Adolescents’ Use of the Internet: 
A Controversial, Coming-of-Age Resource

Dina L.G. Borzekowski, EdD

Department of Population and Family Health Sciences, 
Johns Hopkins Bloomberg School of Public Health, 615 North Wolfe Street, 
Baltimore, MD 21205, USA

The appearance of movies in the 1900s, radio in the 1920s, television in the 
1940s, and the Internet in the 1990s was each met with ambivalence. For each 
emerging media technology, proponents touted the educational benefits, while 
opponents voiced fears about exposure to inappropriate material, such as sexual 
or violent content [1]. When the Internet was in its infancy, the only people with 
access to it were scientists working for the government or at universities. Today, 
the Internet, though itself only in its teenage years, is widely used by adolescents. 
Yet, little is known about the impact of such use on young people. Cases can be 
made for both the benefit and harm of the Internet, suggesting that research needs 
to be done to better understand the social and psychological effect of this 
medium. Knowledge about the influence of time spent engaged in different 
online activities and the impact of visiting specific websites on adolescents would 
be extremely valuable to health providers, educators, and parents. This knowl-
edge would be especially useful in dealing with issues related to the mental health 
of adolescents.

Perhaps more than most other areas of study, research on Internet use needs to 
be absolutely current. Data published even 5 years ago may no longer apply to 
the present day. Society’s perceptions of Internet use are not often based on data, 
but rather on extrapolations of similar or better-known activities. Such ignorance 
can translate to fear —what is unknown is presumed to be dangerous. The pur-
pose of this article is to describe, based on research, the use of the Internet by 
young people. After offering the most up-to-date information on adolescents’ use 
of this technology, the article discusses the pros and cons of the most common 
reason youth go online, which is to communicate and interact with others in a

E-mail address: dborzeko@jhsph.edu

1547-3368/06/$ – see front matter © 2006 Elsevier Inc. All rights reserved.
adolescent.theclinics.com

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
virtual community. The article then focuses on a few specific mental health issues (eg, drug use, eating disorders, and developing sexual identity among gay and lesbian adolescents), and examines available data on online resources and current use. The article concludes with a discussion of the Internet's promises and challenges, recommending specific areas of research.

General use of the Internet

In the last two decades, Internet use by adolescents has changed from an unusual to a commonplace activity. The average American adolescent now lives in a multimedia environment. The Internet is just one technology he or she uses daily. Nearly all young people in the United States have gone on line and 74% have a home Internet connection, with 31% having high-speed access [2]. A nationally representative sample of 1100 adolescents found that 87% use the Internet and 51% go online at least daily [3]. Of those who use the Internet, up to 75% report going online from home [2,3]. Around half (47%) use a dial-up connection, while the remaining half use a high-speed cable modem (28%) or have a digital subscriber line (DSL)-enabled phone line (21%). The remaining 2% have a wireless connection [3]. The percentage of wireless connections will increase as handheld platforms become more popular. No longer will we think of home access, but rather personalized and constant access.

Boys and girls spend comparable amounts of time online, although boys report that they have been using the Internet longer [4]. While the proportion of males and females who have gone on line are similar, significant differences in home access and daily use exist across adolescents from different ethnicities and socioeconomic groups. Among whites, 80% have home access to the Internet compared with 61% of African-American youth [2]. Around 70% of adolescents living in communities where the median income is more than $50,000 use the Internet on a typical day, compared with only 56% of those living in less affluent communities. Youth whose parents have a college degree are more likely to have home access and go online on a typical day than those whose parents have no college degree [2].

Both parents and adolescents believe that adolescents aren't as careful as they ought to be while on the Internet. Equal proportions of adolescents who go on line and their parents (62% for both groups) believe that adolescents engage in activities on the Internet to which their parents would object [3]. These activities can put the adolescent user, as well as his or her computer, at great risk. Threats can come in the form of identity theft, computer viruses, and even online predators. Among a sample of high school students attending a Midwestern private school, 24% reported feeling unsafe on the Internet, and 5% described unwanted contact with a person encountered online [5].

Parents who are often less experienced with the Internet than their children, may attempt to protect them from harmful online experiences. Electronic security and filter systems, such as PC-cillin or Norton security systems, can be installed
on computers to monitor or block access to specific websites or content. More than half (54%) of parents of online adolescents, regardless of ethnicity or education, report having a filter on their home computer [3]. Parents of younger adolescents are even more likely to have a filter [3]. Parents use nontecnological solutions as well to limit what children see. Nearly two-thirds (64%) of parents report that they have rules about online use and a similar proportion (62%) indicate that they check where the child has gone on line [3]. Around three quarters (73%) of adolescents who go online from home report that their computer is in an open family area [3]. Despite concerns, 67% of parents of online adolescents perceive the Internet as a positive medium in their children’s lives [3].

Slightly more than online adults, online adolescents use the Internet to get news about current events [3]. Over three quarters (76%) of online adolescents turn to the Internet for news and 55% have sought political news from the Web [3]. Entertainment news is of great interest, with 84% of online adolescents reporting that they have visited Internet sites for information about celebrities as well as movies, TV shows, music, and sports [3]. Downloading (both legally and illegally) of music and videos occurs often, as does shopping and other consumer activity. Homework and other school assignments require adolescents to go online, and teachers may not only assume and facilitate, but also encourage or require their students’ use of the Internet.

The Internet serves as an accessible way to get information about sensitive and personal issues [6]. The accessible, anonymous, and nonjudgmental nature of the Internet makes it a valuable source to adolescents, who may not have an available health provider or responsible adult in their lives to whom they can turn. Studies show that 26% to 75% of online adolescents report having sought health information on the Web [2,6,8,9]. About one in five adolescents say that they have gone to the Internet to research a difficult health topic, such as drug use, sexual health, or depression [3]. Similar percentages of youth (18.2%) have sought help on the Internet for emotional problems. The most popular reasons for seeking help on the Internet include problems with romantic partners, friends, and family [7].

**Online communication and virtual communities**

Early studies of the Internet found an association between levels of loneliness and time spent online [10,11] and argued that the lack of face-to-face relationships between people means the loss of ethical and socially fulfilling communication. Others have suggested that the Internet can decrease loneliness by offering users opportunities for positive, shared interactions because the Internet removes barriers that might otherwise impede face-to-face relationships. One such barrier is geography. Adolescents can initiate and maintain relationships through the Internet without the need for transportation. Home access allows online meetings and conversations at any time. Among adolescents who may be more anxious about their appearance or hesitant in approaching un-
familiar peers, the anonymous nature of the Internet can provide opportunities for relationships that might not otherwise occur.

Adolescents' online dispositions resemble their offline dispositions. Some adolescents have a difficult time forming relationships, regardless of environment. Kraut and colleague found that adolescents who are extroverted appear to have more positive Internet experiences and relationships than those who are introverted [12]. Socially anxious and lonelier adolescents tend to have less healthy online relationships.

**Instant messaging**

Media-multitasking is common among adolescents. An individual might be online working on a homework assignment while also downloading music, checking e-mail, and instant messaging (IMing), simultaneously or in sequence. The most common reason that an adolescent goes online, however, is to communicate with friends and participate in virtual communities.

E-mailing is an online activity that adolescents use when sending group announcements, contacting an adult, or getting information from an established organization. In contrast, IMing is the preferred way that adolescents communicate online with peers. IMing allows the user to know who else is online and "talk" through quick exchanges of notes with several friends simultaneously. IMing is a background activity that can be done while other computer-based activities are occurring. Almost half (48%) of IM-using adolescents indicate that they do this activity daily. Contemporary adolescents spend an average of 40 minutes a day IMing [4]. Among IM-using adolescents, 24% report that they IM for 1 to 2 hours a day and 11% say that they IM for more than 2 hours in a typical day [3].

Although adolescents have sizeable "buddy lists" of individuals with whom they IM, most exchanges occur with a core set of friends and family. Rarely do adolescents IM with strangers or people whom they have met online. Instead, adolescents exchange messages with family members, classmates, and friends whom they met offline. One study found that 82% of IM buddies were already school friends [4].

Adolescents often have several IM "screen names." Sometimes the choice of several names is a deliberate way to bypass program limitations. However, an adolescent may come to have several screen names inadvertently when new names are adopted and old names from past months or years are forgotten and left undeleted. Most IM-using adolescents use just one or two screen names to identify themselves. Because most online communication by adolescents is typically with people whom they already know, the belief that people use the Internet to experiment with different identities is largely unfounded. However, some adolescents do pretend to be someone else online. Most of those individuals pose as someone older [4].

The IM environment is not always a friendly place. Adolescents can block instant messages from specified names and "away" messages allow users to dodge
conversation partners. If an individual doesn’t properly log out of a shared computer, or if someone knows another user’s password, pranks are possible. About 40% of adolescents indicate that they have played a prank through IMing [3].

Adolescents establish, nurture and end romantic relationships while online. Finding IMing a useful way to avoiding the awkwardness of in-person conversations, around 20% of adolescents indicate that they have asked someone out, and 19% have broken up with someone by way of instant messages [3]. In a sample of 1501 youth, around 14% indicated that they had formed a close online relationship with another individual in the previous year [13]. Considering common problems among adolescents, researchers found that those who had high levels of parent-child conflict and those who were highly troubled (eg, greater levels of depression, victimization, troubling life events) were more likely to have a close online relationship [13]. According to one hypothesis, the Internet provides an alternative and valuable venue for adolescents who are troubled or alienated from their parents and have more difficulties satisfying friendship needs through face-to-face relationships. This medium allows for positive social support and connection for those who might not otherwise be able to form friendships easily [13].

Chatrooms

Chatrooms and online groups are based on common interests, hobbies, and personal characteristics. The online public forum of the chatroom is another way that adolescents raise concerns, voice attitudes and emotions, and form relationships. A socially constructed and shared culture develops in a chatroom. Chatroom members interact through online conversations, sometimes in pairs and sometimes in larger groups.

The anonymous nature of the online medium allows participants to have frank discussions about sensitive and potentially embarrassing topics [14]. Without actively involving themselves in conversations, even nonparticipating individuals can get cultural or topical information by “lurking” in a chatroom. In a 2002 study, chatrooms were cited by almost 90% of online adolescent help seekers, both boys and girls, as a predominant resource [7].

Sexually explicit and sexually oriented websites

Adolescents see sexually oriented and sexually explicit websites on a regular basis both on purpose and by accident. While the most frequently entered search term is “sex” [15], adolescents say that most online encounters with sexual material are accidental or unintentional [16]. Most individuals have experienced clicking on an image or term, only to be brought to a new website, including sites that one had no intention of visiting. This action can also lead to pop-up images featuring material describing everything from “hot young babes” to “low
mortgage rates.” Youth frequently see banner advertisements or receive e-mails with links to sexual websites, so it is not surprising that the curious adolescent might follow such links. While many adults are troubled that young people are exposed to such messages, adolescents believe that they are not harmed by these sexually explicit websites.

Young people who are examining and sometimes struggling with their sexual identity find the Internet to be an invaluable resource. In an online study of same-sex-attracted youth, 85% reported that the Internet played an important role in connecting them with others like them and 70% said that this medium helped reduce their isolation [17]. Among the study participants, announcing to “everyone” on the Internet their identity as a gay or lesbian youth was common. Young people can thus use this medium to rehearse for coming out in real life [17]. One recent news story illustrates how the Internet may be a lifeline to gay and lesbian youth. Zach, a 16-year-old gay male from Tennessee, wrote on his weblog that he had just come out to his parents and was being sent away to an “ex-gay” facility in which conversion therapy is used. He wrote, “It’s like boot camp...if I do come out straight, I’ll be so mentally unstable and depressed it won’t matter.” His postings sparked a huge response from the gay community to investigate the program. This response brought about the involvement of the Tennessee Department of Children’s Services. Zach’s story is still evolving. No matter how the story is resolved, the Internet has obviously played a tremendous role in Zach’s development and expression of his sexual identity.

Eating disorders

A disturbing new phenomenon is the emergence of sites that portray disordered eating in a positive light. Classified as “pro-ana” (pro-anorexia), “pro-mia” (pro-bulimia) or a combination of the both, these sites feature information (including assessment measures), forums, tips, and pictures for individuals who self-identify rather than feel they suffer from an eating disorder [18]. “Thinspirational” pictures and tips are presented on these sites to support the pursuit of the “ideal body”. These sites portray people who are unusually thin or underweight as a persecuted minority group misunderstood and oppressed by others who don’t accept their right to go without food [19].

A content analysis of messages posted on a pro-ana website identified two groups of young women who visited the site: (1) those who wanted to lose weight and (2) those who had eating disorders and other mental health problems, including depression, cutting, and drug addiction [20]. Another small study examining the behaviors of adolescents who suffer from eating disorders found that 40% had visited pro-eating-disorder websites and 34% had gone to websites encouraging recovery. While adolescents report that they have learned new weight-loss techniques from these websites, they also indicate that these sites allow for expression of “innermost thoughts and feelings.” Adolescents who visit
pro-ana and pro-mia websites are more likely to describe themselves in recovery than those who don’t visit them [21].

As the result of media attention that these sites have recently received, some web-hosting companies have banned them or have shut them down. Still, the sites not only exist but flourish, as this author discovered while attempting to identify and log on to these websites as background for this paper. The effect of the websites, especially on vulnerable adolescents, should be further investigated.

**Suicide and the Internet**

Undoubtedly, the Internet has provided destructive information. A handful of reported cases have linked Internet use with a person’s attempt at suicide. Possibly many more such cases have occurred unreported. An adult man who spent over a week searching online for ways to commit suicide was found dead because of asphyxiation by ether inhalation [22]. An adult woman with previous history of suicide attempts, presented to a hospital where she attempted suicide by drinking several liters of water. The woman explained that she learned from a website that this was a less painful and more convenient way to commit suicide. Sites offer information on ways to commit suicide, including methods, availability, estimated time of death, and degrees of certainty [23].

While vulnerable individuals can use the Internet to obtain and share information about committing suicide, they can also go online to find beneficial resources about psychiatry and counseling. Although less frequently mentioned than other problems, thoughts about suicide may lead a person to go online for help. Of those who indicate that they went online to seek help, 12% say they turned to the Internet to ease suicidal thoughts [7]. Individuals can seek help and information through thousands of websites supported through federal, state, and private agencies. Many of these sites offer suicide prevention resources, including warning signs and hotline numbers so that so that an adolescent can find immediate assistance. The communication features of the Internet can also benefit adolescents contemplating suicide. Imagine an adolescent who is in crisis turning to a suicide prevention website. Following a website’s recommendation to “talk to someone they trust,” the adolescent can immediately e-mail or IM with friends, relatives, or mentors, regardless of the time of day.

An example of a suicide prevention website is Ulifeline. After the suicide of their 20-year-old son, the Satow family created the Jed Foundation and subsequently developed Ulifeline. This helpful website (www.ulifeline.org) offers college students nontargeting and supportive local links to their respective college’s mental health center as well as important mental health information and tools [24]. Going online does not replace traditional resources for those seeking help. Rather, the Internet serves as an additional resource [7]. Anecdotal stories suggest that this and other similar sites can be effective, although to date no formal evaluations or research on their effectiveness have been conducted.
Drug use

Thousands of websites offer information about recreational drug use (eg, www.lycaenium.org, www.dancesafe.org, www.clubdrugs.org, www.tripzine.com, www.ravesafe.com). One of the most extensive sites is the Vaults of Erowid website (www.erowid.org) [25]. The mission of Erowid, founded in 1995, is to offer “accurate, specific, and responsible information about how psychoactives are used.” Site statistics suggests an average of 32,000 unique visitors per day, visiting around 13 pages each. According to estimates, the site received 8 million unique visitors in 2004 [26].

Interestingly, many of these drug information websites bill themselves as offering a harm-reduction service. Given the supposition that many young people will experiment with drugs, it is thought that truthful, non-biased information on dosages and expectations of effects should be available. These websites offer a venue for individuals to describe their experiences, both good and bad, using different drugs. Archived and cataloged on the Erowid website are experience reports, which are personal descriptions of the “experiences people have with psychoactive plants and chemicals as well as experiences with endogenous (non-drug) mystical experiences, drug testing, police interactions, etc.” In the past two years, over 20,000 of these reports have been submitted [27]. Box 1 presents an example of an experience report [28]. It is not obvious that a young person reading such a story would be compelled or dissuaded to use psilocybin, mushrooms, or similar psychoactive drugs. Conducting research to examine such a question, however, would pose interesting and ethical challenges.

A small study of drug-using adolescents found that all 12 respondents had used Internet-based information about psychoactive substances. Rather than encouraging use, these individuals indicated that online information found on websites, such as Erowid, had helped them modify, reduce, or cease the use of drugs or minimize the risks of drug use [29]. While it has been theorized that drug websites would promote the initiation and use of recreation drugs [30], no data or research is available to support this causal relationship.

The promise and challenge of Internet use for adolescent health

While much has been made about how the Internet poses potential threats to the mental health of adolescents, the Internet can also be a practical, efficient and effective way to deliver health information and interventions to young people. However, more needs to be known to take full advantage of this medium as a health resource [1]. To motivate individuals to modify behaviors, to reduce risk, and promote health, websites are appearing that apply the “5 A’s”—advise, assess, assist, anticipatory guidance, and arrange follow-up—and tailored interventions are being developed to reduce adolescent risk behaviors [31]. Research to better understand how adolescents use the Internet for health information is being conducted by this author and others in the United States.
Box 1. Example of an experience report on the Erowid website

*My vividly colored nightmare. Mushrooms and cannabis by Vegan Girl*

A couple days ago, my boyfriend, one of our friends, and I bought a sizeable amount of shrooms and decided to trip. My previous three experiences with shrooms had been beautiful beyond words, and this time, I wanted the experience to be as intense as possible, because I assumed that such a breathtaking experience could only get better if it were stronger. So instead of eating an eighth, like I had before, I decided to eat a quarter of an ounce. I smoked a bowl of decent herb, loaded up a sandwich thick with shrooms, and somehow managed to choke down the whole disgusting thing...The last thing I remember clearly is lying facedown in the earth while claiming to be buried and seeing bright patterns when I closed my eyes...My memory of that day returns at the point when I vomited violently all over the grass. I had horrible stomach pains even after throwing up everything, and was still tripping hard, so I didn’t remember I had eaten shrooms. I just kept thinking about how horrible my body felt, which led to thinking about how horrible the park looked, which led to thinking about how horrible life was and how I was a lousy excuse for a person...soon I was stuck in a frightening existential crisis, thousands of time more intense than anyone could possibly experience sober...When I finally started coming down—hours later—I was in my friend’s bed, where my companions had put me hoping to calm me down. I had been tripping so hard, though, that I hadn’t even been aware of their attempts to comfort me. I had only been able to experience the overwhelming inner world of despair and hallucinations...But when I finally did come down, everything was fine—I didn’t have any residual paranoia or depression, which I’m thankful for, and in retrospect it’s probably a blessing that I can’t remember most of the trip.

*From* Erowid.org, with permission.

and elsewhere. There is even a peer-reviewed journal dedicated to medical Internet research (www.jmir.org/).

For adolescents to effectively make use of the Internet to address health issues, those adolescents must have a high degree of health literacy and the health websites themselves must be appropriately designed [32]. The successful delivery of online health interventions needs to be rigorously evaluated so
that the potential of this medium can be maximized. Different technologies (eg, Clickstream software, eye-gaze technology) can be used to assess adolescents’ exposure to online health messages and both quantitative and qualitative methodologies are being employed to accurately measure the impact of online health information and websites. Such information can include detailed records of the websites visited, the amount of time spent on specific pages and general websites, and the pathways in and among websites visited.

Summary

Emerging research on adolescents and the Internet should be thoughtfully considered, especially with respect to the influence of Internet activities on mental health and psychiatric conditions. A given Internet site may have content that would be helpful to one, have no effect on another, and be harmful to yet another adolescent. The effect on the adolescent would in part be determined by the site itself and the way in which it provides information and interactivity, and in part on the characteristics of the particular adolescent. It will be necessary to employ diverse approaches to keep current the information on how adolescents use the Internet, as well as to understand how it affects them. Rather than rely on focus groups and self-report surveys, researchers should examine adolescent Internet use with naturalistic methods that will provide quantitative and qualitative data regarding this new domain. Additionally, researchers can use experimental designs to explore how Internet experiences or exposure to online information affects health knowledge, attitudes, and behaviors.

Because adolescents rely on the Internet for both its content and technology, youth caregivers and advocates should continue to research and study this medium. The efficacy of delivering Internet-based therapies and prevention programs should be studied. Mental health organizations should remain vigilant, monitoring and helping to improve websites [7]. Parents should also be aware of their adolescents’ online activities, so it may be necessary for health practitioners to educate parents about what is available and occurring on line. Lastly, youth need to be better informed on how to best use the Internet. We take for granted that adolescents are savvy users of this technology, when it is not yet fully known how young people make use of the Internet and how they incorporate information from the Internet into their lives. Online media literacy skills are necessary and should be developed among the very young to make the best use of the Internet.

References


