



Exposure to websites that encourage self-harm and suicide: Prevalence rates and association with actual thoughts of self-harm and thoughts of suicide in the United States



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A B S T R A C T

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This article provides 12-month prevalence rates of youth exposure to websites which encourage self-harm or suicide and examines whether such exposure is related to thoughts of self-harm and thoughts of suicide in the past 30 days. Data were collected via telephone from a nationally representative survey of 1560 Internet-using youth, ages 10–17 residing in the United States. One percent (95% CI: 0.5%, 1.5%) of youth reported visiting a website that encouraged self-harm or suicide. Youth who visited such websites were seven times more likely to say they had thought about killing themselves; and 11 times more likely to think about hurting themselves, even after adjusting for several known risk factors for thoughts of self-harm and thoughts of suicide. Given that youth thinking about self-harm and suicide are more likely to visit these sites, they may represent an opportunity for identification of youth in need of crisis intervention.

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Self-directed violent behavior encompasses a variety of acts, ranging from fatal to non-fatal suicide behavior, as well as non-suicidal intentional self-harm (Crosby, Ortega, & Melanson, 2011). Thoughts of suicide are often also included in the same context (Crosby et al., 2011); defined as thoughts, consideration of, or actual plans for suicide, which can be considered as a risk marker for suicide (Kessler, Borges, & Walters, 1999). Suicide is the third leading cause of death among youth and young adults, ages 10 to 24 in the U.S. (Centers for Disease Control, 1999). In 2011, 16% of high school students had seriously thought about attempting suicide (13% of boys and 19% of girls), 8% attempted suicide (6% of boys and 10% of girls), and 2% (2% boys and 3% of girls) reported their suicide attempt required medical attention (Child Trends Data Bank, 2014). Although girls are more likely than boys to seriously consider and actually attempt suicide, boys are more likely to succeed in death by suicide.

The term “self-harm” and the corresponding thoughts of self-harm can encompass non-suicidal self-injury (NSSI) as well as suicidal behavior. In the current study we did not measure degree of intent in the self-injurious behaviors; as such we utilize the term “self-harm” instead of NSSI in reference to our own findings. Further, we did not ask about actual self-harm but instead asked about *thoughts* of self-harm and *thoughts* of suicide.

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National rates of self-harm among adolescents in the United States are limited due to a lack of assessment of this behavior among large, epidemiological studies (Jacobson & Gould, 2007; Muehlenkamp, Claes, Havertape, & Plener, 2012). The largest epidemiological study conducted in the United States found a 12-month prevalence rate of 7.3% for NSSI (Taliaferro, Muehlenkamp, Borowsky, McMorris, & Kugler, 2012) while a 12-month prevalence rate of 11.5% for deliberate self-harm was found across seven European countries (Madge et al., 2008). In the United States, prevalence studies have also examined *thoughts* of suicide and have found 9.7% of adolescent heterosexual males and 15.2% of adolescent heterosexual females had thoughts of suicide in the past 12 months; these rates increased to 15.4% of same-sex sexual orientation males and 28.3% of same-sex sexual orientation females (Russell & Joyner, 2001). Across 17 countries in Europe, 7.4% (Range: 2.1%, 15.3%) of high school students ages 15–16 had frequent (at least five times) self-harm thoughts in their *lifetime* (Kokkevi, Rotsika, Arapaki, & Richardson, 2012).

Risk for self-harm and thoughts of suicide comprises a number of known factors including depression (Fergusson, Beautrais, & Horwood, 2003; Fergusson, Horwood, Ridder, & Beautrais, 2005; Fortune & Hawton, 2005; Hawton, Saunders, & O'Connor, 2012; McLean, Maxwell, Harris, Platt, & Jepson, 2008), alcohol and drug use (Hawton et al., 2012; Patton et al., 1997), poor parent-child relationships (Fergusson, Woodward, & Horwood, 2000), and living in poverty (Beautrais, 2000; Cash & Bridge, 2009; Dupéré, Leventhal, & Lacourse, 2009; Fergusson et al., 2000; Hawton et al., 2012; Kloos, Collins, Weller, & Weller, 2007). Victimization, especially in the form of sexual abuse (Fergusson et al., 2003, 2000; Hawton et al., 2012; Molnar, Berkman, & Buka, 2001; Turner, Finkehor, Shattuck, & Hamby, 2012; Whitlock, Eckenrode, & Silverman, 2006) may be associated with self-harm and thoughts of suicide, although this association may be explained in part by psychiatric risk factors (Klonsky & Moyer, 2008).

Youth may have easier access to self-harm information than previous generations given the variety of types of information about self-directed violence now readily available online. Research has focused on websites, chat groups, and other online contacts that encourage and educate youth about how to injure and kill themselves given concerns of such exposure on actual self-injury and suicide rates (Alao, Soderberg, Pohl, & Alao, 2006; Fortune & Hawton, 2005; Murray & Fox, 2006; Tam, Tang, & Fernando, 2007; Whitlock, Powers, & Eckenrode, 2006). The content of these websites vary, including those that passively provide information and encourage suicide, provide instructions on how to commit suicide, and allow for the exchange of messages from people revealing suicidal thoughts (Mishara & Weisstub, 2007). Still other websites and online materials provide support, awareness, and encourage recovery around self-harm or thoughts of suicide (Duggan, Heath, Lewis, & Baxter, 2012). In 2010, over 5000 NSSI videos were identified on YouTube, and while some are visually graphic, others are more information-based (Lewis, Heath, St. Denis, & Noble, 2011). The fact that teens seek out these sites reinforces a need for increased understanding of motivation, as some teens may access both harmful and beneficial sites as part of their decision-making or education on the topic.

A more recent study among young adults in Japan revealed an association between Internet suicide-related searches and the incidence of suicide (Hagihara, Miyazaki, & Abe, 2012). One estimate is that there are more than 100,000 suicide-related websites on the Internet (Dobson, 1999) and a search for “self-injury” on Google yielded almost 2.5 million results (Duggan et al., 2012). Forty-one groups about “self-injury” or “self-harm” on Facebook were identified in 2010, as well as 206 groups identified on MySpace (Duggan et al., 2012) and a search on YouTube produced 2290 videos. Still, we do not necessarily know that youth have “more” access to such knowledge over previous generations or whether such exposure is related to actual behaviors, particularly given the declining rates of serious thoughts about attempting suicide among youth and young adults – from 29% in 1991 to 16% in 2011 (Child Trends Data Bank, 2014). Moreover, if there is increased access, this may be balanced by a parallel increase in access to beneficial websites on these topics, as well as support from online contacts. In fact, the possible net influence of the Internet could be positive for many youth.

The current paper seeks to answer four research questions. First, we assess rates of thoughts of self-harm and thoughts of suicide in the past 30 days. Second, we report past year rates of youth exposure to websites encouraging self-harm and suicide for all youth, those who report thoughts of self-harm, and those youth reporting thoughts of suicide. Third, we examine characteristics of youth who visit self-harm and suicide websites to determine whether youth visiting those websites present with similar known risk factors as those who report thoughts of self-harm or suicide. Fourth, we consider the relationship between visiting these websites and actual thoughts of self-harm and suicide. No data exists about how many youth in the United States have been to websites that encourage self-harm or suicide, nor whether visiting such sites is associated with actual thoughts of self-harm or thoughts of suicide above other known risk factors among a general population of young Internet users.

Method

The Youth Internet Safety Surveys were conducted in order to quantify and detail youth experiences with unwanted or problematic Internet experiences including sexual solicitations, harassment, and unwanted exposure to pornography on the Internet. The 3rd Youth Internet Safety Survey (YISS-3) is the source for the current article. The data collection for YISS-3 took place between August, 2010 and January, 2011. YISS-3 was conducted via telephone surveys with a national sample of 1560 youth Internet users, ages 10 to 17, and their parents. The parents in this study completed a brief (~five minute) interview aimed at determining eligibility and gathering family and household demographic characteristics. A final target sample size of 1500 was pre-determined on the basis of a desired maximum expected sampling error of $\pm 2.5\%$ at the 0.05 significance level.

Human subject participation in YISS-3 was reviewed and approved by the University of New Hampshire Institutional Review Board and conformed to the rules mandated for research projects funded by the U.S. Department of Justice.

Abt Schulman, Ronca, and Bucuvalas, Inc., a U.S. national survey research firm, conducted the sampling, screening and telephone interviews from a national sample of households with telephones developed by random digit dialing. Using standard dispositions as defined by the American Association for Public Opinion Research ([American Association for Public Opinion Research, 2011](#)) the cooperation rate was 65% (AAPOR Cooperation Rate 4-interviews/estimated eligible) and the refusal rate was 24% (AAPOR Refusal Rate 2-refusals/estimated eligible). [See our final methodology report for more details on the calculation of cooperation and response rates ([Mitchell, Jones, & Wolak, 2012](#))]. Due to increasing reliance of the U.S. population on cell phones only ([Brick et al., 2007](#); [Hu, Balluz, Battaglia, & Frankel, 2010](#)) a cell-phone RDD sample was included in addition to the landline sample in the YISS-3 study. The original intention was to include a sample of 300 respondents from the cell phone in the final sample of 1500. However, due to problems with cell phone sample response rates, and given the required timeframe for the study, a decision was made to complete the survey once a total of 1500 landline completions had been reached. At the end of data collection, 45 interviews had been completed by cell phone in addition to 1516 landline interviews. Quantitative analysis of youth demographic and Internet use characteristics between the cell phone and landline samples indicated that youth in the cell phone sample were more likely to be Hispanic ethnicity and come from families with a single, never married parent ([Mitchell et al., 2012](#)).

Participants

Eligible respondents were youth, ages 10 to 17, who had used the Internet at least once a month for the past six months from any location, and a caregiver in each household that self-identified as the one most knowledgeable about the youth's Internet practices. A broad definition of 'Internet use' was used to ensure a wide range of Internet use behaviors and to include youth with and without home Internet access. [Table 1](#) provides details of the overall sample characteristics.

Procedure

In households with eligible children, interviewers asked to speak with the adult who was most familiar with that child's Internet use and after receiving informed consent, asked a series of questions about Internet use. At the close of the parent survey, the interviewer asked for permission to interview the child. Parents were informed that the youth interview would be confidential, would include questions about "sexual material your child may have seen on the Internet," and that youth would receive \$10 for participating. In households with more than one eligible youth, the one who used the Internet the most often was chosen as the respondent. After receiving parental permission, interviewers spoke with the youth and asked for their assent to conduct an interview.

We took several steps to help ensure the confidentiality of our participants. Interviewers were required to establish that no one was listening to respondents during their interviews. Interviewers emphasize the importance of privacy with the youth. They asked youth if there was a place where they could talk, where they would be alone, and where no one could hear the conversation. Specific probes were used, such as "Who is there now?", "Do you think you may be interrupted?", "Can anyone hear our conversation?". Interviewers suggested calling respondents back at a different time if privacy could not be obtained. Interviewers also told respondents that if anything changed during interviews, they should just say, "Can you call me back later?" and interviews would be re-scheduled. To further help ensure confidentiality for our youth respondents we designed the interview to consist of mainly yes/no responses rather than open-ended questions that others could potentially hear and know what the youth was talking about.

Further, interviewers were specifically trained to handle situations where respondents' answers indicated that they may be endangered by current or recent abuse or violence or by thoughts of suicide. Such "endangered" cases were flagged by an automated system within the questionnaire or by interviewers directly. Because handling such situations goes beyond the responsibilities or expertise of interviewers, our protocol instructed them to bring the situation to the attention of the principal investigator or other research team member, who, after reviewing responses, would make a decision to initiate a second contact to a clinician who was part of the research team in order to collect additional information and provide more individualized referral options.

Measures

Main outcomes of interest

Thoughts of self-harm and thoughts of suicide were measured with two questions asked as part of the depression subscale of the Trauma Symptom Checklist for Children ([Briere, 1996](#)). Specifically, "In the last month, how often have you been: 1) wanting to hurt yourself, and 2) wanting to kill yourself?" Response options ranged from 1 = not at all to 4 = very often. Due to a low base rate, response options were dichotomized to reflect any endorsement versus none.

Exposure to self-harm and suicide websites

One question was asked to assess whether or not youth had visited self-harm or suicide websites: "In the past year have you gone to or seen a website that explains how or encourages people to cut, hurt, or kill themselves?" Response options were a) Yes

Table 1Demographic characteristics of all youth and those who reported visiting a self-harm/suicide website in the past year ($N = 1560$).

Youth characteristics	All youth ($N = 1560$) % (n)	Youth who visited self-harm or suicide websites ^a ($n = 22$) % (n)
Age at time of survey		
10	7 (110)	5 (1)
11	7 (108)	5 (1)
12	9 (141)	0
13	13 (206)	5 (1)
14	15 (228)	23 (5)
15	15 (234)	23 (5)
16	17 (273)	27 (6)
17	17 (260)	14 (3)
Sex		
Boy	50 (775)	45 (10)
Girl	50 (785)	55 (12)
Race/ethnicity ^a		
White	73 (1139)	68 (15)
Black	15 (228)	18 (4)
American Indian or Alaskan Native	3 (41)	0
Asian	3 (49)	5 (1)
Other	2 (28)	0
Hispanic or Latino (any race)	10 (159)	14 (3)
Don't know/not ascertainable	2 (35)	0
Parent marital status		
Married	78 (1214)	59 (13)
Divorced	9 (148)	9 (2)
Single/Never married	6 (98)	14 (3)
Living with partner	2 (36)	0
Separated	2 (29)	5 (1)
Widowed	2 (31)	14 (3)
Don't know/not ascertainable	<1 (4)	0
Youth lives with both biological parents	66 (1029)	55 (12)
Highest education level completed in household		
Not a high school graduate	3 (41)	18 (4)
High school graduate	13 (210)	9 (2)
Some college education	19 (299)	14 (3)
College graduate	37 (577)	23 (5)
Post college degree	28 (431)	36 (8)
Don't know/not ascertainable	<1 (2)	0
Annual household income in 2010		
Less than \$25,000	12 (192)	18 (4)
\$25,000 to \$49,999	18 (287)	18 (4)
\$50,000 to \$74,999	16 (245)	27 (6)
\$75,000 to \$99,999	15 (238)	18 (4)
\$100,000 or more	30 (462)	5 (1)
Don't know/not ascertainable	9 (136)	14 (3)

^a Categories are not mutually exclusive.

(1.4%, $n = 22$); b) No, I don't know what this is (41.4%, $n = 646$) c) No, I've heard of it but I have never been to one (57.1%, $n = 891$); and d) Don't know/not sure (<1%, $n = 1$) and recoded into a yes versus all other dichotomous variable.

Depression

Depression was measured using nine items from the depression subscale of the Trauma Symptom Checklist for Children (Briere, 1996). Questions asked about "things you've been doing and how you've been feeling lately." Items asked about how often the respondent had done or felt each item in the past month: not at all, sometimes, often, and very often. Total scale score was calculated minus the two items described above.

Demographic characteristics

Demographic information was gathered from both the parent/caregiver and the youth respondent. Parents provided information about youth age, sex, living arrangements (youth living with both biological parents or not), and annual household income in 2009. Youth reported on their race and ethnicity.

Victimization

Youth were asked about experiencing physical or sexual abuse, peer or sibling abuse, dating violence, and statutory rape in the past year. Youth also indicated whether they had been a target of online harassment (threats or other offensive behavior sent or posted online about the youth for others to see) in the past year.

Problem behavior and conflict

Any delinquency was coded if youth responded positively to any of a series of six questions referring to behaviors occurring in the past 30 days (e.g., been on suspension; cheated on a test; stolen something from another student). Any substance use was indicated if youth responded positively to at least one of three behaviors in the past 30 days: drunk beer or wine, smoked cigarettes, or used marijuana at least once. Parental conflict was derived from a factor analysis of three items (i.e., nagging, yelling, and taking away privileges) scored with a 5-point Likert scale. Based upon a common latent factor (Eigenvalue: 1.7; % of Variance: 58.3), a composite variable was created to indicate parent-child conflict (M : 4.3, SD : 1.5). Due to indications of non-linearity, this was dichotomized at one standard deviation above the mean to reflect high conflict.

Statistical methods

First, to assess past month rates of thoughts of self-harm and thoughts of suicide, we report overall percentages of youth endorsing each item, as well as percentages by sex and age. Second, we report on the rates of visiting a self-harm/suicide website – for a) all youth, b) among youth who report thoughts of self-harm, and c) among youth who report thoughts of suicide. Third, we conducted a series of bivariate cross-tabulations to determine whether youth who had visited self-harm/suicide websites presented with similar risk factors as those who experienced thoughts of self-harm or suicide. For these bivariate analyses, chi-square and unadjusted odds ratios were provided (or t -tests for continuous variables). Then, we conducted two stepwise logistic regressions, one focusing on thoughts of self-harm and the other on thoughts of suicide, to assess whether exposure to websites encouraging self-harm or suicide was related to actual thoughts of self-harm or suicide while adjusting for other known risk factors. All independent variables included in the regression models were checked for multi-collinearity; the maximum VIF was 1.26, indicating that multi-collinearity was not a problem.

Results

Past month rates of thoughts of self-harm and thoughts of suicide

Five percent (95% CI: 3.9, 6.1) ($n = 77$) of youth said they had thoughts of self-harm and 2.5% (95% CI: 1.7, 3.3) ($n = 39$) had thoughts of suicide in the past month. Girls were more likely than boys to report thoughts of self-harm (6% versus 4%, $\chi^2 = 4.7$, $p = .03$). No differences were noted for thoughts of suicide by sex (3% of girls and 2% of boys, $\chi^2 = 1.2$, $p = .27$). No differences were noted by age for both thoughts of self-harm (6% of 10–12 year olds, 5% of 13–15 year olds, and 5% of 16–17 year olds, $\chi^2 = 0.5$, $p = .8$) and thoughts of suicide (2% of 10–12 year olds, 3% of 13–15 year olds, and 2% of 16–17 year olds, $\chi^2 = 2.3$, $p = .3$).

Past year rates of youth exposure to websites which encourage self-harm and suicide

One percent of youth (95% CI: 0.5, 1.5) ($n = 22$) reported visiting self-harm/suicide websites in the past year. Among youth reported past month thoughts of self-harm, 16% (95% CI: 7.8, 24.2) had been to such a website in the past year. Among youth reporting past month thoughts of suicide, 21% (95% CI: 8.2, 33.8) had been to such a website in the past year.

Characteristics of youth who visit self-harm/suicide websites

A significantly higher mean number of depression symptoms were noted among youth who went to these websites versus unexposed youth. A history of physical or sexual abuse, statutory rape, delinquent behavior and substance use also were more frequently reported in the exposed versus non-exposed groups (Table 2).

The relationship between visiting websites and actual thoughts of self-harm and thoughts of suicide

The relative odds of reporting thoughts of self-harm were significantly higher for youth who reported visiting self-harm/suicide websites (Table 3, Model 1). This association was greatly attenuated but still significant after symptoms of depression were taken into account (Model 2). After further taking into account other influential characteristics, including victimization, problem behavior and demographic characteristics, youth who visited self-harm/suicide websites in the past year were 11 times more likely to have thoughts of self-harm in the past 30 days (Adjusted OR = 11.2, 95% CI: 3.7, 33.7, $p \leq .001$). Similar patterns were noted for associations with thoughts of suicide (Adjusted OR = 7.5, 95% CI: 2.1, 27.2, $p \leq .01$; Table 4).

Discussion

Past month rates of thoughts of self-harm and thoughts of suicide

Current findings indicate that among a general population of Internet-using youth, 10–17 years old, the one-month rate for thinking about suicide was 2.5% (95% CI: 1.7, 3.3). Five percent of youth (95% CI: 3.9, 6.1) in the current study reported thoughts of self-harm in the past 30 days. To our knowledge this is one of few studies to report rates of thoughts of self-harm

Table 2Prevalence of youth characteristics between youth who have and have not visited a self-harm/suicide website in the past year ($N = 1560$).

Characteristic	Self-harm/suicide websites		
	No ($n = 1538$) %	Yes ($n = 22$) %	Unadjusted OR (95% CI)
Depression symptoms in past 30 days (mean, SD) ^a	2.6 (2.8)	6.8 (3.5)	-6.9*** ^b
Wanted to hurt self in past 30 days	4	55	27.2 (11.3, 65.2)***
Wanted to kill self in past 30 days	2	36	27.8 (10.9, 71.0)***
Victimization			
Physical or sexual abuse	3	14	5.8 (1.6, 20.3)**
Peer or sibling abuse	27	45	2.2 (0.9, 5.2)
Statutory rape	4	27	8.8 (3.3, 23.2)***
Dating violence victim	2	0	1.0 (1.0, 1.0)
Online harassment	11	36	4.7 (1.9, 11.3)***
Problem behavior/conflict			
Delinquency (any)	21	41	2.6 (1.1, 6.2)*
Substance use (any)	15	59	8.3 (3.5, 19.7)***
High parent-child conflict	9	14	0.6 (0.3, 3.7)
Demographic characteristics			
Age (mean, SD)	14.2 (2.1)	14.8 (1.8)	-1.4 ^b
Female	50	55	1.2 (0.5, 2.8)
Low income household	12	18	1.6 (0.5)
Lives with both biological parents	66	55	0.6 (0.3, 1.4)
White race	73	68	0.8 (0.3, 1.9)
Black race	15	18	1.3 (0.4, 3.9)
Hispanic ethnicity	10	14	1.4 (0.4, 4.8)

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.^a Depression score calculated minus self-harm thoughts and thoughts of suicide.^b t -test scores reported in unadjusted OR column.

among a national sample of youth in the United States (Muehlenkamp et al., 2012). The most comparable study consisted of over 60,000 U.S. adolescents in grades 9 and 12 using a single item measure of actual NSSI; finding a 12-month prevalence rate of 7.3% (Taliaferro et al., 2012).

Past year rates of youth exposure to websites which encourage self-harm and suicide

The 12-month rate for visiting websites that encourage self-harm or suicide is low (1%; 95% CI: 0.51, 1.49). Even though some of these websites exist, they are not frequented by the great majority of adolescents online. This may be related to

Table 3Stepwise logistic regression analysis of characteristics associated with thoughts of self-harm ($N = 1560$).

	Step 1: websites	Step 2: + depression	Step 3: + victimization	Step 4: + problem behavior/conflict	Step 5: + demographics
	OR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Self-harm/suicide websites	27.1 (11.3, 65.1)***	12.0 (4.4, 32.8)***	12.2 (4.3, 34.6)***	10.9 (3.7, 31.7)***	11.2 (3.7, 33.7)***
Depression symptoms ^a		1.5 (1.4, 1.6)***	1.5 (1.3, 1.6)***	1.5 (1.3, 1.6)***	1.5 (1.3, 1.6)***
Victimization					
Physical or sexual abuse			1.2 (0.4, 3.3)	1.1 (0.4, 3.1)	1.1 (0.4, 3.2)
Peer or sibling abuse			1.6 (0.9, 2.8)	1.5 (0.9, 2.7)	1.5 (0.8, 2.7)
Statutory rape			0.8 (0.3, 2.3)	0.7 (0.2, 1.9)	0.6 (0.2, 1.9)
Dating violence victim			4.6 (1.4, 15.2)**	3.5 (1.0, 11.9)*	3.8 (1.1, 13.3)*
Online harassment			1.3 (0.7, 2.5)	1.2 (0.6, 2.3)	1.2 (0.6, 2.4)
Problem behavior/conflict					
Substance use (any)				1.5 (0.8, 3.0)	1.7 (0.8, 3.5)
Delinquency (any)				1.5 (0.8, 2.8)	1.5 (0.8, 2.8)
High parent-child conflict				0.9 (0.5, 1.9)	0.8 (0.4, 1.7)
Demographic characteristics					
Age					1.0 (0.8, 1.1)
Female					1.2 (0.7, 2.2)
Low income household					1.8 (0.8, 3.9)
Lives with both biological parents					1.5 (0.8, 2.7)
White race					0.4 (0.2, 0.9)*
Black race					1.1 (0.5, 2.6)
Hispanic ethnicity					0.9 (0.4, 2.2)

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

aOR = Adjusted odds ratio; CI = confidence interval.

^a Depression score calculated minus thoughts of self-harm and thoughts of suicide.

Table 4Stepwise logistic regression analysis of characteristics associated with thoughts of suicide ($N = 1560$).

	Step 1: websites	Step 2: + depression	Step 3: + victimization	Step 4: + problem behavior/conflict	Step 5: + demographics
	OR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Self-harm/suicide websites	27.7 (10.9, 70.9)***	10.7 (3.5, 32.3)***	10.2 (3.2, 32.4)***	7.0 (2.1, 23.9)**	7.5 (2.1, 27.2)**
Depression symptoms ^a		1.5 (1.4, 1.7)***	1.5 (1.3, 1.6)***	1.5 (1.3, 1.6)***	1.5 (1.3, 1.7)***
Victimization					
Physical or sexual abuse			2.8 (0.9, 8.4)	3.0 (1.0, 9.2)*	2.7 (0.9, 8.7)
Peer or sibling abuse			2.7 (1.3, 5.7)**	3.0 (1.4, 6.5)**	3.3 (1.5, 7.6)**
Statutory rape			1.3 (0.4, 4.2)	0.9 (0.3, 3.1)	0.7 (0.2, 2.7)
Dating violence victim			2.6 (0.6, 11.9)	1.7 (0.3, 8.7)	1.6 (0.3, 8.7)
Online harassment			1.0 (0.4, 2.4)	0.7 (0.3, 1.9)	0.9 (0.3, 2.2)
Problem behavior/conflict					
Substance use (any)				4.0 (1.6, 9.9)**	3.8 (1.5, 9.5)**
Delinquency (any)				0.6 (0.2, 1.4)	0.7 (0.3, 1.6)
High parent-child conflict				1.1 (0.4, 2.7)	1.0 (0.4, 2.6)
Demographic characteristics					
Age					1.1 (0.9, 1.4)
Female					0.9 (0.4, 1.9)
Low income household					0.6 (0.2, 2.2)
Lives with both biological parents					1.1 (0.5, 2.6)
White race					1.3 (0.4, 5.0)
Black race					3.6 (0.9, 14.6)
Hispanic ethnicity					0.3 (0.04, 1.5)

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

aOR = Adjusted odds ratio; CI = confidence interval.

^a Depression score calculated minus thoughts of self-harm and thoughts of suicide.

research suggesting that while online communities related to self-harm are increasingly common (Whitlock and colleagues, 2006), websites that specifically encourage these behaviors are few in number (Lewis & Baker, 2011). In other online forums, such as in YouTube videos related to self-harm, there is little evidence that there is a focus on encouraging self-harming behaviors (Lewis et al., 2011). Declining rates of youth who seriously consider attempting suicide (16% in 2001) (Child Trends Data Bank, 2014) and a stabilization of rates of NSSI and deliberate self-harm (Muehlenkamp et al., 2012) are promising. Additionally, these and other findings (Rodham, Gavin, & Miles, 2007) may suggest that accessing such websites provides support or perhaps is not consistently contributing to actual self-injurious behavior in a large and concrete way. However, for the youth who do access these websites, the content may serve to normalize or reinforce already existing behaviors (Lewis & Baker, 2011; Lewis et al., 2011; Whitlock, Powers, et al., 2006). Future research could focus more specifically on the nature of these websites and associations with actual behaviors, as the cross-sectional nature of these data do not allow for such analyses. Perhaps not surprisingly, rates of access were higher among youth who reported past month thoughts of self-harm and thoughts of suicide.

Characteristics of youth who visit self-harm/suicide websites

Youth who access these sites present with similar characteristics as those who report actual thoughts of self-harm or thoughts of suicide. For instance, this group of youth was found to have elevated depressive symptoms, as is true with youth who self-injure (Whitlock, Powers, et al., 2006) and want to commit suicide (Balázs et al., 2013). Our finding that youth with depression symptoms are significantly more likely than their non-depressed peers to visit self-harm/suicide websites may suggest that these youth are more actively seeking out websites that reinforce their self-destructive compulsions. It is certainly equally possible that youth attracted to such websites are more prone to depression. Indeed, one of the most significant risk factors for suicide is major depression (Centers for Disease Control, 2014; McLean et al., 2008). Further, youth who visit such websites are similar to others who self-injure or have thoughts of suicide in that both have a likelihood of abuse, statutory rape histories (Evans, Hawton, & Rodham, 2005), and substance use (Beautrais, 2000; Cash & Bridge, 2009; Kloos et al., 2007). There is an urgent need for continued exploration of the risks and opportunities of this new environment from the perspective of early identification of vulnerable youth and referrals into crisis intervention and ongoing care.

The relationship between visiting websites and actual thoughts of self-harm and thoughts of suicide

Even after taking into account several known risk factors, exposure to self-harm and suicide sites that encourage such behaviors were related to a seven-fold increase in likelihood of concurrent reports of thoughts of suicide and an 11-fold increase in likelihood of thoughts of self-harm. It may be that some youth are using the Internet to connect with other people with the goal of reinforcing their intentions (Fortune & Hawton, 2005; Murray & Fox, 2006; Whitlock, Powers, et al.,

2006). Adolescents may be particularly influenced by these kinds of websites and online communications as compared to adults because they generally have higher rates of other factors that also increase the risk of suicide and self-injury, such as substance abuse and depression (Dobson, 1999). Still, more information is needed about whether exposure to websites that encourage self-harm and suicide increases the probability of actual behavior before we can consider their risks in more than just an exploratory way. Longitudinal research is the ideal research methodology for such information.

Implications for clinical practice

These findings suggest implications for practitioners working with youth, particularly youth having thoughts of self-harm or suicide. Professionals need to not only be aware of the existence and potential risk of such websites but also be able to talk about them with youth in a meaningful, balanced way. Indeed, regular assessment of the use of self-injury websites is not common in clinical settings, but could prove critical for the long-term benefits of young clients (Whitlock, Lader, & Conterio, 2007). Recent literature has proposed guidelines that may support work with youth who self-harm and who engage in online activity related to self-harm (Lewis, Heath, Michal, & Duggan, 2012).

Additional clinical considerations could include seeking an understanding of the motivations behind the use of such websites which could range from thoughts of engaging in actual self-injurious behavior or attempts at suicide for themselves, concerns for a family member or a friend who is depressed or has professed an interest in engaging in such behavior, wanting to stop their own self-injurious thoughts or behavior, or even research for a school project. Knowledge about the content of different sites is also important.

Indeed, in addition to websites that encourage or otherwise support self-harm or suicidal behavior, some may act as a deterrent, dispel myths, and offer support (Rodham, Gavin, Lewis, St. Denis, & Bandalli, 2013), these websites may be a source of empathy and understanding and serve as a community to support coping with social and psychological distress (Baker & Fortune, 2008). Research has noted the positive and potentially beneficial experiences of online health resources (Becker & Schmidt, 2005; Hoffmann, 2006; Murray & Fox, 2006; Prasad & Owens, 2001; Whitlock, Powers, et al., 2006). Possible benefits of the Internet for depressed and suicidal youth specifically include support groups (Becker & Schmidt, 2005; Cohen & Putney, 2003; Murray & Fox, 2006) and opportunities for self-help (Prasad & Owens, 2001; Whitlock, Powers, et al., 2006), prevention (Baume, Rolfe, & Clinton, 1998) and intervention (Childress & Asamen, 1998). For example, Whitlock and colleagues found that online interactions within more than 400 self-injury message boards provided positive informal social support for this population (Whitlock, Powers, et al., 2006). Taken together, the Internet may increasingly serve as an important supplemental source of mental health information and care for those youth and their families that encounter barriers through more traditional routes. These supports may include online symptom screening tools, online support groups, online individual therapy, online group therapy, and self-directed therapy. An important first step for clinicians would be to have knowledge of the top recommended sites for accurate and beneficial content. There are clear differences between professionally-driven websites (e.g., Self-Abuse Finally Ends alternatives: S.A.F.E.; www.selfinjury.com) and peer-driven websites in terms of the quality and nature of the content (Duggan et al., 2012). See Lewis and colleagues for further suggestions of credible websites for patients who self-injure (Lewis, Mahdy, Michal, & Arbutnott, 2014). Access to beneficial websites was not queried in the current paper but a direct comparison with those that encourage self-directed violence is critical for putting exposure to such sites into perspective.

Thoughts of self-injury and thoughts of suicide are private behaviors and therefore may be difficult to identify by parents, teachers and clinicians. Symptoms of depression, however, are generally more readily apparent in clinical settings. Given the association between depressive symptomatology and exposure to such sites, probing for access to these sites among youth with depressive symptomatology may be a way to identify youth with larger concerns of self-directed violence.

Limitations

Our findings should be considered within the limitations of the study's design and measures. The study's methodology of using a telephone survey with a cross-sectional design may have posed limitations. The response rate for the study likely reflects a more general decline in respondents' willingness to participate in telephone surveys (Curtin, Presser, & Singer, 2005). However, national telephone surveys continue to provide accurate data and representative samples (Pew Research Center, 2004). Additionally, the inclusion of a small cell-phone sample may introduce unmeasured differences in these two populations of telephone users. The cross-sectional nature of these data do not allow for causal inferences or conclusions. There are several limitations related to the measures used to operationalize key variables in this study. The measures do not indicate whether youth who access self-harm or suicide websites went there on purpose, involuntary, for their own sake, or out of concern for someone else. The measures for self-harm and thoughts of suicide consisted of one item each and could be expanded to better operationalize these terms. These measures asked only about thoughts of self-harm/suicide and did not include questions related to actual behaviors; that same question also groups together self-harming behaviors. A more thorough set of questions in the future may lead to different results. Finally, the reliance on youth self-report may influence accuracy, as some youth respondents may not have disclosed their problems with the Internet or online activities. However, at least one study has found consistency between self-diagnosis of Internet problems and Internet addiction (Widyanto & McMurren, 2004).

Conclusion

In the United States, a notable minority of youth are currently accessing websites that encourage self-harm or suicide – 1% of a national sample of Internet-using youth. This is far less than the 16% of youth and young adults who seriously consider attempting suicide in the same timeframe (Child Trends Data Bank, 2014). There is an association, however, between accessing such sites and actual thoughts of self-harm or suicide. Professionals are encouraged to assess the use of technology in their young clients who present with thoughts of self-harm, thoughts of suicide, or depressive symptomatology. Such knowledge might also serve as an opportunity for providing treatment options through professional websites that have been vetted and deemed supportive of recovery.

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