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The Virtual Cutting Edge: The Internet and Adolescent Self-Injury

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The 2 studies reported here use observational data from message boards to investigate how adolescents solicit and share information related to self-injurious behavior. Study 1 examines the prevalence and nature of these message boards, their users, and most commonly discussed topics. Study 2 was intended to explore the correlations between content areas raised for discussion. Both studies were intended to shed light on the role of message boards in spreading information about self-injurious practices and influencing help-seeking behavior. More than 400 self-injury message boards were identified. Most are populated by females who describe themselves as between 12 and 20 years of age. Findings show that online interactions clearly provide essential social support for otherwise isolated adolescents, but they may also normalize and encourage self-injurious behavior and add potentially lethal behaviors to the repertoire of established adolescent self-injurers and those exploring identity options.

Keywords: adolescence, self-injury, Internet, mental health

> I think my greatest fear is to be forgotten. A teacher I had last year doesn't even remember my name—it makes me think that no one remembers me. How do I know I exist? At least I know I exist when I cut. (Self-injury message board post)

Because adolescents use the Internet for the purpose of connecting with others at higher rates than any other age group (Lenhart, Rainie, & Lewis, 2001), a better understanding of how Internet use affects their social and emotional development is an important line of scientific inquiry. Indeed, a small but growing body of research is beginning to examine the implications of various electronic forums for social interaction (e.g., chat rooms, news groups, message boards) on adolescent behavior (e.g., Gross, 2004; Subrahmanyam, Greenfield, & Tynes, 2004; Tynes, Reynolds, & Greenfield, 2004). The Internet may have particular relevance for adolescents who feel marginalized, because it provides a low-risk venue for finding others who share their perceived or real differences and exchanging information that is difficult to convey in person or when using one's real identity (McKenna & Green, 2002). Adolescents who intentionally injure themselves are one such group. Although research is nascent, adolescent self-injury appears to be increasingly common (Welsh, 2004; Yates, 2004) and, as this article shows, is a practice around which many virtual communities have formed. To date, almost nothing has been written about the existence of self-injury Internet forums, the types of exchanges that occur there, or the ways in which these exchanges may affect the development of adolescents and their ability to cope with distress.

Adolescent Internet Use

Computer access and use among adolescents have grown exponentially over the past decade (Becker, 2000). More than 80% of American youth 12 to 17 years of age use the Internet, and nearly half log on daily (Lenhart, Madden, & Hitlin, 2005). Once connected, adolescents engage in a wide variety of activities, including doing schoolwork, playing games, shopping, and downloading music. Research shows, however, that adolescents use the Internet primarily for social reasons (Gross, 2004; Roberts, Foehr, & Rideout, 2005). The Internet has become a virtual meeting place where teens hang out with their peers to pass time. Many adolescents reportedly prefer being online to other media, including the telephone, TV, and radio (2002 Gallup Survey, cited in Heitner, 2002). According to data from the Pew Internet and American Life Project (Lenhart et al., 2005), the vast majority (89%) of teens use e-mail and 75% use instant messaging (IM), which allows them to have multiple simultaneous conversations with a defined group of peers. More than 50% of teens possess more than one e-mail address or screen name, which they can use to send private messages to friends or to participate anonymously in online forums, such as chat rooms (Lenhart et al., 2001).

Some studies suggest that Internet use may facilitate social interaction by making it easier for individuals to connect with others they know as well as with strangers. It serves also as a powerful resource for youth desiring information about socially sensitive topics such as sexuality and interpersonal relations (Suzuki & Calzo, 2004). This form of communication may be especially advantageous for shy, socially anxious, or marginalized youth, enabling them to practice their social skills without the risks associated with "on the ground" interactions (Heitner, 2002; McKenna, Green, & Gleason, 2002; Subrahmanyam et al., 2004). Additionally, online communication may encourage more truthful

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exchanges; many people report a greater willingness to share thoughts and feelings online than they would in face-to-face situations (Lenhart et al., 2001; McKenna & Bargh, 2000). Clearly, the Internet is transforming the social world of adolescents by influencing how they communicate, establish and maintain relationships, and find social support. Nevertheless, the developmental consequences of adolescent Internet use is an area about which little is known (Wartella, Caplovitz, & Lee, 2004).

The Internet and Adolescent Social and Emotional Development

Three central tasks are integral to healthy social development during adolescence: (a) to establish caring, meaningful relationships; (b) to find acceptance and belonging in social groups; and (c) to establish interpersonal intimacy (Baumeister & Leary, 1995; Reis & Shaver, 1988; Sullivan, 1953). Peers play a crucial role in this process, because a positive relationship with peers is important for psychological well-being and social adjustment (Bishop & Inderbitzen, 1995; Hartup, 1996), whereas peer rejection is linked to serious problems, including delinquency, drug abuse, and depression (Hartup, 1996; Merten, 1996).

Early studies of the influence of online interactions on adolescent development suggested that high levels of Internet use may inhibit healthy social development by linking frequent use to social isolation and depression, especially among teenagers (Kraut et al., 1998; Nie & Erbring, 2000). However, these findings have been disputed. A follow-up study conducted by Kraut et al. (2002) found that the effects documented in their earlier study had largely dissipated. They did find, however, that effects of Internet use on depression differed for introverts and extroverts: Extroverts were more likely to feel greater social connection as a result of Internet use, whereas introverts became more depressed and withdrawn. Heitner (2002) found that adolescents who use the Internet to connect with others in real-time social exchanges tended to possess higher peer status, more social skills, and greater social integration than their more socially introverted and withdrawn peers, who spent most of their Internet time in solitary activities. Additionally, adolescents who used chat rooms exhibited lower peer status and had fewer social skills than those who did not. Similarly, Gross, Juvonen, and Gable (2002) found that teenagers with strong social connections use e-mail and IM to reinforce preexisting bonds, whereas those with less developed social networks use the anonymous features of the Internet to find new friends and social outlets, perhaps compensating for what they lack offline. This suggests that chat rooms and similar venues in which adolescents share experiences anonymously may provide a safe forum for less socially adept adolescents to practice social interaction.

Research finds that online exchange decreases social isolation among adolescents and helps them connect with people and explore their identity (Maczewski, 2002; Suzuki & Calzo, 2004). This helps to explain how the Internet may serve as a virtual peer support group where adolescents under stress can express feelings and exchange information about modes of coping. Adolescence is also a time of increased feelings of distress (e.g., depressed mood) and increased access to modes of coping with stress that are independent of parents (Arnett, 1999; Compas, 1987; Petersen, Kennedy, & Sullivan, 1991). To the extent that Internet use can reduce feelings of social isolation, help normalize feelings of distress through a process of self-disclosure and social comparison, and serve as a venue for giving and receiving social support, it may also provide a positive coping resource for distressed youth. Alternatively, Internet use may maintain or increase distress if the information exchanged reinforces negative views of self or suggests destructive or otherwise ineffective coping strategies.

This article examines the role of the Internet among adolescents who use self-injurious behavior (SIB) as a method of coping with distress. The opportunity to explore different identities and roles through the Internet may be particularly important for individuals with stigmatized identities, such as self-injurious youth, who feel that important aspects of their selves need to be concealed in their day-to-day lives. These youth may be especially motivated to participate in electronic forums that allow them to express themselves in a safe and anonymous environment and to find support from others who share their sense of marginalization and understand their behavior. To date, however, not only is very little known about self-injury in the adolescent population, but nothing is known about how this group uses the Internet to connect with others about their practice.

Adolescent Self-Injury as a Developmental Phenomenon

The increasing number of stories in the mainstream press and popular media, as well as the growing number of anecdotal reports by physicians, therapists, and school counselors, suggest that self-injury may be "the next teen disorder" (Welsh, 2004). Although operationally elusive, scholars differentiate self-injury from culturally sanctioned forms of self-mutilation, such as piercing or tattooing, by intention rather than form. Alternatively called *deliberate self-harm, self-injury, self-mutilation,* or *cutting,* self-injurious behavior typically refers to a variety of behaviors in which an individual purposefully inflicts harm to his or her body for purposes not socially recognized or sanctioned and without the obvious intention of committing suicide (Alderman, 1997; Favazza, 1996). Self-injury, which is most often associated with the term *cutting,* also includes intentional carving or cutting of the skin and subdermal tissue, scratching, burning, ripping or pulling skin or hair, swallowing toxic substances, bruising, and breaking bones. Although not typically a suicidal gesture, self-injury is statistically associated with suicide and can result in unanticipated severe harm or fatality (Claes, Vandereycken, & Vertommen, 2003; Favazza, DeRosear, & Conterio, 1989).

There are currently no reliable estimates of the prevalence of self-injury among the general U.S. adolescent population. The vast majority of research on self-injury has been conducted in clinical populations or using small, unrepresentative community samples. These studies generally find that cutting and other forms of self-injury are evident in approximately 20% of the clinical population (Deiter, Nicholls, & Pearlman, 2000) and are linked to high levels of pathology (Brodsky, Cloitre, & Dulit, 1995; Ross & Heath, 2003). The few studies that have been conducted in U.S. community samples of young adults and adolescents are limited by small convenience-based samples and vary in estimates of self-injury prevalence from 4% to 38% (Briere & Gil, 1998; Favazza, 1992; Gratz, Conrad, & Roemer, 2002; Kokaliari, 2005; Muehlenkamp & Gutierrez, 2004). Large studies in Britain estimate that approximately 10% of youth 11 to 25 years of age self-injure. A British report on the national scope of the problem documents a dramatic

increase in disclosures of self-injury to national children's help lines over the 5 years before the study, noting a 65% increase in the last 2 years (Young People and Self Harm: A National Inquiry, 2004).

The reasons for this apparent increase are unclear. Although general awareness of self-injury may lead to increased willingness to disclose the behavior, it may also reflect a true increase in incidence. Social contagion has been identified by some (Yates, 2004; Rosen & Walsh, 1989), because self-injury follows epidemic-like patterns in institutional settings such as hospitals and detention facilities (Matthews, 1968; Ross & McKay, 1979; Taiminen, Kallio-Soukainen, Nokso-Koivisto, Kaljonen, & Helenius, 1998). The possibility that self-injury is communicable may reflect a pattern similar to what Brumberg (1992) argued with regard to the spread of anorexia nervosa in the 1980s, when heightened cultural visibility through the mass media rendered anorexia nervosa an available emotional outlet for individuals with receptive predispositions.

Although no single self-injurer profile has emerged, there is general consensus that self-injury is most common among adolescents. Self-injurious behavior may parallel other problem behaviors, which begin during early adolescence, peak during mid- to late adolescence, and then decline in adulthood (Briere & Gil, 1998; Favazza, 1999; Favazza & Conterio, 1989). However, there is some evidence that self-injurious behavior may follow two distinct patterns similar to the life course-persistent and adolescence-limited trajectories evident in antisocial behavior (Moffit, 1993). One of these begins in early childhood and persists through adulthood. The other follows a typical adolescence-limited course that emerges in early adolescence and declines in late adolescence or early adulthood (Dubo, Zanarini, Lewis, & Williams, 1997; Nixon, Cloutier, & Aggarwal, 2002). Although some research finds females more likely to injure themselves than males (Conterio & Lader, 1998; Favazza, 1999), other studies suggest that the gender gap may be narrower (Briere & Gil, 1998; Deiter et al., 2000; Dulit, Fyer, Leon, Brodsky, & Frances, 1994; Galley, 2003; Martin, Rozanes, Pearce, & Allison, 1995). The difficulty in accurately assessing gender differences in self-injurious behavior may arise from variation in how male and female self-injurers are identified, how they injure themselves, and whether or not they seek treatment (Alderman, 1997; Connors, 2000).

The relationship between self-injury and suicide is important but not clearly understood. Persons who engage in self-injury are more likely to consider or attempt suicide (Walsh & Rosen, 1988; Gardner & Cowdry, 1985; Hawton, Fagg, Simkin, Bale, & Bond, 2000). Nevertheless, in the vast majority of cases self-injury is used to alleviate distress temporarily rather than to signal the intention to end one's life (Favazza, 1996; Rosen & Walsh, 1989; Tantam & Whittaker, 1993). Indeed, some scholars see it as a highly functional alternative to suicide (Alderman, 1997; Strong, 1998). Among clinical populations, self-injury is comorbid with borderline personality disorder, eating disorders, posttraumatic stress disorder, depression, anxiety disorders, and a history of abuse or trauma (Alderman, 1997; Connors, 2000; Conterio & Lader, 1998; Holmes & Nadelson, 2000; Sansone & Levitt, 2002; Yates, 2004). Indeed, some researchers have called for a new *Diagnostic and Statistical Manual of Mental Disorders* impulse-control disorder, *deliberate self-harm syndrome*, which would include self-injurious behavior (Favazza et al., 1989). Most, however, see self-injury as a manifestation of mental or emotional disorders or heterotypic manifestation of childhood trauma (Conners, 2000; Conterio & Lader, 1998; Favaro & Santonastaso, 2002; Strong, 1998; Yates, 2004).

Whether a trauma-linked developmental model will hold true for nonclinical populations is unclear. However, the proximal causes for those who engage in self-injurious behavior in both clinical and community settings are strongly linked to difficulties in regulating strong emotions and coping with stress (Favazza, 1996; Rosen & Walsh, 1989; Ross & Heath, 2002; Tantam & Whittaker, 1993). The cumulative impact of stressful life events that trigger self-injurious episodes, the subsequent shame associated with the self-injurious response, and the secrecy surrounding the behavior create fertile ground for the development of marginalized perceptions of the self. The Internet provides self-injurers with an anonymous venue for sharing actual and fabricated aspects of their true identity among a community of similar others. Because young people with depressive symptomatology are much more likely to talk with strangers online and to disclose personal information than those without depressive symptomatology (Ybarra, Alexander, & Mitchell, 2005), self-injurers may be particularly receptive to using the Internet to locate virtual communities. Although such virtual communities may provide a much-needed source of support and cathartic sharing, the possibility that self-injury is communicable suggests that the Internet may also serve to spread or deepen the practice in adolescent populations.

Aim of the Present Studies

Two studies were designed to explore and document adolescent use of online message boards to share, solicit, and receive information and advice related to self-injurious behavior. Message boards are an electronic venue in which individuals (i.e., "posters") register with the site under a chosen name and are allowed to post thoughts, ask questions, and respond to other posters. Unlike e-mail and IM, which permit private exchange between selected individuals, message boards and chat rooms (in which exchanges occur in real time) are entirely public: All postings are available to all members and, in many cases, nonmembers as well, although nonmembers cannot post material. When individuals log on to a message board, the content varies but typically includes information about the message board purpose and rules as well as direct links to "threads," posts that have been made by users sorted by subject title. Anyone who logs on to a message board may read posts, but only those registered may make a post. Blogs, which are becoming increasingly common, are essentially public electronic diaries. Message board posters frequently link their blog site to their membership identity or the signature line in their posts.

The goal of the first study was to investigate the prevalence and nature of self-injury message boards and their users with the intention of better understanding the general subject categories most commonly raised for discussion. The goal of the second study was to explore the correlations between content areas raised for discussion. Both studies were intended to shed light on the role of message boards in spreading information about self-injurious practices and influencing help-seeking behavior. Studies of the Internet are effectively studies of culture. Participants are free to construct their age and identity as they wish, and studies show that teen Internet users often construct themselves as somewhat older than

they actually are (Gross, 2004). Both studies were approved by the University Internal Review Board and have abided by the stipulation that participant quotes would be paraphrased rather than exact quotes. All quotes used here comply with this requirement. Because the studies use observational methods, active consent was not required.

Study 1: Prevalence and Nature of Self-Injury Message Board Use

The first study was undertaken to describe: (a) the prevalence of self-injury message boards, (b) the number of self-injury message boards advertised jointly with message boards for another disorder or behavior (such as eating or bipolar disorders), (c) the ratio of active and inactive posters, (d) the age range of users, as revealed in their self-descriptions, (e) date of appearance on the Web, (f) the relationship between using message boards and blogs, and (g) the nature of and variation in the content of postings on active message boards.

Method

Identification and selection. For this study, there were two units of analysis: the message board and individual posts in a selected set of message boards. First, to identify the prevalence of self-injury message boards, five Internet search engines were used: Yahoo, Google, MSN, AOL, and Gurl.com. Terms searched included *self-injury, self-harm, self-mutilation,* and *cutting.* More than 400 self-injury message boards were identified using this method; of these, 10 were selected for in-depth content analysis. These boards represented the first 10 listed in each search engine, which are generally those Web sites with the most activity. The moderation level of each of these boards varied as well. Moderation level refers to the degree to which posters are actively monitored for potentially damaging content (such as sharing techniques for self-injury). For example, when a particularly graphic or triggering post is made to a high- or medium-level moderation board, it is blocked altogether (high moderation) or labeled as a potential trigger (medium moderation). We were most interested in message boards with medium and low moderation, because content would be less likely to be censored. Detailed membership and moderation level information for the 10 sites selected was recorded (see Table 1 for a description of the sites; names are withheld to protect confidentiality). A total of 3,219 individual posts, examined over a 2-month period, were coded for themes of interest and used in the content analysis that follows.

In addition to individual-level posts, we were also interested in gathering descriptive information about message board characteristics. Although most message boards do not contain information about date of inception, cross-listing with other topics, and membership characteristics, one of the Internet service providers did permit access to this information. The identity of this search engine is hidden to protect confidentiality. All 140 message boards identified through this engine were examined for dates of inception, number of members, and cross-listing with other conditions.

Measures for message board analysis. Depending on the analysis, the following information was obtained for each message board: date of establishment, mean self-reported user age, number of active and inactive members, percentage of posters with blogs, and colisting with message boards for other behaviors. Date of establishment was determined using information from the home page or, if this was absent, from the date of the first post. The mean range of self-described age was determined by selecting 50 members at random from the site introduction board, where basic member profiles are stored. The number of active and inactive posters was determined by comparing the number of members who have registered but never posted with that of members who have posted. Moderation level was determined by identifying whether there were any instructions to users about allowable and unallowable posts and whether potentially triggering posts (i.e., events that provoke self-injurious behavior) were labeled as such. Cross-listing with other topics refers to the extent to which a message board was advertised as a virtual meeting place for individuals interested in or affected by the intersection of two or more issues (e.g., self-injury and suicide). Cross-listing was measured by examining the formal message board title and description of each board. When a cross-listed board was identified, the cross-listed topic was noted and the message board was considered as a cross-listed board.

Measures for content analysis of postings. The content analysis of posts was conducted using a set of binary (present–absent) codes. These codes were drawn from a synthesis of the research cited previously, from interviews conducted with 15 self-injurers by Janis L. Whitlock, and from pilot message board observations that spanned a 2-week period. A team of three coders systematically reviewed posts and used the constant comparative method (Glaser & Strauss, 1967) to inductively monitor themes. Once the initial set of observations had been coded, thematically grouped clusters were identified (e.g., motivation). The 11 broad categories identified en-

Table 1
Membership Breakdown of Selected Self-Injury Message Boards

	Age (years)					Members w/posts (%)			
Site	Range	*M*	% Female	No. members	% w/Blogs	Never	2–10	>100	Mod level[a]
A	12–44	18.7	88.1	844	30	41.0	20.0	9.5	Low
B	13–54	18.3	90.0	5,259	25	57.0	15.5	7.2	Med
C	14–47	19.4	88.0	5,082	15	14.0	44.1	17.3	High
D	12–37	17.6	74.0	NA	25	31.5	32.8	2.0	Low
E	14–22	17.5	91.5	70	15	45.7	41.5	0	Low
F	14–36	19.6	87.5	6,656	10	63.4	10.9	8.5	Med
G	16–47	20.5	90.0	153	20	65.0	9.8	9.8	Low
H	14–28	18.1	80.0	4,021	30	41.3	15.9	21.0	Med
I	15–46	23.9	80.6	1,427	15	30.4	27.8	9.5	Med
J	13–26	16.4	78.0	2,581	10	50.8	25.0	10.0	Mod

Note. Mod = moderation; NA = not available; Med = medium.
[a] Moderation level was determined by the extent to which the message board moderator blocked or labeled potentially triggering posts. In high-moderation boards, potentially triggering or disruptive posts were blocked entirely. In medium-moderated message boards, triggering or otherwise disruptive posts were identified and labeled. Low-moderation message boards took no steps to identify or block posts of any sort.

Table 2
Number of Self-Injury Message Boards From One Internet Service Established by Year

Year	No. boards	Total membership
1998	1	93
1999	7	949
2000	26	2,831
2001	25	703
2002	28	1,611
2003	19	952
2004	24	806
2005	38	1,698
Total	168	9,643

compassed virtually all message board exchanges and served, along with all specific themes they encompassed, as a coding tool (e.g., loneliness, anger, and dysphoria were all themes in the motivation category). Posts left uncoded were those with little capacity to illuminate understanding of self-injurious behavior, such as idle discussion about a current event or activity. The resulting 11 areas were as follows: (a) informal support and exchange, (b) motivation for self-injury, (c) concealment of self-injurious behavior (e.g., anxiety about exposure, methods for concealment of cuts and scars), (d) addiction language (e.g., days self-injury free, difficulty stopping), (e) formal help seeking and treatment, (f) sharing techniques, (g) links to other mental health or behavioral conditions known to be associated with self-injurious behavior, (h) references to popular culture, (i) perceptions of non-self-injurers reactions to self-injurious behavior, (j) perception of self and behavior (e.g., self-worth, lovability, dissociation), and (k) venting or apologizing. These areas contained a total of 70 themes into which nearly all posts could be categorized.

Coding of posts. A content analysis was conducted on all original and follow-up responses to the original post in 10 message boards over a 2-month period. A time frame of 2 months was selected to ensure adequate breadth in content areas. A total of 3,219 posts were examined during this period. Both original posts and responses to posted messages were coded. Because not all posts contained content relating to the coding scheme, the total number of posts examined exceeds the total number of posts to which a code was assigned (2,942). (The criterion for leaving postings uncoded is described later). However, if posts contained more than one thematic reference, they were assigned multiple codes. Therefore, totals in the Results section can add up to more than 2,942.

Four coders were trained by Janis L. Whitlock and the study coordinator to observe and code message boards during this time period. This was accomplished by having each coder and the principal investigator code the same posts and discuss code assignment. Once training was completed, each coder logged on one to two times per week during the study period to identify and code new posts. To establish intercoder reliability, each coder team was given three randomly selected threads to code. Codes for each individual coder were then compared to establish agreement within each team. The teams were in full agreement about codes for 96% and 97% of the postings, respectively.

Results

Message board prevalence, dates of inception, and colisting with other topics. The search procedure described previously revealed 406 boards. As shown in Table 2, examination of the 140 boards available through the Internet service providing historical information shows an increase from 1998 to 2000 and then a generally stable trend over time, with peaks in 2000 and in 2002. Although caution is warranted when interpreting these data, because public familiarity and dedicated server space with message boards have also increased over time, these findings indicate that message boards as a cultural tool for self-injury grew dramatically between 1998 and 2000 and that interest in both establishing and participating in self-injury specific groups over the past 5 years has been sustained.

Examination of these same message boards for colisting with other topics reveals links with a number of topics known to be associated with self-injury in the literature. Table 3 shows the extent to which self-injury message boards were cross-listed with other topics. Although listed most often alone (56%), 44% of the message boards were cross-listed with one or more other topics. When linked to another topic, self-injury occurs most often with depression (32%) and eating disorders (17%). Although less frequent, it often occurs with message boards dedicated to discussions of dissociative identity and multiple personality disorders (10%); bipolar disorder (9.2%); sexual abuse (7%); obsessive–compulsive disorders (7%); addiction (2.8%); anxiety disorder (2.8%); lesbian, gay, bisexual, and transgender issues (2.8%); and autism (1.4%).

Message board membership analysis. The 10 most popular message boards were selected for membership analysis. Table 1 shows the averages for self-description: member age, age range, and percentage of females. It also shows the percentage of members with public blogs, the percentage of registered members who have never posted (potential viewers), percentage of posters with more than 100 posts, and moderation level. The average self-described age of members ranged from 16.4 to 23.9 years for each message board, although there was large variation in ages represented and the mean tends to be negatively skewed. The majority of message boards had a mean stated age of 18 years; 80% of the members described themselves as being between the ages of 14 and 20; 31% of all members described themselves as being 15 or 16 years old. In all 10 boards examined, posters describing themselves as female were more likely to be registered and to participate actively. The number of members in each message board varied dramatically from 70 to 6,656. Membership data from one of the sites were not available because members post in any of a wide number of forums, not all of which relate to self-injury.

Table 3
Conditions and Behaviors With Which Self-Injury Message Boards Are Cross-Listed

Cross-listed condition/behavior	Frequency (n = 140)	% of Total
Depression	45	32.0
Eating disorders	24	17.0
Dissociative identity disorder/multiple personalities	14	10.0
Bipolar	13	9.2
Obsessive-compulsive disorder	10	7.1
Sexual abuse	10	7.1
Posttraumatic stress disorder	7	5.0
Anxiety	4	2.9
LGBTQ	2	1.4
Mood disorders	4	2.8
Addiction	4	2.8
Autism	2	1.4
No other disorder specified	78	56.0

Note. LGBTQ = lesbian, gay, bisexual, transgender, and questioning.

The number of message board members with blogs ranged from 10% to 30%. Preliminary examination of blog content revealed few substantive differences from message board posts other than the fact that blogs often provided more detailed accounts of events and feelings. There was considerable variation in the extent to which members posted. In four of the boards, more than half of the membership had never posted a single comment. The majority of those who did participate posted 2 to 10 messages, although each message board had a group of high posters with more than 100 posts.

One notable characteristic of message board membership was that virtually all members have images associated with their online identity. Characters, such as "Emily the Strange," digital images made by posters of scars and bleeding wounds, and other graphic and bloody icons were frequently included with posted text. Also, lines from songs, poetry, or books were included in signature lines and were often expressions of sentiment. One example is the lyric by the music artist Eminem: "Sometimes I even cut myself to see how much it bleeds. It's like adrenaline, the pain is such a sudden rush for me."

Message board content. A total of 3,219 posts were examined from six message boards over a 2-month period; 2,942 were assigned a code. Although posts could be assigned multiple codes, most were not. Tables 4 and 5 list the total number of times a post was assigned a particular content code and the proportion of all posts examined that fell into this content area. As shown in Table 4, the vast majority of all posts examined fell into 1 of 11 broad thematic categories. Several of the most common categories contained a variety of subthemes (see Table 5).

Providing informal support to other posters was the most common type of exchange on the message boards, occurring in 28.3% of all posts (see Table 4). Comments such as "We're glad you've come here" and "Just relax and try to breathe deeply and slowly" were very common. Although less frequent, exchanges around support were often linked with apologizing behavior ("I'm so sorry to lay this on you") and confessions of self-loathing ("I hate myself for doing this"). Discussion of events that triggered a self-injurious episode occurred in 19.5% of the posts (see Table 4). Conflict with important others constituted the primary trigger (34.8% of all trigger-related posts) followed by depression (24.8%) and stress (10.3%; see Table 5).

Table 4
Dominant Thematic Categories in Message Board Content

Category	No. of category occurrences	% Posts examined (N = 3,219)[a]
Informal provision of support for others	913	28.3
Motivation/triggers	629	19.5
Concealment issues	292	9.1
Addiction elements	288	8.9
Formal help seeking, treatment	229	7.1
Requesting, sharing techniques	200	6.2
Link to other mental health conditions	153	4.7
References to popular culture	137	4.2
Interpretation of other's perceptions	85	2.6
Perceptions of self	70	2.1
Venting or apologizing behavior	61	2.9
Uncategorized	277	8.6

[a] Individual posts could be assigned multiple codes; total percentages will not equal 100%.

Table 5
Breakdown of Most Common Themes[a]

Category/themes	Total no. of occurrences	Percentage of primary category
Triggers		
Conflict with important others	212	34.8
Perceived depression	151	24.8
School or work stress	63	10.3
Loneliness	44	7.2
Sexual abuse/rape	22	3.6
Other	117	19.2
Concealment issues		
Anxiety about concealment	149	51.8
Managing scars	109	37.3
Acknowledgment of dishonesty	29	10.9
Addictive elements		
"I've been cutting free for . . ."	120	41.7
Stable pattern/cannot control urge	52	18.1
Minimize problem	28	9.7
Liken to other drugs	27	9.3
Multiple attempts to quit	27	9.4
Increased tolerance, need more over time	24	8.4
Relapse	10	3.4
Help seeking and treatment		
Positive attitudes toward therapy	101	44.1
In therapy	60	26.2
Negative attitude toward therapy	43	18.7
References to medications	25	10.9

[a] Provision of informal support, although the dominant theme, is not included in this table because specific categories of support were not tracked.

The next largest thematic category discussed involved concealment of the practice and its effects (primarily scarring), accounting for 9.1% of all posts examined (see Table 4). Comments focused largely on anxiety about being discovered, how to manage scars, and the extent to which posters had to be dishonest to maintain secrecy (see Table 5).

Posts about the perceived addictiveness of self-injury were almost as common (8.9%) (see Table 4). Typical examples include "It just haunts me and I don't think I'll ever get away from it" and "I may try and quit but even if I succeed, I'll always dream of razorblades and blood." Observations starting with the phrase "I've been cutting free for [length of time]" accounted for almost half of posts coded with addiction elements. References to stable patterns of self-injury, tendency to minimize the problem, similarities to other drugs, multiple quit attempts, the need to self-injure more or more deeply because of increased tolerance for effects of self-injury, and relapse after quitting were all areas discussed within this category (see Table 5). Often this discussion co-occurred with comments regarding frustration at parents, caregivers, and others, who, according to the posters, do not appreciate the addictive nature of the behavior.

Discussion of formal help seeking from physical or mental health professionals occurred in 7.1% of all posts (see Table 4). Attitudes toward and experiences with treatment were largely positive (44.1% of all help-seeking posts reflected positive attitudes toward therapy), and discussion of experiences related to

therapy accounted for a sizable portion of formal help-seeking posts as well (26.2%). Negative attitudes and active discouragement from seeking therapy were also evident in 18.7% of the formal help-seeking posts. References to specific medications occurred in about 1 in 10 cases.

The sixth most common category of discussion for all age groups related to sharing details about techniques use to self-injury, accounting for 6.2% of all posts. These exchanges were generally either descriptions of specific self-injury techniques or requests for specific technique information. The following conversation exemplifies this type of exchange:

> Poster 1: Does anyone know how to cut deep without having it sting and bleed too much?
>
> Poster 2: I use box cutter blades. You have to pull the skin really tight and press the blade down really hard. You can also use a tourniquet to make it bleed more.
>
> Poster 3: I've found that if you press your blade against the skin at the depth you want the cut to be and draw the blade really fast it doesn't hurt and there is blood galore. Be careful, though, 'cause you can go very deep without meaning to.
>
> Poster 1: Okay, I'll get a Stanley blade 'cause I hear that it will cut right to the bone with no hassle. But I'll be careful if I do use a tourniquet and I won't cut that deep.

Mental health conditions empirically linked to self-injurious behavior, such as depression, eating disorders, suicidality, and sexual abuse, were cited as either linked with or as a trigger for self-injury in 4.7% of all posts (see Table 4). References to pop culture (e.g., music, movies, books, celebrities, and characters with special significance to posters) appeared in just over 4% of the posts. Discussion and interpretation of the perceptions of others came up in 2.6% of the posts. Recognition of the pain their behavior caused or might cause others, in conjunction with difficulty stopping a behavior once a pattern was formed, was often linked to the need for secrecy and feelings of shame. Similarly, perceptions of self, usually negative, were shared in just over 2% of all posts. Remaining posts were rants, aimless venting, usually frustration or anger, or apologies for sharing.

Study 2: Variations in the Use of Message Boards Among Self-Injurers

This study was intended to explore the correlations between content areas raised for discussion. It focuses on exchange in four broad areas: (a) help seeking and disclosure, (b) technique sharing, (c) comorbidity, and (d) attitudes toward self and other posters. These areas were selected to explore the role of message boards exchange in spreading information about self-injurious practices and influencing help-seeking behavior.

Method

Identification and sampling. The unit of analysis for this study was the individual self-injury message board poster. Individual posters were selected from five low- and one medium-moderation self-injury message boards included in the previous study (A, B, D, E, F, and G in Table 1). Because the extent to which posters sought and shared self-injury techniques was of interest, low-moderation boards were selected as recruitment sites to ensure that the content of message posts would not be blocked. One medium-moderation board was selected to permit a balanced sample by age, because the low-moderation boards did not contain an adequate number of active posters for which age was available. Each site allowed for all posts from individual posters to be searched readily.

Individual posters were identified by looking through threads and identifying individuals in the age brackets of interest with more than 50 posts. Then 20 in each of three self-described age groups (13–15, 16–18, 19–22 years) were selected at random, for a total sample size of 60. Once individual posters were identified, 50 posts from each individual were selected at random from posts made from July 2004 to January 2005. A 6-month window was chosen to ensure that each poster monitored would have adequate time to make multiple posts and engage in a variety of interactions.

Measures. As in Study 1, the content analysis of posts was conducted using a set of binary (present–absent) codes. These codes were similar to those used in Study 1 but were focused on six specific types of exchange: (a) soliciting and sharing techniques, (b) attitudes toward and disclosed use of formal support, (c) solicitation and provision of informal support, (d) disclosure to nontherapeutic others (e.g., family and friends), (e) disclosure of other mental health conditions, and (f) disclosed self-concept. A total of 17 measures were used to indicate each of these broad conceptual domains (Table 6). Although many of these measures are similar to those used in Study 1, Study 2 measures were designed to focus on a specific type of exchange and to permit individual-level analysis of correlations between variables. Self-represented demographics, including gender, age, and total number of posts, were also recorded.

Coding of posts. A total of 3,000 individual posts were coded (50 per each 60 individuals). The actual number of posts per individual ranged from 60 to several hundred. Because coders could query for all threads posted by individual posters, they randomly selected 50 by identifying the total number of pages and threads any one poster made and dividing by 50. The resulting number was used to systematically identify threads included in the analysis. For example, if a poster made 100 posts, coders coded every two posts. If the resulting interval inadvertently identified a redundant thread (one already coded but that surfaced later), the next thread was used. Posts were not coded when they did not contain content relevant to the study objectives. Six coders were assigned individual posters to track and code. To establish intercoder reliability, 40% of the observations (1,200 posts) were independently coded by three pairs of coders. Each pair of coders coded 400 posts in common. No two pairs coded the same posts. Agreement was assessed by calculating the proportion of posts each individual in the pair coded the same. The average intercoder agreement across all three pairs was 93% (range = 90–96%).

Results

To assess the relationship between soliciting and sharing self-injurious practices and informal and formal help seeking, Spearman correlations were conducted between all measures. Results are shown in Table 6.

The analysis revealed two trends in the correlations: one in which more positive exchanges were correlated and one in which negative exchanges were correlated. For example, offering informal support was correlated with disclosing that someone knows, suggesting formal treatment, seeking advice on stopping, and disclosing a history of trauma. Similarly, seeking advice on stopping and harm reduction were correlated with each other and with seeking advice about disclosure and sharing positive remarks about oneself. Encouraging formal treatment of self-injurious be-

Table 6
Spearman's Correlations for All Study Variables (N = 60 individuals; 3,000 posts)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Techniques																	
1. Share techniques	—																
2. Request techniques	.231	—															
Informal support																	
3. Offer informal support	.075	−.204	—														
4. Seek advice on stopping	.098	.088	.299*	—													
5. Seek advice on reducing harm	−.042	.085	.108	.319*	—												
Disclosure attitude																	
6. Seek advice about disclosure	−.084	−.218	.006	.228	.281*	—											
7. Encourage disclosure	.103	.048	.187	.112	.009	.163	—										
8. Discourage disclosure	.332**	.009	.126	.314*	.243	.160	.134	—									
Formal support																	
9. Disclose treatment	.111	−.145	.082	.150	.114	.002	−.088	.073	—								
10. Suggest formal treatment	−.025	−.228	.529**	.129	−.156	.128	.334**	.239	.108	—							
Disclosure status																	
11. Disclose that someone knows	.315*	−.079	.289*	.191	.004	.056	.125	.197	.199	.169	—						
Associated conditions																	
12. Suicidality	.110	−.176	.145	.149	.163	.031	−.087	.167	.457**	−.190	.299*	—					
13. History of trauma	.055	.105	−.286*	.022	.008	.099	−.082	.106	.157	−.024	−.013	.005	—				
14. Diagnosed disorder	.164	.120	−.032	.108	.096	.082	−.058	.120	.478**	.125	−.048	.142	.234	—			
15. Disparaging comments about self	.185	.133	−.068	.061	.107	.319*	−.184	−.059	.092	.008	.070	.171	.139	.261*	—		
16. Positive comments about self	.183	−.087	−.127	.291*	.207	.237	.199	.301*	.132	.182	.144	.154	.029	.103	.269*	—	
17. Disparaging comments about others	.029	−.010	−.144	.198	−.031	−.114	.293*	.237	−.003	.100	.066	.193	−.102	−.143	−.241	.098	—

* $p < .05$. ** $p < .01$.

havior, offering informal support, and encouraging disclosure to others were interrelated as well.

A somewhat more negative cluster of exchange linked discussion of technique sharing with negative attitudes toward disclosure. However, discouraging disclosure was also associated both with positive views of self and with seeking advice on stopping. In addition, disclosing that one was in treatment was correlated with disclosing another diagnosed disorder and suicidality. Individuals who disclosed a history of trauma were likely to offer informal support, and those who disclosed suicide-related behaviors were more likely than others to disclose that someone knows about their self-injurious behavior.

Discussion

Our findings confirm that Internet message boards provide a powerful vehicle for bringing together self-injurious adolescents. Although the message boards examined for these studies may not be representative of all self-injury message boards, they do provide a snapshot of content and exchange common in those with high activity. We found that in the last 5 years hundreds of message boards specifically designed to provide a safe forum for self-injurious individuals have come into existence. Many of these are populated by individuals who identify themselves as females between 14 and 20 years of age. Although the strong preponderance of females may not accurately reflect the gender breakdown of self-injurious behavior in the general population (Whitlock, Eckenrode, & Silverman, in press), it may reflect the tendency for females to solicit more informal and formal help and social support compared with males (Fuhrer, Stansfield, Chemali, & Shipley, 1999; Saunders, Resnick, Hoberman, & Blum, 1994).

Once online, message board members are able to post or passively observe a wide variety of anonymous exchanges. Just less than half of all message boards we investigated were cross-listed with conditions known to be comorbid with self-injurious behavior, such as depression, eating disorders, and suicide. Of all types of online dialogue, the giving and receiving of informal support and discussion of proximal life events that trigger self-injury are most common. Posters also share casual and sometimes very personal information related to the addictive qualities of their practice, their fears relating to disclosure, experiences with therapy, how they self-injure, and other related health concerns. Although our findings are generally consistent with existing literature on self-injurious behavior, the correlations documented among informal support, encouraging disclosure, and advising formal treatment suggest that online interactions may be providing self-injurers support and meaning outside the clinical setting.

What the self-injurious adolescents in our study appeared to do online is what most people who trust each other do in conversation: exchange support, share personal stories about daily life events, and voice opinions and ideas. Because the anonymity of the Internet inspires the most personal and trusting of exchange between individuals with little or no previous relationship, online sharing may encourage greater and more truthful disclosures (McKenna & Bargh, 2000), especially among self-injurers, many of whom suffer from depressive symptomatology (Ybarra et al., 2005). For adolescents, this support may be particularly valuable, because healthy social and emotional development hinges on their ability to establish caring, meaningful relationships, to find acceptance and belonging in social groups, and to establish interpersonal intimacy (Reis & Shaver, 1988; Sullivan, 1953). These developmental tasks can be especially difficult for young people struggling with intense shame, isolation, and distress, particularly when the source and outcome of these feelings must be kept hidden. The assurance of online anonymity may contribute to identity construction by providing opportunities for adolescents with marginalized or nonmainstream proclivities to experiment with different social roles and selves (McKenna & Bargh, 2000; Turkle, 1995).

The less positive side of our findings suggests that participation in self-injury message boards may also expose vulnerable adolescents to a subculture in which self-injury is normalized and encouraged. For example, issues related to concealment of self-injurious behavior, identified as a dominant theme here, may make self-injury message boards particularly potent agents of self-injury, because sharing techniques and motives can take place anonymously. In light of evidence here and elsewhere that self-injurious behavior may possess addictive qualities (see Yates, 2004, for review), the adolescent drive to belong and the satisfaction that comes with associating with a community of similar others may inadvertently feed a fundamentally self-destructive behavior for some participants. The correlation documented here between sharing injurious techniques and discouraging disclosure lends support to this possibility.

Although not impossible for individual self-injurers to have gathered before the advent of the Internet, easy access to a virtual subculture of like-minded others may reinforce the behavior for a much larger number of youth. The tendency for self-injurious behavior to follow epidemic-like patterns in institutional settings such as hospitals and detention facilities (Matthews, 1968; Ross & McKay, 1979; Rosen & Walsh, 1989; Taiminen, Kallio-Soukainen, Nokso-Koivisto, Kaljonen, & Helenius, 1998) suggests that the behavior may be socially contagious in other settings and, therefore, through the Internet as well. As Brumberg (1992) has argued for eating disorders, discussion of techniques and the perceived benefits of self-injury may add potentially lethal behaviors to the repertoire of established self-injurers, not yet committed message board members, and even nonparticipating message board viewers who are exploring identity options. Indeed, some message boards contain links to pro-self-injury Web sites where Internet users can purchase self-injury paraphernalia such as bracelets or clothing that signify self-injury status and cutting clubs have been rumored to be a growing form of friendship ritual (Booth, 2004). Some self-injury Web sites host forums specifically dedicated to sharing new self-injury techniques. Discussion of technique sharing, triggers, negative attitudes toward formal and informal help seeking, and the pleasures and pains of self-injury addiction may influence behavioral choices outside of the virtual realm that are later brought back, shared, and used to ensure support and membership. It may also make some youth targets for individuals who falsely pose as supporters to accomplish other, less benevolent aims. For vulnerable adolescents, the difficulty of ending a strategy for coping with distress (self-injury) and leaving a needed source of support (individual or collective members of the virtual community) may stifle the desire to find alternate ways of coping with stress. Moreover, the low-sense of self-worth common among self-injurers may expose them to damaging online relationships.

This study supports the findings of other scholars of Internet and development (Suzuki & Calzo, 2004) by suggesting that electronic

forums provide a rich data source for studying issues pertinent to marginalized subgroups of the adolescent population that are hard to identify and reach. Observation of interaction as it unfolds, rather than in retrospective self-reports, eliminates biases relating to self-report and recall and allows study of actual transactions between individuals. Moreover, because self-injury is typically a private, secretive behavior, the Internet provides a unique opportunity to study exchange between members of a group rarely assembled outside of a clinical setting. As such, it may provide a valuable means of accessing information and perspectives useful in clinical settings. Indeed, self-injury message boards may provide a vehicle for administering a Web-based intervention to reach self-injurers.

Our methods have limits. It was not possible to observe all 406 message boards identified in this study. The 10 selected for analysis, although the most active at the time of the study, may not be generalizable to all self-injury message boards. Message boards, like all communities, possess their own culture and character and are governed by subtle and overt norms and mores. Rules posted and enforced by the moderator is one example of this. How these affect participant self-selection into specific message board communities and the content of their exchange is unclear. Moreover, the absence of demographic data on individual Internet users prohibits many important and useful analyses.

In conclusion, this research has several implications for those interested in the nexus between adolescents, the Internet, and self-injury. Like other social environments (e.g., schools, families, or neighborhoods), the Internet plays a powerful role in shaping opportunities for adaptive and maladaptive social interaction. What occurs in the virtual world, however, is largely invisible to adults and treatment providers who have a vested interest in adolescents and self-injurious behavior. Although it is neither possible nor, perhaps, desirable to monitor all adolescent Internet use, particularly as youth age and become increasingly independent, it is very important for adults to know something about what adolescents, particularly vulnerable adolescents, encounter in the virtual communities they inhabit. The data presented here are exploratory and would be strengthened by tracking a larger number of individual posters over a longer period of time to prospectively capture variability over time within individual and within and between age groups. Additionally, future research in this area should seek to verify the accuracy of what adolescent users share online, to better understand the unique role the Internet may play in affecting off-line behavior, and to clarify the role played by Internet use in spreading or deepening self-injurious practices among adolescents.

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