



Online behavior of youth who engage in self-harm provides clues for preventive intervention

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Abstract

Objective. To explore the Internet use and interpersonal interactions of youth reporting deliberate self-harm as defined by any non-fatal act, regardless of intention.

Method. The Second Youth Internet Safety Survey is a nationally representative telephone survey of 1500 Internet users (ages 10–17) in the United States, conducted March to June 2005.

Results. Youth reporting deliberate self-harm in the past 6 months (3%) were significantly more likely than other youth to have a sexual screen name or to talk with people known only online about sex (35% versus 5%) and to use chat rooms (57% versus 29%). All youth were equally likely to talk online with people known in person, yet youth engaging in deliberate self-harm were significantly more likely also to have a close relationship with someone met online (38% versus 10%). Three quarters (76%) of youth reporting self-harm used instant messaging.

Conclusion. Findings suggest that youth who engage in self-harm may be more likely to engage in online behaviors that have the potential to place them in risky situations. Programs aimed at preventing deliberate self-harm should consider adding chat room and instant messaging to their telephone hotline capabilities.

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Introduction

Non-suicidal self-injury (NSSI) is associated with increased risk of considered and attempted suicide, psychological distress, and a history of child abuse (Whitlock et al., 2006). Some researchers view self-harm or self-injury as part of a continuum of suicidal behavior encompassing any non-fatal act, regardless of intention (e.g. Rodham et al., 2005) while others view it as a distinct syndrome (Muehlenkamp and Gutierrez, 2004, 2007; Walsh, 2005). Regardless of the scope of the definition, both NSSI and suicidality are important adolescent health issues. Similar to Rodham et al. (2005), in the current paper we refer to deliberate self-harm as any non-fatal act, regardless of intention.

The Internet has become a central element in the lives of children and adolescents. It has impacted how youth conduct

their social lives, pursue their educations and entertain themselves (e.g., Lenhart and Madden, 2007a,b; Lenhart et al., 2005). Although empirical research is practically non-existent, recent reports, based on investigations of online chat rooms, message boards, and newsgroups suggest that the Internet can have both beneficial and detrimental influences on youth who are engaging in deliberate self-harm. Benefits include support groups for depressed and suicidal youth (Becker and Schmidt, 2005; Cohen and Putney, 2003; Murray and Fox, 2006) and opportunities for self-help (Prasad and Owens, 2001; Whitlock et al., 2006), prevention (Baume et al., 1998) and intervention (Childress and Asamen, 1998; Hoffmann, 2006). Detrimental aspects comprise web sites that encourage self-harm and instruction of successful techniques (Becker and Schmidt, 2005; Fortune and Hawton, 2005), and networking with people who are also interested in and encourage suicide and self-harm (Baume et al., 1998; Fortune and Hawton, 2005; Whitlock et al., 2006). While it is important to understand the Internet help-seeking behavior – both positive and negative – of youth who

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are engaging in deliberate self-harm, understanding more globally the Internet use and interactions reported by these young people will provide valuable clues as to where best to reach these young people online. This exploratory paper will provide some initial insight into the connections between deliberate self-harm and Internet use and online interactions.

Methods

The Second Youth Internet Safety Survey (YISS-2) is a nationally representative telephone survey of 1500 youth Internet users conducted between March and June of 2005. YISS-2 used a structured interview designed to estimate the prevalence of youth receiving unwanted online experiences and to identify related risk factors, such as Internet use characteristics, online relationships, online risky behavior, and offline behaviors and experiences. The research protocol was 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.

Sampling and methods

Households were randomly identified via random digital dial and all data were collected via structured telephone interviews. Eligibility criteria required the youth to be between the ages of 10 and 17 years, have used the Internet at least once a month for the previous 6 months at any location, and be English speaking. A final sample size of 1500 was pre-determined based upon a maximum expected sampling error of $\pm 2.5\%$ at the .05 significance level. The response rate was 45% (American Association for Public Opinion Research, 2005).

Study respondents

One caregiver and one youth were surveyed in each participating household. Caregivers provided verbal informed consent for their own participation and youth participation. Youth also provided verbal informed assent. Youth interviews were scheduled when youth could talk freely. On average, the caregiver interview lasted 10 min and the youth interview lasted for 30 min. Youth who participated received \$10. More details about the YISS-2 methodology can be found elsewhere (Wolak et al., 2006). Characteristics of the final sample were similar to those reported by recent national studies of the online population in terms of race, ethnicity, and household income (Cheeseman Day et al., 2005; Lebo, 2004; Lenhart et al., 2005).

Measures

Deliberate self-harm

This was assessed using one item from the Youth Self-Report (YSR) version of the Child Behavior Check List (Achenbach, 1991). Youth were asked to rate on a 3-point Likert scale how true the following statement was: "Now or in the past 6 months... I deliberately try to hurt or kill myself". Responses were dichotomized to compare youth who reported the statement was "very true or often true" (1%, $n=7$) or "somewhat or sometimes true" (2%, $n=30$) (coded as '1') with those reporting the statement was "not true" (97%, $n=1463$) (coded as '0').

Internet behavior

Five types of online behavior are examined in the current study (all types were coded '0' for symptom absent and '1' for symptom present): (1) *sexual behavior* was indicated if youth responded positively to either of the following: using a sexual screen name or talking about sex online with someone not known in person. (2) *Viewing pornography* was indicated if the youth reported either going to X-rated sites on purpose or downloading sexual pictures from a file-sharing program. (3) *Posting personal information* was indicated if youth had posted any of the following information about themselves: real last name, telephone number, school name, home address, age or year of birth, or a picture. (4) *Sending personal information* was indicated if youth had sent any of the above information to someone met online. (5) *Aggressive behavior* was in-

dicated if youth reported making rude or nasty comments to someone on the Internet or using the Internet to harass or embarrass someone they were mad at. All behaviors were asked of the youth "in the past year."

Online interactions

Youth were asked about their interactions with others online "in the past year." They were asked to indicate whether they had a close online relationship with someone they met on the Internet meaning "someone they could talk online with about things that were real important to them." They also indicated whether they used the Internet to communicate with people *known in person* (e.g., frequently seen peers) as well as people *met online* (e.g., through family or friends or some other way, such as in chat rooms). All characteristics were coded '0' for symptom absent and '1' for symptom present.

Psychosocial characteristics

Child emotional problems were assessed using the Youth Self-Report (YSR) of the Child Behavior Check List (Achenbach, 1991). The current article includes two subscales measuring *social problems* and *withdrawal/depression*. For each subscale, continuous *T* scores were included in analyses.

High parent-child conflict was derived from a factor analysis of three items (i.e., nagging, yelling, and taking away privileges) scored with a 4-point Likert scale. Based upon a common latent factor (eigenvalue: 1.69; percent of variance: 56.2), a composite variable was created to measure parent-child conflict (M: 3.98, SD: 1.43). Due to indications of non-linearity, this was dichotomized at 1 standard deviation above the mean (versus 'other') to reflect high conflict.

Given the association between suicidal thoughts and behaviors and history of physical or sexual abuse (Evans et al., 2005b), the concurrent report of abuse in the previous year was included in the analyses (coded '0' for symptom absent and '1' for symptom present). *Physical or sexual abuse* was indicated if youth responded positively to either of the following questions: "Did a grown-up taking care of you hit, beat, kick or physically abuse you in some way?" or "Have you been forced or made to do sexual things by someone else?" *Other interpersonal victimization* was indicated if youth reported any of the following: simple assault, gang assault, peer assault, or bullying.

Demographic characteristics

A number of demographic characteristics were gathered from caregivers including the age of their child (continuous variable ranging from 10 to 17 years old), youth sex (females coded as '1' and males coded as '0'), highest level of education attained in the household (coded as college degree or higher versus other), annual household income (coded as less than \$20,000 versus other), and their marital status (coded as married versus other). Youth reported their race (e.g., White, Black, Asian) and ethnicity (i.e., Hispanic or Latino/a). Youth had the option of classifying themselves in more than one racial group as well as Hispanic ethnicity separately. Detailed information about these sample characteristics is published elsewhere (Wolak et al., 2006).

Internet use characteristics

It is likely that familiarity with and usage of the Internet in general will affect one's online experiences and interactions. Youth estimated the average number of days a week and hours a day they spent online in a typical week, as well as their Internet expertise and the importance of the Internet to themselves. These four variables were included in a factor analysis, with one latent variable indicated (eigenvalue: 1.71; percent of variance: 42.9). As such, a summation score was created (M: 0.41, SD: 0.31) and dichotomized at 1 standard deviation above the mean (versus other) to reflect *high Internet use*. Youth also reported whether or not they used the Internet in a variety of ways (coded as yes=1 and no=0) including for chat rooms, instant messaging, and blogging. Youth also reported on whether they used the Internet at home.

Statistical analysis

Using SPSS 14.0 (SPSS, 2006) a series of bivariate Chi-square cross tabulations and independent sample *t*-tests were run to examine similarities and differences in demographic characteristics, psychosocial characteristics, Internet use and online interactions between youth reporting deliberate self-harm in the previous 6 months versus those who had not. Logistic regression was used to quantify this comparison while adjusting for race, age, sex, household income,

highest level of household education attained, whether the youth lived with both biological parents, offline victimization, parent–child conflict, withdrawal/depression, and social problems.

Results

Three percent of respondents reported that engaging in deliberate self-harm was at least somewhat or sometimes true if not very true or often true for them in the previous 6 months. Differences in demographic and psychosocial characteristics by report of deliberate self-harm are shown in Table 1.

Youth who reported deliberate self-harm were more likely to have high Internet use, use chat rooms, have a close online relationship, interact with someone met online in “some other way” (e.g., in a chat room), engage in sexual behavior online, and send personal information about themselves online. No differences were identified between youth who engaged in deliberate self-harm and those who did not in terms of interacting with people online who they had previously known in person. Detailed results are shown in Table 2.

Discussion

Findings reveal opportunities for reaching and intervening online with youth who engage in deliberate self-harm. Almost half of youth reporting deliberate self-harm also report high Internet use; this is twice the frequency of high Internet use among otherwise similar youth not reporting self-harm. Thus, the Internet may be where many youth engaging in deliberate self-harm are, suggesting that this is an important place for intervention services and support for these youth to be. Three-quarters (76%) of youth reporting deliberate self-harm use instant messaging and more than two times as many youth who self-harm are using chat rooms (57%) compared to other youth (29%). This suggests that interactive communications online may be an important avenue for immediate intervention. Hotlines may do well to enhance their telephone services with these online communication tools.

A concerning picture of potentially risky behavior online is emerging for youth who report deliberate self-harm. Compared to otherwise similar youth, those reporting deliberate self-harm are seven times more likely to report sexual behavior (i.e., having a sexual screen name, talking about sex with someone known only online), 3.5 times more likely to report a close online relationship and twice as likely to send personal information to someone online after adjusting for other potentially influential factors. Together, and in line with previous research, these behaviors suggest that youth reporting deliberate self-harm may be using the Internet to connect with others (Murray and Fox, 2006; Whitlock et al., 2006). It is possible that what we are seeing is an outlet where these youth are able to form bonded relationships with someone online who is having a positive influence on their behavior. In fact, research suggests that this may be the case. Whitlock and colleagues found that online interactions within more than 400 self-injury message boards provided informal social support for this population. Further, findings from Murray and Fox indicate that the majority of respondents from a self-harm Internet discussion group viewed their involvement as having positive effects on their self-harming behavior (e.g., reducing frequency and severity of behavior). So, if people involved in such groups have good intentions or have a therapeutic response to the youth's distress, this social support may have a positive effect on the youth's behavior.

At the same time, participants in online support and discussion groups typically have similar interests in self-harm and may thus be simply increasing the youth's network of individuals in support of self-harm and potentially helping to normalize the behavior (Fortune and Hawton, 2005; Murray and Fox, 2006; Whitlock et al., 2006). Further, given the strong association between self-harming behavior and online sexual behavior, it appears likely that at least some of these youth are at risk for a sexually exploitative relationship through an online environment. This is consistent with previous literature that suggests sexual activity may be associated with self-harm for both boys and girls (Patton et al., 1997). There is also a noted

Table 1
Demographic and psychosocial characteristics of youth engaging in deliberate self-harm ($N=1500$)

Youth characteristic	Youth with no deliberate self-harm (97%, $n=1463$)	Youth with deliberate self-harm (3%, $n=37$)	Odds ratio or mean difference (95% confidence interval)
Demographic characteristics			
Female	50%	81%	4.3 (1.9, 9.8)***
Age (mean)	14.23	14.59	-.37 (-1.04, .31)
Caregiver has college degree or higher	54%	59%	1.2 (.63, 2.4)
Household income <\$20,000	8%	3%	.31 (.04, 2.2)
Lives with both biological parents	62%	46%	.52 (.27, 1.0)*
White race	76%	78%	1.1 (.52, 2.5)
Black race	13%	11%	.81 (.29, 2.3)
Hispanic ethnicity	9%	19%	2.5 (1.1, 5.7)*
Psychosocial characteristics			
Physical or sexual abuse	3%	24%	11.1 (4.9, 25.1)***
Other interpersonal victimization	38%	68%	3.4 (1.7, 6.9)***
High parent–child conflict	13%	41%	4.7 (2.4, 9.1)***
Withdrawal/Depression (mean)	53.02	60.00	-6.98 (-10.45, -3.51)***
Social problems (mean)	53.63	61.27	-7.64 (-10.30, -4.98)***

Data were collected from a nationally representative sample of youth (ages 10–17) in the United States, between March and June 2005. * $p<.05$, *** $p<.001$.

Table 2
Prevalence (%) of Internet use and interactions among youth engaging in deliberate self-harm ($N=1500$)

Youth characteristic	Youth with no deliberate self-harm (97%, $n=1463$), % (n)	Youth with deliberate self-harm (3%, $n=37$), % (n)	Adjusted odds ratio (95% CI) ^a
Amount and location of Internet use			
High Internet use	27 (391)	43 (16)	2.1 (1.0, 4.7)*
Home use	91 (1328)	95 (35)	1.7 (.37, 8.3)
Online activities			
Chat rooms	29 (431)	57 (21)	2.2 (1.1, 4.7)*
Blogging	16 (234)	24 (9)	1.2 (.50, 2.9)
Instant messaging	68 (989)	76 (28)	1.4 (.55, 3.6)
Online interactions			
Known in person			
Infrequently seen peers	55 (805)	62 (23)	.99 (.43, 2.3)
Frequently seen peers	77 (1130)	81 (30)	.87 (.32, 2.3)
Frequently seen family members	52 (757)	46 (17)	.60 (.28, 1.3)
Met online			
Close online relationship	10 (150)	38 (14)	3.5 (1.5, 8.1)**
Method of meeting online			
Through family or friends	32 (469)	57 (21)	1.4 (.66, 3.1)
Getting information from	14 (08)	30 (11)	1.1 (.46, 2.9)
Met some other way (e.g., in chat room)	26 (379)	59 (22)	2.7 (1.3, 5.8)**
Online behavior			
Sexual behavior	5 (73)	35 (13)	7.2 (2.9, 18.2)***
Viewing pornography	13 (193)	27 (10)	2.3 (.81, 6.3)
Aggressive behavior	29 (420)	65 (24)	2.2 (.94, 5.1)
Sending personal information	25 (369)	57 (21)	2.2 (1.0, 4.9)*
Posting personal information	56 (814)	76 (28)	1.9 (.78, 4.4)

Data were collected from a nationally representative sample of youth (ages 10–17) in the United States, between March and June 2005.

^a Odds ratio and 95% confidence interval (CI) are adjusted for all characteristics listed in Table 1. * $p < .05$, ** $p < .01$, *** $p < .001$.

overlap in abuse history and deliberate self-harm (Evans et al., 2005b). Our findings therefore take into account one's sexual and physical abuse status, increasing the importance of the finding.

Similar to previous research of online interactions of youth who report depressive symptomatology (Ybarra et al., 2005), youth who report deliberate self-harm are equally likely to report talking online with people they know in person but significantly more likely to report talking with people they know only online compared to youth who do not self-harm. These youth do not appear then, to be withdrawing socially from their known peers. Previous research paints a complex picture of social interactions for youth who report deliberate self-harm. As with youth who do not report self-harm, these youth are most likely to turn to friends for help (De Leo and Heller, 2004; Evans et al., 2005a), but they also are more likely to report self-harm behavior by friends and family members (De Leo and Heller, 2004; Hawton et al., 2002). Whether friends known in person are exerting a positive or alternatively, negatively reinforcing effect is unknown.

As expected, youth in the current survey reporting deliberate self-harm are significantly more likely to report physical or sexual abuse and other interpersonal victimization (Evans et al., 2005b; Hawton et al., 2002; Whitlock et al., 2006), adverse family and social experiences (Skegg, 2005), and withdrawal and depression (Hawton et al., 2002). Self-harm is often a manifestation of such stressful experiences which can result in feelings of anger and helplessness (Favazza and Rosenthal, 1993). It is not surprising that risky and self-harmful behaviors

noted offline for these youth are transferring to online behavior. It is an important wake-up call however for adolescent health professionals to be mindful of including online behaviors in their risk assessments.

Limitations

Data are cross-sectional. It cannot be determined whether noted online behaviors are the cause, effect, or simple correlate of self-harm behavior. Also, it is likely that the sample is biased toward higher functioning youth in general; those who are extremely suicidal or depressed may be less likely to be completing a 30-min survey. It is possible that a clinical sample may reveal even more differences and possibly more risky behavior online than is currently reported. Further, despite the low response rate (.45), national telephone surveys continue to obtain representative samples of the public and provide accurate data about the views and experiences of Americans (Pew Research Center, 2004). The measure of self-harm was limited to only one question. It refers to any non-fatal act, regardless of intention and as such assumes NSSI and suicidality are part of the same behavioral phenomenon. There may be important differences in the online behavior of adolescents who engage in NSSI who do and do not report suicidal ideation as has been found in previous research (Muehlenkamp and Gutierrez, 2007). Thus, it will be important to examine such nuances in self-harm behavior in the future. Finally, the measure of self-harm only refers to the past 6 months; there could be other youth in the sample with self-harm behavior in the past year that are not

captured as part of this group. These youth may be different than the identified self-harm group in some ways we are unable to determine.

Conclusion

Similar to the offline world, youth engaging in deliberate self-harm appear to be more likely to engage in potentially risky behavior online, including the formation of close relationships with people met online and online sexual behavior. Youth who engage in deliberate self-harm are also significantly more likely than otherwise similar youth to be high Internet users, suggesting the Internet may be an important yet underutilized mode of intervention. Programs aimed at preventing deliberate self-harm should consider adding chat room and instant messaging to their telephone hotline capabilities.

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