

Satisfaction and Condomless Anal Sex at Sexual Debut and Sexual Risk Among Young Black Same-Sex Attracted Men

Jessica Oidtman^{1,2} · Susan G. Sherman¹ · Anthony Morgan² · Danielle German³ · Renata Arrington-Sanders²

Received: 14 September 2015 / Revised: 17 July 2016 / Accepted: 6 August 2016 / Published online: 20 September 2016
© Springer Science+Business Media New York 2016

Abstract First sex may be a sentinel event crucial to understanding sexual health trajectories of young Black same-sex attracted men (YBSSAM). We sought to understand whether satisfaction, condomless anal sex, and contextual factors during first sex were associated with sexual risk and recent condom use in YBSSAM. A total of 201 YBSSAM aged 15–24 years completed an Internet survey exploring first sex, current condom use, and sexual risk. High risk was defined as ≥ 3 of the following: new/concurrent sex partners, STI history, and no/inconsistent condom use. Multivariate logistic regression assessed the association between predictor (satisfaction and first condomless anal sex) and outcome (sexual risk and condomless sex in the past 3 months) variables. Mean age at first sex was 15.2 (SD = 2.9) years, and emotional satisfaction (51.7 %), physical satisfaction (63.7 %), and condomless first anal sex (55.2 %) were common. YBSSAM describing high levels of satisfaction were no more likely to be at high risk or engage in recent condomless sex. Condomless first sex (AOR = 4.57, $p = .001$), younger age (AOR = 3.43, $p = .02$), and having a partner >5 years older (AOR = 2.78, $p = .03$) at first sex were significantly associated with increased risk. Only condomless first sex (AOR = 4.28, $p < .001$) was associated with condomless recent sex. Satisfaction at first sex may not influence later sexual risk in YBSSAM. However, context of first sex, including condom use at first

sex, may play an important role in subsequent risk. Prevention strategies on condom negotiation prior to first sex may help to mitigate HIV burden in YBSSAM.

Keywords First anal sex · Sexual satisfaction · Sexual risk · Sexual orientation · Race/ethnicity

Introduction

First sex has been described as a key developmental milestone signifying a transition toward adulthood that may have significant positive and negative outcomes in adulthood (Sandfort, Orr, Hirsch, & Santelli, 2008). While early first sex has been associated with increased sexual risk (Sandfort et al., 2008), experiencing satisfaction during first sex has been found to be associated with improved self-esteem (Higgins, Mullinax, Trussell, Davidson, & Moore, 2011), and intimacy and identity development in adolescents (Collins, Welsh, & Furman, 2009; Kroger, 2006) and is an important factor in determining overall relationship satisfaction (Sprecher, Cate, Harvey, & Wenzel, 2004). Experiencing satisfaction during the first sexual experience has also been shown to be associated with current sexual satisfaction, higher locus of control, greater sexual esteem, and lower sexual depression (Smith & Shaffer, 2013).

Some have suggested that sexual satisfaction during first sex may influence future sexual behavior and may be key to understanding why some adolescents and young adults engage in unsafe sex (Higgins et al., 2011; Higgins, Trussell, Moore, & Davidson, 2010; Marston & King, 2006). In heterosexual youth, condom use during the first sexual experience has been shown to be significantly associated with condom use during recent sex (Shafii, Stovel, Davis, & Holmes, 2004; Shafii, Stovel, & Holmes, 2007) and may influence recent behavior even after controlling for risky decision-making, use of alternative contraceptive measure, and alcohol and drug use during first sex (Shafii et al., 2004).

✉ Renata Arrington-Sanders
rarring3@jhmi.edu

¹ Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

² Division of General Pediatrics and Adolescent Medicine, Johns Hopkins School of Medicine, 200 North Wolfe Street, Room 2063, Baltimore, MD 21287, USA

³ Department of Health, Behavior, and Society, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA

Despite findings that first sex may promote or protect against current sexual risk and have psychosocial benefits, few studies have explored the role of sexual satisfaction on current sexual behavior during first sex in Black same-sex attracted men. Given the disproportionate rates of HIV in young Black same-sex attracted men (YBSSAM) (Centers for Disease Control, 2012; Prejean et al., 2011), which some have suggested may result from early first same-sex (Outlaw et al., 2011), more work is needed to explore factors that contribute to sexual satisfaction during first same-sex in young Black men and the relationship between those factors and recent sexual behavior. Understanding same-sex satisfaction and condom use among YBSSAM during first same-sex sexual experiences and how these factors may influence future condom use decisions and overall sexual risk may be helpful for addressing the HIV epidemic in this population.

Researchers have called for a focus on sexual development, including factors relating to the first same-sex sexual experience, to better understand the early sexual health needs of YBSSAM (McClelland & Tolman, 2014). Exploration of young Black men is critical as they may be at a unique intersection of identities that influence the presence or absence of satisfaction during first same-sex (Bowleg, 2013). For example, YBSSAM may exist within two marginalized identities—Black race and sexual orientation/behavior. Marginalization creates social isolation and a lack of social support, which in turn can result in secretive sex and nondisclosure of sexuality that may be protective and adaptive by allowing the individual to preserve important social supports (Frable, Platt, & Hoey, 1998). Previous work has demonstrated that often anti-homosexual expectations of masculinity within Black communities may isolate YBSSAM, leading to increased HIV risk, psychological distress, and feelings of isolation (Fields et al., 2015; Voisin, Bird, Shiu, & Krieger, 2013). Early same-sexual experiences may also help youth to cope with such social stressors (Bauermeister, Carballo-Dieguez, Ventuneac, & Dolezal, 2009) and allow some young men to connect with the larger same-sex attracted community. Prior work that focuses on Black same-sex attracted youth has not specifically examined sexual satisfaction during first same-sex and whether such experiences may impact recent sexual behavior.

While sexual satisfaction has been defined as including concepts of physical and emotional satisfaction in young men who report sex with other men (Arrington-Sanders, Rosenberger, Matson, Novak, & Fortenberry, 2016), a number of contextual and demographic factors at the time of first sex may be relevant to both experiences of satisfaction at first sex and to sexual risk, including those at the individual, sex event, and contextual level. At the individual level, sexual identity development and perceptions of first same-sex sexual experiences may be uniquely influenced by body image (Cash, Maikkula, & Yamamiya, 2004; Wilton, 2009) and religiosity (Garofalo et al., 2014; Higgins et al., 2010; Regnerus, 2007), in addition to age at first sex, which was described above.

Sex-event level and contextual level factors (such as expectations of the experience, sexual role, and partner type) may also uniquely affect perceptions of satisfaction and overall sexual risk in YBSSAM. In addition to condom use at the sex-event level, partner type and expectations of sex (Arrington-Sanders et al., 2016) may influence experiences of satisfaction and risk. This, coupled with sociostructural factors like a lack of social support, feelings of isolation, and oppression, may have important impacts on healthy sexual development (Torres et al., 2013; Waldo, McFarland, Katz, MacKellar, & Valleroy, 2000). A clearer understanding of the early perceptions of sexual satisfaction and condom use during first same-sex, taking into account these individual, sex event, and contextual level factors, may help in understanding the sexual health trajectories and HIV risk behaviors in YBSSAM.

The current study sought to explore what factors present at first sex may be associated with sexual risk among a sample of YBSSAM aged 15–24, with a particular focus on perceived physical satisfaction, emotional constructs related to connectedness, closeness, and intimacy, and condomless first anal sex. This study examined the effect of factors present at first same-sex on overall and current (self-reported condomless sex with a male partner in the past 3 months) sexual risk. We chose to examine both overall sexual risk and recent condomless sex because overall sexual risk may not be indicative of current sexual risk behavior. We approached this question from a conceptual framework, which hypothesizes that physical and emotional satisfaction would be associated with overall sexual risk and recent condomless sex, based on the literature described above. Additionally, we hypothesized that condomless first anal sex would be associated with overall sexual risk and recent condomless sex. Based on this conceptual model, we a priori hypothesized that: (1) higher ratings of physical satisfaction and emotional constructs related to connectedness, closeness, and intimacy during first penetrative same-sex would be associated with higher overall sexual risk and independently associated with lower condom use in the past 3 months; (2) condomless first anal sex would be associated with higher overall sexual risk and independently associated with lower condom use in the past 3 months; (3) contextual and demographic factors, such as those described above at the individual, sex-event, and contextual level, would be associated with experiences of satisfaction, condomless first anal sex, and sexual risk, and affect the relationship between satisfaction or condomless first anal sex and both sexual risk and condomless sex.

Method

Participants

Data were drawn from a cross-sectional Internet survey aimed at examining how young men experience their first same-sex sexual relationships, and whether these relationships are associated with future sexual trajectories. English-speaking, self-

reported Black (Black Caribbean, Black White, Black Arabic, Black African, Black Latino, Black American/African American) males [male sex assigned at birth (natal sex)] aged 15–24 living in the USA, who reported having had prior anal penetrative sex (i.e., insertive or receptive anal sex) with a male partner, were eligible to participate in the Internet survey. The lower age boundary of 15 years was chosen based on previous research that suggests young men initiate first same-sex at 15.5 years (oral sex) and 17 years (anal sex) (Kubicek et al., 2008).

Participants were recruited from November 2014 through March 2015 using a number of methods including flyer posts and referrals from providers at an urban academic pediatric and adolescent medicine clinic, flyer posts on Internet sites frequented by YBSSAM (e.g., Craigslist, Jack'd, Facebook for participants aged ≥ 18 years), at a website that provides at-home STI testing, and at venue-based outreach. Participants aged less than 18 years were eligible to provide consent and participate without parental consent if they acknowledged accessing confidential reproductive health services as part of clinic or venue-based care for HIV/STI counseling and testing given under Maryland Law (Article 20-102 of the Maryland Annotated Code). This criterion was necessary because these services are conditions whereby parental guardian permission is not a reasonable requirement, and a waiver of parental consent was approved through the Johns Hopkins School of Medicine Institutional Review Board for human subjects research.

Procedure

An Internet survey was designed using current recommendations for Internet-based research (Couper, 2008; Dillman, Smyth, & Melani, 2010). The Internet survey and responses were hosted by the site's enterprise web hosting, which provided a firewall server and 256-bit SSL encryption to ensure data security. Upon entering the secured website, participants were given information about the study and provided consent. Participants then completed a series of questions to assess eligibility. Individuals were excluded from participating if they: (1) were not aged 15–24; (2) were not male; (3) were not self-identified as Black; (4) completed the survey before; or (5) reported no prior anal penetrative sex with a male partner. Using embedded web consent, acknowledgement of participants' understanding and agreement to participate was recognized by clicking to enter the study. Informed consent was obtained from all individual participants included in the study.

Eligible participants then completed a 15–45 min questionnaire that contained items regarding sociodemographic characteristics, first and second penetrative anal sex experiences, recent sexual experiences, risk perceptions and behaviors, community experiences, body image, and mood. The wide time frame of the questionnaire was due to the fact that participants may not complete all subsections if the experiences outlined in each subsection did not apply to them. Participants

who completed the entire survey were compensated with a \$25 gift card. The Johns Hopkins School of Medicine Institutional Review Board approved this study, including a waiver of parental consent and embedded web consent procedures. A certificate of confidentiality was obtained.

The online system automatically prohibited individuals who attempted to take the survey more than one time using the same name, mailing address, and e-mail address, based on previous research aimed at effectively handling invalid and suspicious data collected via Internet-based surveys (Bauermeister et al., 2012). Duplicate, falsified, and/or invalid data entries were removed using the following criteria: (a) assessing if the name was a duplicate in some way (e.g., Matthew Smith versus Matt Smith), (b) comparing e-mail addresses (e.g., name@yahoo.com versus name@gmail.com), (c) verifying the legitimacy of e-mail addresses with profiles in public social network accounts (i.e., Facebook), (d) confirming that mailing addresses were legitimate based on US Postal Service records, and (e) determining whether the survey was completed in a non-realistic time frame (set at <10 min based on piloting). Due to the transient nature of the sample, and the potential self-exclusion of participants who were unwilling or unable to provide an accurate mailing address or name, a sensitivity analysis with questionable entries was performed. This sensitivity analysis examined how potential entries with non-legitimate mailing addresses according to US Postal service records or potentially false (unusual spelling or made-up) names, influenced the strength and significance of the final adjusted models and determined whether or not to include them in the final model.

Measures

Primary Outcome Variables

Overall Sexual Risk

Overall sexual risk during recent sex was measured through six questions previously used to assess sexual risk among adolescents via an Internet site (Chai et al., 2010; Gaydos et al., 2009, 2015). These questions included items related to number and frequency of sexual partners, history of STI diagnosis, and condom use. Table 1 depicts the six risk questions, as well as the corresponding risk score for each response. Participants were classified as having low (score = 0–2) or high (score = 3–9) risk during recent sex by summing risk scores across the six questions. The majority of participants in this study were classified as high risk, so to ensure a sufficient number of observations within sexual risk categories, this measure was dichotomized at a cutoff chosen based on prior work (Gaydos et al., 2009, 2015). A composite sexual risk score, rather than an examination of specific risky behaviors, was used for this analysis because YBSSAM may be engaging in multiple risky behaviors, and this study sought to explore overall current sexual risk.

Table 1 Risk questionnaire

Question	Response (Risk Score)
(1) Have you had either (or both) a new sex partner or multiple partners in the last 3 months?	Yes (1) No (0)
(2) Do you have more than one current sex partner at the present time?	Yes (1) No (0)
(3) Have you ever been told you had or been treated for a sexually transmitted infection in the past?	Yes (1) No (0)
(4) How many male sex partners have you had in the last 3 months?	For the sum 0–1 (0)
(5) How many female sex partners have you had in the last 3 months?	2–4 (1) 5–9 (2) 10 or more (3)
(6) When you have sex do you use a condom?	Always (0) Sometimes (3) Never (3)

Depicts the six risk questions, as well as the corresponding risk score for each response used to assess overall current sexual risk

Recent Condomless Sex

We additionally examined associations with recent condomless anal sex in the past 3 months (as an indicator of recent sexual behavior). Condom use measures were collected based on validated questions examining condom use in men who have sex with men (Kashubeck-West & Szymanski, 2008; Rosario, Schrimshaw, & Hunter, 2006). Data were collected (1) continuously by subtracting the total number of protected episodes from the total number of episodes for receptive and insertive anal intercourse separately and (2) continuously as the total number of times the participant reported having condomless intercourse by partner type [main (romantic) male partner and casual (one-time or friend with benefits) male partner]. The distribution of recent condomless sex was skewed, so we formed a binary outcome variable, coded 1 for yes and 0 for no, reflecting whether any history of condomless intercourse with another male partner in the past 3 months was reported. Previous work has suggested that a binary measure representing any condomless intercourse is an appropriate measure for assessing HIV risk (Clerkin, Newcomb, & Mustanski, 2011; Joseph et al., 2011).

Predictor Variables

Physical and Emotional Satisfaction

Global measures of physical and emotional satisfaction during the first penetrative same-sex sexual experience were assessed using a modified version of the Global Measure of Sexual Satisfaction Scale (Lawrance, Byers, & Cohen, 1998). Based on

previous work in YBSSAM aged 15–19 (Arrington-Sanders et al., 2015), the GMSEX was modified in this study to ease participant comprehension and acceptability.

Physical satisfaction at first anal sex was assessed using the following one question:

“Overall, how would you rate how physically (sexually) satisfied you felt with this partner the first time you had anal sex?”

Emotional satisfaction, specifically emotional constructs related to connectedness, closeness, and intimacy, at first anal sex was assessed with one item that read:

“Overall, how would you rate how emotionally satisfied you felt with this partner the first time you had anal sex?”

Responses to both items were given on a 5-point Likert scale of 1–5 ranking satisfaction from not satisfied at all (1) to extremely satisfied (5). To increase comprehension, we provided participants with the definition of physical satisfaction [i.e., how good the sex felt (bodily sensations)], and emotional satisfaction (feelings of connectedness, closeness, and intimacy with your partner). These definitions were based on previous qualitative interviews conducted with YBSSAM (Arrington-Sanders et al., 2015).

For the current analysis, we dichotomized physical and emotional satisfaction at first sex to reflect either the presence (rating ≥ 4) or absence (rating < 4) of satisfaction. This was done for two main reasons. First, because little work has been done to explore aspects of satisfaction in the literature, we sought to understand whether the presence of any satisfaction was associated with sexual trajectories and sexual behavior. Additionally, very few participants in this study described low levels of satisfaction, so we chose to dichotomize satisfaction measures to ensure a sufficient number of observations within satisfaction categories. Dichotomizing satisfaction to reflect its presence or absence is consistent with the limited other work on the subject (Higgins et al., 2011; Sánchez-Fuentes, María del Mar Sánchez & Iglesias, 2014).

Condom Use at First Anal Sex

Condom use during the first penetrative same-sex sexual experience was assessed using a one item question that read “Did you use condoms during this experience?” For the current analysis, participant responses were coded as 1 = condom nonuse during first anal sex and 0 = condom use during first anal sex.

First Same-Sex Contextual Factors

Based on our conceptual framework, we examined the following factors in the models, which may affect the relationship between satisfaction and both sexual risk and condomless sex: respondent’s age at first sex, partner characteristics (i.e.,

age), and sexual arousal (Ratings of Affective Sexual Arousal Scale) (Mosher, 1998). Social support at first sex was examined with one item which read “There were people I can depend on to help me if I really need it.” Responses to this item were given on a 5-point Likert scale, and this item was analyzed as a binary variable representing high perceived social support (4–5) versus low perceived social support (1–3). Age difference with first partner was calculated by taking the difference between partner’s age (in years) and participant’s self-reported age at first sex, and older partners were defined as partners aged ≥ 5 years older at first same-sex (Arrington-Sanders, Leonard, Brooks, Celenzano, & Ellen, 2013).

Other potential factors that may be important to the association between satisfaction and risk based on our conceptual framework included self-reported sexual identity/orientation (homosexual/gay, bisexual, heterosexual, questioning), level of religiosity (Higgins et al., 2010), body image (Multidimensional Body-Self Relations Questionnaire) (Cash, 2000), prior sexual experiences with men (i.e., other types of sex), relationship status at first sex (1 = Dating (main) partner; 0 = Other partner), and time between first same-sex and survey completion. Time between first same-sex sexual experience and survey completion was calculated by subtracting age at first same-sex (in years) from current age calculated using date of birth. Because previous research has demonstrated that socioeconomic status (SES) is related to sexual decisions (Santelli, Lowry, Brener, & Robin, 2000), participants were queried on the highest level of education attained by their mother, which served as a proxy for SES in the current study (0 = Less than High School; 1 = High School Graduate, Technical School, or some College, 2 = College Graduate or Beyond). Previous work has demonstrated that maternal education is an adequate general index of SES (Entwisle & Astone, 1994).

Data Analysis

Descriptive analysis was used to illustrate demographic characteristics of the sample. Bivariate logistic regression analysis was then used to examine whether physical satisfaction, emotional satisfaction, or condom nonuse at first sex was associated with overall sexual risk during recent sex and recent condomless sex. Bivariate logistic regression was additionally used to assess whether any of the first same-sex contextual and other factors that may affect the relationship between satisfaction and both overall current sexual risk and condomless sex were independently associated with satisfaction and risk measures.

To examine the association between physical satisfaction, emotional satisfaction, and condom nonuse at first sex and both overall current sexual risk and recent condomless sex, multivariable logistic regression analysis was used. The first models explored the first hypothesis by examining: the relationship between physical and emotional satisfaction at first same-sex and overall current sexual risk, and separately, the

relationship between physical and emotional satisfaction at first same-sex and recent condomless sex. The second models explored the second hypothesis by examining: the relationship between condomless first anal sex and overall current sexual risk, and separately, the relationship between condomless first anal sex and recent condomless sex. The final models explored the third hypothesis by also including potential factors that may influence the relationship between satisfaction or condomless first sex and risk by including covariates with significant bivariate associations ($p < .10$) with the primary outcomes (overall current sexual risk or recent condomless sex). Both models additionally controlled for time between first same-sex and survey completion in order to control for recall bias associated with this sample, in addition to HIV status, SES, and relationship status, which have all been shown previously to be associated with sexual risk (Mustanski, Newcomb, & Clerkin, 2011; Santelli et al., 2000). Interactions between variables, including possible interactions between physical and emotional satisfaction, were explored. All variables were assessed for collinearity, and collinear variables were excluded from the final, adjusted models. Goodness-of-model-fit was tested using Hosmer and Lemeshow’s (2004) goodness-of-fit tests. To understand how questionable entries influenced the final adjusted models, we additionally performed sensitivity analyses excluding questionable cases. All statistical analyses were performed using Stata, version 13 (College Station, TX).

Results

Online Survey Entries

A description of the final analytic sample is displayed in Fig. 1. A total of 272 entries to the online survey were attempted, and 242 (89 %) entries were completed. Of the completed entries, 46 (19 %) were flagged as suspicious according to the protocol outlined in the methods section above and 196 (81 %) entries were verified as valid. We investigated these 46 suspicious cases to determine whether entries were duplicated based on identical name, mailing address, and e-mail address ($N = 10$) and whether entries were completed in < 10 min ($N = 31$). These 41 entries were excluded from analysis. Five entries (Fig. 1) were categorized as questionable based on non-legitimate mailing addresses according to US Postal service records ($N = 2$) and potentially false names ($N = 3$). These five entries did not change point estimates or inferences in sensitivity analysis. Feedback suggested that some potential participants were concerned about disclosing name and/or mailing address. These five entries were therefore included in the final analytic sample of 201 entries.

Demographic Characteristics

Table 2 shows demographic characteristics of the sample. The mean age in this sample of 201 YBSSAM was 21.4 years

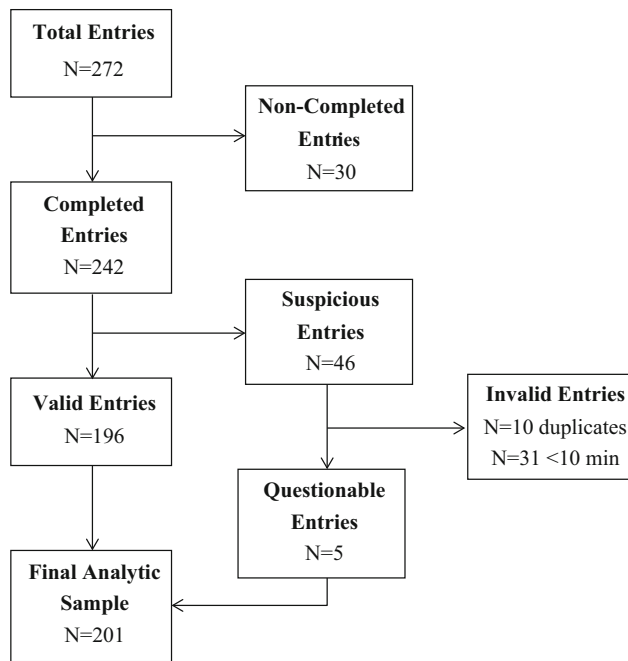


Fig. 1 Breakdown of the sample. Completion rate = $(242/272) = 89\%$. Suspicious entries included entries with possible name duplication, mailing address and/or e-mail address duplication, non-legitimate mailing and/or e-mail address, and surveys completed in <10 min. All known duplicated entries or entries completed in <10 min were removed from the final analytic sample. Five questionable entries were included in the final analytic sample, and sensitivity analysis was run without these entries

(SD = 2.1), and the majority of this sample self-identified as gay (82 %) or bisexual (12 %). Fifty-two participants reported a prior HIV diagnosis (26 %). The mean age at first same-sex was 15.2 (SD = 2.9) years, and most reported condomless first sex ($N = 111, 55\%$). About half ($N = 104, 52\%$) of participants reported high emotional satisfaction during first sex, whereas 64 % ($N = 128$) reported high physical satisfaction at first sex. Most participants were classified as having high overall sexual risk during recent sex ($N = 141, 70\%$). Additionally, 54 % ($N = 108$) reported history of condomless intercourse with a male partner during the past 3 months.

Bivariate Analyses

Overall Sexual Risk

In bivariate analyses (Table 3), reporting high levels of emotional satisfaction during first same-sex was associated with 2.17 times the odds (95 % CI 1.17–4.03, $p = .01$) of having overall high sexual risk during recent sex. However, physical satisfaction was not significantly associated with being at high risk overall during recent sex (OR 0.92, 95 % CI 0.49–1.73, $p = .80$). Indi-

Table 2 Participant characteristics ($N = 201$)

	Mean (SD), N (%)
Age (years) ^a	
Mean (SD)	21.4 (2.1)
Geographic location	
Baltimore-Towson	147 (73.1 %)
New York	29 (14.4 %)
Washington, D.C.	7 (3.5 %)
Philadelphia	2 (1.0 %)
North Carolina	3 (1.5 %)
Maryland	3 (1.5 %)
Delaware	1 (0.5 %)
Florida	1 (0.5 %)
Louisiana	1 (0.5 %)
California	1 (0.5 %)
Texas	1 (0.5 %)
Connecticut	1 (0.5 %)
New Jersey	1 (0.5 %)
South Carolina	1 (0.5 %)
Mississippi	1 (0.5 %)
North Carolina	1 (0.5 %)
Sexual orientation	
Homosexual/gay	165 (82.1 %)
Bisexual	25 (12.4 %)
Heterosexual	2 (1.0 %)
Questioning	9 (4.5 %)
History of sex in the past 3 months	
N (%)	153 (76.1 %)
Condomless sex in the past 3 months	
N (%)	108 (53.7 %)
Risk of STI/HIV infection	
N (%)	141 (70.2 %)
HIV diagnosis	
N (%)	52 (25.9 %)
Age at first sex	
Mean (SD)	15.2 (2.9)
Emotional satisfaction ^b	
High	104 (51.7 %)
Low	97 (48.3 %)
Physical satisfaction ^b	
High	128 (63.7 %)
Low	73 (36.3 %)
Sexual arousal ^b	
High	181 (90.0 %)
Low	20 (10.0 %)
Prior sexual experiences ^b	
Yes	86 (42.8 %)
No	115 (57.2 %)
Condom use ^b	
Yes	90 (44.8 %)

Table 2 continued

	Mean (SD), <i>N</i> (%)
No	111 (55.2 %)
Partner \geq 5 years older ^b	
Yes	47 (23.4 %)
No	154 (76.6 %)
Partner type ^b	
Main (dating)	34 (21.9 %)
Other	157 (78.1 %)
Body image	
Mean (SD)	22.3 (6.5)
Religiousness compared to peers	
Less religious	85 (42.3 %)
About as religious	83 (41.3 %)
More religious	33 (16.4 %)
Mother's education level	
Less than high school	29 (14.4 %)
High school graduate, technical	145 (86.6 %)
School, or some college, college graduate or beyond	27 (13.43 %)

^a Participant's age was missing for 6.5 % of entries. Missing data were imputed as the mean value of the sample

^b At first sex

viduals who reported a condomless first experience with another man had 7.65 times the odds of being at high risk overall during recent sex (95 % CI 3.50–16.74, $p < .001$). Individuals aged <16 -years at first same-sex had 6.25 times the odds of being at overall high sexual risk during recent sex compared to individuals aged ≥ 16 years at first sex (95 % CI 3.05–12.82, $p < .001$). Social support was not significantly associated with overall current sexual risk (OR 0.63, 95 % CI 0.35–1.17, $p = .14$).

Recent Condomless Sex

In bivariate analyses, emotional satisfaction, self-reported HIV-positive diagnosis, reporting first sex prior to age 16, and condom nonuse at first penetrative same-sex sexual experience were significantly associated with recent condomless sex (Table 3). Individuals who reported emotional constructs related to connectedness, closeness, and intimacy were significantly more likely to report recent condomless sex (OR 1.92, 95 % CI 1.10–3.38, $p = .02$). Age <16 years and condomless sex at sexual debut were significantly associated with increased odds of recent condomless sex (OR 3.27, 95 % CI 1.83–5.84, $p < .001$; OR 6.07, 95 % CI 3.25–11.33, $p < .001$, respectively). In addition, reporting an HIV diagnosis was similarly associated with increased odds of recent condomless sex (OR 2.41, 95 % CI 1.23–4.71, $p = .01$). Physical satisfaction (OR 1.21, 95 % CI 0.68–2.16, $p = .51$) was not significantly associated with condomless sex in bivariate analyses.

Multivariate Analysis

Overall Sexual Risk

The first model explored the first hypothesis by examining the relationship between physical and emotional satisfaction at first same-sex and overall sexual risk during recent sex, controlling only for time between first same-sex and survey completion (Table 4). In this model, physical satisfaction at first sex was associated higher levels of overall sexual risk during recent sex (AOR 0.43, 95 % CI 0.19–0.98, $p = .05$), controlling for time between survey completion and first sex. Higher perceived emotional satisfaction at first sex was additionally associated with greater odds of overall sexual risk during recent sex (AOR 3.48, 95 % CI 1.56–7.81, $p < .01$), controlling for time between survey completion and first sex.

The second model explored the second hypothesis by examining the relationship between condomless first anal sex and overall sexual risk during recent sex, controlling only for time between first same-sex and survey completion. In this model, condomless first anal sex was associated higher levels of overall sexual risk during recent sex (AOR 6.22, 95 % CI 2.78–13.89, $p < .001$), controlling for time between survey completion and first sex.

In final multivariable analysis that adjusted for factors that may influence the relationship between satisfaction or condomless first sex and overall sexual risk during recent sex (hypothesis 3), both physical satisfaction (AOR 0.63, 95 % CI 0.24–1.61, $p = .33$) and emotional satisfaction (AOR 1.96, 95 % CI 0.81–4.73, $p = .14$) during first same-sex were not associated with reporting high overall sexual risk during recent sex. Instead, reporting condomless first sex was associated with higher sexual risk overall during recent sex (AOR 4.57, 95 % CI 1.94–10.77, $p < .01$). Additionally, younger age at first same-sex was associated with increased odds of overall sexual risk during recent sex (AOR 3.43, 95 % CI 1.23–9.56, $p = .02$). Individuals reporting a partner ≥ 5 years older at first same-sex were also more likely to be at overall higher sexual risk during recent sex (AOR 2.78, 95 % CI 1.08–7.11, $p = .03$). Given the high HIV prevalence in this sample, the final model adjusted for HIV diagnosis. Additionally, the final model adjusted for relationship status and maternal education (as a proxy for SES), as these factors have been shown to be associated with risk behavior in adolescents. No significant interactions between risk factors were found, including a possible interaction between physical and emotional satisfaction.

Recent Condomless Sex

In the regression analysis exploring the relationship between physical and emotional satisfaction at first sex and recent condomless anal sex (hypothesis 1), physical satisfaction at first sex was not associated with recent condomless sex, adjusting only

Table 3 Unadjusted relative odds of sexual risk

	Overall sexual risk ($N = 201$)		Recent condomless sex ($N = 201$)	
	OR (95 % CI)	p	OR (95 % CI)	p
Physical satisfaction ^a	0.92 (0.49–1.73)	.800	1.21 (0.68–2.16)	.513
Emotional satisfaction ^a	2.17 (1.17–4.03)	.014 ^c	1.92 (1.10–3.38)	.022 ^c
HIV diagnosis	2.94 (1.29–6.73)	.010 ^c	2.41 (1.23–4.71)	.010 ^c
Age < 16 years ^a	6.25 (3.05–12.82)	<.001 ^d	3.27 (1.83–5.84)	<.001 ^d
Time since 1st sex	1.21 (1.09–1.35)	.067 ^b	1.21 (1.10–1.34)	<.001 ^d
Sexual arousal ^a	2.62 (1.03–6.67)	.044 ^c	1.18 (0.47–2.97)	.725
Prior sexual experiences ^a	0.54 (0.29–1.00)	.050 ^b	0.65 (0.37–1.15)	.137
Condomless sex ^a	7.65 (3.50–16.74)	<.001 ^d	6.07 (3.25–11.33)	<.001 ^d
Social support ^a	0.63 (0.35–1.17)	.143	0.60 (0.34–1.05)	.074 ^b
Partner \geq 5 years older ^a	2.49 (1.08–5.70)	.032 ^c	1.36 (0.70–2.64)	.360
Mother's education	0.95 (0.54–1.68)	.862	0.94 (0.55–1.58)	.804
(Main) dating partner ^a	0.60 (0.30–1.21)	.152	0.65 (0.33–1.28)	.214
Body image	0.97 (0.92–1.02)	.243	0.98 (0.94–1.02)	.371
Religiosity	1.07 (0.70–1.63)	.752	0.98 (0.68–1.47)	.991

^a At first sex^b $p < .10$ ^c $p < .05$ ^d $p < .001$ **Table 4** Relative odds of sexual risk

	Overall sexual risk ($N = 201$)		Recent condomless sex ($N = 201$)	
	AOR (95 % CI)	p	AOR (95 % CI)	p
<i>Hypothesis 1</i>				
Physical satisfaction ^a	0.43 (0.19–0.98)	.045 ^b	0.74 (0.34–1.61)	.448
Emotional satisfaction ^a	3.48 (1.56–7.81)	.002 ^b	2.25 (1.06–4.77)	.035 ^b
Time since 1st sex	1.21 (1.08–1.35)	.001 ^b	1.21 (1.09–1.33)	.001 ^b
<i>Hypothesis 2</i>				
Condomless sex ^a	6.22 (2.78–13.89)	<.001 ^c	4.95 (2.60–9.44)	<.001 ^c
Time since 1st sex	1.13 (1.01–1.27)	.029 ^b	1.14 (1.03–1.26)	.029 ^b
<i>Hypothesis 3</i>				
Physical satisfaction ^a	0.63 (0.24–1.61)	.332	0.92 (0.39–2.19)	.851
Emotional satisfaction ^a	1.96 (0.81–4.73)	.135	1.77 (0.78–4.02)	.176
Age < 16 years ^a	3.43 (1.23–9.56)	.018 ^b	1.26 (0.55–2.86)	.586
Time since 1st sex	0.99 (0.85–1.16)	.940	1.09 (0.97–1.25)	.149
Sexual arousal ^a	2.87 (0.87–9.47)	.084	–	–
Condomless sex ^a	4.57 (1.94–10.77)	.001 ^b	4.28 (2.18–8.40)	<.001 ^c
Partner \geq 5 years older ^a	2.78 (1.08–7.11)	.033 ^b	–	–
(Main) dating partner ^a	0.64 (0.27–1.49)	.302	0.77 (0.36–1.65)	.504
Socioeconomic status	1.06 (0.52–2.16)	.880	1.06 (0.58–1.94)	.852
HIV diagnosis	2.25 (0.81–6.24)	.119	1.44 (0.65–3.19)	.363

^a At first sex^b $p < .05$ ^c $p < .001$

for time between first sex and survey completion (AOR = 0.74, 95 % CI 0.34–1.61, $p = .45$). However, emotional satisfaction was significantly associated with increased odds of recent condomless sex, adjusting only for time between first sex and survey completion. Individuals who reported high levels of emotional constructs related to connectedness, closeness, and intimacy had 2.25 times the odds (95 % CI 1.06–4.77, $p = .04$) of reporting recent condomless sex, as compared to individuals who did not report high levels of emotional satisfaction.

The second model explored the second hypothesis by examining the relationship between condomless first anal sex and recent condomless anal sex, controlling only for time between first same-sex and survey completion. In this model, condomless first anal sex was associated increased odds of recent condomless sex (AOR 4.95, 95 % CI 2.60–9.44, $p < .001$), controlling for time between survey completion and first sex.

In final multivariable analyses (hypothesis 3), neither physical satisfaction (AOR 0.92, 95 % CI 0.39–2.19, $p = .85$) nor emotional satisfaction (AOR 1.77, 95 % CI 0.78–4.02, $p = .18$) was significantly associated with condomless sex in the past 3 months after adjusting for other factors in the model. However, reporting condomless first sex was associated with reporting condomless sex in the past 3 months (AOR 4.28, 95 % CI 2.18–8.40, $p < .001$). Again, the final model adjusted for HIV diagnosis, relationship status, and maternal education (as a proxy for SES), as these factors have been shown to be associated with risk behavior in adolescents. No significant interactions between risk factors or between physical and emotional satisfaction were found.

Discussion

This work suggests that first sexual experiences may shape current sexual risk, but such experiences may not be independently motivated by physical and emotional satisfaction during sexual debut. Instead, condom use at first sex and the context of first sex, including age and age of the partner, played an important role in subsequent risk and condomless sex. Public health experts have recognized the need to explore satisfaction as an important driver of overall sexual health and well-being (Davison, Bell, LaChina, Holden, & Davis, 2009; Robinson, Bockting, Rosser, Miner, & Coleman, 2002; Scott, Sandberg, Harper, & Miller, 2012). The current study represents an important first step in understanding how satisfaction and first sexual experiences are associated with future sexual risk in a sample of YBSSAM. Unlike previous studies that have mostly focused on heterosexual adolescents, the findings of this work fulfill a significant gap in the literature by focusing on a sample of young Black men engaging in first same-sex. These findings also support a life course perspective that argues that experiences during important periods of development can influence future disease risk (Ben-Shlomo & Kuh, 2002).

We hypothesized that physical and emotional satisfaction would be independently associated with both overall sexual risk during recent sex and more recent condomless sex. Yet, in contrast to this hypothesis and previous research among heterosexual youth (Crosby, Milhausen, Yarber, Sanders, & Graham, 2008; Hensel, Stupiansky, Herbenick, Dodge, & Reece, 2012), only emotional satisfaction was associated with recent condomless sex in bivariate analyses and the model controlling only for time between first sex and survey completion. Although higher levels of physical and emotional satisfaction at first sex were significantly associated with overall sexual risk during recent sex in the model controlling only for time between survey completion and first same-sex, perceived satisfaction was not a significant factor in the final model including contextual factors at the time of first same-sex. In contrast, we found that condomless first anal sex was associated with both overall sexual risk and recent condomless sex even in final models controlling for other factors, suggesting that decisions regarding condom use at first sex may play an important role in subsequent risk behavior. Additionally, this work suggests that several factors that have been demonstrated previously to be associated with risk, including age, and partner age at first sex, were significantly associated with current sexual risk in these analyses, and may be important in directing future sexual risk behaviors among YBSSAM.

The first sexual experience is likely a critical factor influencing risk trajectories in adolescents. In this sample, the mean age at first penetrative sexual experience was 15.2 years, which is in line with other studies (Kaplan, Jones, Olson, & Yunzal-Butler, 2013; Kubicek et al., 2008). The finding that youth who engage in first same-sex prior to age 16 have increased odds of overall sexual risk during recent sex is also supported by previous work that has examined the role of younger age on risk in HIV-positive young men who have sex with men (Outlaw et al., 2011). This study expands upon the current literature focused primarily on heterosexual youth by indicating that condom use at first sex is associated with recent condom use and may influence recent behavior even after controlling for risky decision-making (Shafii et al., 2004, 2007). This work also suggests that first same-sex behaviors are critical to recent sexual behaviors and possibly risk.

Previous work has demonstrated that older partners may increase sexual risk among YBSSAM (Arrington-Sanders et al., 2013; Fields et al., 2012), which is in line with the findings of this study. A potential lack of appropriate sexual health information at the time of first sex may be especially exacerbated in YBSSAM engaging in first same-sex at a young age, especially among youth with older partners. Previous work has shown that limited information about sexual health may lead some YBSSAM to lack the skills necessary to negotiate condom use during first sex, leaving some to rely on older partners and sexually explicit material to learn about sex (Arrington-Sanders et al., 2013, 2015; Kubicek, Beyer, Weiss, Iverson, & Kipke, 2010). However, such age-discordant relationships may limit younger

adolescents' ability to negotiate condom use during first and subsequent same-sex (Fields et al., 2012), thus putting these young men at high overall sexual risk. Because previous research has demonstrated that older partners may influence condom use negotiation (Fields et al., 2012), it may be that young men are engaging in first sexual experiences with older partners and lack the skills necessary to negotiate condom use in these relationships. Additionally, previous work has demonstrated that older partners for YBSSAM are more likely to be HIV infected compared to their white counterparts (Hurt et al., 2010; Millett et al., 2012), which increases both their risk and salience of early preventive efforts among this group.

In contrast with previous work, other contextual factors, including body image, religiosity, partner type, and social support, were not significantly associated with either overall sexual risk or recent condomless sex. It may be that these contextual factors have a direct relationship with satisfaction and/or condom use at first sex, but are not significantly associated with overall sexual risk or recent condomless sex because satisfaction and/or condom use at first sex mediates this relationship. Future work is needed to further explore this phenomenon.

Limitations

The results of the present study should be viewed in light of potential limitations. First, survey questions were retrospective, and our attempt to control for potential recall bias may not have been sufficient. The cross-sectional nature of this study also limits our ability to draw causal conclusions. Future work should employ a prospective cohort study that captures YBSSAM at or around the time of first same-sex and follows them forward in time. This study relied on an online sample of YBSSAM who were recruited through online advertisement, clinic referral, and venue outreach that may be different from other random samples of YBSSAM. Additionally, YBSSAM aged <18 years were eligible only if they had received care, outreach or venue services from a single urban clinic, potentially introducing some selection bias, since this particular sample is to some degree engaged in HIV-related services. YBSSAM who are not seeking such services, and may therefore be at even higher risk of HIV, were not included. Although we used a rigorous protocol to remove duplicate, invalid, and suspicious entries from analysis, we also may have inadvertently removed some potential participants who were afraid to provide personal identifying information due to perceived stigma. Additionally, the current study did not directly assess the role of Black culture in influencing sexual risk behavior, despite previous work that suggests that YBSSAM are at the unique intersection of identities (Bowleg, 2013), which may influence the presence or absence of satisfaction during first same-sex and risk taking behavior.

Physical and emotional satisfaction measures were one-question items and may not accurately reflect these constructs

in their entirety. Additionally, the current study focused on emotional constructs related to connectedness, closeness, and intimacy, although people may have sex for a range of emotional reasons. Because we dichotomized these measures, we also limited the precision of our estimates, which may partially explain our null finding. More research is needed to validate our measure of overall sexual risk in young males, especially YBSSAM, as the cutoffs between risk levels may not be completely accurate. Additionally, in creating a binary variable for recent condomless sex, this study was not able to differentiate between receptive and insertive anal sex, and decreases the ability of this study to determine relative level of risk for infection. Future work should explore how the association of contextual factors at first sex on sexual risk may differ by sexual position. Despite these limitations, our findings contribute significantly to the current knowledge on the role first same-sex sexual experiences have on sexual trajectories and risk in YBSSAM.

Implications

Our findings highlight the importance of first same-sex in determining future condomless sex and overall sexual risk in YBSSAM. Understanding first same-sex sexual experiences in YBSSAM may provide researchers with insight into high-risk early behavior patterns that can be used in the formation of HIV prevention interventions. The ability to inquire about early high-risk sexual patterns to inform current sexual risk behavior may be especially important to clinicians as they determine pre-exposure prophylaxis need for young gay and bisexual patients.

Although not directly assessed in the current analysis, empirical data have suggested that limited knowledge regarding sexual health and health protective behaviors at the time of first sex may lead some YBSSAM to employ maladaptive behaviors, and may be associated with future risk trajectories (Arrington-Sanders et al., 2015; Bauermeister et al., 2010; Kubicek et al., 2008). This study demonstrated that not only are many YBSSAM engaging in sex for the first time at a young age, but that this first same-sex is often occurring without condom use. In an environment where culturally competent and relevant sexual health education is not the norm due to a concerning lack of emphasis on LGBT health in educational curricula nationally, these youth may be relying on resources such as older partners to teach them about sex, leading to a lack of condom use and the overall higher sexual risk observed in this study. Given the high rate of HIV infection among YBSSAM shown in this study, there needs to be a commensurate increase in the development of relevant sexual health education available to this group. Reshaping of existing sexual health education, regardless of if this is done in schools, LGBT youth centers, or other areas where YBSSAM may frequent, may help to mitigate HIV risk in this group.

Given these findings, more work is needed to prepare YBSSAM for their first sexual experience. Communicating to YBSSAM

about relationship and sexual negotiating skills may be critical in reducing risk of HIV infection in this group, especially given that this work suggests that YBSSAM are often engaging in sex at a young age with older partners, and lack the skills needed to negotiate safer sex, including condom use. Several key strategies could be used to expand relevant sexual health education for YBSSAM, including delaying first sex to an older age and equipping YBSSAM with the skills necessary to effectively negotiate safer sex (especially in a context where older partners may demand nonuse). Providers are poised to provide these young men with necessary sexual health information including information on condoms, lube, and STI/HIV prevention before these young men engage in sex for the first time.

In addition, although social support was not significantly associated with overall sexual risk or recent condomless sex in this sample, supportive social networks around the time of first sex appear to be important for disseminating much needed sexual health education (Glick & Golden, 2014). In the absence of supportive social networks, YBSSAM rely on alternative resources to learn about same-sex (Arrington-Sanders et al., 2015), suggesting that YBSSAM should be able to access information regarding healthy sexual development (including delaying first sex and effective negotiation of safer sex) in established social networks, including local venues supporting gay and bisexual youth. Using established social networks to disseminate information to prepare YBSSAM for first sex may be especially effective in reducing sexual risk in these youth. This work suggests that first sex may be a salient event in determining risk trajectories in YBSSAM and that more work is needed to support young gay and bisexual men prior to first same-sex sexual experiences to adequately equip them with the skills necessary to engage in healthy, safe, and satisfying relationships.

Funding This work was funded by National Institute of Child Health and Development K23 HD074470 (Sanders) award.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

References

- Arrington-Sanders, R., Harper, G. W., Morgan, A., Ogunbajo, A., Trent, M., & Fortenberry, J. D. (2015). The role of sexually explicit material in the sexual development of same-sex-attracted black adolescent males. *Archives of Sexual Behavior, 44*(3), 597–608.
- Arrington-Sanders, R., Leonard, L., Brooks, D., Celentano, D., & Ellen, J. (2013). Older partner selection in young African-American men who have sex with men. *Journal of Adolescent Health, 52*(6), 682–688.
- Arrington-Sanders, R., Rosenberger, J. G., Matson, P., Novak, D. S., & Fortenberry, J. D. (2016). Factors associated with emotional satisfaction during first anal intercourse in a sample of YMSM. *Journal of Homosexuality, 63*, 968–984.
- Bauermeister, J. A., Carballo-Diequez, A., Ventuneac, A., & Dolezal, C. (2009). Assessing motivations to engage in intentional condomless anal intercourse in HIV-risk contexts (“bareback sex”) among men who have sex with men. *AIDS Education and Prevention, 21*(2), 156–168.
- Bauermeister, J. A., Johns, M. M., Sandfort, T. G., Eisenberg, A., Grossman, A. H., & D’Augelli, A. R. (2010). Relationship trajectories and psychological well-being among sexual minority youth. *Journal of Youth and Adolescence, 39*(10), 1148–1163.
- Bauermeister, J. A., Pingel, E., Zimmerman, M., Couper, M., Carballo-Diequez, A., & Strecher, V. J. (2012). Data quality in HIV/AIDS web-based surveys: Handling invalid and suspicious data. *Field Methods, 24*(3), 272–291.
- Ben-Shlomo, Y., & Kuh, D. (2002). A life course approach to chronic disease epidemiology: Conceptual models, empirical challenges and interdisciplinary perspectives. *International Journal of Epidemiology, 31*(2), 285–293.
- Bowleg, L. (2013). “Once you’ve blended the cake, you can’t take the parts back to the main ingredients”: Black gay and bisexual men’s descriptions and experiences of intersectionality. *Sex Roles, 68* (11–12), 754–767.
- Cash, T. F. (2000). *The multidimensional Body-Self Relations Questionnaire*. Norfolk, VA: Old Dominion University Press.
- Cash, T. F., Maikkula, C. L., & Yamamiya, Y. (2004). Baring the body in the bedroom: Body image, sexual self-schemas, and sexual functioning among college women and men. *Electronic Journal of Human Sexuality, 7*, 1–9. <http://www.ejhs.org/volume7/bodyimage.html>.
- Centers for Disease Control. (2012). Estimated HIV incidence among adults and adolescents in the United States, 2007–2010. *HIV Surveillance Supplemental Report, 17*(4), 1–26.
- Chai, S. J., Aumakhan, B., Barnes, M., Jett-Goheen, M., Quinn, N., Agreda, P., et al. (2010). Internet-based screening for sexually transmitted infections to reach nonclinic populations in the community: Risk factors for infection in men. *Sexually Transmitted Diseases, 37*(12), 756–763.
- Clerkin, E. M., Newcomb, M. E., & Mustanski, B. (2011). Unpacking the racial disparity in HIV rates: The effect of race on risky sexual behavior among black young men who have sex with men (YMSM). *Journal of Behavioral Medicine, 34*(4), 237–243.
- Collins, W. A., Welsh, D. P., & Furman, W. (2009). Adolescent romantic relationships. *Annual Review of Psychology, 60*, 631–652.
- Couper, M. P. (2008). *Designing effective web surveys*. New York: Cambridge University Press.
- Crosby, R., Milhausen, R., Yarber, W. L., Sanders, S. A., & Graham, C. A. (2008). Condom ‘turn offs’ among adults: An exploratory study. *International Journal of STD and AIDS, 19*(9), 590–594.
- Davison, S. L., Bell, R. J., LaChina, M., Holden, S. L., & Davis, S. R. (2009). The relationship between self-reported sexual satisfaction and general well-being in women. *Journal of Sexual Medicine, 6*(10), 2690–2697.
- Dillman, D. A., Smyth, J. D., & Melani, L. (2010). *Internet, mail, and mixed-mode surveys: The tailored design method*. Toronto: Wiley.
- Entwisle, D. R., & Astone, N. M. (1994). Some practical guidelines for measuring youth’s race/ethnicity and socioeconomic status. *Child Development, 65*(6), 1521–1540.
- Fields, E. L., Bogart, L. M., Smith, K. C., Malebranche, D. J., Ellen, J., & Schuster, M. A. (2012). HIV risk and perceptions of masculinity among young black men who have sex with men. *Journal of Adolescent Health, 50*(3), 296–303.
- Fields, E. L., Bogart, L. M., Smith, K. C., Malebranche, D. J., Ellen, J., & Schuster, M. A. (2015). “I always felt I had to prove my manhood”: Homosexuality, masculinity, gender role strain, and HIV risk

- among young black men who have sex with men. *American Journal of Public Health*, 105, 122–131.
- Frable, D. E. S., Platt, L., & Hoey, S. (1998). Concealable stigmas and positive self-perceptions: Feeling better around similar others. *Journal of Personality and Social Psychology*, 74(4), 909–922.
- Garofalo, R., Kuhns, L. M., Hidalgo, M., Gayles, T., Kwon, S., Muldoon, A. L., et al. (2014). Impact of religiosity on the sexual risk behaviors of young men who have sex with men. *Journal of Sex Research*, 52(5), 590–598.
- Gaydos, C. A., Barnes, M., Aumakhan, B., Quinn, N., Agreda, P., Whittle, P., et al. (2009). Can e-technology through the internet be used as a new tool to address the chlamydia trachomatis epidemic by home sampling and vaginal swabs? *Sexually Transmitted Diseases*, 36(9), 577–580.
- Gaydos, C. A., Jett-Goheen, M., Barnes, M., Dize, L., Barnes, P., & Hsieh, Y. (2015). Use of a risk quiz to predict infection for sexually transmitted infections: A retrospective analysis of acceptability and positivity. *Sexually Transmitted Infections*, 92(1), 44–48.
- Glick, S. N., & Golden, M. R. (2014). Early male partnership patterns, social support, and sexual risk behavior among young men who have sex with men. *AIDS and Behavior*, 18(8), 1466–1475.
- Hensel, D. J., Stupiansky, N. W., Herbenick, D., Dodge, B., & Reece, M. (2012). Sexual pleasure during condom-protected vaginal sex among heterosexual men. *Journal of Sexual Medicine*, 9(5), 1272–1276.
- Higgins, J. A., Mullinax, M., Trussell, J., Davidson, J. K., & Moore, N. B. (2011). Sexual satisfaction and sexual health among university students in the United States. *American Journal of Public Health*, 101(9), 1643–1654.
- Higgins, J. A., Trussell, J., Moore, N. B., & Davidson, J. K. (2010). Virginity lost, satisfaction gained? Physiological and psychological sexual satisfaction at heterosexual debut. *Journal of Sex Research*, 47(4), 384–394.
- Hosmer, D. W., Jr., & Lemeshow, S. (2004). *Applied logistic regression*. Hoboken, NJ: Wiley.
- Hurt, C. B., Mathew, D. D., Calabria, M. S., Green, K. A., Adimora, A. A., Golin, C. E., & Hightow-Weidman, L. B. (2010). Sex with older partners is associated with primary HIV infection among men who have sex with men in North Carolina. *Journal of Acquired Immune Deficiency Syndromes*, 54(2), 185–190.
- Joseph, H. A., Marks, G., Belcher, L., Millett, G. A., Stueve, A., Bingham, T. A., et al. (2011). Older partner selection, sexual risk behaviour and unrecognised HIV infection among black and Latino men who have sex with men. *Sexually Transmitted Infections*, 87(5), 442–447.
- Kaplan, D. L., Jones, E. J., Olson, E. C., & Yunzal-Butler, C. B. (2013). Early age of first sex and health risk in an urban adolescent population. *Journal of School Health*, 83(5), 350–356.
- Kashubeck-West, S., & Szymanski, D. M. (2008). Risky sexual behavior in gay and bisexual men internalized heterosexism, sensation seeking, and substance use. *The Counseling Psychologist*, 36(4), 595–614.
- Kroger, J. (2006). *Identity development: Adolescence through adulthood*. Thousand Oaks, CA: Sage Publications.
- Kubicek, K., Beyer, W. J., Weiss, G., Iverson, E., & Kipke, M. D. (2010). In the dark: Young men's stories of sexual initiation in the absence of relevant sexual health information. *Health Education and Behavior*, 37(2), 243–263.
- Kubicek, K., Carpineto, J., McDavitt, B., Weiss, G., Iverson, E. F., Au, C. W., et al. (2008). Integrating professional and folk models of HIV risk: YMSM's perceptions of high-risk sex. *AIDS Education and Prevention*, 20(3), 220–238.
- Lawrance, K., Byers, E. S., & Cohen, J. (1998). Interpersonal exchange model of sexual satisfaction questionnaire. In C. M. Davis, W. L. Yarber, & S. L. Davis (Eds.), *Sexuality related measures: A compendium* (pp. 525–530). Thousand Oaks, CA: Sage.
- Marston, C., & King, E. (2006). Factors that shape young people's sexual behaviour: A systematic review. *Lancet*, 368(9547), 1581–1586.
- McClelland, S. I., & Tolman, D. L. (2014). Adolescent sexuality. In T. Teo (Ed.), *Encyclopedia of critical psychology* (pp. 40–47). New York: Springer.
- Millett, G. A., Peterson, J. L., Flores, S. A., Hart, T. A., Jefferies, W. L., Wilson, P. A., et al. (2012). Comparisons of disparities and risks of HIV infection in black and other men who have sex with men in Canada, UK, and USA: A meta-analysis. *Lancet*, 380(9839), 341–348.
- Mosher, D. L. (1998). Multiple indicators of subjective sexual arousal. In W. L. Yarber & R. Bauserman (Eds.), *Handbook of sexuality-related measures* (pp. 75–77). Thousand Oaks, CA: Sage.
- Mustanski, B., Newcomb, M. E., & Clerkin, E. M. (2011). Relationship characteristics and sexual risk-taking in young men who have sex with men. *Health Psychology*, 30(5), 597–605.
- Outlaw, A. Y., Phillips, G., Hightow-Weidman, L. B., Fields, S. D., Hidalgo, J., Halpern-Felsher, B., et al. (2011). Age of MSM sexual debut and risk factors: Results from a multisite study of racial/ethnic minority YMSM living with HIV. *AIDS Patient Care and STDs*, 25(S1), S23–S29.
- Prejean, J., Song, R., Hernandez, A., Ziebell, R., Green, T., Walker, F., et al. (2011). Estimated HIV incidence in the United States, 2006–2009. *PLoS One*, 6(8), e17502. doi:10.1371/journal.pone.0017502.
- Regnerus, M. D. (2007). *Forbidden fruit: Sex and religion in the lives of American teenagers*. New York: Oxford University Press.
- Robinson, B. B., Bockting, W. O., Rosser, B. R., Miner, M., & Coleman, E. (2002). The Sexual Health Model: Application of a sexological approach to HIV prevention. *Health Education Research*, 17(1), 43–57.
- Rosario, M., Schrimshaw, E. W., & Hunter, J. (2006). A model of sexual risk behaviors among young gay and bisexual men: Longitudinal associations of mental health, substance abuse, sexual abuse, and the coming-out process. *AIDS Education and Prevention*, 18(5), 444–460.
- Sánchez-Fuentes, M., & Iglesias, P. S. (2014). A systematic review of sexual satisfaction. *International Journal of Clinical and Health Psychology*, 14(1), 67–75.
- Sandfort, T. G., Orr, M., Hirsch, J. S., & Santelli, J. (2008). Long-term health correlates of timing of sexual debut: Results from a national US study. *American Journal of Public Health*, 98(1), 155–161.
- Santelli, J. S., Lowry, R., Brener, N. D., & Robin, L. (2000). The association of sexual behaviors with socioeconomic status, family structure, and race/ethnicity among US adolescents. *American Journal of Public Health*, 90(10), 1582–1588.
- Scott, V. C., Sandberg, J. G., Harper, J. M., & Miller, R. B. (2012). The impact of depressive symptoms and health on sexual satisfaction for older couples: Implications for clinicians. *Contemporary Family Therapy*, 34(3), 376–390.
- Shafii, T., Stovel, K., Davis, R., & Holmes, K. (2004). Is condom use habit forming? Condom use at sexual debut and subsequent condom use. *Sexually Transmitted Diseases*, 31(6), 366–372.
- Shafii, T., Stovel, K., & Holmes, K. (2007). Association between condom use at sexual debut and subsequent sexual trajectories: A longitudinal study using biomarkers. *American Journal of Public Health*, 97(6), 1090–1095.
- Smith, C. V., & Shaffer, M. J. (2013). Gone but not forgotten: Virginity loss and current sexual satisfaction. *Journal of Sex and Marital Therapy*, 39(2), 96–111.
- Sprecher, S., Cate, R. M., Harvey, J., & Wenzel, A. (2004). Sexual satisfaction and sexual expression as predictors of relationship satisfaction and stability. In J. H. Harvey, A. Wenzel, & S. Sprecher (Eds.), *The handbook of sexuality in close relationships* (pp. 235–256). Mahwah, NJ: Lawrence Erlbaum Associates.
- Torres, H. L., Delonga, K., Lee, S., Gladstone, K. A., Barrad, A., Huckaby, S., et al. (2013). Sociocontextual factors: Moving beyond individual determinants of sexual risk behavior among gay and bisexual adolescent males. *Journal of LGBT Youth*, 10(3), 173–185.
- Voisin, D. R., Bird, J. D. P., Shiu, C. S., & Kreiger, C. (2013). It's crazy being a Black, gay youth. Getting information about HIV prevention: A pilot study. *Journal of Adolescence*, 36, 111–119.

- Waldo, C. R., McFarland, W., Katz, M. H., MacKellar, D., & Valleroy, L. A. (2000). Very young gay and bisexual men are at risk for HIV infection: The San Francisco Bay Area Young Men's Survey II. *Journal of Acquired Immune Deficiency Syndromes*, *24*(2), 168–174.
- Wilton, L. (2009). A preliminary study of body image and HIV sexual risk behavior in black gay and bisexual men: Implications for HIV prevention. *Journal of Gay and Lesbian Social Services*, *21*(4), 309–325.