



Published in final edited form as:

Sex Transm Dis. 2013 July ; 40(7): 528–533. doi:10.1097/OLQ.0b013e31829413f7.

Evaluating the Internet as a Sexually Transmitted Disease Risk Environment for Teens: Findings From the Communication, Health, and Teens Study

Eric R. Buhi, MPH, PhD^{*}, Natalie Klinkenberger, MPH[†], Mary McFarlane, PhD[‡], Rachel Kachur, MPH[‡], Ellen M. Daley, MPH, PhD^{*}, Julie Baldwin, PhD^{*}, Heather D. Blunt, PhD^{*}, Shana Hughes, MPH[§], Christopher W. Wheldon, MSPH^{*}, Cornelis Rietmeijer, MD, PhD, MSPH[¶]

^{*}College of Public Health, University of South Florida, Tampa, FL

[†]Physicians for Peace, Norfolk, VA

[‡]Centers for Disease Control and Prevention, Atlanta, GA

[§]College of Arts and Sciences, University of South Florida, Tampa, FL

[¶]Colorado School of Public Health, University of Colorado, Denver, CO

Abstract

Background: Few studies have examined the association between sexual health risks and online sex-seeking among teenagers. The purpose of this study was to assess the associations between meeting sex partners online and a range of sexual risk behaviors and outcomes among adolescents.

Methods: Participants aged 13 to 19 years were recruited from a publicly funded teen clinic in Florida. After obtaining informed consent/assent, 273 participants completed an audio computer-assisted self-interview that included questions on demographics, sexual behavior, sexually transmitted disease (STD) history, and online sex-seeking behaviors and experiences. Participants also provided urine samples for chlamydia and gonorrhea testing. Data were analyzed using logistic regression to identify the association between having an online sex partner and sexual behaviors/outcomes.

Results: After adjusting for significant bivariate correlates, teens reporting online sex partners were more likely to be male, be multiracial, have a history of same-sex sexual activity, report a higher number of vaginal sex partners, and report a lower age at first vaginal sex. However, teens with online sex partners were no more likely to have ever had an STD or a current biological STD.

Conclusions: This study is one of the first to correlate biological STD results to online sexual partnering data in a youth population. Although meeting a sex partner online was not associated with past or current STDs, it was associated with other sexual risk behaviors. Future research is

Correspondence: Eric R. Buhi, MPH, PhD, Department of Community and Family Health, College of Public Health, University of South Florida, 13201 Bruce B. Downs Blvd, MDC 56, Tampa, FL 33612. ebuhi@health.usf.edu.

There are no conflicts of interest to disclose.

Findings from this study were presented at the 19th Biennial Conference of the International Society for STD Research in Quebec City.

needed to examine the complex nature of online sexual partnering among adolescents and to develop intervention approaches.

Investigations associating sexual health risks with online sex-seeking began more than a decade ago, when researchers in San Francisco reported an outbreak of syphilis among gay men, linked by their use of an Internet chat room.¹ Since 2000, most research regarding meeting Internet sex partners has focused specifically on men who have sex with men (MSM),²⁻¹⁰ adult heterosexuals,¹¹⁻¹³ and individuals residing outside the United States^{5,14-16} Much of this research suggests that meeting online partners is associated with various risk behaviors including unprotected intercourse,^{2,7,17} having multiple sex partners,^{7,18} and substance use,¹⁹ as well as a history of sexually transmitted diseases (STDs)^{19,20} and HIV infection.^{6,9} According to Rietmeijer and colleagues,²¹ “It may be that MSM are currently the group most actively using the Internet for sex-seeking purposes, but there is no reason to believe that this medium is less appealing to heterosexuals, particularly those who are coming of age in the on-line era.”

The degree to which meeting sex partners online poses an increased risk of STDs for adolescents in the United States is of public health importance, yet largely unaddressed by the extant literature. Adolescents and young adults are the most active Internet users²² and are also disproportionately affected by STDs. In the United States, approximately 19 million new STDs occur annually, and approximately half of these infections are among young people aged 15 to 24 years.²³ It has been estimated that 1 in 4 women between the ages of 14 and 19 years (3.2 million) are infected with at least 1 of the most common STDs (human papillomavirus, chlamydia, herpes simplex virus, and trichomoniasis).²⁴

To our knowledge, 3 published studies have reported on online sex-seeking among young people in the United States.^{6,25,26} In a study of young (aged 16–24 years) ethnically diverse MSM, Garofalo and colleagues⁶ found that 48% reported having had sex with a partner first met online. Meeting sex partners online was associated with unprotected anal sex, having multiple sex partners, and having sex in a bathhouse or sex club. McFarlane and colleagues²⁶ identified several differences in sexual health risk behaviors of young adults (aged 18–24 years) who had sex with Internet partners (SIPs) and those who did not (NIPs). Compared with those who had not sex with Internet partner, SIPs reported an earlier age of first intercourse, were more likely to report ever having had anal sex, and reported a higher number of lifetime and 12-month non-Internet sex partners. Those who had sex with Internet partner were also more likely to report ever having had an STD.²⁶ Buhi and colleagues²⁵ found that, compared with college students with offline sex partner(s) only, students with both online and offline partners were more likely to report an STD history. In addition, having both online and offline partners was associated with an unintended pregnancy event and greater numbers of vaginal and oral sex partners.²⁵

Although these studies provide some evidence that meeting online partners may increase risk for STDs among young people, they are limited by a reliance on self-reported STD history. Such a limitation is not trivial. In the National Survey of Adolescent Males, Dariotis and colleagues²⁷ noted that self-reports at one point in time likely underestimate true STD history. Furthermore, the only study identified to date²⁸ that used biological STD data found

no association between current STD infection and having a recent Internet sex partner. In fact, researchers found a *protective* effect for men who have sex with women; that is, men who have sex with women reporting a recent Internet sex partner were *less likely* to have a current STD.²⁸

The purpose of the current study was to examine the sociodemographic factors of those reporting online sex partners as well as associations between meeting sex partners online and a range of sexual risk behaviors and outcomes (including biological STD data) among adolescents aged 13 to 19 years. To understand the level of risk among teens, we report findings from the Communication, Health, and Teens Study.

METHODS

The Communication, Health, and Teens Study was a mixed methods research study of adolescent sexual behavior to determine the correlates of having online sex partners and the degree to which Internet-initiated sexual encounters increase the risk of STD infection. For the current study, self-reported Internet and sexual behavior data collected by audio computer-assisted self-interview (ACASI) were linked to biological STD test results.

Participants

Participants were aged 13 to 19 years and recruited from a publicly funded teen clinic in West Central Florida between February 2010 and January 2011. In addition to STD and HIV testing and treatment, the teen clinic provides a range of health care services including provision of contraceptives, pregnancy testing, and well care visits. All clinic patients in the target age range were provided with a study factsheet upon check-in. Eligible patients were referred to a trained research assistant who provided a study overview to interested teens, obtained verbal assent/consent, and provided the participant a study identification card. The card contained the study ID number on one side and a checklist on the other side for each of the following 5 clinic “stations”: (1) explanation of the study, (2) examination/clinician visit, (3) laboratory visit, (4) completed survey, and (5) a signature line to indicate receipt of a \$25 gift card for participating. The study ID number was entered into the ACASI and used by the researchers to link biological STD results collected by clinic staff members to behavioral survey results. Participants were instructed to provide their number to the clinic staff member at each station. Participating teens completed the ACASI, provided a urine sample for chlamydia and gonorrhea testing, and were seen by a nurse at the clinic, all on the same day. Names or other personally identifying information were not recorded through the ACASI.

A total of 302 teens provided assent/consent and completed the ACASI. When asked about honesty during the survey, 6 teens acknowledged that they had reported “doing something when they really didn’t do it,” and an additional 6 acknowledged that they had reported “not doing something when they really did do it.” Thirteen other teens reported that they were only “fairly honest” (compared with “very honest” or “completely honest”) when answering the survey questions. To ensure the integrity of the data, these 25 participants were excluded from the analysis. Four teens reported never having oral, vaginal, or anal sex and were also removed, leaving a final analytic sample of 273.

Data Collection

All procedures and data collection instruments were reviewed and approved by the Florida Department of Health institutional review board. Teens agreeing to participate provided assent/consent based on age—parental consent for participants younger than age 18 years was waived because of the highly sensitive nature of the study, and as such, those younger than 18 years provided verbal assent and those aged 18 and 19 years provided verbal consent to participate. Completion of the ACASI averaged 15 minutes.

Measures

Demographic questions consisted of age, sex, grade in school, living arrangement, race, and ethnicity. Behavioral questions included age at first vaginal sex; willing participation in oral, vaginal, and anal sex; number of lifetime sex partners for each type of sex; use of drugs and/or alcohol during sex; HIV testing in the past 12 months; unintended pregnancy (e.g., “Have you *ever* unintentionally become pregnant or gotten someone else pregnant?”); and lifetime sex with same-sex partners (e.g., “Have you ever had oral, vaginal, or anal sex with someone of the *same sex*?”). Respondents also self-reported on lifetime history of hepatitis B, trichomoniasis, human papillomavirus, genital warts, genital herpes, syphilis, gonorrhea, chlamydia, and HIV/AIDS. Respondents were asked about online sex-seeking behaviors and experiences of sex with partners *first met online*, including the Web sites on which sex partners were first met as well as general Internet use. Lastly, participants’ urine samples were tested for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* using nucleic acid amplification tests.

Data Analyses/Statistical Methods

Binary logistic regression was used to determine the sociodemographic correlates of ever having an online sex partner (someone the respondent first met online and later had sex with offline). Predictor variables were all categorical aside from age, which was dichotomized using a median split because of the lack of linearity of effect across the distribution of values. An α level of 0.10 was used to assess statistical significance in the bivariate models and subsequent inclusion in the multivariable model. A multivariable binary logistic regression model was then used to examine the unique associations between each sociodemographic factor and the probability of ever having an online sex partner ($P < 0.05$).

A series of logistic regression models were also estimated to identify the association between having an online sex partner and a number of sexual behaviors and outcomes, while controlling for confounding factors. Outcomes were dichotomous aside from 2 continuous behavioral variables that included the total number of lifetime vaginal sex partners and number of days between first interacting and having sex. The distributions of these variables were highly skewed so they were categorized into quartiles (interquartile range; IQR) and analyzed as ordinal variables using proportional odds models for logistic regression. The proportional odds assumption for these models was met, as indicated by the χ^2 score test. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated to assess the strength and direction of associations. SAS version 9.2 was used to conduct all analyses (SAS Institute, Cary, NC).

RESULTS

Demographic characteristics of the study sample are reported in Table 1. Most respondents were female (89%) and between 17 and 19 years of age (79%). Most were white (58%), although roughly equal numbers identified as Hispanic (16%) or non-Hispanic black (15%). More than three-quarters reported currently living with a parent or guardian, and most were either high school students (46%) or high school graduates enrolled in college (30%).

Teens reported varying levels of sexual experience and substance use. Nearly all respondents reported ever having had vaginal or oral sex (98% and 89%, respectively), and 29% reported anal sex experience. Fifty teens (18%) reported having sex with a person of the same sex. The median number of vaginal sex partners was 4 (IQR, 6) (Table 2). Most teens (87%) reported first vaginal sex after age 14 years. Drug (17%) or alcohol use (18%) during or before sex was reported by approximately one third of respondents.

Almost a quarter of respondents (22%) self-reported ever having been told by a doctor or nurse that they had an STD. Chlamydia was the most commonly self-reported STD (18%) followed by gonorrhea (5%). Of teens with biological STD data for their current clinic visit ($n = 267$), 14% had a current STD infection. Of those, 33 teens had a current chlamydia infection and 7 had a current gonorrhea infection (2 were coinfecting). Of all teens, 42 (16%) reported ever being pregnant or getting someone else pregnant, and more than half of those were within the past year.

Teens reported frequent use of the Internet, with 62% reporting using the Internet “several times a day” and 80% reporting using the Internet at least once daily. Using the Internet to “look for sex partners” was uncommon in this sample, with 21 teens reporting this behavior (8%); however, 42 teens (15%) reported first meeting a person online with whom they later had sex. Among these respondents, most (57%) reported having met more than 1 sex partner online.

Approximately 4 of 5 teens who reported an online partner acknowledged having met that partner on a social networking Web site (SNS), such as MySpace or Facebook. Several other SNSs were noted as venues where teens reported originally meeting an online partner, including www.stickham.com, www.mycyearbook.com, www.tagged.com, www.mocospace.com, and www.chatango.com (all with 1 each). One teen also reported meeting a sex partner on www.craigslist.com.

Correlates of Having Online Sex Partners

Sample characteristics associated with having an online sex partner are reported in Table 1. In bivariate analyses, males (OR, 2.88; 95% CI, 1.21–6.86), adolescents 17 to 19 years old (OR, 2.83; 95% CI, 0.97–8.29), and those identifying as multiracial (OR, 2.52; 95% CI, 0.98–6.50) had statistically ($P < 0.10$) greater odds of reporting an online sex partner. In addition, high school graduates who were not currently enrolled at a college also had greater odds of reporting an online sex partner (OR, 3.65; 95% CI, 1.53–8.66). Teens identifying as gay or bisexual (OR, 2.46; 95% CI, 1.11–5.45), as well teens with a history of same-sex sexual behavior (OR, 3.55; 95% CI, 1.27–10.32), also had greater odds of reporting an

online sex partner. There were no differences in reporting an online partner by current living arrangement or relationship status. After adjusting for all statistically significant bivariate correlates, teens with online sex partners were significantly ($P < 0.05$) more likely to be male (adjusted OR [AOR], 5.02; 95% CI, 1.78–14.14), be multiracial (OR, 2.87; 95% CI, 0.96–8.54), and have a history of same-sex sexual activity (AOR, 3.86; 95% CI, 1.35–11.00).

Sexual Behaviors and Outcomes Associated With Having an Online Sex Partner

Behavioral and health outcomes associated with having an online sex partner are presented in Table 2. In bivariate analyses, having an online sex partner increased the ordered log odds of being in a higher quartile of lifetime number of vaginal sex partners (OR, 4.90; 95% CI, 2.56–9.40). Having an online sex partner was also associated with early first vaginal sex (at or before the age of 14 years; OR, 3.07; 95% CI, 1.37–6.88) and with alcohol use during or immediately before sex (OR, 2.10; 95% CI, 0.98–4.51). This latter association was attenuated after adjusting for control variables; however, the positive associations between having an online sex partner with the number of vaginal sex partners (AOR, 3.43; 95% CI, 1.72–6.82) and age at first vaginal sex (AOR, 3.63; 95% CI, 1.43–9.25) remained significant in the adjusted models. Teens with online sex partners were no more likely to have ever had an STD (self-reported), to have a current STD (biological data), or to have ever been pregnant or impregnated someone else.

DISCUSSION

This study found that although teens may not explicitly seek out sex partners online, a small percentage of them are eventually interacting face-to-face and engaging in sexual activity with partners originally met on the Internet, largely via social networking sites. This study is the first to our knowledge to correlate biological STD data to behavioral sexual data (meeting partners online) in a youth population. The findings indicate that teens with online partners are no more likely to currently have an STD or self-report an STD history when compared with teens who have not had sex with a partner first met online. Although meeting a sex partner online was not associated with past or current STDs, it was associated with certain sexual behaviors, including early first sex and having a greater number of vaginal sex partners, both potential risk factors for acquiring an STD.

Similar to other studies,^{26,28} respondents in this sample who reported same-sex behavior were more likely to report sex with a partner first met online. This finding is consistent with previous research documenting the central role the Internet plays in the sexual lives of many lesbian, gay, or bisexual individuals,¹⁷ by providing them with a space free from stigma and homophobia where they can both socialize and meet potential partners. For young people, the Internet can be a social space where they can “practice aspects of same-sex sexuality,” safe from physical contact in an anonymous virtual environment.²⁹ Likewise, sexually active lesbian, gay, or bisexual adults find the Internet a safe and convenient venue to meet potential partners.³⁰ Online sex partners were also more common among male participants.

Interpreting these results any further requires nuance and caution. There are those who perceive that the online environment is, by its very nature, producing or fomenting sexually

risky behavior. Liao et al.¹⁷ referred to this idea as the “accentuation hypothesis.” On the other hand, what the same authors term the “self-selection hypothesis” is held by those who view the Internet as simply an additional venue through which people inclined toward risk behaviors can make connections. Unfortunately, this study is not able to directly test either of these competing hypotheses. A fundamental assumption of the accentuation hypothesis is that there exist particular properties of Internet-based interactions that produce sexual risk. A lack of evidence of increased risky behaviors, however, should not be read as evidence of decreased risky behaviors. It is conceivable, for example, that the relative anonymity offered by meeting partners online could be analogous to the situational disinhibition other researchers^{31,32} have hypothesized as leading to sexual risk behavior in young people. Equally plausible, however, is the notion that the Internet is merely an effective tool being used by individuals who wish to connect with partners amenable to risky sex. Also, as Liao and colleagues noted, these ostensibly oppositional dynamics may well be working in concert. Particularly among teens, we need to know much more about the details and context of sexual behavior with both online and offline partners in general, before any definitive interpretation of the results of this study is possible. Moreover, given the normative use of social media and social networking sites, it will be important to tease out risk differences between those who go online with the intended purpose of finding a sex partner versus those who meet someone online without sexual intentions but with whom they later have sex.

What is clear is that some teens are meeting sex partners via the Internet, and those teens are more likely to engage in behaviors that are typically seen as high risk, such as early first sex and having more partners. Although online sex-seeking among this sample was not associated with currently diagnosed or self-reported STDs, online venues, nonetheless, represent an important public health intervention context for this priority population. Specifically, research and prevention efforts focusing on SNS such as Facebook may be fruitful in reaching young people. Bull et al.³³ demonstrated that youth can be successfully recruited to participate in HIV and STD prevention activities on Facebook and that social media can help to sustain healthy sexual behaviors among youth. Although young people are heavy users of Facebook, however, other research has suggested that teens do not want to be targeted through such social media channels.³⁴

This study has certain limitations. First, teens were recruited at one publicly funded clinic site. Teens who participated in the study also received STD testing on the same day they completed the survey, thereby excluding youth who did not get tested for STDs or who were not sexually active. In addition, respondents skewed female. Future research should be conducted with greater numbers of teens because the current sample may have been too small to detect statistically significant differences in some analyses. In addition, the sex of online partners was not captured, nor was the context of the online relationship that led to offline contact recorded. Both variables could provide additional information on potential risk.

More in-depth research is needed to further examine the complex nature of online sexual partnering among young people, including the process and context of meeting sex partners to better assess if the medium correlates with STD and HIV risks. Research should also directly test the accentuation hypothesis (factors inherent to the Internet increase risks) and

the self-selection hypothesis (the use of the Internet as a sexual venue attracts individuals predisposed to risk taking).¹⁷ In the final analysis, the Internet may not add to preexisting risk for many young people. If the Internet is a risk-promoting environment, then it may only be so for select groups of young people who are already at high risk.

Acknowledgments

The authors would like to thank Patricia Albright, BSN, MPH, FNP-BC, Suzy Reiter, MM, MSN, SANE-A, FAANP, and other staff at the Largo Center of Pinellas County Health Department. This research would not have been possible without their assistance.

The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Supported by an American Sexually Transmitted Diseases Association Developmental Award.

REFERENCES

1. Klausner JD, Wolf W, Fischer-Ponce L, et al. Tracing a syphilis outbreak through cyberspace [comment]. *JAMA* 2000; 284:447–449. [PubMed: 10904507]
2. Bolding G, Davis M, Hart G, et al. Gay men who look for sex on the Internet: Is there more HIV/STI risk with online partners? *AIDS* 2005; 19:961–968. [PubMed: 15905678]
3. Bolding G, Davis M, Hart G, et al. Where young MSM meet their first sexual partner: The role of the Internet. *AIDS Behav* 2007; 11:522–526. [PubMed: 17347876]
4. Bowen A. Internet sexuality research with rural men who have sex with men: Can we recruit and retain them? *J Sex Res* 2005; 42:317–323. [PubMed: 19827236]
5. Elford J, Bolding G, Sherr L. Seeking sex on the Internet and sexual risk behaviour among gay men using London gyms. *AIDS* 2001; 15:1409–1415. [PubMed: 11504962]
6. Garofalo R, Herrick A, Mustanski B, et al. Online and at-risk: Young men who have sex with men and the Internet. *J Adolesc Health* 2006; 38:104.
7. Garofalo R, Herrick A, Mustanski BS, et al. Tip of the iceberg: Young men who have sex with men, the Internet, and HIV risk. *Am J Public Health* 2007; 97:1113–1117. [PubMed: 17463378]
8. Horvath KJ, Rosser SBR, Remafedi G. Sexual risk taking among young Internet-using men who have sex with men. *Am J Public Health* 2008; 98:1059–1067. [PubMed: 18445804]
9. Rosser BR, Oakes JM, Horvath KJ, et al. HIV sexual risk behavior by men who use the Internet to seek sex with men: Results of the Men's INternet Sex Study-II (MINTS-II). *AIDS Behav* 2009; 13:488–498. [PubMed: 19205866]
10. Bull SS, McFarlane M, Rietmeijer C. HIV and sexually transmitted infection risk behaviors among men seeking sex with men on-line. *Am J Public Health* 2001; 91:988–989. [PubMed: 11392947]
11. Bolding G, Davis M, Hart G, et al. Heterosexual men and women who seek sex through the Internet. *Int J STD AIDS* 2006; 17:530–534. [PubMed: 16925899]
12. McFarlane M, Kachur R, Bull S, et al. Women, the Internet, and sexually transmitted infections. *J Womens Health* 2004; 13:689–694.
13. Padgett PM. Personal safety and sexual safety for women using online personal ads. *Sex Res Soc Policy* 2007; 4:27–37.
14. Daneback K, Mansson SA, Ross MW. Using the Internet to find offline sex partners. *Cyberpsychol Behav* 2007; 10:100–107. [PubMed: 17305455]
15. Ross MW, Daneback K, Mansson SA, et al. Reported sexually transmitted infections in Swedish Internet-using men and women. *J Eur Acad Dermatol Venereol* 2008; 22:696–703. [PubMed: 18341536]
16. Malu MK, Challenor R, Theobald N, et al. Seeking and engaging in Internet sex: A survey of patients attending genitourinary medicine clinics in Plymouth and in London. *Int J STD AIDS* 2004; 15:720–724. [PubMed: 15537455]

17. Liao A, Millett G, Marks G. Meta-analytic examination of online sex-seeking and sexual risk behavior among men who have sex with men. *Sex Transm Dis* 2006; 33:576–584. [PubMed: 16540884]
18. Mettey A, Crosby R, DiClemente RJ, et al. Associations between Internet sex seeking and STI associated risk behaviours among men who have sex with men. *Sex Transm Infect* 2003; 79:466–468. [PubMed: 14663122]
19. McKirnan D, Houston E, Tolou-Shams M. Is the Web the culprit? Cognitive escape and Internet sexual risk among gay and bisexual men. *AIDS Behav* 2007; 11:151–160. [PubMed: 16779660]
20. Centers for Disease Control and Prevention. Internet use and early syphilis infection among men who have sex with men—San Francisco, California, 1999–2003. *MMWR Mortal Wkly Rep* 2003; 52:1229–1232.
21. Rietmeijer CA, Bull SS, McFarlane M. Sex and the Internet. *AIDS* 2001; 15:1433–1434. [PubMed: 11504965]
22. Zickuhr K, Smith A. *Digital Differences*. Washington, DC: Pew Internet and American Life Project, 2012.
23. Weinstock H, Berman S, Cates W Jr. Sexually transmitted diseases among American youth: Incidence and prevalence estimates, 2000. *Perspect Sex Reprod Health* 2004; 36:6–10. [PubMed: 14982671]
24. Forhan S, Gottlieb S, Sternberg M, et al. Prevalence of sexually transmitted infections among female adolescents aged 14–19 in the United States. *Pediatrics* 2009; 126:1505–1512.
25. Buhi ER, Cook RL, Marhefka SL, et al. Does the Internet represent a sexual health risk environment for young people? *Sex Transm Dis* 2012; 39:55–58. [PubMed: 22183848]
26. McFarlane M, Bull S, Rietmeijer CA. Young adults on the Internet: Risk behaviors for sexually transmitted diseases and HIV. *J Adolesc Health* 2002; 31:11–16. [PubMed: 12090960]
27. Dariotis JK, Pleck JH, Sonenstein FL, et al. What are the consequences of relying upon self-reports of sexually transmitted diseases? Lessons learned about recanting in a longitudinal study. *J Adolescent Health* 2009; 45:187–192.
28. Al-Tayyib AA, McFarlane M, Kachur R, et al. Finding sex partners on the internet: What is the risk for sexually transmitted infections? *Sex Transm Infect* 2009; 85:216–220. [PubMed: 19098059]
29. Hillier L, Harrison L. Building realities less limited than their own: Young people practising same-sex attraction on the Internet. *Sexualities* 2007; 10:82–100.
30. Rhodes SD. Hookups or health promotion? An exploratory study of a chat room-based HIV prevention intervention for men who have sex with men. *AIDS Educ Prev* 2004; 16:315–327. [PubMed: 15342334]
31. Apostolopoulos Y, Sonmez S, Yu CH. HIV-risk behaviours of American spring break vacationers: A case of situational disinhibition? *Int J STD AIDS* 2002; 13:733–743. [PubMed: 12437892]
32. Eiser JR, Ford N. Sexual relationships on holiday—A case of situational disinhibition. *J Soc Pers Relat* 1995; 12:323–339.
33. Bull SS, Breslin LT, Wright EE, et al. Case study: An ethics case study of HIV prevention research on Facebook: The Just/Us study. *J Pediatr Psychol* 2011; 36:1082–1092. [PubMed: 21292724]
34. van der Velden M, El Emam K. “Not all my friends need to know”: A qualitative study of teenage patients, privacy, and social media. *J Am Med Inform Assoc* 2013; 20:16–24. [PubMed: 22771531]

TABLE 1.

Sample Characteristics Associated With Having Online Sex Partners (n = 273)

Independent Variables	Online Sex Partner				Adjusted OR (95% CI)
	Total, n (%)	No, n (%)	Yes, n (%)	Crude OR (95% CI)	
Age, years					
13–16	57 (21)	53 (93)	4 (7)	1.00	1.00
17–19	216 (79)	178 (82)	38 (18)	2.83 (0.97–8.29)*	3.29 (0.84–12.85)
Sex					
Female	244 (89)	211 (86)	33 (14)	1.00	1.00
Male	29 (11)	20 (69)	9 (31)	2.88 (1.21–6.86) [‡]	5.02 (1.78–14.14) [‡]
Race/ethnicity					
White, non-Hispanic	157 (58)	131 (83)	26 (17)	1.00	1.00
Hispanic	43 (16)	40 (93)	3 (7)	0.38 (0.11–1.31)	0.37 (0.10–1.40)
Black, non-Hispanic	42 (15)	38 (91)	4 (10)	0.53 (0.17–1.61)	0.51 (0.15–1.68)
Other race	6 (2)	5 (83)	1 (17)	1.01 (0.11–8.99)	0.88 (0.07–11.63)
Multiracial	24 (9)	16 (67)	8 (33)	2.52 (0.98–6.50)*	2.87 (0.96–8.54) [‡]
School					
In high school (HS)	126 (46)	113 (90)	13 (10)	1.00	1.00
Not a HS graduate, not in school	22 (8)	18 (82)	4 (18)	1.93 (0.57–6.58)	1.52 (0.37–6.25)
HS graduate, not in school	44 (16)	31 (70)	13 (30)	3.65 (1.53–8.66) [‡]	2.48 (0.87–7.10)
HS graduate, current student	81 (30)	69 (85)	12 (15)	1.51 (0.65–3.50)	1.06 (0.38–2.95)
Residence					
Live with parents or guardian	205 (80)	176 (86)	29 (14)	1.00	
Lives with partner	21 (8)	17 (81)	4 (19)	1.43 (0.45–4.55)	
Lives alone or with roommate	30 (12)	25 (83)	5 (17)	1.21 (0.43–3.43)	
Relationship status					
Single	120 (44)	100 (83)	20 (17)	1.00	
Dating, engaged, or married	153 (56)	131 (86)	22 (14)	0.84 (0.43–1.62)	
Sexual identity					
Heterosexual	217 (81)	188 (87)	29 (13)	1.00	1.00

Independent Variables	Online Sex Partner		Crude OR (95% CI)	Adjusted OR (95% CI)
	Total, n (%)	No, n (%)		
Gay/bisexual	40 (15)	29 (73)	11 (28)	1.84 (0.54–6.35)
Unsure	12 (4)	10 (83)	2 (17)	1.30 (0.27–6.22)
Same-sex sex				
No	222 (82)	196 (88)	26 (12)	1.00
Yes	50 (18)	34 (68)	16 (32)	3.55 (1.72–7.30) [†]
Column total	231 (85)	42 (15)		

Totals do not all add up to 273 because of missing data.

* $P < 0.10$.

[†] $P < 0.05$.

TABLE 2.
Sexual Behavior and Health Outcomes Associated With Having an Online Sex Partner (n=273)

	Online Sex Partner			Crude OR (95% CI)	Adjusted OR* (95% CI)
	Total, n (%)	No, n (%)	Yes, n (%)		
First vaginal sex, age in years [†]					
>14	231 (87)	202 (89)	29 (73)	1.00	1.00
14	36 (13)	25 (11)	11 (28)	3.07 (1.37–6.88) [‡]	3.63 (1.43–9.25) [‡]
Unprotected vaginal sex (last partner) [§]					
No	168 (72)	141 (73)	27 (68)	1.00	
Yes	65 (28)	52 (27)	13 (33)	1.31 (0.63–2.72)	
Drug use during sex [¶]					
No	217 (83)	186 (85)	31 (76)	1.00	
Yes	43 (17)	33 (15)	10 (24)	1.82 (0.81–4.06)	
Alcohol use during sex [¶]					
No	212 (82)	183 (84)	29 (71)	1.00	1.00
Yes	48 (18)	36 (16)	12 (29)	2.10 (0.98–4.51) ^{//}	1.82 (0.80–4.15)
Ever STD					
No	212 (78)	181 (78)	31 (74)	1.00	
Yes	61 (22)	50 (22)	11 (26)	1.29 (0.60–2.74)	
Current STD ^{**}					
No	229 (86)	195 (87)	34 (81)	1.00	
Yes	38 (14)	30 (13)	8 (19)	1.53 (0.65–3.62)	
Ever pregnant or gotten someone else pregnant [†]					
No	225 (84)	194 (85)	31 (78)	1.00	
Yes	42 (16)	33 (15)	9 (22)	1.71 (0.75–3.91)	
Median (IQR) Median (IQR) Median (IQR)					
Median number of vaginal sex partners (IQR) ^{††}	4 (6)	3 (4)	8 (9)	4.90 (2.56–9.40) [‡]	3.43 (1.72–6.82) [‡]
Median number of days between interacting and having sex (IQR) ^{†††}	104 (180)	131 (210)	74 (147)	0.55 (0.30–1.02) ^{//}	0.71 (0.37–1.38)

- * Models were adjusted for age, sex, educational status, and history of same-sex sexual activity.
- † Only those who have ever engaged in vaginal intercourse (n = 267).
- ‡ $P < 0.05$.
- § Only those who had vaginal intercourse with their last sexual partner (n = 233).
- ¶ Listwise deletion of cases with missing data (n = 260).
- // $P < 0.10$.
- ** Listwise deletion of cases with missing biological test results (n = 267).
- †† Models the cumulative probability of having a greater number of vaginal sex partners (n = 260 after removing those with no vaginal sex partners).
- ††† Models the cumulative probability of the number of days between first interacting with partner and having sex.