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A national study of lesbian, gay, bisexual (LGB) and non-LGB youth sexual behavior online and in-person

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Abstract

Online and in-person sexual behaviors of cisgender lesbian, gay, queer, bisexual, heterosexual, questioning, unsure, and youth of other sexual identities were examined using data from the Teen Health and Technology study. Data were collected online between August 2010 and January 2011 from 5,078 youth 13–18 years old. Results suggested, depending on sexual identity, between 4–35% of youth had sexual conversations and 2–24% shared sexual photos with someone online in the past year. Among the 22% of youth who had oral, vaginal, and/or anal sex, between 5–30% met one of their two most recent sexual partners online. Inconsistent condom use was associated with increased odds of meeting one's most recent partner online for heterosexual adolescent men. For gay and queer adolescent men, having an older partner, a partner with a lifetime history of sexually transmitted infections (STI), and concurrent sex partners were each significantly associated with increased odds of having met one's most recent sex partner online. None of the examined characteristics significantly predicted meeting one's most recent sexual partner online versus in-person for heterosexual; bisexual; or gay, lesbian, and queer women. The Internet is not replacing in-person exploration and expression of one's sexuality and meeting sexual partners online appears to be uncommon in adolescence across sexual identities. Healthy sexuality programming that acknowledges some youth are meeting partners online is warranted, but this should not be a main focal point. Instead, inclusive STI prevention programming that provides skills to reduce risk when engaging in all types of sex and is critical.

Keywords

Adolescence; Sexual Behavior; Internet; Lesbian; Gay; Bisexual

Introduction

Sexually curious behavior is a normal part of sexual development (Crockett, Raffaelli, & Moilanen, 2003; Petersen, 1988; Ponton & Judice, 2004). Given the ubiquity of youth Internet use (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013), it seems likely that the Internet is a tool used by young people to explore their sexuality. This may be especially true

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for lesbian, gay, bisexual and other sexual minority youth (LGB), who may face difficulty in finding partners in-person because of stigma and discrimination (Almeida, Johnson, Corliss, Molnar, & Azrael, 2009; Dehaan, Kuper, Magee, Bigelow, & Mustanski, 2013). In particular, bisexual youth, who sometimes face “double discrimination” from heterosexual and exclusively homosexual communities, may feel further isolated (Dodge & Sandfort, 2007; Friedman et al., 2014).

Exploring one's Sexual Self Online

Until recently, only limited attention had been paid to understanding how youth explore their sexual selves online. Qualitative research suggests that LGB youth use the Internet to practice a number of aspects of their emerging selves, including explorations of their sexuality (Hillier & Harrison, 2007; Hillier, Mitchell, & Ybarra, 2012; Kubicek, Beyer, Weiss, Iverson, & Kipke, 2010; Mustanski, Lyons, & Garcia, 2011). Moreover, studies of young men who have sex with men (MSM) find that the Internet is an integral source for not only sexual health information but also friends and sexual partners, both casual and serious (Kubicek, Carpineto, McDavitt, Weiss, & Kipke, 2011).

“Sexting,” which refers to sharing sexual photos of oneself via text messaging and online, has gained prominence in the adolescent health literature as of late. Results from regional studies are mixed (Houck et al., 2014; Rice et al., 2012; Temple et al., 2012). Data from a national survey of youth finds that sharing sexual photos is associated with both being sexually active and engaging in risky sexual behavior particularly having concurrent sexual partners and inconsistent condom use (Ybarra & Mitchell, 2014). Thus, there is some indication that youth are using technology to facilitate their sexual exploration and expression in ways that are not always a neutral indicator of sexual risk. What is noticeably absent from this discussion of technology and sexual behavior is whether and how young people are using the Internet to find sexual partners.

Meeting Sexual Partners Online

With increasing numbers of youth using technology to communicate (Lenhart, 2012), the Internet may also be a practical means of increasing one's pool of sexual partners for LGB individuals who, with one in ten youth identifying as LGB, have fewer potential partners. Studies of sexual minority adults' use of technology to find sexual partners have overwhelmingly focused on adult MSM. Data consistently suggest that a large minority of adult MSM use the Internet to meet sexual partners (Chiasson et al., 2007; Liao, Millet, & Marks, 2006; White et al., 2013). Results differ about whether meeting partners online is associated with risky sexual behavior, however. In a review of the literature, Mustanski and colleagues (2011) conclude that the findings are inconsistent. Although many studies have found linkages between meeting partners online versus offline and a history of sexual risk behavior (Benotsch, Kalichman, & Cage, 2002; Elford, Bolding, & Sherr, 2001; Garofalo, Herrick, Mustanski, & Donenberg, 2007; Horvath, Bowen, & Williams, 2006; Kim, Kent, McFarland, & Klausner, 2001; White et al., 2013), others have found no difference (Bolding, Davis, Hart, Sherr, & Elford, 2005; Chiasson et al., 2007; Mettey, Crosby, DiClemente, & Holtgrave, 2003; Mustanski, Lyons, et al., 2011; Mustanski, Newcomb, & Clerkin, 2011) and a few have even found a decreased likelihood of risky sexual behavior (Bull, McFarlane,

& Rietmeijer, 2001; Horvath, Rosser, & Remafedi, 2008; Mustanski, 2007). Indeed, it may be that adults who meet sexual partners online are more likely to engage in risky sexual behaviors generally, that is regardless of whether they met the person online or face-to-face (Mustanski, 2007; Mustanski, Newcomb, & Clerkin, 2011). Interestingly, among young MSM who have had unprotected sex with partners they met online, risk perceptions center on their physical safety rather than their STI risk. These men tend to report taking precautions such as informing a friend about the online partner, meeting the online partner in a public place, and chatting with the partner prior to meeting (Bauermeister, Giguere, Carballo-Diéguez, Ventuneac, & Eisenberg, 2010) rather than those that could protect their physical health. Whether and how these data from adult MSM populations translate to younger adolescents, particularly across sexual identities, is not well understood.

The Potential for Sexual Exploitation Online

There has been considerable research attention about how “sexual predators” may be using the Internet to exploit youth (Mitchell, Finkelhor, & Wolak, 2007; Mitchell, Jones, Finkelhor, & Wolak, 2013; Wolak, Finkelhor, Mitchell, & Ybarra, 2008; Wolak, Ybarra, Mitchell, & Finkelhor, 2007). Findings indicate that the stereotype of the adult molester who uses the Internet to lure young children into sexual assaults and abduction is largely inaccurate (Wolak et al., 2008). Not only are episodes of Internet facilitated sexual exploitation quite rare, but they also, when they do occur, more typically fit the model of statutory rape in which adult offenders seduce and develop sexual relationships with underage teenagers who know that they are talking to an adult. A large gap in this literature concerns the potential exploitative sexual relationships encountered by sexual minority youth while online. We know that LGB youth experience disproportionately higher rates of interpersonal victimization compared to heterosexual youth (Kosciw, Greytak, Bartkiewicz, Boesen, & Palmer, 2012). For example, LGB youth are significantly more likely to report sexual harassment victimization than heterosexual youth (Mitchell, Ybarra, & Korchmaros, 2014), with the most common mode being in-person, followed by technology (online and/or text messaging). With a focus on peer-based victimization in the extant literature, more information is needed about the potential for victimization and exploitation by adults.

Gendered Differences in Online Interactions

While primarily focused on heterosexual youth, existing literature suggests that adolescent men and women interact and express themselves differently online. For example, in a study of five teen chat sites, Kapidzic and Herring (2011) found that adolescent women tend to present themselves consistently with traditional expressions of femininity: friendly, emotional, well expressed listening skills, seductive, and eager to please. Male expressions are also stereotypically gendered, with more interactions that are assertive, dominant, and, at the same time, distant and manipulative. That these “roles” appear to be relatively constant in online interactions over the past decade suggests that the Internet facilitates and reinforces sexual and identity development similar to other spaces and places in our gendered society (Bailey, Steeves, Burkell, & Regan, 2013; Kapidzic & Herring, 2011; Magnuson & Dundes, 2008). A study of Twitter users finds that women are more likely to communicate positive emotions online as compared to men, and this is especially true when they are talking to other women (Kivran-Swaine & Naaman, 2014). Similarities in male and female online

expression are noted as well, however: Adolescent men and women are equally likely to use their real name; and to post a photo or video of themselves, their relationship status, and their interests on social networking sites (Pew Research Center, 2013). In fact, the only discernible difference is in sharing cell phone numbers, which adolescent men (26%) post more frequently than adolescent women (14%). Thus, men and women may express themselves sexually online, both similarly and differently, in ways that may help us understand associated risk behaviors.

Gap in the Literature

Understanding how young people use the Internet to express and explore their sexuality is a critical component necessary to inform adolescent sexual health programs that are relevant to today's youth (Allison et al., 2012; Mustanski, Newcomb, Du Bois, et al., 2011). To our knowledge, this is the first national study that examines how young people are using the Internet to express themselves sexually, including meeting sexual partners online, with a population of youth as young as 13 years. It also is one of the few studies to look at these behaviors across sexual identities for both men and women.

Methods

Data for the Teen Health and Technology (THT) study were collected online between August 2010 and January 2011. The survey protocol was approved by the Chesapeake Institutional Review Board (IRB), the University of New Hampshire IRB, and Gay, Lesbian and Straight Education Network (GLSEN) Research Ethics Review Committee.

The survey questionnaire was self-administered online. Qualified respondents were: (a) U.S. residents; (b) between 13 and 18 years old; (c) in 5th grade or above; and (d) able to provide informed assent.

Obtaining nationally representative samples of sexual minority youth, with sample sizes sufficient to conduct complex analyses, is challenging (Harris Interactive & GLSEN, 2005; Remafedi, Resnick, Blum, & Harris, 1992). The THT study was designed to address this limitation. Respondents were recruited from: (a) the Harris Poll Online (HPOL) opt-in panel ($n = 3,989$ respondents) and (b) through referrals from GLSEN ($n = 1,918$ respondents), a non-profit research and advocacy organization focused on ensuring safe schools for all students including LGB youth.

HPOL respondents were invited through password-protected email invitations to participate in a survey about their online experiences. A stratified random sample of U.S. residents was identified among four groups of HPOL members: 1) 13 to 18 year-olds; 2) adults with a 13 to 17 year-old in their household; 3) adults with a child under 18 in their household; and 4) a general population of adults. Invitations to HPOL adults noted that the survey was intended for a 13 to 18 year-old in the household and asked the adult to forward the survey link to the teen. HPOL email invitations referred to a survey about "online experiences."

GLSEN sent notices about the survey to its list of then-current national student contacts, consisting of thousands of high school students who have participated in GLSEN's programs

and online actions or who have signed up to receive information about GLSEN's programs and resources. The list represents students from all 50 states and the District of Columbia. It is important to note, however, that these students have some degree of involvement, even if minimal, with the LGB community and may not represent more isolated segments of the community. Towards the end of the field period, GLSEN also placed targeted ads on Facebook to reach younger gay and bisexual (GB) male youth, as we had difficulties reaching this particular group. The text referred to a survey about "health and the Internet" and that we were interested in hearing from LGB youth.

A waiver of parental permission was granted to protect youth who might be placed in harm's way if their sexual identity was disclosed to their caregivers. Respondents were anonymous and did not provide personally identifiable information beyond basic demographic data to ensure their privacy and safety. Incentives were not provided. The median survey length was 23 minutes for HPOL respondents and 34 minutes for GLSEN respondents, due to additional LGB-specific questions.

Response rates in national surveys are lower as of late (Mitchell & Jones, 2011). The HPOL sample survey response rate, 7%, is within range of other national surveys (Mitchell & Jones, 2011). The response rate for the GLSEN sample cannot be calculated as it is impossible to determine the number of youth who saw the survey invitation but chose not to participate.

Measures

Sexual identity—Youth were asked: "How would you describe your sexuality or sexual orientation? Please select all that apply." In the limited literature on the development of identity among sexual minority youth, there has been debate about whether and to what degree adolescents are diverse and fluid in their sexual identity and whether use of related identity labels is applicable (Diamond, 2006; Savin-Williams, 2005). Early identity theories promoted the idea that a sexual identity is stable and distinct (Cass, 1979; Troiden, 1993) and can therefore be captured by traditional quantitative (i.e., "check box") means. Recent findings from a large-scale study on sexual minority adolescents supports this assertion, suggesting that "historically typical" labels, such as gay, lesbian, or bisexual, are endorsed by the majority of the population (Russell, Clarke, & Clary, 2009). As such, the THT study measured sexual identity using a quantitative checkbox methodology that provided response options following these historically typical labels. Youth were allowed to endorse multiple labels to acknowledge that sexual identity in adolescence may be emerging and less concrete than in adulthood.

Mutually exclusive categories were created at the data cleaning stage so that analyses could compare youth across sexual identity categories. Response options included: gay, lesbian, bisexual, straight/heterosexual, questioning, queer, other, or not sure. Responses were categorized based upon a hierarchy that gave deference to labels that reflected a stronger identity on the homoaffiliative continuum in this order: Gay/Lesbian, Bisexual, Queer, Questioning and Straight/Heterosexual. Thus, as an example, individuals identifying as both "gay" and "queer" were categorized as "Gay/Lesbian." Individuals identifying as both "bisexual" and "questioning" were categorized as "Bisexual."

Sexual behavior—For the purposes of this article, sexual behavior refers to a comprehensive range of behaviors, including: having sexual conversations; sharing sexual photos; and having oral, penetrative, vaginal, or anal sex.

Sexual conversations and sexual photos—Youth were asked how often in the past 12 months they had a “sexual conversation with someone (such as phone sex)” and “sent or showed someone sexual pictures of yourself where you were nude or nearly nude.” Those who indicated they had engaged in either behavior at least once were asked a follow-up question to identify the mode through which the behavior was expressed (e.g., in-person, online). Based upon the research questions posed, we focus on youth who report engaging in these behaviors online and in-person. No youth were excluded as a result of this foci as all had met one of their two most recent partners online or in-person.

Youth also were asked if the person with whom they engaged in conversations or shared photos was older or younger, and if so, by how many years. Partners five years or older were denoted as “potentially exploitative.” This age differential was used to help identify relationships which might have had a true power difference, in comparison to the more ambiguous statutory relationships between, for example, a 16- and 18-year-old. [A statutory relationship has been defined as “a relationship between a juvenile and an adult that is illegal under age of consent statutes, but that does not involve the degree of coercion or manipulation sufficient to qualify under criminal statutes as a forcible sex crime” (Hines & Finkelhor, 2007). Age of consent is typically 16 years old, although this varies from state to state, with many states specifying a minimum age difference between the youth and older partner (Glosser, Gardiner, & Fishman, 2004).]

Consensual sexual intercourse—Youth were asked whether they had ever had consensual oral sex (“Have you ever had oral sex [we mean stimulating the vagina or penis with the mouth or tongue] when you wanted to?”), vaginal or anal sex with a finger or sex toy (“Have you ever had sex with another person that involved a finger or sex toy going into the vagina or anus when you wanted to?”), vaginal sex with a penis (“Have you ever, when you wanted to, had sex where a penis went into a vagina?”), and anal sex with a penis (“Have you ever, when you wanted to, had sex where someone’s penis went into your anus?”; “Have you ever, when you wanted to had sex where your penis went into someone’s anus?”).

Sexual intercourse partner characteristics—Youth who said they had engaged in at least one of the above mentioned types of sex were asked the number of sexual partners they had had in their life. Those who did not decline to answer were subsequently asked about the details of their most recent, and if applicable, second most recent sexual partner, including where they met this partner. Options included: at school; online; at the mall; at a program or activity outside of school; at a place of worship such as a church, synagogue, mosque, etc.; and some other way. Youth who reported meeting their most recent sexual partner online were compared to all other youth.

Condom use—Youth who reported either vaginal or anal sex were asked how many times they had sex in the past 90 days and how many times they had used a condom. They

also were asked how often they used condoms generally. Past 90-day condom use was highly skewed. Since general condom use was highly correlated with the measure of average condom use in the past 90 days, we used the former measure. Youth who reported using condoms “most of the time” or more frequently were compared to those who used condoms “half of the time” or less frequently.

Weighting to Merge the Data Sets

The data were weighted to approximate a nationally representative sample and to allow the two samples to be validly combined (Markow, Dickson, & Lee, 2011). First, the HPOL “general population sample” was weighted to the known demographics of 13- to 18-year-olds (United States Census Bureau, 2009). Then, GLSEN respondents were weighted to the demographic profile of LGB youth in the weighted HPOL sample. Next, LGB youth from the HPOL and GLSEN samples were compared on behavioral and attitudinal characteristics. Because the two samples differed on key indicators (e.g., “outness” of their sexual identity, political involvement), a second weight was applied to align the two groups of LGB youth on these characteristics. Similar to the demographic weight, GLSEN data were weighted to HPOL data.

Identifying the Analytical Sample

Several steps were taken to reduce the likelihood of fraudulent or duplicate responses: Incentives were not offered, thereby eliminating a “reward” for completing the survey multiple times. The eligibility criteria were not transparent: Respondents clicked on the survey to complete a number of demographic characteristics, including some that were not part of the eligibility criteria (e.g., race). If they did not meet the eligibility criteria, they were told they were ineligible but not why, thus making it harder to reenter the survey and provide the correct responses. A validity check was also applied. Surveys were excluded if a) the response time was less than five minutes; b) responses for one’s age at the beginning and end of the survey were more than one year apart; or c) respondents “straight-lined” (i.e., provided the exact same response to each item) in the last two grids of the survey.

Respondents who failed the validity check (above; $n = 227$), had an extreme weight ($n = 138$), or were not cisgender ($n = 464$) were excluded from the sample, resulting in a final sample size of 5,078 youth. Transgender youth were excluded because their gender identity likely influences their partner-seeking behavior in ways that is not fully captured by their sexual identity.

Statistical Analyses

Missing data were imputed using Stata’s “impute” command (StataCorp, 2009). In most cases, less than 7% of responses were imputed within a variable. Exceptions were the number of years older the person with whom youth were having a sexual conversation was (7.5%) and the number of years older that the person with whom youth were sharing sexual photos was (9.6%).

Two different weighted data sets were used in analyses. Estimates for “all youth” were based upon the national sample recruited by HPOL ($n = 3,715$). Estimates for youth by sexual identity were based upon the combined HPOL and GLSEN sample ($n = 5,078$).

Population-based rates of youth sexual behavior online and in-person were compared by sexual identity. Youth estimated the age of the person they had sexual conversations with or sent sexual photos to. As an indicator of possible exploitation by adults, we looked at the frequency of recipients who were five or more years older than the respondent. Differences across the four sexual identity categories were quantified for males and females separately, using multinomial logistic regression, which allows for the estimate of relative odds for multiple categories versus one reference category. For both males and females, heterosexual youth were the reference group because they had the largest number of youth in the category, thereby resulting in more stable estimates.

Finally, sexual behaviors were examined for differences based upon where one met their most recent sexual partner. Sexual risk differs by both sexual identity and sex assigned at birth. For example, gay adolescent men engage predominantly in penile-anal sex, whereas heterosexual adolescent men engage predominantly in penile-vaginal sex. Because anal tissue is much more likely to tear, anal sex is associated with a higher risk for STIs, including HIV (Leynaert, Downs, & de Vincenzi, 1998; Macdonald et al., 2014; Vittinghoff et al., 1999). Similarly, LGB women are more likely to engage in sex with a sex toy or finger, whereas heterosexual women are more likely to engage in penile-vaginal sex. Although sex with a sex toy or finger is not risk-free (Marrazzo, Coffey, & Bingham, 2005), the STI risk for penile-vaginal sex is higher (Fethers, Marks, Mindel, & Estcourt, 2000). As such, comparisons were made within sex and sexual identity (e.g., female lesbian, gay, or queer youth who met a sexual partner online versus female lesbian, gay, or queer youth who did not meet a sexual partner online). Differences were quantified using logistic regression (StataCorp, 2009).

Results

Among cisgender male respondents (unweighted data), 66% ($n=1,493$) was heterosexual exclusively; 28% ($n=636$) gay or queer; 3% bisexual ($n=60$); and 3% ($n=66$) queer, questioning, unsure, or of other sexual identity (QUO). Among cisgender female respondents (unweighted data), 65% ($n=1,842$) was heterosexual exclusively; 13% ($n=377$) lesbian or gay; 16% ($n=456$) bisexual; and 5% ($n=148$) QUO youth. Participant characteristics (weighted data) are shown in Table 1.

Prevalence Rates of Sexual Behavior Online and In-Person

As shown in Table 2, 18% of respondents 13–18 years of age had a sexual conversation, and 7% had shared a sexual photo of themselves with someone in the past year. In general, sexual conversations and sharing sexual photos was reported with similar frequency online as in-person.

LGB cisgender youth (including queer, questioning, unsure, and youth of ‘other’ identities) were significantly more likely to have a sexual conversation with someone in the past year

than non-LGB youth (Tables 2 and 3). Specifically, the relative odds were elevated for gay, lesbian, and queer youth, Men: aCOR = 3.6, 95% CI: 2.5, 5.2; Women: 4.3, 95% CI: 2.7, 6.7, and bisexual youth, Men: aCOR = 3.7, 95% CI: 1.7, 7.8; Women: 5.0, 95% CI: 3.6, 6.8, compared to heterosexual youth; whereas the odds to engage in sexual conversations for QUO youth were more similar to heterosexual youth, Men: aCOR = 1.6, 95% CI: 0.8, 2.9; Women: aCOR = 1.6, 95% CI: 1.0, 2.6. Similar patterns were noted for sharing sexual photos of oneself.

Almost one in five cisgender youth (22%) reported ever having had oral sex, penetrative sex (i.e., with a finger or sex toy), penile-vaginal sex, and/or penile-anal sex (Table 2). Ten percent of youth who have had sex (2% of all youth) reported meeting one of their two most recent sexual partners online. Among male respondents who had ever had sex, gay and queer youth were 3.4 times as likely and QUO youth were 5.3 times as likely as their same-aged heterosexual male peers to have met one of their two most recent sexual partners online (Table 2). Similar but non-significantly elevated odds were noted for bisexual men. Among cisgender women, rates of meeting a recent sexual partner online versus offline were similar for LGB and non-LGB youth (Table 3).

Potentially Exploitative Relationships

As shown in Table 2, few cisgender youth reported having had sexual conversations or having shared sexual pictures with someone known to be five or more years older (0.4% and 0.2%, respectively). That said, gay and queer, as well as bisexual adolescent men were significantly more likely to have had a sexual conversation with someone five years or older than them (5% and 9%, respectively) compared to same-aged heterosexual men. Elevated rates were also suggested for lesbian, gay and queer women, as well as bisexual women compared to heterosexual women (Table 3). Because none of the heterosexual men reportedly shared photos with someone five years or older, relative differences by sexual identity could not be examined (Table 2). Among women, however, lesbian, gay, and queer women were seven times more likely than their same-aged heterosexual peers to report sharing a sexual photo with someone five years or older (2.5% versus 0.3%, respectively; Table 3).

Characteristics of Youth who Meet Partners Online

Cisgender youth who met one of their two most recent sexual partners online were equally likely to be female (58% vs. 53%), $p = 0.52$; non-White (56% vs. 67%), $p = 0.11$; Hispanic (17% vs. 22%), $p = 0.39$; live in a rural setting (49% vs. 38%), $p = 0.27$; and in a household with lower than average income (24% vs. 30%), $p = 0.38$, than youth who met their partners in-person (data not shown in table). They were also similar by age, M: 16.5 years SE: 0.05; vs. M: 16.5 SE: 0.2, $p = 0.91$.

Among cisgender youth who had at least two sexual partners, meeting one partner online and the other in-person was more common (11%) than meeting both of their last two partners online (2%; data not shown in table). Differences were not apparent by sexual identity: Compared to 14% of heterosexual youth who had at least two sexual partners, 22% of gay, lesbian and queer youth; 15% of bisexual youth; and 14% of QUO youth met one of

their two most recent partners online, $p = 0.21$. That said, compared to 3% of heterosexual and QUO youth, <1% of bisexual youth and 6% of gay, lesbian and queer youth reported meeting *both* of their two most recent sexual partners online, $p < 0.001$.

Partner Characteristics Based upon Whether Partner Was Met Online or In-Person

Male youth

General behavioral indicators: About 16–17% of heterosexual cisgender adolescent men, whether they met their most recent partner online or in-person, said this partner were older than them, as did 37% of gay/queer adolescents who met their most recent partner in-person and 67% who met this person online (Table 4). Almost all (98–100%) of heterosexual men said their most recent sexual partner was female gender, as did 3% of gay/queer men who met their most recent partner in-person and 0% of gay/queer men who met their most recent partner online. Between 25–35% of adolescent men said they did not know their most recent sexual partner's STI status before they had sex (excluding heterosexual men who met their most recent partner online, which appear to be outliers on this particular indicator, likely because of small sample size). Between 45–72% of adolescent men, depending on sexual identity and where they met their partner, talked to their partner about using condoms before the first time they had sex. Between 73–81% of heterosexual men had penile-vaginal sex with their most recent sex partner, compared to 3% of gay/queer men who met their most recent sex partner in-person and 0% of gay/queer men who met their partner online. Of adolescent men who met their most recent partner online, 57% of heterosexual men and 48% of gay/queer men reported generally inconsistent condom use.

Differences among heterosexual men: Among same-aged heterosexual men, very few differences were noted between men who met their most recent sexual partner online versus in-person (Table 4). As an exception, meeting one's partner online was associated with 10 times higher odds of inconsistent condom use generally. There also was suggestion, although non-significant perhaps due to low cell sizes, that heterosexual men who met their most recent partner online were less likely to discuss using condoms, less likely to have a younger partner, and more likely to have penile-vaginal sex than those who met their partner in-person.

Differences among gay and queer men: Among gay/queer men who were the same age, those who met their most recent partner online were 5.6 times as likely to indicate that their partner had a lifetime history of an STI. Sexual concurrency (i.e., having more than one sexual partner) was also more than 4.8 times more likely among gay/queer men who met their most recent partner online than in-person. Older partners were five times as likely as younger partners to be met online versus in-person.

Because only three bisexual and three QUO male youth reported meeting their most recent sexual partner online, comparisons within these identities was not possible.

Female youth

General behavioral indicators: About half of cisgender heterosexual women said their most recent sexual partner was older than them (Table 5). In contrast, 72% of lesbian, gay,

and queer women who met their partner online said this person was older, as did 73% of bisexual women. Between 1–3% of heterosexual women, 76–88% of lesbian, gay, and queer women, 19% of bisexual women said this partner was female gender. About one in four women, across sexual identities and where the partner was met, did not know their most recent sexual partner's STI status before they had sex. Penile-anal sex with one's most recent sexual partner was reported by 8–10% of heterosexual women; 1% of lesbian, gay, and queer women; and 14–28% of bisexual women. About 27% of heterosexual women, 62–88% of gay, lesbian, and queer women, and 34–57% of bisexual women reported inconsistent condom use generally when they have vaginal or anal sex.

Differences among heterosexual women: No significant differences were noted between same-aged heterosexual women who met their most recent sexual partner online than in-person (Table 5). There also was suggestion, although non-significant, perhaps due to low cell sizes, that heterosexualmen whomet their most recent partner online were less likely to discuss using condoms and less likely to have a younger partner.

Differences among lesbian, gay, and queer women: Similarly non-significant findings were noted among same-aged lesbian, gay, and queer women. Findings suggested that partners met online were more likely to be female and to be older than younger compared to the respondent's age, than partners met in-person. Sexual concurrency, vaginal or anal sex with a sex toy or finger, and inconsistent condom use were additionally suggested to be related to meeting one's most recent partner online than in-person, although none of these differences were statistically significant.

Differences among bisexual women: Significant differences were not noted between same-aged bisexual women who met their most recent sexual partner online than in-person. Nonetheless, data suggested that older versus younger partners, talking about condoms before first sex, having penile-anal sex, having sex with a sex toy or finger, and inconsistent condom use might each be associated with meeting one's partner online versus in-person.

Because only two QUO female youth reported meeting their most recent partner online, we did not estimate relative differences between youth who met their partner online versus in-person were.

Discussion

Based upon data from over 5,000 cisgender youth 13 to 18 years of age surveyed in the national Teen Health and Technology study, findings indicate that, in general, the Internet does not seem to be replacing in-person opportunities to explore and express one's sexuality. Even for male bisexual youth, who report the highest rates of online sexual expression, most (76%) have not shared a sexual picture of themselves online. Among those who have had sex, the vast majority (70% and higher) have not met a recent sexual partner online. Interestingly too, among youth who have met sexual partners online, few report the Internet as their sole source of sex partners. The Internet thus appears to enhance and not replace other ways youth are exploring their sexuality.

Rates of Sexual Behavior and Experiences Vary by Sexual Identity

Previous research directly comparing LGB and non-LGB youth suggests that LGB youth are more likely to use the Internet to explore and express their sexuality (Hillier et al., 2012). The current findings suggest an interesting distinction between meeting sexual partners and other types of sexual experiences, however. Consistent with Hillier and colleagues, rates of sexual conversations and sharing sexual pictures are higher for LGB adolescent men and women (including queer, questioning, unsure, and other youth) than for same-aged heterosexual men and women. At the same time, although rates of meeting sexual partners online are three times higher for gay and queer; bisexual; and QUO men than heterosexual men, differences are not noted between heterosexual and lesbian, gay and queer; bisexual; and QUO adolescent women. It seems likely that meeting sexual partners online reflects a greater degree of sexual confidence as compared to other types of behaviors that seem more exploratory. Indeed, neither talking about sex nor sharing sexual photos will necessarily result in meeting someone face-to-face, let alone having sex. Gay and bisexual men typically become certain about their sexual identity earlier than lesbian and bisexual women (Rosario et al., 1996; Savin-Williams, 1990). Perhaps this explains, in part, why sexual minority men in the current study are more likely to use the Internet to increase their sexual pool, whereas sexual minority women in the current study are not. If we were to follow these youth into young adulthood, sexual minority women may become just as likely to meet sexual partners online as sexual minority men. Or, it may be that rates for both groups may decrease as access to like others increase in college, bars, and other in-person adult spaces (Mustanski, Newcomb, Du Bois et al, 2011). Future research could integrate a mixed-methods, qualitative/quantitative approach to better understand the different motivations for using the Internet to find sexual partners for men versus women, and for LGB and non-LGB youth.

In addition to online expressions of sexual selves, in-person sexual conversations and sharing of sexual photos are more common among LGB women and men compared to their same-aged non-LGB peers. Perhaps the higher rates of exploration and expression among LGB youth are reflective of their efforts to solidify their psychosexual identity (Rosario et al., 1996). Unlike heterosexual youth, who grow up in a heteronormative culture and therefore do not typically expend energy trying to understand their sexual attractions, LGB youth use the Internet to explore and understand their feelings (Hillier et al., 2012). Sexual experiences with people of the same and opposite sex, be it online or in-person, likely further enhance this process (Rosario et al., 1996).

Consistent with previous research (Goodenow, Szalacha, Robin, & Westheimer, 2008; Rosario, Hunter, Maguen, Gwadz, & Smith, 2001; Rotheram-Borus, Marelich, & Srinivasan, 1999; Thoma, Huebner, & Rullo, 2013), rates of penile–anal sex with one’s most recent sexual partner appear to be higher for bisexual than for gay, lesbian, and queer women in the current study — although direct statistical comparisons were not made. Nonetheless, bisexual women in the current sample appear to be more likely than gay, lesbian, and queer women to engage in sexual expression online. Moreover, bisexual women appear to be equally, or perhaps more likely, to report prevention behaviors, particularly discussing condom use before first sex, and less likely to report inconsistent condom use than lesbian, gay, and queer women. Perhaps this is because online sexual expression in and of itself is

not necessarily risky behavior and because comparisons of risk behavior are being made among women who had ever had sex and stratified by where one's partner was met.

Importantly too, although rates of online sexual expression are higher for QUO youth than heterosexual youth, they appear to be much lower than those noted for other LGB youth. This may be a reflection of the questioning and unsure nature of these youth's sexual identity. They may be less comfortable exploring their sexuality—especially their same-sex attractions—than youth who have taken on a more formal sexual identity (e.g., the label “lesbian”). Researchers are encouraged to continue to include these youth in studies to continue to build upon their scant literature base.

Meeting Sexual Partners Online May Be a Marker for Risky Sexual Behavior

As has been noted in the adult literature (Benotsch et al., 2002; Bolding, Davis, Hart, Sherr, & Elford, 2006; Elford et al., 2001; Garofalo et al., 2007; Horvath et al., 2006; Kim et al., 2001; White et al., 2013), there is an indication that, for some youth, meeting sexual partners online is associated with risky sexual behavior. Previous literature suggests that meeting online sexual partners is a marker for sexual risk behaviors more generally rather than a marker for intention to engage in sexual risk behavior with that specific partner met online (Bolding et al., 2006; Mustanski, 2007; Mustanski, Newcomb, & Clerkin, 2011). In contrast, indicators that distinguish online and in-person partnering for adolescent GB and non-GB men in the current study are both specific to that partner (i.e., positive STI status) and more general (i.e., concurrent sexual partners). Similar albeit non-significant trends are noted for LGB women as well. Differences in sexual risk behaviors among heterosexual women who met their most recent sexual partner online versus in-person are not apparent. Findings need to be replicated, preferably in national samples that include both LGB and heterosexual youth, before conclusions can be made as to whether and for which adolescents meeting sexual partners online indicate general risk behavior versus an intention to engage in risky sexual behavior with a particular partner. Additional indicators of general risk behavior (e.g., substance use, delinquent behavior) also need to be examined.

Few Youth Are Being Sexually Exploited Online

Of continued parental and professional concern is the potential for youth to be sexually exploited by adults, both those known in-person and met online (Wolak et al., 2008). Our findings support prior research that suggests this is relatively rare (Wolak et al., 2008). Indeed, less than 1% of youth in the current study have shared a sexual photo or had a sexual conversation with someone online five years of age or older. Health professionals should be encouraged that the Internet is not fostering exploitative relationships for the vast majority of youth.

At the same time, LGB youth—especially adolescent men—are more likely to have sexual conversations with people who are five or more years older than them; and there is suggestion that partners of LGB youth who are met online are more likely to be older. Previous research aimed at understanding relationships between Black gay and bisexual adolescent and adult men found that adolescent men appreciated the emotional maturity of an older partner and increased exposure to life experiences, including access to the LGB

community (Arrington-Sanders, Leonard, Brooks, Celentano, & Ellen, 2013). Furthermore, those who had an older partner during first sex said the partner helped them explore sexual positions in a safe environment. Similar motivations may help explain LGB adolescents' relationships with older partners in the current study.

Limitations

The percentage of youth meeting sexual partners online is based upon the two most recent sexual partners. Partner characteristics were examined for one's most recent sexual partner. Eight percent of all youth (31% of youth who have had sex), reported three or more sexual partners in their lifetime, however. It is possible that some of these youth met an earlier sexual partner online who would not be included in the current study and/or with whom youth may have behaved differently. Additionally, the relatively low percentage of youth who reported meeting sexual partners online resulted in little power to detect differences, and limited analyses from being further refined. Moreover, we did not query HIV status. Previous research suggests that this can be an important determinant of risky sexual behavior (Lewnard & Berrang-Ford, 2014). Also, we do not have information about the exact age differences between the youth respondents and their sexual partners because such knowledge may have triggered mandatory reporting laws. Comparisons including more specific age differences may reveal different relations. Finally, while the national sampling frame is a strength of the study, the manner with which youth were recruited may have introduced sampling bias. LGB respondents recruited through GLSEN were likely more aware of and comfortable expressing their sexual identity than those recruited through HPOL, simply because they responded to an advertisement about a survey for LGBT youth. Weighting these youth to the HPOL sample was intended to reduce this bias. It is possible that in doing so, however, different bias was introduced or the bias was not eliminated completely. It is possible too, that HPOL-recruited youth are different than youth not available through the panel. Recruitment was random to eliminate self-selection bias into the sample, although self-selection bias may not have been completely eliminated.

Implications

From the perspective of STI prevention, having sexual conversations and sharing sexual photos may represent a positive opportunity for youth to express and explore their sexuality without STI or pregnancy risk. Healthy sexuality programs could suggest to youth that sexual discussions with romantic partners may be a safe and fun alternative to having vaginal or anal sex. Nonetheless, it is important to talk with youth about the outstanding legal issues surrounding the generation and sharing of sexual photos of minors (Sacco, Argudin, Maguire, & Tallon, 2010) lest they think this is necessarily an all-around safer option.

While older partners may be attractive to adolescents, they also have the potential to have power in the relationship that can decrease the likelihood of consistent condom use (Mustanski, Newcomb, Du Bois et al., 2011). Moreover, older partners are more likely to have STIs because they are more likely to have had multiple sex partners simply by virtue of having had more time "at risk" (i.e., sexually active) (Centers for Disease Control and Prevention, 2011). HIV/STI prevention programs for youth—especially LGB youth—need to

address the benefits and drawbacks of having older sexual partners and provide negotiation skills building education to ensure that they are able to communicate effectively about condom use in relationships with partners of all ages.

Rates of consistent condom use need to be increased across sexual identities: About one in two LGB youth and two in five heterosexual youth report inconsistent condom use. The rates of youth who talk to their partners about STIs and using condoms could also be improved. For example, about one in four youth did not know if their recent sexual partners had an STI. Findings extend beyond the current paper; recent Youth Risk Behavior Surveillance data reveal that two in five high school students who have had sex did not use condoms the last time they had sex (Centers for Disease Control and Prevention, 2011b). Only fifteen percent of high school students report learning about HIV/AIDS in school (Centers for Disease Control and Prevention, 2011b), and 69% of LGBT youth report a lack of attention to homosexuality in sexual health curricula (Kosciw & Diaz, 2006). This is particularly problematic as it suggests that adolescents are likely not taught about the importance of condoms and lubrication during anal sex, which has the highest risk for STI transmission (McGowan, 2011). Strengthening access to inclusive, evidence-based programming for all adolescents is critical. To improve STI preventive behaviors, healthy sexuality programs need to specifically focus on skills building and the need for using condoms or other latex barriers with all partners.

Low rates of consistent condom use reported among LGB adolescent women who have had anal or vaginal sex (one in four who met their most recent partner online) are particularly concerning because HIV prevention programs for LGB women are completely lacking. None of the effective behavioral interventions identified by the Centers for Disease Control and Prevention target LGB adolescent women (Centers for Disease Control and Prevention, 2013). Although often assumed to be at low risk for STIs (Montcalm & Myer, 2000), these data add to the research suggesting that adolescent LGB women would likely benefit from targeted HIV/STI prevention messaging (Goodenow et al., 2008; Rosario, Meyer-Bahlburg, Hunter, & Gwadz, 1999; Saewyc et al., 2006; Thoma et al., 2013).

Meeting sexual partners online is less common than meeting sexual partners in-person for adolescents in the current study sample. With only three in ten youth, or fewer depending on sexual identity, doing so, it is likely an important indicator that should trigger a targeted conversation about STI preventive behaviors with youth. For example, in technology-based STI prevention programs, the baseline survey could include a question about whether the person has ever met a sexual partner online. Those who endorse the question could receive targeted content that explores different reasons for meeting partners online, and the need to enact preventive behavior, including consistent condom use, with all partners.

Conclusion

To our knowledge, this is the first national study that examines how adolescent men and women as young as 13 years of age and with different sexual identities are using the Internet to express themselves sexually, including meeting sexual partners online. Findings suggest that the Internet is not necessarily replacing in-person opportunities to explore and express

one's sexuality. While young people are having sexual conversations, sharing sexual photos, and even meeting sexual partners online, they are engaging in these behaviors in-person as well. Only a minority of youth are meeting sexual partners online, and this is true across all sexual identities. Findings need to be replicated, preferably with other national samples, before conclusions can be made about the STI risk implications of meeting partners online. Healthy sexuality program content that acknowledge some youth are meeting partners online is warranted, but current findings suggest this should not be a main focal point. Instead, given concerning rates of sexual risk behavior across sexual identities, focusing on STI prevention behaviors with all partners, across all sexual identities—including lesbian youth who are typically excluded from discussion of STI risk—is critical.

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Table 1
Demographic characteristics of the weighted Teen Health and Technology sample ($n = 5,542$)

Demographic characteristics	Cisgender male ($n = 2,255$)				Cisgender female ($n = 2,823$)				p -value
	Heterosexual ($n = 1,493$)	Gay, queer ($n = 636$)	Bisexual ($n = 60$)	QUO ($n = 66$)	Heterosexual ($n = 1,842$)	Lesbian, gay, queer ($n = 377$)	Bisexual ($n = 456$)	QUO ($n = 148$)	
Age (M:SE)	15.4 (0.05)	16.2 (0.2)	16.6 (0.3)	15.2 (.2)	15.7 (0.05)	16.1 (0.2)	15.8 (0.1)	15.3 (0.2)	0.005
	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	% (n)	
Race									0.57
White	72.4% (1224)	63.1% (441)	49.4% (41)	76.4% (53)	66.2% (1312)	64.6% (275)	65.8% (320)	57.3% (95)	
Black/African American	14.2% (106)	10.4% (30)	2.2% (1)	12.5% (6)	14.7% (231)	13.7% (26)	9.9% (26)	20.7% (21)	
Asian/Pacific Islander	1.8% (35)	3.4% (23)	2.3% (1)	3.6% (3)	3.1% (70)	3.0% (9)	3.9% (29)	5.8% (11)	
Native American	2.7% (28)	0.7% (10)	0.3% (1)	2.4% (1)	3.1% (39)	2.8% (5)	3.8% (11)	2.3% (2)	
Mixed	6.5% (75)	15.4% (89)	20.3% (11)	5.1% (3)	7.6% (123)	11.2% (41)	11.7% (52)	8.5% (13)	
All other	2.5% (25)	7.0% (43)	25.5% (5)	0.0% (0)	5.4% (67)	4.7% (21)	4.9% (18)	5.3% (6)	
Hispanic	17.3% (139)	28.0% (122)	42.5% (12)	12.9% (5)	18.8% (213)	14.6% (50)	18.4% (57)	17.2% (19)	0.73
Urbanicity									0.19
Urban	27.9% (399)	32.1% (212)	31.5% (16)	30.6% (19)	26.3% (507)	27.2% (110)	28.4% (147)	29.3% (46)	
Suburban	32.5% (608)	41.5% (238)	30.2% (27)	35.6% (28)	29.7% (706)	34.8% (166)	36.4% (194)	33.6% (58)	
Small town	39.6% (486)	26.4% (186)	38.3% (17)	33.7% (19)	44.1% (629)	38.0% (101)	35.2% (115)	37.1% (44)	
Household income									0.43
Lower than average	26.6% (339)	34.7% (143)	24.0% (9)	19.5% (12)	27.5% (438)	21.9% (73)	35.2% (134)	28.1% (34)	
Average	58.6% (877)	54.1% (359)	61.5% (36)	62.1% (39)	60.8% (1134)	62.6% (234)	58.0% (259)	61.8% (96)	
Higher than Average	14.8% (277)	11.2% (134)	14.5% (15)	18.5% (15)	11.7% (270)	15.5% (70)	6.8% (63)	10.2% (18)	

Note. Data were collected online between August 2010–January 2011.

QUO = questioning, unsure, and youth of an 'other' sexual identity

Table 2

Prevalence rates for sexual behavior online and in-person among all youth ($n = 3,715$) and among cisgender adolescent men ($n = 2,255$)

Sexual behavior	All youth (<i>n</i> = 3,715)		Heterosexual (<i>n</i> = 1,493)		Gay, queer (<i>n</i> = 636)		Bisexual (<i>n</i> = 60)		QUO (<i>n</i> = 66)	
	%	% (<i>n</i>)	% (<i>n</i>)	aCOR (95% CI)	% (<i>n</i>)	aCOR (95% CI)	% (<i>n</i>)	aCOR (95% CI)	% (<i>n</i>)	aCOR (95% CI)
Sexual conversation in the past year (any)	18%	19.3% (286)	48.8% (401)	3.6 (2.5, 5.2)	51.5% (31)	3.7 (1.7, 7.8)	25.7% (16)	1.6 (0.8, 2.9)		
Yes, in-person ^a	7%	6.7% (111)	14.6% (133)	2.1 (1.3, 3.4)	29.1% (13)	4.8 (2.1, 11.1)	12.0% (8)	2.0 (0.9, 4.5)		
Yes, online ^a	5%	4.1% (63)	24.2% (234)	6.7 (4.2, 10.6)	34.9% (21)	10.0 (4.4, 22.7)	8.5% (6)	<i>2.4 (0.9, 6.0)</i>		
Yes, all other ways (text messaging, phone, some other way) ^a	15%	14.7% (214)	41.7% (336)	3.8 (2.6, 5.4)	45.0% (26)	4.0 (1.9, 8.5)	18.5% (11)	1.4 (0.7, 2.8)		
Sexual conversation with someone 5 or more years older	0.4%	0.2% (2)	4.6% (37)	32.0 (6.5, 157.4)	9.0% (3)	68.9 (8.3, 571.0)	0.0% (0)	NC		
Shared a sexual picture of oneself in the past year (any)	7%	4.9% (66)	31.8% (295)	8.0 (5.2, 12.4)	37.9% (21)	9.6 (4.0, 22.6)	11.5% (7)	2.7 (1.1, 6.6)		
Yes, in-person ^a	1%	1.1% (13)	3.6% (41)	2.8 (1.2, 6.7)	5.4% (3)	4.4 (1.0, 19.9)	1.3% (1)	1.2 (0.1, 10.4)		
Yes, online ^a	2%	1.6% (21)	18.2% (153)	11.9 (6.2, 22.7)	23.9% (13)	15.6 (5.5, 44.3)	6.5% (4)	4.8 (1.5, 15.6)		
Yes, all other ways (text messaging, some other way) ^a	5%	3.3% (42)	25.0% (228)	9.1 (5.5, 15.0)	17.3% (13)	5.0 (2.0, 12.6)	5.5% (3)	1.8 (0.5, 6.5)		
Shared sexual picture with someone 5 or more years older	0.2%	0.0% (0)	2.6% (24)	NC	1.1% (2)	NC	0.0% (0)	NC		
Any sex (oral, penetrative, vaginal and/or anal) ever	22%	20.9% (305)	55.5% (428)	4.0 (2.6, 6.2)	61.0% (36)	4.6 (2.0, 10.7)	22.8% (15)	1.2 (0.6, 2.3)		
Met one of the two most recent sexual partners online ^b	10%	7.9% (21)	22.9% (128)	3.4 (1.8, 6.5)	21.2% (8)	<i>3.2 (0.9, 11.6)</i>	29.6% (4)	5.3 (1.3, 22.0)		

Note. Two different weighted data sets were used: Estimates for “all youth” were based upon the national sample recruited by Harris Interactive. ($n = 3,715$). Estimates for youth by sexual orientation were based upon the combined Harris Intervention + GLSEN sample ($n = 5,542$). Data were collected online between August 2010–January 2011.

^aCategories are not mutually exclusive; column percentages will sum to over 100%

^bAmong youth who have had sex

aOR = adjusted odds ratios generated from multinomial logistic regression. Covariates include age, self-reported dishonesty in completing the survey, and being alone or not when completing the survey. Non-GB men are the reference group.

NC = Not calculable due to small cell sizes; QUO = questioning, unsure, and youth of an ‘other’ sexual identity

Statistically significant ($p < 0.05$) comparisons are bolded. Borderline significant ($p < 0.10$) comparisons are italicized.

Table 3

Prevalence rates for sexual behavior online and in-person among adolescent cisgender women ($n = 2,823$)

Sexual behavior	Heterosexual ($n = 1,842$)		Lesbian, gay, queer ($n = 377$)		Bisexual ($n = 456$)		QUO ($n = 148$)	
	% (n)		% (n)		% (n)		% (n)	
Sexual conversation in the past year (any)	14.5% (271)		43.5% (185)		45.1% (240)		19.9% (31)	
Yes, in-person ^a	5.0% (92)		16.5% (64)		17.3% (89)		5.8% (10)	
Yes, online ^a	3.6% (70)		19.9% (87)		15.5% (101)		6.7% (13)	
Yes, all other ways (text messaging, phone, some other way) ^a	12.6% (231)		36.1% (154)		39.0% (207)		15.0% (24)	
Sexual conversation with someone 5 or more years older	0.5% (9)		1.9% (5)		1.3% (8)		0.8% (2)	
Shared a sexual picture of oneself in the past year (any)	7.6% (131)		23.5% (98)		23.6% (122)		8.9% (13)	
Yes, in-person ^a	1.1% (21)		2.9% (14)		6.1% (27)		0.4% (1)	
Yes, online ^a	1.8% (34)		6.4% (31)		7.7% (51)		2.4% (3)	
Yes, all other ways (text messaging, some other way) ^a	6.0% (100)		16.6% (69)		15.5% (82)		7.3% (11)	
Shared sexual picture with someone 5 or more years older	0.3% (7)		2.5% (6)		0.9% (4)		0.0% (0)	
Any sex (oral, penetrative, vaginal and/or anal) ever	20.9% (386)		54.0% (191)		54.6% (235)		24.0% (30)	
Met one of the two most recent sexual partners online ^b	10.2% (33)		14.5% (24)		11.0% (22)		5.1% (2)	

Data were collected online between August 2010–January 2011.

^aCategories are not mutually exclusive; column percentages will sum to over 100%^bAmong youth who have had sex

aOR = adjusted odds ratios generated from multinomial logistic regression. Covariates include age, self-reported dishonesty in completing the survey, and being alone or not when completing the survey. Non-GB men are the reference group.

NC = Not calculable due to small cell sizes; QUO = questioning, unsure, and youth of an 'other' sexual identity

Statistically significant ($p < 0.05$) comparisons are bolded. Borderline significant ($p < 0.10$) comparisons are italicized.

Table 4

Sexual behaviors general and specific to the most recent sexual partner based upon whether the partner was met online or not, by youth sexual identity among gay/queer and heterosexual men who have had sex

Characteristics of the most recent sexual relationship and general sexual behaviors	Heterosexual men (<i>n</i> = 279)			Gay/queer men (<i>n</i> = 408)		
	Most recent partner met in-person (<i>n</i> = 266)	Most recent partner met online (<i>n</i> = 13)	aOR	Most recent partner met in-person (<i>n</i> = 319)	Most recent partner met online (<i>n</i> = 89)	aOR
	% (<i>n</i>)	% (<i>n</i>)	(95% CI)	% (<i>n</i>)	% (<i>n</i>)	(95% CI)
Characteristics of the most recent sexual relationship						
Partner's age						
Younger	17.2% (44)	7.6% (1)	RG (1.0)	13.7% (37)	12.1% (11)	RG (1.0)
Same age	67.2% (180)	75.4% (8)	2.3 (0.2, 21.6)	49.4% (163)	20.7% (25)	0.8 (0.2, 3.1)
Older	15.6% (42)	17.0% (4)	2.2 (0.2, 23.9)	36.9% (119)	67.3% (53)	5.1 (1.3, 19.2)
Partner is female gender	98.1% (264)	100.0% (13)	NC	2.8% (7)	0.0% (0)	NC
Partner ever had an STI						
No	72.7% (194)	96.6% (12)	RG (1.0)	60.8% (224)	57.0% (64)	RG (1.0)
Yes	2.0% (8)	0.0% (0)	NC	3.8% (12)	18.4% (6)	5.6 (1.1, 29.2)
Don't know	25.3% (64)	3.4% (1)	0.1 (0.0, 1.0)	35.4% (83)	24.6% (19)	0.7 (0.3, 1.6)
Talked about condoms before having sex ^a	71.8% (171)	57.9% (8)	0.5 (0.1, 2.2)	44.6% (174)	57.2% (56)	1.3 (0.5, 3.0)
Type of sex had with partner						
Oral sex	65.4% (177)	53.8% (8)	0.5 (0.1, 2.0)	94.0% (303)	95.7% (85)	1.7 (0.4, 6.8)
Vaginal or anal sex with a finger or sex toy	61.4% (174)	47.7% (7)	0.5 (0.1, 1.9)	39.5% (135)	50.4% (46)	1.7 (0.7, 3.8)
Vaginal sex with a penis	72.6% (190)	81.2% (10)	1.7 (0.5, 6.2)	2.5% (6)	0.0% (0)	NC
Anal sex with a penis	8.1% (17)	7.6% (1)	0.9 (0.1, 10.6)	62.3% (176)	74.6% (50)	<i>2.1 (1.0, 4.5)</i>
Indicators of generally risky behavior						
Had sex with someone else while in this relationship	10.4% (23)	7.6% (1)	0.7 (0.1, 6.1)	8.3% (34)	31.5% (20)	4.8 (1.6, 14.0)
Use a condom half of the time or less frequently ^b	15.4% (32)	57.0% (5)	9.9 (2.0, 47.4)	46.6% (104)	48.1% (30)	1.1 (0.5, 2.7)

Note: Data were collected online between August 2010–January 2011. Because only 3 of 31 bisexual youth and 3 of 11 QUO youth reported meeting their most recent sexual partner online, they are excluded from the table due to insufficient sample size.

^a Among youth who had oral, penile-anal, or penile-vaginal sex with most recent partner

^b Among youth who have had past-year vaginal/anal sex with a penis, not necessarily the most recent partner.

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OR = adjusted odds ratios generated from logistic regression, comparing youth who met their most recent partner online versus those who met their partner in-person. Covariates include age, self-reported dishonesty in completing the survey, and being alone or not when completing the survey. Two separate LR models are shown: one for gay/queer men and the other for heterosexual men.

NC = Not calculable due to small cell sizes

QUO = questioning, unsure, and youth of an 'other' sexual identity

Statistically significant ($p < 0.05$) comparisons are bolded. Borderline significant ($p < 0.10$) comparisons are italicized.

Table 5

Sexual behaviors general and specific to the most recent sexual partner based upon whether the partner was met online or not, by youth sexual identity among lesbian, gay, bisexual, queer, and heterosexual women who have had sex

Characteristics of the most recent sexual relationship and general sexual behaviors	Heterosexual (<i>n</i> = 365)			Lesbian, gay, queer (<i>n</i> = 186)			Bisexual (<i>n</i> = 228)		
	Most recent partner met in-person (<i>n</i> = 338)	Most recent partner met online (<i>n</i> = 27)	aOR (95 % CI)	Most recent partner met in-person (<i>n</i> = 166)	Most recent partner met online (<i>n</i> = 20)	aOR (95 % CI)	Most recent partner met in-person (<i>n</i> = 211)	Most recent partner met online (<i>n</i> = 17)	aOR (95 % CI)
	% (<i>n</i>)	% (<i>n</i>)	(95 % CI)	% (<i>n</i>)	% (<i>n</i>)	(95 % CI)	% (<i>n</i>)	% (<i>n</i>)	(95 % CI)
Characteristics of the most recent sexual relationship									
Partner's age									
Younger	5.4% (19)	4.4% (1)	1.0 (RG)	10.7% (16)	9.6% (2)	1.0 (RG)	4.6% (11)	0.0% (0)	
Same age	42.3% (150)	42.7% (13)	1.2 (0.1, 9.5)	61.4% (98)	18.6% (9)	0.3 (0.0, 3.5)	43.4% (96)	27.5% (7)	NC
Older	52.3% (169)	52.9% (13)	1.2 (0.1, 10.1)	28.0% (52)	71.8% (9)	2.1 (0.2, 28.3)	52.1% (104)	72.5% (10)	NC
Partner is female gender	0.8% (4)	2.8% (1)	3.3 (0.3, 34.9)	76.1% (127)	87.7% (17)	2.1 (0.2, 17.7)	18.7% (43)	19.3% (2)	0.8 (0.1, 6.3)
Partner ever had an STI									
No	70.2% (243)	69.1% (19)	1.0 (RG)	76.2% (130)	75.0% (17)	1.0 (RG)	73.2% (164)	66.2% (12)	1.0 (RG)
Yes	4.7% (15)	3.7% (1)	0.8 (0.1, 6.8)	3.1% (6)	1.3% (1)	0.4 (0.0, 5.1)	2.7% (7)	3.4% (1)	1.2 (0.1, 22.3)
Don't know	25.1% (80)	27.2% (7)	1.1 (0.4, 3.2)	20.7% (30)	23.8% (2)	1.6 (0.2, 13.8)	24.2% (40)	30.4% (4)	1.2 (0.3, 5.7)
Talked about condoms before having sex ^a	72.9% (230)	73.5% (17)	1.0 (0.4, 2.8)	32.0% (39)	28.4% (7)	1.0 (0.1, 6.8)	60.5% (118)	77.7% (12)	2.1 (0.3, 13.3)
Type of sex had with partner									
Oral sex	64.4% (217)	60.7% (16)	0.9 (0.4, 2.1)	75.1% (123)	45.6% (14)	0.3 (0.1, 1.5)	81.8% (163)	80.1% (14)	0.8 (0.1, 6.6)
Vaginal or anal sex with a finger or sex toy	61.2% (212)	61.3% (14)	1.0 (0.4, 2.4)	94.8% (151)	98.7% (19)	3.7 (0.3, 42.9)	84.2% (174)	93.9% (15)	3.0 (0.5, 18.0)
Vaginal sex with a penis	76.9% (251)	67.4% (19)	0.6 (0.2, 1.8)	17.2% (24)	10.3% (1)	0.7 (0.1, 6.8)	62.1% (117)	53.1% (8)	0.6 (0.1, 2.3)
Anal sex with a penis	9.7% (27)	8.2% (2)	0.8 (0.2, 3.9)	0.8% (4)	1.3% (1)	1.3 (0.1, 29.1)	14.4% (26)	28.1% (2)	2.0 (0.4, 11.3)
Indicators of generally risky behavior									
Had sex with someone else while in this relationship	6.1% (21)	10.2% (3)	1.8 (0.5, 7.3)	5.8% (12)	33.2% (2)	8.3 (0.5, 130.9)	9.3% (17)	4.3% (2)	0.8 (0.1, 6.1)
Use a condom half of the time or less frequently ^b	27.9% (74)	26.2% (5)	0.9 (0.3, 2.8)	61.5% (16)	87.6% (3)	4.9 (0.4, 64.8)	33.9% (43)	56.5% (8)	4.0 (0.6, 25.9)

Note: Data were collected online between August 2010–January 2011. Because only 2 of 27 QUO youth reported meeting their most recent sexual partner online, they are excluded from the table due to insufficient sample size.

^a Among youth who had oral, penile-anal, or penile-vaginal sex with most recent partner

^b Among youth who have had past-year vaginal/anal sex with a penis, not necessarily the most recent partner.

aOR = adjusted odds ratios generated from logistic regression, comparing youth who met their most recent partner online versus those who met their partner in-person. Covariates include age and being alone or not when completing the survey. Three separate LR models are shown: one for heterosexual women, one for lesbian, gay, and queer women, and one for bisexual women.

NC = Not calculable due to small cell sizes

QUO = questioning, unsure, and youth of an 'other' sexual identity