Technological Advancements and Internet Sexuality: Does Private Access to the Internet Influence Online Sexual Behavior?

Kristian Daneback, Ph.D.,¹ Sven-Axel Månsson, Ph.D.,² and Michael W. Ross, Ph.D.³

Abstract

The aim of this study was to investigate whether demographic characteristics and sexual behavior online and offline were associated with private, respectively, nonprivate access to the Internet in a Web sample of people who use the Internet for sexual purposes. A total of 1,913 respondents completed an online questionnaire about Internet sexuality, and 1,614 reported using the Internet for sexual purposes. The majority of these respondents reported having access to an Internet-connected computer no one else had access to (62 percent women and 70 percent men). The results showed that it is possible to differentiate between those who have access to an Internet-connected computer no one else has access to and those who have shared access to an Internet-connected computer. Not only did they differ in demographic characteristics, but also in the sexual activities they engaged in on the Internet. Different patterns were found for women and men. For example, men who had private access to Internet-connected computers were more likely than those who had shared access to seek information about sexual issues. Thus, having access to Internet computers no one else has access to may promote sexual knowledge and health for men. The results of this study along with the technological development implies that in future research, attention should be paid to where and how people access the Internet in relation to online behavior in general and online sexual behavior in particular.

Introduction

IT IS WITHOUT DOUBT that the advent of the Internet has had a profound impact on human sexuality. In the mid 1990s, it was reported that sexuality was a part of the role of playing games in Multi User Domains where the participants' characters occasionally became sex partners in fictive milieus.¹ Later, engagement in this behavior was categorized as cybersex, referring to two or more individuals engaging in sexual interaction on the Internet with the purpose of sexual pleasure, sometimes involving masturbation by one or all participants. In the early days when Internet access became available to the public, sex was one of the most frequently used search terms on the search engines.²

Over the last 15 years, a significant number of empirical studies have shown that people use the Internet for a variety of sexual activities, and some have shown how this may influence sexual behavior offline.^{3–5} For example, people use the Internet to seek information about sexual issues,^{6,7} to view pornography,^{8,9} to have cybersex,¹⁰ to meet sex partners,^{11,12} and to purchase sexual merchandise.^{13,14}

Similar to all technical advancements throughout history, the Internet too was met by concerns of its meanings and influences on humans and society. Initially, scholars speculated about the man-machine hybrid—the cyborg—and its possible consequences.¹⁵ Others focused on the how the world we used to know now is transformed into a network society.¹⁶ In the field of Internet sexuality, researchers found the new technology as bringing both potential benefits and possible hazards.² Nevertheless, much of the existing research has focused on the negative aspects of using the Internet for sexual purposes.¹⁷ However, some of the largest studies available have found the use of the Internet for sexual purposes to be unproblematic for more than 90 percent of the users.^{4,18} On the contrary, the results from previous studies suggest that using the Internet for sexual purposes may have a positive impact on individuals.^{18,19}

The technological development has led to increased computer performance at decreased costs. This has made it possible for an increased number of people to have Internet access at home. A recent Swedish estimate suggested that 89 percent of people aged 16–74 have Internet access at home.²⁰

¹Department of Social Work, University of Gothenburg, Gothenburg, Sweden.

²Department of Health and Society, Malmö University, Malmö, Sweden.

³School of Public Health, University of Texas, Houston, Texas.

In addition, in a Swedish study, it was found that 30 percent of the households owned two or more computers.²¹ Along with WiFi and high-capacity battery packs, some users have even abandoned their stationary computers at home and, thus, have become mobile by switching to smart phones and netbooks.²² In addition, without the need of mains outlets and Ethernet outlets, users have been able to connect to the Internet virtually anywhere. Consequently, accessing the Internet has become more of a personal and private affair. The question is whether this shift toward individuality and increased privacy will bring changes in terms of how people use the Internet, in general, and for sexual purposes, in particular.

Theoretically, the Triple-A-Engine (Access, Affordability, and Anonymity) has been used to explain the power and attraction of using the Internet for sexual purposes.² Access refers to the immediate access to the Internet and to the sexual material of interest, while affordability refers to the low prices online due to competition and, in some aspects, the abundance of free material. The anonymous setting provided by the Internet has made it possible to overcome or break away with individual, interpersonal, and societal norms regulating sexual behavior in more traditional settings offline.^{23,24} It has also been suggested that the level of anonymity influences what sexual activities people engage in on the Internet; the more anonymous an online setting is, the more sexually explicit (or stigmatized) activity can take place.²³ Thus, it is possible that not only the anonymity in online settings influences online sexual behavior, but also the level of privacy in the offline setting from where the Internet is accessed.

The aim of this study was to investigate whether demographic characteristics and sexual behavior online and offline were associated with private, respectively, nonprivate access to the Internet in a Web sample of people who use the Internet for sexual purposes.

Methods

Procedure

The Web questionnaire was administered in the Swedish language on four sites, three Web sites and one Swedish university. Two Web sites were portal sites oriented toward adults, presenting information from diverse sources and including various applications (such as e-mail) with one leaning more toward online dating. The third Web site was an explicit youth community, one of the two largest in Sweden for 16–29 year olds. The sites were Passagen.se with approximately 500,000 unique visitors per week, Spray.se with approximately 400,000 unique visitors, and Playahead.se with approximately 100,000 unique visitors per week. The size of the University was nearly 21,000 students.

Between 27 February and 8 March 2009, a banner was placed on the Passagen.se and Spray.se (part of the Eniro Corporation) Web portal site, and this site was visible at all times to all visitors. The banner read “Participate in a study on love and sex on the Internet.” On the 11th of March, an e-mail briefly describing the study including a hyperlink to the Web questionnaire was sent to all active student e-mail addresses registered at the university. Finally, on the 18th of March, a message with similar content as to the University was randomly sent by the administrators to 10,000 members 18 or older of the Playahead.se community. Data collection was ended on 20 March 2009.

Instrument

The instrument was based on an earlier instrument that was used in a similar study in 2002 but was revised and expanded.³ The questionnaire comprised 85 questions divided into six subsections. The first section had 24 socio-demographic questions, including items on Internet access, various forms of relationship constellations, love, and sexuality. Section two had twenty-eight questions about love and sexual activities on the Internet focusing on what activities the respondents engage in, how frequently, and why. Section three comprised eleven questions of sexual exposure and sexual exploitation. The fourth section had six questions about sexual activities in exchange for money or goods (attitudes and experiences). Section five had six questions about positive and negative experiences from using the Internet for love and sexual purposes. The sixth section comprised ten questions on online sexual problems (i.e., loss of control, addiction to online sex, sexually transmitted infections, and HIV). However, by using skip patterns, we were able to personalize the question to some extent. This could reduce the number of questions to 51 for some respondents.

Sample

The sample participating in this study came from the population who visited the Passagen.se and Spray.se Web portals during the time for the study, those who were members of the Playahead Web community by the 18th of March, and were enrolled in the University through the spring semester of 2009.

A total of 1,913 respondents completed the questionnaire. The majority of the respondents were recruited from the University, 955 respondents, and 580 respondents from the Playahead.se web community. The numbers recruited from Spray.se and Passagen.se were 273 and 105 respondents, respectively.

The sample comprised 66 percent women and 34 percent men. However, the distribution differed depending on site for recruitment (University, 78 percent women vs. 22 percent men; Playahead.se, 50 percent women vs. 50 percent men; Spray.se, 63 percent women vs. 37 percent men; Passagen.se, 42 percent women vs. 58 percent men). The mean age was 28 for women and 29 for men, and it also differed depending on site for recruitment (University, 29 years for both sexes; Playahead.se, 20 years for women vs. 21 years for men; Spray.se, 37 years for women vs. 43 years for men; Passagen, 36 years for women vs. 46 years for men). Approximately 1 percent claimed to be from a country outside Sweden.

In this study, only those who reported using the Internet for sexual purposes were included ($n=1,614$), 62 percent women and 38 percent men.

Data analysis

SPSS version 17 (SPSS, Chicago, IL) was used for all data analyses. Descriptive statistics were used for variables related to demographic questions. The dependent variable examined in the current study was phrased *Do you have access to an Internet connected computer no one else has access to?* and the response alternative was simply *Yes* or *No*. Since the dependent variable was a binary, multivariate logistic regression analysis was chosen to predict group membership of those

who had access to an Internet-connected computer none else had access to. Previous research has suggested sex to be a discriminating variable in relation to online sexual behavior. Therefore, two models were built, and separate regression analyses were conducted for women and men, respectively. The independent variables were determined *a priori* and revolved around three areas: sociodemographic, sexual behavior offline, and sexual behavior online. Sociodemographic variables comprised sex (woman, man), age (age groups: 18–24, 25–34, 35–49, 50–65), relationship status (in a relationship, not in a relationship). Sexual orientation was measured by the respondents' reported sexual experience on a five-point version of the Kinsey H-H scale (sexual experience with women only, mostly women sometimes men, both men and women, mostly men sometimes women, and with men only). Those respondents who reported opposite sexual experience only were coded heterosexual; those who reported same sex only were coded gay/lesbian; and those who reported sexual experiences with both sexes were coded bisexual. Due to the low number of gay men and lesbians, the original variable sexual orientation was collapsed into a two-category variable (heterosexual, nonheterosexual). Sexual behavior offline included frequency of having sex (not in last 12 months, rarely, monthly, weekly, and daily) and frequency of masturbation (never, rarely, monthly, weekly, and daily). Sexual behavior online was measured through positive and negative responses to a range of love and sexual activities engaged in on the Internet: reading erotic novels, viewing pornography, chatting about sex, seeking information about sex, shopping for sex products, flirting, seeking romantic partners, seeking sex partners, having had sex with a partner met online, and having had cybersex.

The effects of the multivariate logistic regression analyses are expressed in odds ratios (OR) with 95 percent confidence intervals, where values above 1 indicate increased effects and values below 1 indicate decreased effects.

Results

The sample characteristics of the respondents using the Internet for sexual purposes are shown in Table 1. The majority of these respondents reported having access to an Internet-connected computer no one else had access to (62 percent women and 70 percent men).

A total of 1,610 respondents who used the Internet for sexual purposes had answered the question of whether they had access to an Internet-connected computer no one else had access to. The results of the multivariate logistic regressions are displayed in Table 2. The Hosmer and Lemeshow's goodness of fit was nonsignificant for both regression models, indicating appropriate fitting of the data to the model (women = 0.84, men = 0.56). Nagelkerke's R square was 0.16 for women and 0.19 for men. The women's model classified 67 percent of the cases correctly, while the corresponding proportion for the men's model was 75 percent.

The results showed age and relationship to be associated with women's access to an Internet-connected computer no one else had access to. Women aged 35–49 (OR = 0.60, $p < 0.01$) and in a relationship (OR = 0.31, $p < 0.001$) were significantly less likely to have access to an Internet-connected computer no one else had access to. For men, it was associated with sexual orientation and relationship status. Men

TABLE 1. SAMPLE CHARACTERISTICS OF RESPONDENTS USING THE INTERNET FOR SEXUAL PURPOSES ($N = 1,614$)

Variable	Percentages and means
Gender (%)	
Women	62
Men	38
Age (means)	
Women	27.23 ($SD = 9.46$)
Men	28.59 ($SD = 12.45$)
Sexual orientation (%)	
Heterosexual	85
Gay/lesbian/bisexual	15
Relationship status (%)	
In a relation	53
Not in a relation	47

TABLE 2. EFFECT ON ODDS IF HAVING ACCESS TO AN INTERNET-CONNECTED COMPUTER NO ONE ELSE HAS ACCESS TO ($N = 1,610$)

Factors	Women ($n = 1,047$)	Men ($n = 563$)
	OR (95% C.I.)	OR (95% C.I.)
Age groups		
18–24 (ref.)	1	1
25–34	0.96 (0.68–1.35)	1.05 (0.63–1.74)
35–49	0.60 (0.39–0.90)*	1.14 (0.60–2.16)
50–65	0.75 (0.33–1.71)	0.89 (0.40–1.96)
Sexual orientation		
Heterosexuals	1.12 (0.77–1.63)	0.45 (0.23–0.88)*
GLB (ref.)	1	1
Relationship status		
Steady relationship	0.31 (0.21–0.46)**	0.35 (0.21–0.59)**
Frequency having sex		
Daily (ref.)	1	1
Weekly	0.84 (0.44–1.61)	0.43 (0.17–1.10)
Monthly	0.70 (0.36–1.35)	0.44 (0.17–1.12)
Rarely	0.92 (0.44–1.93)	0.32 (0.12–0.88)***
Not in last 12 months	0.80 (0.32–2.02)	0.64 (0.19–2.11)
Frequency of masturbation		
Daily (ref.)	1	1
Weekly	1.47 (0.68–3.21)	0.85 (0.50–1.45)
Monthly	1.12 (0.51–2.43)	0.79 (0.41–1.53)
Rarely	1.17 (0.53–2.60)	0.76 (0.35–1.64)
Do not masturbate	0.77 (0.32–1.86)	0.69 (0.18–2.67)
Online sexual activities		
Read erotic novels	0.90 (0.66–1.22)	1.59 (1.03–2.45)***
View pornography	0.91 (0.66–1.25)	1.47 (0.81–2.67)
Chat about sex	0.85 (0.57–1.26)	1.14 (0.66–1.97)
Seek sex information	1.20 (0.89–1.61)	1.60 (1.06–2.42)***
Shop sex merchandise	0.92 (0.67–1.26)	1.10 (0.69–1.75)
Flirt	1.12 (0.77–1.64)	1.31 (0.76–2.25)
Seek romantic partner	0.79 (0.50–1.27)	0.93 (0.53–1.61)
Seek sex partner	1.50 (0.79–2.86)	0.83 (0.47–1.47)
Have met sex partner online	1.40 (1.02–1.93)***	1.71 (1.06–2.75)***
Have had cybersex	1.70 (1.17–2.48)*	1.09 (0.63–1.89)

* $p < 0.01$, ** $p < 0.001$, *** $p < 0.05$.

OR, odds ratios; C.I., confidence intervals; GLB, gay, lesbian and bisexual.

were significantly less likely to be heterosexual ($OR=0.45$, $p<0.01$) and in a relationship ($OR=0.35$, $p<0.001$). No significant associations were found for the frequencies of partnered sex and masturbation other than that men were less likely to masturbate rarely compared with daily ($OR=0.32$, $p<0.05$). For both women and men, online sexual behavior was associated with having access to an Internet-connected computer no one else had access to. Women were significantly more likely to have met someone on the Internet whom they later met offline and had sex with ($OR=1.40$, $p<0.05$) and to have had cybersex with ($OR=1.70$, $p<0.01$). Men were significantly more likely to read erotic novels online ($OR=1.59$, $p<0.05$) and to seek information about sexuality online ($OR=1.60$, $p<0.05$). They were also significantly more likely to have met someone on the Internet whom they later met offline and had sex with ($OR=1.71$, $p<0.05$).

Discussion

The aim of this study was to investigate whether demographic characteristics and sexual behavior online and offline were associated with private, respectively, nonprivate access to the Internet in a Web sample of people who use the Internet for sexual purposes. The results showed that it is possible to differentiate between those who have access to an Internet-connected computer no one else has access to and those who have shared access to an Internet-connected computer. Not only do they differ in demographic characteristics, but also in the sexual activities they engage in on the Internet. However, barely any association with offline sexual behavior was found.

Not surprisingly, having access to an Internet-connected computer was associated with relationship status. Since almost 90 percent of Swedes have Internet access,²⁰ not being in a relationship would for most people mean that they do not have to share computers. Gay and bisexual men were more likely than heterosexuals to have access to Internet-connected computers no one else have access to. This was also not surprising, as anecdotal evidence suggest gay men to have pioneered the social uses of the Internet, but there are likely several other factors not included in this study that may better explain this finding. Women aged 35–49 were less likely than women aged 18–24 to have access to an Internet-connected computer no one else had access to. Perhaps this could point to an aspect of the digital divide in this group, a divide not found between other age groups and among men. This finding merits further research.

Women and men who had access to an Internet-connected computer no one else had access to were more likely than those who shared their computer to have met someone on the Internet they later met offline and had sex with. On the one hand, this is not surprising, as they were also more likely to be singles (not in a relationship), but on the other hand, they were not more likely to seek romantic partners or sex partners online. Thus, an alternative explanation could be that those who have access to Internet-connected computers no one else have access to also use it to find partners for sexual encounters outside their committed relationships.

Although women seem to prefer interactive online sexual activities, previous research has shown women and men to have had cybersex to a similar extent.¹⁰ In the current study, women who had access to an Internet-connected computer no

one else had access to were also more likely than those who shared their computer to have had cybersex. Maybe women feel the need for a high level of offline privacy to have cybersex, perhaps due to their engagement in a behavior they deem inappropriate for various reasons, whether in a relationship or not. Cybersex consumes more time than several other online sexual activities, and previous research has shown that cybersex users spend twice as much time online for sexual purposes.¹⁰ Perhaps, engaging in a time-consuming activity demands access to a computer no one else has access to. However, it could be the other way around as well, that having access to a computer no one else has access to allows more time to be spent on such activities. More research is needed related to this for a more complete understanding.

Men who had access to Internet-connected computers no one else had access to were more likely than those who shared their computer to read erotic novels online and to seek information about sexual issues. At this point, we have no satisfactory explanation as to why these activities stood out from the rest, as they are not associated with the most explicit or stigmatized behaviors. Nevertheless, the fact that men were more likely to seek information about sexual issues on the Internet is interesting and makes us think of the possible health benefits related to how and where people connect to the Internet. This is yet another question produced from this study that should be examined in future research.

Until now, the power and attraction of the Internet has been explained by the specific and extraordinary characteristics of various online settings, primarily anonymity.² Remaining unseen and unknown to others online has been thought to make it possible for people to engage in behavior they would not otherwise engage in, not the least in sexually related behavior due to individual, interpersonal, and societal norms of acceptable and unacceptable sexual behavior.^{23,24} The results of this study suggest that the offline setting also plays an important role in how the Internet is used for sexual purposes. This would translate directly to the theory of sexual scripts where sexual behavior is determined partly by the setting.²⁵ In addition, it actualizes the works of Goffman and his dramaturgical perspective and the concepts of front stage and back stage as viable tools for future analyses.

This study was not without limitations. First, it was a convenient sample; thus, we are not able to make generalizations to a larger population. Second, it was conducted in Sweden, and the results may differ from those in other countries on several parameters. Third, this was a self-reported questionnaire, which means that participants may have over or under reported their actual behavior due to social desirability pressures. Fourth, we did not specify the type of Internet-connected computer the respondent had access to and, thus, we are not able to draw any conclusions about how they accessed the Internet and where they accessed it from. Fifth, relationship status does not automatically predict co-habitations. This means that in a relationship, one could live alone and have private access to the Internet.

Conclusion

This was one of the first studies to suggest that the offline setting plays an important role in how the Internet is used for sexual purposes. Those who had access to Internet-connected computers no one else had access to were more likely than

those who had shared access to Internet-connected computers to engage in certain sexual activities on the Internet. In addition, different patterns were found for women and men. Interestingly, men who had access to Internet-connected computers were more likely than those who had shared access to seek information about sexual issues. Thus, having access to Internet computers no one else has access to may promote sexual knowledge and health for men. The results of this study along with the technological development implies that in future, research attention is paid to where and how people access the Internet in relation to online behavior, in general, and online sexual behavior, in particular.

Author Disclosure Statement

No competing financial interests exist.

References

1. Turkle S. (1995) *Life on the screen: identity in the age of the Internet*. New York, NY: Simon & Schuster.
2. Cooper A. Sexuality and the Internet: surfing into the new millennium. *CyberPsychology & Behavior* 1998; 1:24–28.
3. Cooper A, Månsson S-A, Daneback K, et al. Predicting the future of Internet sex: online sexual activities in Sweden. *Sexual and Relationship Therapy* 2003; 18:277–291.
4. Cooper A, Scherer CR, Boies SC, Gordon BL. Sexuality on the Internet: from sexual exploration to pathological expression. *Professional Psychology: Research and Practice* 1999; 30:154–164.
5. Shaughnessy K, Byers SE, Walsh L. Online sexual activity experience of heterosexual students: Gender similarities and differences. *Archives of Sexual Behavior* 2011; 40:419–427.
6. Daneback K, Löfberg C. (AQ) Youth, sexuality and the Internet: young people's use of the Internet to learn about sexuality. In Dunkels E, Frånberg GM, Hällgren C, eds. *Youth culture and net culture: online social practices*. Hershey, PA: IGI Global, pp. 190–206.
7. Daneback K, Månsson S-A, Ross MW, Markham C. (2011) The internet as a source of information about sexuality. *Sex Education*, 1–16, iFirst. DOI: 10.1080/14681811.2011.627739.
8. Daneback K, Træen B, Månsson S-A. Use of pornography in a random sample of Norwegian heterosexual couples. *Archives of Sexual Behavior* 2009; 38:746–753.
9. Træen B, Nilsen TS, Stigum H. Use of pornography in traditional media and on the Internet in Norway. *Journal of Sex Research* 2006; 43:245–254.
10. Daneback K, Cooper A, Månsson S-A. An Internet study of cybersex participants. *Archives of Sexual Behavior* 2005; 34:321–328.
11. Daneback K, Månsson S-A, Ross MW. Using the Internet to find offline sex partners. *CyberPsychology & Behavior* 2007; 10:100–107.
12. Sevcikova A, Daneback K. Anyone who wants sex? Seeking sex partners on sex-oriented contact websites. *Sexual and Relationship Therapy* 2011; 26:170–181.
13. Daneback K, Månsson S-A, Ross MW. Online sex shops: purchasing sexual merchandise on the Internet. *International Journal of Sexual Health* 2011; 23:102–110.
14. Fisher WA, Barak A. Online sex shops: phenomenological, psychological, and ideological perspectives on Internet sexuality. *CyberPsychology & Behavior* 2000; 3:575–589.
15. Stone RA. (1996) *The war of desire and technology at the close of the mechanical age*. Cambridge, MA: MIT Press.
16. Castells M. (1996) *The rise of the network society*. Oxford: Blackwell.
17. Döring N. The Internet's impact on sexuality: a critical review of 15 years of research. *Computers in Human Behavior* 2009; 25:1089–1101.
18. Månsson S-A, Daneback K, Tikkanen R, Löfgren-Mårtenson L. (2003) *Kärlek och sex på Internet* [Love and sex on the Internet]. Göteborg University, Göteborg, Sweden and Malmö University, Malmö, Sweden.
19. Daneback K, Sevcikova A, Månsson S-A, Ross MW. Outcomes of using the internet for sexual purposes: Fulfilment of sexual desires. *Sexual Health*, in press.
20. Statistics Sweden. (2010) *Use of computers and the Internet by private persons in 2009*. Stockholm: Statistics Sweden, Investments, R&D and IT Unit.
21. Bennich P. (2008) *Mätning av hushållsel-tänkar om framtiden*. [Measuring household electricity-thoughts about the future]. Retrieved October 10, 2010, from www.energimyndigheten.se/Global/Forskning/AES/Forskningsarena%20Katrineholm%2025-26%20aug/Peter_Bennich.pdf.
22. Vance A, Richtel M. (2009) Light and cheap, netbooks are poised to reshape PC industry. *The New York Times*. Retrieved October 7, 2010, from www.nytimes.com/2009/04/02/technology/02netbooks.html?_r=1
23. Daneback K. (2006) *Love and sexuality on the Internet*. Doctoral dissertation, University of Gothenburg.
24. Ross MW. Typing, doing, and being: sexuality and the Internet. *Journal of Sex Research* 2005; 42:342–352.
25. Gagnon JH, Simon W. (2005) *Sexual conduct: the social sources of human sexuality*. New Brunswick, NJ: Aldine Transaction.

Address correspondence to:
Dr. Kristian Daneback
Department of Social Work
University of Gothenburg
P.O. Box 720
SE-405 30 Göteborg
Sweden

E-mail: kristian.daneback@socwork.gu.se