can be viewed as a factor or combination of factors (psychological or social) which can have either a moderating or mediating effect on the associations between risk and the outcome variable (Rutter, 2006; Unger, 2013). The construct of resilience, as we use it in this study, is maintenance of positive adaptation despite the experience of adversity (Luthar,

Cicchetti, & Becker, 2000), rather than a particular attribute of an individual. Resilient individuals can be described as those exposed to adverse conditions yet not displaying the negative outcome under examination (von Eye & Schuster, 2000), in this case self-harm. Taking this approach allows us to focus on a rarely examined subgroup of adolescents: those exposed to suicidal behavior of others, yet not having engaged in self-harm themselves, with a view to developing our knowledge about resilience in this group.

Objectives and Hypotheses

Little is known about the characteristics of young people who have been exposed to suicidal behavior (self-harm and/or suicide) of others. Our objectives and hypotheses for this study were as follows:

1. To examine the prevalence of self-harm among young people exposed to self-harm or suicide of others versus those without this experience. We hypothesized that, as consistently reported by previous studies, exposure to self-harm would be associated with reporting own self-harm among adolescents.
2. To identify and compare subgroups of young people with different histories of exposure to suicidal behavior in terms of a broad range of factors from lifestyle, life event, and psychological domains. Adolescents with neither exposure to suicidal behavior nor own self-harm were compared with those exposed to suicidal behavior but with no own self-harm, those unexposed to suicidal behavior but reporting own self-harm, and those reporting both exposure and own self-harm. We hypothesized that young people exposed to suicidal behavior but not reporting own self-harm would display distinctive characteristics on at least one of the domains examined that might be considered resilience fac-

tors; for example, use of problem-oriented coping or high self-esteem.

METHOD

Design and Setting

The study was conducted using a cross-sectional design, with data gathered in 39 schools in counties Cork and Kerry in Ireland. The questionnaire was administered and completed by students in a class setting with a member of the research team present. The study design, procedure, measures, and sample have been more fully described elsewhere (McMahon et al., 2010).

The survey in Ireland was part of the multicentre CASE study (Madge et al., 2008). A standardized, internationally validated, anonymous questionnaire was designed by the CASE collaborators and used for data collection by each of the seven centers involved in the study (six centers in Europe and one in Australia). The questionnaire included a wide range of variables, including demographics, lifestyle factors, life events, and questions about deliberate self-harm and self-harm thoughts. These were handled as dichotomous variables for the analyses reported.

The questionnaire also included three validated psychological scales. Depressive symptoms and anxiety were measured using the Hospital Anxiety and Depression Scale (HADS), which has been validated for use with an adolescent population (White, Leach, Sims, Atkinson, & Cottrell, 1999). Cronbach's alphas for our sample were 0.71 for the depression subscale and 0.79 for the anxiety subscale. Each subscale comprises seven items with total scores ranging from 0 to 21 on each scale. Higher scores indicate higher levels of anxiety or depressive symptoms. Impulsivity was measured using six items from the Plutchik Impulsivity Scale, with scores ranging from 6 to 24 (Plutchik, van Praag, Picard, Conte, & Korn, 1989). Higher scores on this scale indicate higher levels of impulsivity. Self-

esteem was measured using an eight-item version of the Self-concept Scale, with scores ranging between 8 and 32 (Robson, 1989). Strong convergent and discriminant validation of the scale has been reported (Addeo, Greene, & Geisser, 1994). Cronbach's alphas for our sample were 0.71 for the impulsivity scale and 0.90 for the self-esteem scale. Coping style was assessed using an eight-item measure, comprised of two components: emotion-oriented coping (scored between 4 and 12) and problem-oriented coping (scored between 3 and 9), with adequate interitem correlations in our sample (McMahon et al., 2013).

An important aspect of the study methodology was that participants who reported self-harm were asked to describe, in their own words, the method(s) they had used to harm themselves to facilitate rigorous verification and coding of cases according to a standardized definition of *deliberate self-harm*: "An act with non-fatal outcome in which an individual deliberately did one or more of the following: initiated behavior (for example, self-cutting, jumping from a height), which was intended to cause self-harm; ingested a substance in excess of the prescribed or generally recognisable therapeutic dose; ingested a recreational or illicit drug that was an act that the person regarded as self-harm; or ingested a non-ingestible substance or object" (Madge et al., 2008). *Self-harm thoughts* were defined as having thoughts of harming oneself without acting on them on that occasion.

Sample

Of the 54 schools invited to participate, 39 schools took part in the study. Of the 4,583 students invited to complete the questionnaire, 3,881 participated in the survey (85% response rate). Eighty surveys were then disregarded as these did not fit the age criteria of 15, 16, or 17 years, were not filled in seriously, or gender was missing. A further 181 surveys were disregarded as questions regarding exposure to suicidal behavior and history of self-harm were not

completed. Fifty-two percent of the participants were girls, and the majority (53.1%) of students were 16 years old.

Statistical Analyses

Chi-square tests were used to assess associations between pairs of categorical variables such as self-harm history and knowledge of suicidal behavior of others. Odds ratios and 95% confidence intervals for lifetime history of self-harm were calculated, and the strength of these associations was measured by the Phi statistic. In line with previous recommendations (Cohen, 1988), associations were considered very weak if $\Phi < 0.10$, weak if < 0.30 , moderate if < 0.50 and strong if $0.50+$.

Four subgroups of adolescents were identified, and means and 95% confidence intervals for the psychological scales and numbers or percentages reporting lifestyle and life event factors are presented. The four subgroups were compared using one-way analysis of variance for continuous psychological variables and chi-square for categorical variables (life events and lifestyle factors). Multinomial logistic regression was used to assess the associations between gender, age, lifestyle factors, psychological characteristics, and reported stressful life events and lifetime self-harm history with a

view to identifying which factors distinguished between the comparison group and the other subgroups. The dependent variable comparison group was those with no self-harm and also no exposure to suicidal behavior of others. All independent variables were entered simultaneously. Associations were reported as odds ratios with 95% confidence intervals.

RESULTS

Associations between Exposure to Suicidal Behavior and History of Self-Harm

We examined associations between exposure to suicidal behavior of a friend or family member and own history of self-harm (Table 1). Approximately one third of the total sample reported knowledge of suicidal behavior of a friend or family member. Knowledge of self-harm of a friend was common, reported by 17.3% of those without a history of own self-harm and 37.6% of those with a history of own self-harm. Knowledge of self-harm of a family member was less common, but was reported by more than one tenth of the total sample (7.8% of those without a history of self-harm and 42.2% with a history of self-harm). Suicide of a friend or family member was less com-

TABLE 1

Associations between Knowledge of Self-Harm or Suicide of Others and Reporting Own Self-Harm

	No history of self-harm group	Lifetime history of self-harm group	Odds ratio for self-harm (95% CI)	<i>p</i> value	Phi
Self-harm of friend					
Yes	559 (17.3%)	123 (37.6%)			
No	2,675 (82.7%)	204 (62.4%)	7.94 (6.23–10.10)	<0.0005	0.32
Self-harm of family member					
Yes	253 (7.8%)	135 (42.1%)			
No	2,991 (92.2%)	186 (57.9%)	8.58 (6.64–11.09)	<0.0005	0.32
Suicide of friend or family member					
Yes	347 (10.7%)	82 (25.5%)			
No	2,901 (89.3%)	240 (74.5%)	2.86 (2.17–3.76)	<0.0005	0.13
Any self-harm or suicide of someone close					
Yes	913 (27.8%)	251 (75.6%)			
No	2,375 (72.2%)	81 (24.4%)	8.06 (6.20–10.47)	<0.0005	0.30

mon, but was nonetheless reported by 429 adolescents in total (10.7% of those without a history of self-harm and 25.5% with a history of self-harm). All associations with lifetime history of self-harm were highly statistically significant ($p < .0005$ in all cases). There were moderately strong associations between lifetime history of self-harm and knowledge of self-harm of a friend or family member. There was a weak association between lifetime history of self-harm and the suicide of a friend or family member. Overall, there was an association of moderate strength between reporting knowledge of any suicidal behavior (self-harm or suicide) of a friend or family member and lifetime history of self-harm (odds ratio 8.09; CI 6.20–10.47). Three quarters of young people with a history of self-harm themselves also reported knowledge of self-harm of others. Reporting self-harm without knowledge of self-harm of others was particularly rare.

Four subgroups were identified based on participants' reported history of self-harm and also their reported exposure to suicidal behavior (suicide and/or self-harm) of a family member or friend. The subgroups were as follows.

Group 1: Unexposed to suicidal behavior, no own self-harm ($n = 2,375$; 66% of sample).

Group 2: Exposed to suicidal behavior, no own self-harm ($n = 913$; 25% of sample).

Group 3: Unexposed to suicidal behavior, own self-harm ($n = 81$; 2% of sample).

Group 4: Exposed to suicidal behavior, own self-harm ($n = 251$; 7% of sample).

Comparison of Exposed and Unexposed Subgroups

The four subgroups were compared on a range of psychological, life event, and lifestyle factors (Table 2). There was a clear trend toward those exposed to suicidal

behavior reporting poorer mental health and higher prevalence of negative life events, with those reporting both exposure and own self-harm showing the most maladaptive profile.

Psychological Characteristics. With the exception of problem-oriented coping, there was a trend for scores indicating poorer mental health on all psychological factors (anxiety, depressive symptoms, impulsivity, self-esteem, emotion-oriented coping) moving through the four subgroups from Group 1 to Group 4 (Table 2). However, an exception to this was problem-oriented coping, where the subgroups exposed to suicidal behavior reported greater use of problem-oriented coping (a positive indicator of coping) than their peers, in both the groups with and without a history of own self-harm.

There was a striking difference between Groups 1 and 2 in terms of prevalence of self-harm thoughts, with 28.8% of those in Group 2 reporting self-harm thoughts more than double the prevalence for Group 1.

Lifestyle Factors. There was a trend for increasing prevalence of heavy drinking, smoking, and drug use moving through the four subgroups from Group 1 to Group 4. Particularly, there were striking group differences in terms of drug use, with 67.3% of those in Group 4 reporting drug use, compared with 25.2% of Group 1.

Negative Life Events. Group 1 had the lowest prevalence of lifetime history of all negative life events examined, with prevalence increasing in each subgroup to Group 4. The largest group difference was in terms of physical or sexual abuse, with 35.1% of Group 4 reporting this experience compared with 8.3% of Group 2 and 3.3% of Group 1. The trend toward higher prevalence of negative events moving from Group 1 to Group 4 was not evident in the case of experience of illness of self or someone close, where Group 2 had higher prevalence (63.9%) than Group 3, whose prevalence was 55.6%.

TABLE 2
Psychological Characteristics, Lifestyle Factors, and Life Events by Exposure to Suicidal Behavior and Self-Harm History

	Group 1. Unexposed to suicidal behavior, no own self-harm Mean (95% CI)	Group 2. Exposed to suicidal behavior, no own self-harm Mean (95% CI)	Group 3. Unexposed to suicidal behavior, own self-harm Mean (95% CI)	Group 4. Exposed to suicidal behavior, own self-harm Mean (95% CI)	<i>p</i> value
Psychological characteristics					
Depressive symptoms	3.00 (2.90–3.11)	3.75 (3.55–3.95)	5.74 (4.80–6.68)	6.01 (5.48–6.54)	<.0005
Anxiety	6.23 (6.09–6.38)	7.77 (7.51–8.03)	9.87 (9.03–10.72)	10.80 (10.27–11.32)	<.0005
Impulsivity	13.48 (13.37–13.60)	14.30 (14.10–14.50)	14.72 (13.97–15.48)	15.84 (15.41–16.27)	<.0005
Self-esteem	23.74 (23.56–23.90)	22.59 (22.33–22.85)	20.16 (19.16–21.15)	19.23 (18.67–19.79)	<.0005
Problem-oriented coping	6.66 (6.60–6.71)	6.73 (6.64–6.82)	6.07 (5.74–6.39)	6.16 (5.98–6.34)	<.0005
Emotion-oriented coping	7.19 (7.13–7.25)	7.86 (7.56–7.97)	8.43 (8.12–8.74)	9.21 (9.01–9.40)	<.0005
Life events					
	Yes <i>n</i> (%)	Yes <i>n</i> (%)	Yes <i>n</i> (%)	Yes <i>n</i> (%)	
Self-harm thoughts	258 (11.1)	259 (28.8)	N/A	N/A	<.0005
Lifestyle factors					
Smoking	417 (17.8)	258 (28.7)	29 (36.3)	131 (52.4)	<.0005
Drugs in the past year	599 (25.2)	324 (35.5)	39 (48.1)	169 (67.3)	<.0005
Heavy drinking	639 (28.6)	317 (36.6)	33 (41.3)	130 (53.5)	<.0005
Problems with or between parents	873 (36.8)	536 (58.7)	56 (69.1)	215 (85.7)	<.0005
Serious illness of family or friend	1,079 (45.4)	583 (63.9)	45 (55.6)	194 (77.3)	<.0005
Difficulties with friends and peers	1,020 (42.9)	607 (66.5)	58 (71.6)	222 (88.4)	<.0005
Problems with schoolwork	867 (36.8)	473 (52.4)	62 (76.5)	197 (78.5)	<.0005
Bullied	399 (17.0)	225 (25.0)	28 (35.9)	110 (44.0)	<.0005
Trouble with the police	306 (13.0)	180 (19.8)	20 (25.3)	92 (36.7)	<.0005
Physical or sexual abuse	79 (3.3)	76 (8.3)	15 (18.5)	88 (35.1)	<.0005
Worries about sexual orientation	103 (4.4)	63 (7.1)	17 (21.0)	60 (24.2)	<.0005

Multinomial Logistic Regression

The results of multivariate, multinomial logistic regression analysis carried out to identify the factors independently distinguishing between adolescents in the four subgroups are presented in Table 3. The comparison group for the analysis was Group 1 (no exposure to suicidal behavior, no own self-harm). The derived regression model explained 34.9% of the variation between the groups. A wide range of factors independently differentiated the subgroups.

Factors Distinguishing between Adolescents With and Without Exposure to Suicidal Behavior of Others in the Absence of Own Self-Harm. We compared two groups of adolescents without self-harm but who differed in terms of exposure to suicidal behavior, Group 1 and Group 2. Group 2 (exposed to suicidal behavior, no own self-harm) differed significantly from Group 1 (unexposed to suicidal behavior, no own self-harm) in terms of several negative life events. Problems with peers, problems with or between parents, and illness of self or someone close distinguished between these groups (all $p < .0005$); trouble with police ($p = .01$) was also significant.

Factors Distinguishing Adolescents With and Without Self-Harm in the Absence of Exposure to Suicidal Behavior of Others. We compared Group 3 with the comparison group to identify the factors that independently distinguished adolescents unexposed to suicidal behavior who reported self-harm (Group 3) with their peers who did not report self-harm (Group 1). Depressive symptoms (OR 1.1; CI 1.01–1.20; $p = .03$), problem-oriented coping (OR 0.81; CI 1.67–1.97; $p = .03$), worries about sexual orientation (OR 2.07; CI 1.02–4.19; $p = .04$), bullying victimization (OR 1.89; CI 1.10–13.27; $p = .02$), problems with schoolwork (OR 2.32; CI 1.26–4.28; $p = .01$), and trouble with the police (OR 2.15; CI 1.11–4.15; $p = .02$) all distinguished between the two groups.

Factors Distinguishing Adolescents With Both Exposure to Suicidal Behavior and Own

Self-Harm from Those Without Exposure and Without History of Self-Harm. Group 4 presented the most severe picture in terms of a wide range of factors. The following distinguished between those adolescents with exposure to suicidal behavior and own self-harm (Group 4) and the comparison group (Group 1): self-esteem (OR 1.32; CI 1.16–1.49; $p < .0005$), impulsivity (OR 1.07; CI 1.01–1.14; $p = .02$), problem-oriented coping (OR 0.85; CI (0.75–0.97; $p = .01$), and emotion-oriented coping (OR 1.32; CI 1.16–1.49; $p \leq .0005$). Neither anxiety nor depressive symptoms distinguished between these two groups. Drug use in the past year was the only lifestyle factor that differentiated Group 4 from the comparison group (OR 3.47; CI 2.27–5.32; $p < .0005$). All negative life events examined independently contributed to distinguishing between Groups 1 and 4, with the exception of problems with schoolwork. Highest odds ratios were for physical or sexual abuse (OR 3.47; CI 2.27–5.32; $p < .0005$), problems with or between parents (OR 3.47; CI 2.27–5.32; $p < .0005$), and worries about sexual orientation (OR 3.47; CI 2.27–5.32; $p < .0005$).

DISCUSSION

The present study revealed strong associations between exposure to suicidal behavior of others and history of own self-harm among adolescents. One third of our sample reported having a friend or family member who had engaged in self-harm or who had died by suicide. Exposed adolescents were approximately eight times more likely to report self-harm themselves than those without this experience. Adolescents exposed to suicidal behavior also reported greater exposure to a wide range of negative life events and poorer mental health and coping than their unexposed peers. Those adolescents reporting both exposure to suicidal behavior and own self-harm presented the most maladaptive picture in terms of a wide range of psychological, lifestyle, and life event factors.

TABLE 3
Multinomial Logistic Regression Analysis of the Independent Associations between Psychological Characteristics, Lifestyle Factors, Stressful Life Events, Exposure to Suicidal Behavior, and Self-Harm History

	Group 2: Exposed to suicidal behavior, no own self-harm ^a			Group 3: Unexposed to suicidal behavior, own self-harm ^a			Group 4: Exposed to suicidal behavior, own self-harm ^a		
	OR ^b	95% CI	p value	OR ^b	95% CI	p value	OR ^b	95% CI	p value
Psychological characteristics									
Anxiety ^c	1.01	0.98–1.04	0.45	1.07	0.99–1.16	0.08	1.05	0.99–1.11	0.08
Depressive symptoms ^c	1.04	1.00–1.08	0.08	1.10	1.01–1.20	0.03	1.03	0.97–1.10	0.28
Self-esteem score	1.01	0.98–1.04	0.40	0.98	0.90–1.06	0.61	0.94	0.89–0.99	0.03
Impulsivity score ^c	1.05	1.02–1.09	0.01	1.02	0.94–1.11	0.58	1.07	1.01–1.14	0.02
Problem-oriented coping ^c	1.03	0.96–1.10	0.47	0.81	0.67–0.97	0.03	0.85	0.75–0.97	0.01
Emotion-oriented coping ^c	1.09	1.02–1.17	0.01	1.12	0.93–1.35	0.22	1.32	1.16–1.49	0.01
Lifestyle factors									
Heavy drinking	0.96	0.77–1.19	0.69	0.85	0.46–1.56	0.60	0.83	0.56–1.23	0.35
Smoking	1.15	0.91–1.45	0.24	1.05	0.56–1.99	0.88	1.23	0.82–1.86	0.31
Drugs in past year	1.24	0.98–1.56	0.07	1.69	0.89–3.19	0.11	3.47	2.27–5.32	0.01
Life events									
Worries about sexual orientation	1.06	0.73–1.55	0.76	2.07	1.02–4.19	0.04	2.32	1.42–3.80	0.01
Bullied	1.23	0.99–1.53	0.06	1.89	1.10–3.27	0.02	2.06	1.43–2.97	0.01
Problems with schoolwork	1.12	0.92–1.35	0.26	2.32	1.26–4.28	0.01	1.35	0.91–2.00	0.13
Trouble with police	1.45	1.12–1.89	0.01	2.15	1.11–4.15	0.02	2.29	1.48–3.53	0.01
Problems with peers or friends	1.60	1.32–1.95	0.01	0.99	0.55–1.79	0.98	1.84	1.15–2.93	0.01
Problems with or between parents	1.49	1.23–1.80	0.01	1.29	0.74–2.27	0.37	2.36	1.53–3.65	0.01
Illness of self or someone close	1.67	1.39–2.00	0.01	1.05	0.63–1.75	0.85	2.20	1.51–3.20	0.01
Physical or sexual abuse	1.08	0.74–1.58	0.69	1.75	0.84–3.62	0.13	2.55	1.62–4.03	0.01

^aNo exposure to suicidal behavior and no own self-harm was the comparison category of the dependent variable.

^bOdds ratios were adjusted for age and sex as well as the factors detailed in the table.

^cThese odds ratios represent the effect of a one-point increase in the score of the scale measuring the psychological characteristic.

We have identified the factors which distinguished between subgroups of adolescents exposed and unexposed to suicidal behavior of others. Among adolescents without a history of self-harm, the subgroup considered “resilient,” who had been exposed to suicidal behavior, in fact had higher levels of impulsivity, greater use of emotion-oriented coping, trouble with the police, illness, and problems with peers and parents than their unexposed peers. Interestingly, adolescents with a history of own self-harm also differed depending on their exposure to suicidal behavior of others. Those reporting self-harm in the absence of exposure had higher levels of depressive symptoms and less use of problem-oriented coping than the comparison group, as well as reporting significantly higher prevalence of worries about sexual orientation, problems with schoolwork, experience of bullying, and trouble with the police. This unexposed subgroup did not have a significantly higher prevalence of drug use than the comparison group, despite the fact that drug use has been reported to be strongly associated with self-harm in this sample previously (McMahon et al., 2010). Adolescents reporting both exposure to suicidal behavior and own self-harm presented the most severe picture in terms of a range of factors, including poorest self-esteem, coping, and highest levels of impulsivity. They also differed from the comparison group in terms of drug use and most negative events. However, this group did not differ from the comparison group in terms of anxiety or depressive symptoms.

Our findings suggest that the factors associated with self-harm vary depending on adolescents’ exposure to suicidal behavior through their peer or family groups. It is interesting to note that the exposed group with own self-harm did not have significantly higher levels of depressive symptoms or anxiety than the comparison group with no exposure to self-harm or own history of self-harm. This is at odds with the majority of previous studies on similar populations reporting multivariate

analyses which found that depressive symptoms made a significant and large contribution to the variance in self-harm (Evans et al., 2004; Hawton et al., 2002). Here, we have found this to be the case only among the unexposed subgroup. The fact that these risk factors appear to be specific to the unexposed subgroup may explain the finding we previously reported that depressive symptoms were not independently associated with self-harm in the total sample (McMahon et al., 2010).

A central finding of this study is that individuals exposed to self-harm share a wide range of risk factors with those adolescents who themselves report self-harm, but with a less severe risk profile. Nonetheless, those exposed to suicidal behavior are a particularly high-risk group with exposure to a large number of other negative events. Our finding that a significant minority of the exposed subgroup reported self-harm thoughts (more than a twofold difference compared with the unexposed group) supports this view of the exposed group as burdened and in need of support. The strength of the associations reported between exposure to suicidal behavior and self-harm thoughts, acts, and mental health factors suggests that exposure to suicidal behavior may be a key factor for some adolescents in the initiation of the self-harm process.

This view of exposed young people as having higher levels of difficulties than their unexposed peers, even when they do not have a history of self-harm, offers an alternative view of resilient individuals, who are sometimes assumed to display positive outcomes in the presence of adversity due to particular skills or competence they possess (Luthar et al., 2000). Rather than displaying primarily protective characteristics, adolescents in the “resilient” group in fact were more depressed, anxious, and impulsive than their unexposed peers, all factors associated with risk of self-harm in adolescents (Hawton, Saunders, et al., 2012; Madge et al., 2011). Further research could examine the possibility, suggested by these findings, that resilience in this case may be associated with

falling short of a certain threshold level in terms of a broad range of risk factors. Investigation of other potential protective factors not examined here could also shed light on resilience in this group.

Our finding relating to the central association between drug use and self-harm in the group of young people exposed to suicidal behavior of others underlines the importance of interventions to prevent drug use, which may potentially contribute to preventing the contagious effects of self-harm. On the other hand, it is interesting to note the importance of depressive symptoms among the unexposed group, among whom the development of self-harm is rare. Our findings suggest that self-harm may be more likely to be triggered by mental health problems in this unexposed group, while mental health problems may play a much smaller role in the development of self-harm among exposed adolescents, who display difficulties in a variety of social domains.

There are many possible ways in which the clustering and contagion of self-harm thoughts and behaviors come about within peer and family groups. The family self-harm contagion effect is consistent with the familial intergenerational transmission of suicide risk hypothesis (Ali, Dwyer, & Rizzo, 2011; Melhem et al., 2007), while peer associations suggest a possible modeling effect, in line with other evidence on contagion of suicidal behavior in adolescents (Hawton, Bergen, et al., 2012). It has been suggested that contagion may be a particularly important factor among girls who cut themselves (Hawton, Harriss, & Rodham, 2009). A previous study has reported a uniquely distinct relationship between self-harm of a friend and self-harm without intent to die on the one hand and of a family member with self-harm with intent to die on the other (Hargus, Hawton, & Rodham, 2009), leading to the suggestion that distinctions should be drawn between familial and nonfamilial models of self-harm when designing prevention programs. It may be the case

that the clustering of self-harm within peer groups is due in large part to peer selection effects, and the complexity of relationships between peer selection and suicidality has previously been highlighted (Ali et al., 2011). Our analyses grouped together those with familial and nonfamilial self-harm history, and those with various methods and reported motives for self-harm, which prevented in-depth analyses of any possible distinctions. Due to small numbers who reported suicide of a friend or family member, it was impossible to look at those with this specific risk factor. However, it may be the case that a unique profile exists for those with a family member who has died by suicide.

This study was carried out using a cross-sectional design, which makes it difficult to draw conclusions on causal or temporal relations between self-harm, exposure to suicidal behavior, and associated factors. The study examined self-harm episodes reported to have happened at any time in the past and therefore reported self-harm did not necessarily occur after the various associated factors and events, making it difficult to draw conclusions on causality. However, since 82% of the self-harm had occurred within the past year (Morey et al., 2008), the associations may be valid. The psychological scales and lifestyle items measured current state and lifestyle at one time point only, which may have been after any reported self-harm.

Despite these limitations, we have employed the novel and rigorous CASE study methodology to explore the effects of exposure to suicidal behavior in a large sample of adolescents. We have found that adolescents exposed to suicidal behavior of others share a wide range of risk factors for self-harm. Self-harm thoughts are common in this group, and support should be given to these burdened individuals. Adolescents reporting self-harm in the absence of exposure have a distinctive pattern of associated factors, including high levels of depressive symptoms, while self-harm in the presence of exposure was associated with drug use

and negative events, but not anxiety or depressive symptoms. Knowledge of the factors associated with self-harm among exposed and unexposed adolescents can inform school-based intervention programs promoting resilience and positive mental health, as these have been found to be most

effective when targeted at specific at-risk groups. Current international longitudinal research aims to identify the most effective school-based programs for the prevention of suicidal behavior in this group (Wasserman et al., 2010).

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