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## **Sexual Partner Characteristics, Relationship Type, and HIV Risk Among a Community Venue-based Sample of Urban Adolescent and Young Adult Men Who Have Sex with Men**

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### **Abstract**

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Few studies have examined sexual partnerships and HIV risk in diverse samples of African American/black and Hispanic/Latino adolescent and young adult men who have sex with men (YMSM), a group that have a high burden of HIV in the U.S. A community-venue recruitment approach was used, which identified significant differences in HIV risk by sexual partner type among 1215 YMSM. Those with casual partners had a higher number of sexual partners, had more STIs, and were more likely to engage in transactional sex, to use alcohol, marijuana, or other substances compared with those with main partners only. Among those with female sexual partners, many used condoms “every time” when engaging in vaginal sex with casual partners, but a sizeable proportion “never/rarely” used condoms with their main partners. Our findings demonstrate a need for tailored HIV prevention education and counseling with necessary skills regarding consistent and correct condom use with all sexual partnerships.

### Keywords

young men who have sex with men; sexual partner characteristics; HIV risk; community-venue sampling

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Alarming high rates of new HIV infections among adolescents and young adults are among gay and bisexual men who have sex with men (MSM) in the United States (Centers for Disease Control and Prevention, 2015). In 2014, 22% of all new HIV infections diagnosed in the US were among adolescents and young adults, aged 13–24 years. Among this age group 80% of new HIV infections were among gay and bisexual men with a disproportionately high burden identified in African American/Black (55%) and Hispanic/Latino (23%) adolescent and young adult gay and bisexual men (Centers for Disease Control and Prevention, 2016).

Recent research has identified associations between syndemic psychosocial and health factors (e.g., substance use, mental health distress, childhood sexual abuse, violence victimization) and HIV-related risk behaviors (e.g., condomless anal sex), and increased HIV prevalence (Mimiaga, O’Cleirigh, Biello, et al., 2015; Mustanski, Garofalo, Herrick, & Donenberg, 2007). In the context of this important research there remains tremendous debates and unexplained hypotheses in research (Maulsby et al., 2013; Millett et al., 2007) about the need to more fully understand the sexual partnerships and relationship dynamics of adolescent and young adult MSM so that we can better intervene at the interpersonal level while simultaneously addressing the multiple syndemic psychosocial and health factors, both of which are important to stem the tide of HIV among at risk young MSM.

Regarding sexual partner characteristics, older age discrepancies and race and ethnicity play are shown to play contributing roles in HIV risk for MSM (Berry, Raymond, & McFarland, 2007; Feldman, 2010; Millett et al., 2007; Millett, Peterson, Wolitski, & Stall, 2006). Increasing evidence also suggests that African Americans/Blacks are at increased risk for HIV infection because their sexual partners are more likely to be from groups that have a high HIV prevalence, including male partners who are also African American/Black and older (Berry et al., 2007; Bingham et al., 2003; Hurt et al., 2010; Joseph et al., 2011; Mimiaga et al., 2009; Newcomb & Mustanski, 2013; Raymond & McFarland, 2009). For example, Newcomb and Mustanski (2013) found that African/American/Black MSM

reported significantly less unprotected sex than other racial and ethnic groups of participants and were more likely to have sexual partnerships with other African American/Black MSM. They also found that older sexual partners and a greater familiarity with sexual partners were factors significantly associated with increased odds of sexual risk in African/American/Black MSM, compared with other racial and ethnic participants. That is, they identified an interaction among participant age, participant race, and sexual partner age, which revealed a strong association between having older sexual partners and odds of sexual risk for African American/Black MSM.

Other sexual partner characteristics associated with HIV for MSM include number and types of sexual partners (i.e., casual or main), frequency of sex, and condom use with different types of partners (Rosenberg, Sullivan, Dinunno, Salazar, & Sanchez, 2011). One study found that having four or more sexual partners over a six-month period was the most significant behavior that contributed to HIV incidence in MSM (Zablotska, Grulich, De Wit, & Prestage, 2011). Casual sexual partnerships are common in MSM (Koblin et al., 2006; Rosenberg et al., 2011; Zablotska et al., 2011) and have long been identified as a risk factor for HIV transmission in this group, which may increase their likelihood of encountering a serodiscordant sexual partner (Jaffe et al., 1983). Rosenberg and colleagues (Rosenberg et al., 2011) reported that most (76%) MSM in their study reported having had a male casual sexual partner. They also found that men who reported having a main sex partner reported having fewer sexual partners, as did men who identified as African American/Black or Hispanic/Latino. Notwithstanding indications that casual partnerships are associated with HIV risk, one study of MSM found that most HIV transmission was the result of unprotected sexual intercourse with main sex partners (Sullivan, Salazar, Buchbinder, & Sanchez, 2009). Specifically, with main sex partners, this group of MSM was more likely to engage in receptive anal intercourse and was less likely to use condoms with main sex partners compared with casual sex partners.

Despite the large body of literature focused on sexual partner characteristics, sexual partner type, and HIV risk mostly among older adult men, few studies have examined these important factors in a large community-based sample of adolescent and young adult MSM or with a large sample of young African American/Black and Hispanic/Latino MSM. As indicated, these young men carry a high burden of new HIV infections in the U.S. (Centers for Disease Control and Prevention, 2016). Given the paucity of data focused on adolescent and young adult MSM, this research examined sexual partner characteristics, sexual partner types, and HIV risk among adolescent and young adult MSM (referred hereafter as YMSM). We specifically focused on YMSM using a cross-sectional, community venue-based recruitment approach. Since prior research suggests that sexual risk behaviors varied by sexual partner characteristics (Berry et al., 2007; Bingham et al., 2003; Feldman, 2010; Hurt et al., 2010; Joseph et al., 2011; Maulsby et al., 2013; Millett et al., 2007; Millett et al., 2006; Mimiaga et al., 2009; Newcomb & Mustanski, 2013; Raymond & McFarland, 2009; Rosenberg et al., 2011; Sullivan et al., 2009; Zablotska et al., 2011) our goal was to examine differences in sexual partner characteristics and HIV risk between YMSM who had only main partnerships compared with those who had only casual partnerships in the year prior to the study participation. We also examined differences in sexual partner characteristics and HIV risk among YMSM who had both main and casual sex partners as previously suggested

for older adult MSM (Jaffe et al., 1983; Koblin et al., 2006; Rosenberg et al., 2011; Sullivan et al., 2009; Zablotska et al., 2011). There is clear value in better understanding such lived sexual experiences of YMSM to help guide the development of future HIV prevention efforts. Thus, to develop effective interventions aimed at altering sexual risk behaviors of YMSM in the context of syndemic psychosocial and health factors, it is imperative that we have a clearer understanding of their sexual partner selection, the type of sexual behaviors they engage in, and whether they use condoms with each type of sexual partnership.

## Methods

### Study Design and Overall Recruitment Procedures

Data were collected through the Connect to Protect ® (C2P) program, the local community mobilization (i.e., community coalitions) effort of the Adolescent Medicine Trials Units (AMTUs) of the Adolescent Medicine Trials Network for HIV/AIDS Interventions (ATN). Detailed information about C2P has been published elsewhere (Miller, Reed, Francisco, & Ellen, 2012; Willard, Chutuape, Stines, & Ellen, 2012; Ziff et al., 2006). Each participating AMTU, located in Tampa, Los Angeles, Washington DC, Chicago, San Juan, New York City (Manhattan), San Francisco, and Baltimore, collected data using anonymous cross-sectional HIV-related risk surveys of youth that were administered annually in four waves between 2007–2010, at publicly accessible community venues where youth congregate. Data from all four waves were combined for this analysis. Surveys were administered via audio computer-assisted self-interview (ACASI) technology in order to minimize social desirability bias.

Adolescent and young adult-focused venues were selected through a multi-step process as previously described (Chutuape et al., 2009). Briefly, at each AMTU, the C2P community coalitions used publicly available data and geographic information software to map health, crime, and demographic information and to identify a target geographic area (Geanuracos et al., 2007). All AMTUs focused on low-income, urban neighborhoods with high rates of sexually transmitted infections (STIs) among adolescents and young adults. C2P coalition members also provided input for identifying an at risk target population of focus for the surveys. Five AMTUs (Los Angeles, Washington DC, New York City, San Francisco, and Baltimore) targeted African American/Black and Hispanic/Latino YMSM; two AMTUs (Tampa and Chicago) targeted young African American/Black and Hispanic/Latina women; and the San Juan, PR AMTU targeted adolescents and young adults who used/abused substances (including, but not exclusively, those who injected substances), regardless of gender or sexual risk behaviors. Venues were eligible for inclusion in one or more survey rounds. Once the venue selection process was complete, study staff conducted outreach at each venue at varying times to screen and recruit participants for completion of the survey until the desired sample size was achieved. Venue type varied across participating cities, while the screening and recruitment procedures were standardized across cities and survey rounds. Study participants were provided modest remuneration in gift cards or cash for the time they spent to complete the survey. Information about and direct referrals to clinical and psychosocial services were provided to all participants. The Institutional Review Boards of each AMTU approved all study procedures including a waiver of signed consent for participants to protect their anonymity.

## Study Participants

For the overall survey, eligible participants were youth aged 12–24 years who engaged in any type of consensual sexual behavior (i.e., oral, anal, or vaginal sex) over the 12-month period prior to survey administration. For purposes of this analysis, only YMSM who reported a sexual relationship (referred to as sex hereafter) with a main and/or casual sex partner(s) in the last year were included. Transgender participants, female, and male participants who only had sexually partnered with females and who reported neither main nor casual sex partners were also excluded from this specific analysis given our focus on YMSM and concerns about small sample sizes for transgender and male participants who had sexually partnered exclusively with females.

## Measures

Participants provided demographic and HIV-related information about themselves and their sexual partners. Demographic information included measures of age, gender, race/ethnicity, sexual orientation, living situation, and history of homelessness. HIV-related risk included number of sexual partners, relationship status (long- or short term), sexual partner type (main, casual), condom use (frequency of lifetime (overall) use, frequency of use at last with main and casual sex partners), history of STIs, and alcohol and substance use. Additionally, history of HIV testing and HIV status were assessed by self-report using ACASI technology (see Table I for a detailed description of each measure).

Participants who indicated that they had a main and/or casual sex partner within the last year were asked to provide information about their most recent main and/or casual sex partner. Participants could provide information on up to two sexual partners: one main and one casual, regardless of how many main or casual sex partners they may have had during this period. Sexual partner concurrency was not assessed either between main and casual sex partners, or multiple sexual partners of the same type (for example, among participants who may have had multiple casual sex partners during the last year). Main sex partners were defined in the survey, as “*a partner to whom you feel committed above anyone else*” or “*someone with whom you have an ongoing sexual relationship—like a spouse, lover, boyfriend or girlfriend.*” Casual sex partners were defined as “*someone that you have sex with but do not consider this person to be a main partner to you*” or “*someone with whom you have sex occasionally on a casual basis.*” Information about each of the most recent sexual partner types included age, gender, race/ethnicity, HIV status as well as information about the participant’s sexual behavior with each particular sexual partner, including type of sexual behavior they engaged in, condom use, and alcohol and other substance use during their sexual encounters.

## Statistical Analyses

Conventional descriptive statistics were used to describe participants and their main and/or casual sex partners. Specifically, means, standard deviations (SD), ranges, and medians were calculated for continuous characteristics (e.g., age) and frequencies and proportions (or percentages) calculated for categorical characteristics (e.g., race/ethnicity). We conducted an analysis of the background demographics and risk behaviors of the participants. Participants were categorized into three groups, including: having only main sex partners in the last year

(and no casual sex partners); having only casual sex partners in the last year (and no main sex partners); and having both main and casual sex partners in the last year. The first set of analyses that compared main versus casual sex partners was performed among participants in the first two mutually exclusive groups (i.e., main sex partners only or casual sex partners only). The second set of analyses that compared main versus casual sex partners was performed among participants in the third group (i.e., both main and casual sex partners).

Statistical tests for partner-specific measures were conducted to assess the relationship between sexual partner type and indicators of HIV risk (e.g., entering into serodiscordant relationships, engaging in penetrative sex, condom use). For the multivariable analyses, we constructed an initial model that included sexual partner type, which controlled for participants' characteristics (e.g., demographic factors such as race/ethnicity and sexual orientation, and HIV risk factors such as transactional sexual intercourse, sexually transmitted infection (STI) history, history of condom use, and HIV testing), and characteristics of the participants' main or casual sex partner (e.g., age, race/ethnicity, HIV status). Variables were eliminated from the initial model using a stepwise selection process, and all covariates (other than sexual partner type) included in the final model were significant at  $p < 0.05$ . Linear regression models were run using PROC GLM for continuous variables. Results for categorical variables include those from logistic regression models that utilized PROC LOGISTIC (these models were also run in PROC GENMOD to account for the potential correlation in risk behaviors with sexual partners for participants with more than one sexual partner type, and there were no substantive differences in the results). All statistical analyses were generated using SAS version 9.3 (SAS Institute Inc).

## Results

### Study Screening, Eligibility, and Enrollment

Study staff approached 3528 young men at participating venues, and 2029 (57.5%) agreed to be screened for eligibility for the survey. Among those who were screened, 1802 (88.8%) were initially deemed eligible for the study, and 1778 (98.6%) of those eligible agreed to participate in the survey. Of these individuals, 1750 (98.4%) completed at least some portion of the survey. However, 535 (30.6%) were subsequently excluded from this analysis based on their responses to survey questions for the following reasons: identified as transgender or refused to provide data on current gender ( $n=69$ ); had never had sex with a man ( $n=230$ ); did not provide data on a main or a casual partner ( $n=109$ ); or did not complete an adequate proportion of the survey, including questions related to condom use with main and casual partners ( $n=127$ ). A final total of 1215 participants met the inclusion criteria for this analysis (male gender, sexual intercourse within the last year with a male main and/or casual sex partner). These participants were then grouped into three mutually exclusive groups: main partners only (MPO;  $n=428$ , 35.2%); casual partners only (CPO,  $n=300$ , 24.7%); and both main and casual partners (BMCP,  $n=487$ , 40.1%).

### Demographic Characteristics

Table I presents the demographic and HIV risk factors among the three participant groups. Overall, the average age was 20.7 years; 72.2% identified as gay, while nearly one-quarter

(23.7%) identified as bisexual. The majority of the participants were racial and ethnic minorities: 43.1% identified as Hispanic/Latino and 37.5% identified as African American/Black. Most participants (78.9%) reported living with parents (birth, adoptive, foster), although nearly one-third (29.0%) reported a history of homelessness.

### HIV-Related Factors

Regarding relationship status, Table I also shows that 19.2% of the participants, overall, were in a long-term relationship defined as being with the same person for more than a year or being married. However, those in a long-term relationship varied significantly by sexual partner type: MPO (31.6%), CPO (2.7%), and BMCP (18.6%). In addition, more than one-fourth (27.6%) reported a history of STIs; the rate was highest among those with casual partners (CPO and BMCP) compared with those with MPO. Approximately one-fourth of participants with casual sex partners (CPO 24.0%, BMCP 24.5%) reported a history of receiving money in exchange for sex, compared with only 11% of those with MPO. Over half (53.3%) reported a history of sex with a female (all reported sex with a male, as this was a criterion for inclusion in the analysis), but this was less common among those with CPO (46.0%) compared with those with MPO (55.8%) and BMCP (55.6%). A history of unprotected sex was prevalent among participants (66.1%); however, this was most commonly identified among participants who had BMCP for insertive anal, receptive anal, and vaginal sex than those with MPO or CPO. Use of alcohol (83.4%) and marijuana (59.3%) was also prevalent among all participants while other drugs (23.5%) were less commonly used; these substances were used less frequently among participants with MPO compared with those with CPO and BMCP. As described in Table I, HIV testing was prevalent across all groups; 88.5% reported a history of ever testing for HIV with 61.4% of them in the last six months. Lastly, 8.9% of the participants self-identified as HIV positive with a slightly higher proportion identified among participants with casual partners (CPO and BMCP).

### Sexual Partner Characteristics

Table II examines associations between participants' type of sexual partner (casual vs. main sex partners within the last year) and sexual partner characteristics. Each row in this table shows bivariate results as well as results from two separate adjusted models: one model fit for participants who had only one sexual partner type (i.e., MPO or CPO; first four columns of data) and the other fit among participants with BMCP (final four columns of data). As shown, the first row examines the association 'Partner HIV Status' with type of sexual partner; a higher proportion of casual partners (of CPO participants) were reported to be HIV positive (7.8% vs. 6.1%) or have an unknown HIV status (19.6% vs. 11.1%) compared MPO participants. Adjusting for significant demographic and HIV risk-related characteristics, there was a significant association between sexual partner type in the last year and sexual partner HIV status ( $p=0.015$ ); casual partners were more likely to be HIV positive than main partners, though not significantly so (odds ratio [OR] 1.6, 95% CI: 0.8, 3.3), and 2.1 times more likely [CI: 1.2, 3.5] to have an HIV status that is unknown to the participant. The final four columns can be interpreted in a similar fashion for the group of participants with BMCP. A higher proportion of HIV positive main sex partners were reported to be HIV positive than casual sex partners (8.5% vs. 6.7%), while a higher



proportion of casual sex partners were reported to be of unknown status (18.5% vs. 11.5%). Adjusting for significant demographic and HIV risk-related factors, there was a significant association between sexual partner type in the last year and sexual partner HIV status ( $p=0.009$ ); casual sex partners were less likely to be HIV positive than main sex partners, though not significantly so (OR 0.8, 95% CI: 0.4, 1.4), and nearly twice as likely to have an HIV status that is unknown to the participant (OR 1.9, 95% CI: 1.2–3.0).

In the adjusted models, there were significant associations between sexual partner type in the last year and age of sexual partner and race/ethnicity concordance. The mean age of sexual partners was higher for casual sex partners than main sex partners among participants with only one partner type ( $p=0.002$ ) and among BMCP participants ( $p=0.047$ ). Among participants reporting only one sexual partner type, casual sex partners were less likely to be race concordant than main sex partners ( $p<0.001$ ).

### Sexual Behaviors Compared by Sexual Partner Type

Table III compares the participants' sexual behaviors in the last year with main versus casual partners for those who had MPO or CPO, as well as for those who had BMCP. Among participants with MPO or CPO, there were no significant differences in overall condom use (i.e., for oral, anal, or vaginal sex). Conversely, participants with BMCP were significantly more likely to use condoms "every time" vs. "never" with casual partners compared with main partners (OR 2.3, 95% CI: 1.7–3.2) and to use them during their "last sexual encounter" with their most recent casual partner compared to their most recent main partner (OR 2.2, 95% CI: 1.5–3.2). In both models, participants were significantly more likely to have engaged in receptive and insertive anal sex with a main partner than a casual partner. However, participants were significantly more likely to use condoms "every time" during either receptive or insertive anal sex with casual partners compared to main partners. In addition, condom use at last sex for both insertive and receptive anal intercourse was more commonly reported with casual partners; while the difference was significant in both models of condom use at last insertive anal sex, the difference for receptive anal sex was only statistically significant in the model of participants with BMCP ( $p<.001$ ). Insertive anal sex was a more commonly reported behavior than receptive anal sex overall. Only a small proportion of the participants reported that their main or casual partner in the last year was a female, however, most reported condom use during their last vaginal sex encounter for casual partnerships, but not for main partnerships (Table III).

### Discussion

This community venue-based research focused largely on racial and ethnic minority YMSM who resided in urban communities who experience a high burden of STIs, HIV, and crime. In this sample of young men nearly one-tenth (8.9%) self-identified as HIV positive and almost one-third (29.0%) reported a history of homelessness, revealing some level of economic vulnerability, which is a known structural barrier to HIV prevention (Ray, 2007; Wolitski, Kidder, & Fenton, 2007). As demonstrated by our findings, YMSM in this research engaged in risk behaviors that were indicative of risk for HIV transmission, including a lack of a long-term sexual partnerships, having a history of multiple sexual partners, STIs,

transactional and unprotected sex, and use of alcohol and other substances (Table I). These findings underscore the syndemic psychosocial and health risks and vulnerabilities that YMSM face. Other studies of both older adult MSM and YMSM have demonstrated the synergistic clustering of multiple health disparities such as poverty, mental health challenges, substance abuse, violence, and victimization that are related to cultural marginalization and multiple stressors that confront MSM (Bruce & Harper, 2011; Halkitis et al., 2013; Lyons, Johnson, & Garofalo, 2013; Mimiaga et al., 2015; Mustanski, et al., 2007). Thus, it is imperative that prevention interventions for YMSM should not focus solely on sexual risk factors including sexual partner characteristics, but should target multiple co-occurring factors that increase their risk for HIV including other health and mental health problems that increase their risk and vulnerability for HIV. As such, further basic behavioral and psychosocial research is needed to better understand and address many of the syndemic contributing factors that continue to marginalize YMSM, particularly African American/Black and Hispanic/Latino YMSM, who are seeking to navigate through life as any young men their age, but who are also often confronted with racism, cultural barriers and psychosocial challenges increase their risk and vulnerability for HIV and impede effective HIV prevention (Lyons et al., 2013; Mimiaga et al., 2015; Mustanski et al., 2007).

Since a criterion for inclusion in this research was a history of sex with main and/or casual sex partners, a number of HIV-related risk factors associated with at-risk sexual partners was also identified. We focused our data analysis on comparisons between main and casual sex partners, both in terms of demographic characteristics and sexual behaviors. As expected, in our sample, YMSM who had casual partners (i.e., CPO and BMCP) had a higher number of sexual partners and, on average, were more likely to have had an STI, have engaged in transactional sex, and used alcohol, marijuana, or other substances compared with those who reported a MPO. We also found the characteristics of main and casual sex partners to be demographically similar. That is, our participants were more likely to choose sexual partners who were, on average, several years older and of the same race and ethnicity that they were. In contrast, there were significant differences in the HIV-related behaviors of our participants by sexual partner type. After controlling for a host of covariates, our participants were more likely to engage in anal sex (both receptive and insertive) with their main sex partners, but were less likely to use condoms during these encounters. Our findings and those from prior research suggest that a deeper examination of YMSM's sexual partner selection is warranted, especially in situations when selections are race-based or age discordant (Arrington-Sanders, Leonard, Brooks, Celentano, & Ellen, 2013; Wilson et al., 2009). For example, a qualitative study of YMSM by Wilson and colleagues (2009) identified a variety of race-based sexual stereotypes (e.g., characteristics of sexual experiences, gender expectations, embodiment and body validation) that were used by YMSM that influenced their sexual partner selection as well as sexual decision-making, beliefs, and sexual practices. Our findings as well as findings from other studies that identified race-based partnerships among MSM (Mustanski et al., 2007; Wilson et al., 2009) underscore the need for further research to examine the perceptions that YMSM have about men of the same or different races/ethnicities and how such perceptions inform sexual partner selection and other sexual decision-making. Such research may begin to shed light

on the mechanisms by which high-risk sexual networks are formed (Wilson et al., 2009). With regards to the age of sexual partners, Arrington-Sanders and colleagues (2013) found that emotional maturity rather than transactional sex was a primary factor associated with YMSM seeking older sexual partners. Clearly, further research with YMSM that examine these and other underlying factors associated with sexual partner characteristics is warranted. This research may be most beneficial if it further examined the synergism of developmental, cultural, social, and environmental factors that both increase risk and protect YMSM from HIV infection and other health burdens (Bruce & Harper, 2011; Halkitis et al., 2013; Lyons et al., 2013; Mimiaga et al., 2015; Mustanski et al., 2007). Moreover, prevention interventions for YMSM should assist them in better understanding that who they select for sexual partners matters for their risk and prevention of HIV.

Data from this research also revealed that participants with BMCP more frequently used condoms overall with their casual sex partners, however this was not true for those with MPO or CPO (Table III). This finding is consistent with other research of older adult MSM, which showed that frequent condom use was higher among participants with new or with casual sex partners than with regular or main sex partners (Macaluso, Demand, Artz, & Hook, 2000; Tieu, Murrill, Xu, & Koblin, 2010). Thus, there is a clear need for partner-specific HIV prevention education and counseling. Targeting boys early in their teen years prior to the onset of sexual activity and providing HIV prevention messages that emphasize the importance of consistent and correct condom use with all sexual partner types is important for HIV prevention.

Our study sample was restricted to YMSM who were recruited from community venues where these young men socialize, however, a small proportion of our participants also had female sexual partners that were characterized both as main and/or casual sex partners. Many of these young men used condoms “every time” when engaging in sex with their female casual sex partners, however, a sizeable proportion of those with both sexual partner types “never/rarely” used condoms with their main sex partners “usually” or during their “last” vaginal sex encounter (Table III). Although the reports of condom use with female sexual partners were marginally statistically significant for participants with BMCP our findings, nonetheless, demonstrate a gap in sexual health education for YMSM and speaks to the fact that, developmentally, some boys and young men will have sexual experiences with same- and opposite-sexual partners as they explore their sexuality even if they identify as gay. As such, comprehensive sexuality education that addresses the importance of using condoms during each sexual encounter regardless of their partner’s gender or other perceived risk characteristics is needed for adolescent boys before their initiation of sexual activity.

Despite our findings, which highlight several psychosocial and public health education gaps for YMSM, a number of limitations of this research should be noted. Specifically, this research reflects cross-sectional data collected from targeted urban, community venues over multiple years. As such, our findings may not be generalizable to other YMSM who do not frequent or rarely frequent these sites or who may reside in rural communities. Moreover, given the cross-sectional nature of these data causal inferences cannot be inferred. As noted, all data regarding the participants’ sexual partners were reported by the participants with no

means of verifying the data, which may have introduced some biased responses. Also, as indicated, we did not assess sexual partner concurrency. Participants with BMCP in the last year may not have had concurrent partners, and participants who provided data on MPO or CPO may have had multiple or concurrent sexual partners at the same time during the period covered in the survey. Despite these limitations, this research is among a few community venue-based studies that recruited participants from high-risk urban communities across the U.S. that included a sizeable number of adolescent and young adult African American/Black and Hispanic/Latino MSM that examined sexual partnerships and HIV risk. As noted, these young men are often socially and culturally marginalized and experience layers of stigma that often promote health risk and prevent them from seeking necessary preventative services and healthcare.

Our findings confirm that YMSM's risk and prevention of HIV vary by sexual partner type. Given this, our findings demonstrate a clear need for tailored HIV prevention education and risk reduction counseling that provide them with accurate prevention information and skills that are necessary for consistent and correct condom use with all sexual partnerships, even within more committed relationships. Specific to YMSM who have multiple sexual partners, prevention efforts should also focus on communication and decision-making skills training to provide them strategies to effectively communicate with their sexual partners regarding disclosure of their HIV status and sexual history, including multiple and concurrent sexual partnerships. Our findings are supported by commentary provided Harper (Harper, 2007), which indicates that interventions for YMSM should address the syndemic influences of sexual and gay culture on the HIV risk and protective behaviors of gay and bisexual adolescents as well as the influence of other biases and cultural factors related to race and ethnicity as well as contextual developmental factors related age discordance including the role of emotional maturity. Moreover, our research underscores the need for further research, including basic behavioral and psychosocial research and development of prevention interventions that address the syndemic psychosocial and health disparities that co-occur in YMSM who reside in resource challenged communities. Lastly, in light of recent PrEP availability, there is a clear need to educate YMSM about PrEP as another possible means for HIV prevention (Centers U S Public Health Service, 2014). However, careful consideration should be given to understanding the cultural meaning and utility of this HIV prevention strategy for African American/Black and Hispanic/Latino YMSM.

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Table 1

Demographic and HIV risk of YMSM with main and/or casual sex partners

Characteristic	Main Partner Only n=428 (%)	Casual Partner Only n=300 (%)	Both Main and Casual Partner n=487 (%)	P-Value*	Total (N=1215)
Age:					
Mean (SD)	20.7 (2.1)	20.8 (2.0)	20.6 (2.1)	0.345	20.7 (2.1)
Median (IQR:25th – 75th)	21.0 (19.0, 22.0)	21.0 (19.0, 22.0)	21.0 (19.0, 22.0)		21.0 (19.0, 22.0)
Min, Max	15.0, 24.0	16.0, 24.0	14.0, 24.0		14.0, 24.0
Sexual Orientation					
Straight	8 (1.9)	1 (0.3)	4 (0.8)	0.146	13 (1.1)
Gay/Lesbian	303 (70.8)	231 (77.3)	343 (70.4)		877 (72.2)
Bisexual	105 (24.5)	57 (19.1)	126 (25.9)		288 (23.7)
Questioning	12 (2.8)	10 (3.3)	14 (2.9)		36 (3.0)
Race/ethnicity: n (%)					
Hispanic	183 (42.8)	118 (39.3)	223 (45.8)	0.002	524 (43.1)
White, non-Hispanic	15 (3.5)	30 (10.0)	38 (7.8)		83 (6.8)
Black, non-Hispanic	183 (42.8)	107 (35.7)	166 (34.1)		456 (37.5)
Other	47 (11.0)	45 (15.0)	60 (12.3)		152 (12.5)
Ever been homeless					
Yes	100 (23.4)	95 (31.7)	157 (32.2)	0.007	352 (29.0)
No	328 (76.6)	205 (68.3)	330 (67.8)		863 (71.0)
Relationship Status					
In a long term relationship	135 (31.6)	8 (2.7)	90 (18.6)	<.001	233 (19.2)
Not in a long term relationship	292 (68.4)	291 (97.3)	395 (81.4)		978 (80.8)
Who have you lived with for most of your life					
Alone	32 (7.5)	22 (7.3)	33 (6.8)	0.910	87 (7.2)
Birth or adoptive parents/Foster parents					
Other relatives/Friends/	329 (76.9)	246 (82.0)	384 (78.9)	0.249	959 (78.9)
Other people not mentioned	100 (23.4)	66 (22.0)	132 (27.1)	0.219	298 (24.5)
Number of partners last 3 months:					
Mean (SD)	2.2 (2.9)	4.2 (7.6)	5.7 (19.3)	<.001	4.1 (13.0)
Median (IQR:25th – 75th)	1.0 (1.0, 2.0)	2.0 (1.0, 4.0)	2.0 (1.0, 5.0)		2.0 (1.0, 4.0)



Characteristic	Main Partner Only n=428 (%)	Casual Partner Only n=300 (%)	Both Main and Casual Partner n=487 (%)	P-Value*	Total (N=1215)
Min, Max	0.0, 23.0	0.0, 90.0	0.0, 333.0		0.0, 333.0
Number of partners last year:					
Mean (SD)	4.6 (12.9)	9.5 (14.2)	10.8 (23.2)	<.001	8.3 (18.2)
Median (IQR;.25th – 75th)	2.0 (1.0, 4.0)	5.0 (2.0, 9.5)	5.0 (3.0, 10.0)		3.0 (2.0, 8.0)
Min, Max	1.0, 200.0	1.0, 100.0	1.0, 300.0		1.0, 300.0
Ever had an STI					
Yes	80 (18.7)	95 (31.7)	160 (32.9)	<.001	335 (27.6)
No	347 (81.3)	205 (68.3)	326 (67.1)		878 (72.4)
Had STI within last 6 months					
Yes	19 (4.5)	37 (12.3)	46 (9.5)	<.001	102 (8.4)
No	407 (95.5)	263 (87.7)	440 (90.5)		1110 (91.6)
Ever received money in exchange for sex					
Yes	45 (10.7)	69 (24.0)	115 (24.5)	<.001	229 (19.4)
No	376 (89.3)	219 (76.0)	355 (75.5)		950 (80.6)
Ever had sex with a female					
Yes	239 (55.8)	138 (46.0)	271 (55.6)	0.016	648 (53.3)
No	189 (44.2)	162 (54.0)	216 (44.4)		567 (46.7)
Ever had unprotected sex (without a condom)					
Yes	245 (58.5)	201 (67.7)	342 (71.8)	<.001	788 (66.1)
No	174 (41.5)	96 (32.3)	134 (28.2)		404 (33.9)
What types of unprotected sex have you had?					
Insertive anal sex	178 (42.8)	143 (48.6)	268 (56.5)	<.001	589 (49.7)
Receptive anal sex	139 (33.4)	108 (36.7)	208 (43.9)	0.005	455 (38.4)
Vaginal sex	47 (11.3)	39 (13.3)	85 (17.9)	0.017	171 (14.4)
Ever had protected sex (with a condom)					
Yes	309 (75.6)	233 (80.1)	380 (81.9)	0.067	922 (79.2)
No	100 (24.4)	58 (19.9)	84 (18.1)		242 (20.8)
What types of protected sex have you had?					
Insertive anal sex	245 (59.2)	184 (63.0)	302 (64.0)	0.315	731 (62.1)
Receptive anal sex	185 (44.7)	149 (51.0)	245 (51.9)	0.073	579 (49.2)
Vaginal sex	76 (18.4)	56 (19.2)	107 (22.7)	0.242	239 (20.3)

Characteristic	Main Partner Only n=428 (%)	Casual Partner Only n=300 (%)	Both Main and Casual Partner n=487 (%)	P-Value*	Total (N=1215)
Ever used marijuana					
Yes	204 (48.0)	198 (66.2)	315 (64.9)	<.001	717 (59.3)
No	221 (52.0)	101 (33.8)	170 (35.1)		492 (40.7)
Ever used drugs other than marijuana					
Yes	53 (12.5)	92 (31.1)	138 (28.5)	<.001	283 (23.5)
No	371 (87.5)	204 (68.9)	346 (71.5)		921 (76.5)
Ever IDU					
Yes	10 (2.4)	8 (2.7)	22 (4.6)	0.160	40 (3.3)
No	413 (97.6)	287 (97.3)	459 (95.4)		1159 (96.7)
Ever used alcohol					
Yes	324 (77.0)	256 (85.9)	423 (87.6)	<.001	1003 (83.4)
No	97 (23.0)	42 (14.1)	60 (12.4)		199 (16.6)
Ever been tested for HIV					
Yes	368 (87.0)	253 (84.6)	449 (92.2)	0.001	1070 (88.5)
No	55 (13.0)	46 (15.4)	38 (7.8)		139 (11.5)
Last tested for HIV					
Within the past 6 months	254 (60.5)	172 (58.3)	309 (64.0)	0.019	735 (61.4)
More than 6 months ago, but less than 1 year	64 (15.2)	35 (11.9)	74 (15.3)		173 (14.4)
More than 1 year ago	47 (11.2)	42 (14.2)	62 (12.8)		151 (12.6)
Never tested	55 (13.1)	46 (15.6)	38 (7.9)		139 (11.6)
HIV Test Results (Self Report only)					
HIV positive	32 (7.6)	26 (8.7)	50 (10.3)	0.023	108 (8.9)
HIV negative	327 (77.3)	214 (71.8)	382 (78.6)		923 (76.5)
Indeterminate	3 (0.7)	5 (1.7)	9 (1.9)		17 (1.4)
Did not return for result	6 (1.4)	7 (2.3)	7 (1.4)		20 (1.7)
Never Tested	55 (13.0)	46 (15.4)	38 (7.8)		139 (11.5)

\* P-values for categorical variables generated using the Fishers Exact test; p-values for continuous variables generated using the nonparametric Kruskal-Wallis test.

**Table II**

Associations between participants' sexual partner type and sexual partner characteristics

Partner characteristic	Main or Casual Partner Only (n=728)			Both Main and Casual Partner (n=487)				
	Casual Partners n (%)	Main Partners n(%)	Adjusted Odds Ratio <sup>2</sup> (95% CI)	Adjusted p-value	Casual Partners n(%)	Main Partners n(%)	Adjusted Odds Ratio <sup>2</sup> (95% CI)	Adjusted p-value
Partner HIV status:								
HIV+	14 (7.8)	22 (6.1)	1.6 (0.8, 3.3)	0.015	22 (6.7)	34 (8.5)	0.8 (0.4, 1.4)	0.009
HIV-	130 (72.6)	299 (82.8)	Ref		247 (74.8)	321 (80.0)	Ref	
Status unknown/Never tested	35 (19.6)	40 (11.1)	2.1 (1.2, 3.5)		61 (18.5)	46 (11.5)	1.9 (1.2, 3.0)	
Respondent/Partner HIV status (among those with a self-reported status for respondent and partner):								
Concordant, HIV+	11 (8.6)	13 (4.5)	2.6 (0.7, 9.7)	0.349	9 (3.6)	19 (5.9)	0.4 (0.1, 1.1)	0.223
Concordant, HIV-	109 (85.2)	259 (89.6)	1.6 (0.6, 4.4)		212 (85.1)	275 (84.9)	0.8 (0.5, 1.5)	
Discordant	8 (6.3)	17 (5.9)	Ref		28 (11.2)	30 (9.3)	Ref	
Age of partner:								
Mean (Std. Dev.)	24.9 (6.9)	22.8 (5.5)		0.002	24.3 (6.9)	23.4 (6.2)		0.047
Median	23.0	21.0			22.0	22.0		
IQR: 25 <sup>th</sup> – 75 <sup>th</sup>	20.0–27.0	19.0–25.0			20.0–26.0	19.0–25.0		
Min. – Max.	12.0 – 56.0	15.0 – 55.0			14.0–69.0	14.0–55.0		
Sex/Gender identity of partner:								
Male	287 (97.3)	399 (95.2)	1.8 (0.6, 5.7)	0.158	442 (92.3)	440 (92.1)	1.6 (0.7, 3.3)	0.224
Female	5 (1.7)	10(2.4)	Ref		18 (3.8)	24 (5.0)	Ref	
Transgender (MTF &FTM)	3 (1.0)	10 (2.4)	0.5 (0.1,3.2)		19 (4.0)	14 (2.9)	2.5 (0.9, 6.8)	
Race/ethnicity of partner:								
Hispanic	113 (37.8)	171 (40.2)	1.1 (0.7,1.7)	0.190	187 (39.0)	183 (37.7)	1.1 (0.8, 1.6)	0.865
White, non-Hispanic	60 (20.1)	39 (9.2)	1.6 (0.9,2.8)		60 (12.5)	65 (13.4)	1.1 (0.6, 1.7)	
Black, non-Hispanic	104 (34.8)	176 (41.4)	Ref		178 (37.1)	189 (38.9)	Ref	
Other (includes mixed race)	22 (7.4)	39 (9.2)	0.8 (0.4,1.4)		55 (11.5)	49 (10.1)	1.2 (0.7, 2.0)	
Race concordance:								
Respondent race same as partner race	167 (55.9)	308 (72.5)	0.5 (0.4, 0.7)	<.001	293 (61.0)	311 (64.0)	0.8 (0.6, 1.1)	0.220

Partner characteristic	Main or Casual Partner Only (n=728)			Both Main and Casual Partner (n=487)		
	Casual Partners n (%)	Main Partners n(%)	Adjusted Odds Ratio <sup>2</sup> (95% CI)	Casual Partners n(%)	Main Partners n(%)	Adjusted Odds Ratio <sup>2</sup> (95% CI)
Respondent race different than partner race	132 (44.1)	117 (27.5)	Ref	187 (39.0)	175 (36.0)	Ref
Number of partners that this partner has had:						
0	30 (10.6)	72 (17.2)	Ref	57 (12.3)	39 (8.2)	Ref
1-5	161 (56.7)	232 (55.4)	1.0 (0.5, 1.7)	228 (49.0)	257 (54.2)	0.7 (0.4, 1.1)
6+	93 (32.7)	115 (27.4)	0.7 (0.4, 1.4)	180 (38.7)	178 (37.6)	0.7 (0.4, 1.2)

<sup>1</sup> Each outcome variable (row) in the table served as the dependent variable in a multivariable model that included sexual partner type and significant (p<0.05) covariates (e.g., age, sexual orientation, race/ethnicity, relationship status, who the respondent has lived with, ever been homeless, number of sexual partners, ever use of alcohol and other substances, ever receiving money for sex, history of sex without a condom, history of an STI, and HIV testing history). Only the odds ratio associated with the partner type, with main partner as the reference group, is shown for each model. For the models with respondents with a main partner only or a casual partner only, each respondent contributes a single observation to the analysis (either for a main partner, or for a casual partner). For the models with respondents with both a main and a casual partner, each respondent contributes two observations to the analysis: one for their most recent main partner, and one for their most recent casual partner.

<sup>2</sup> Odds ratios shown are associated with the category “casual partner” (relative to “main partner”).

**Table III**

Associations between participants' sexual partner type and sexual behaviors with those partners

	Risk Behaviors with Sexual Partners: Casual vs. Main <sup>1</sup>							
	Main or Casual Partner Only (n=728)		Both Main and Casual Partner (n=487)					
	Casual Partners n (%)	Main Partners n (%)	Adjusted Odds Ratio <sup>2</sup> (95% CI)	Adjusted p-value	Casual Partners n (%)	Main Partners n (%)	Adjusted Odds Ratio <sup>2</sup> (95% CI)	Adjusted p-value
Condom use: anal, oral, or vaginal sex								
Condom frequency with this partner:								
Every time	144 (48.0)	208 (48.7)	1.6 (1.0, 2.5)	0.057	267 (55.2)	184 (37.8)	2.3 (1.7, 3.2)	<.001
Some of the time	90 (30.0)	107 (25.1)	1.7 (1.1, 2.6)		86 (17.8)	131 (26.9)	0.9 (0.6, 1.3)	
Rarely/Never	66 (22.0)	112 (26.2)	Ref		131 (27.1)	172 (35.3)	Ref	
Used a condom during last sex with this partner:								
Yes	179 (59.7)	260 (61.0)	0.9 (0.6, 1.5)	0.706	313 (64.8)	238 (48.9)	2.2 (1.5, 3.2)	<.001
No	121 (40.3)	166 (39.0)	Ref		170 (35.2)	249 (51.1)	Ref	
Receptive anal sex (among those with male partners)								
Ever had receptive anal sex:								
Yes	140 (48.6)	238 (58.2)	0.6 (0.4, 0.8)	<.001	238 (52.0)	295 (64.3)	0.6 (0.4, 0.8)	<.001
No	148 (51.4)	171 (41.8)	Ref		220 (48.0)	164 (35.7)	Ref	
Condom frequency during receptive anal sex:								
Every time	69 (56.1)	103 (48.6)	3.0 (1.3, 6.9)	0.039	109 (54.8)	94 (38.4)	2.3 (1.5, 3.7)	<.001
Some of the time	27 (22.0)	39 (18.4)	2.3 (0.9, 5.9)		34 (17.1)	56 (22.9)	1.2 (0.7, 2.0)	
Rarely/Never	27 (22.0)	70 (33.0)	Ref		56 (28.1)	95 (38.8)	Ref	
Used a condom during last receptive anal sex:								
Yes	96 (68.6)	145 (61.2)	1.7 (0.9, 2.9)	0.080	163 (68.5)	159 (54.1)	2.1 (1.4, 3.2)	<.001
No	44 (31.4)	92 (38.8)	Ref		75 (31.5)	135 (45.9)	Ref	
Insertive Anal Sex								
Ever had insertive anal sex:								
Yes	210 (70.0)	337 (79.7)	0.5 (0.4, 0.8)	<.001	303 (62.6)	410 (84.2)	0.3 (0.2, 0.4)	<.001
No	90 (30.0)	86 (20.3)	Ref		181 (37.4)	77 (15.8)	Ref	

	Risk Behaviors with Sexual Partners: Casual vs. Main <sup>1</sup>							
	Main or Casual Partner Only (n=728)			Both Main and Casual Partner (n=487)				
	Casual Partners n (%)	Main Partners n (%)	Adjusted Odds Ratio <sup>2</sup> (95% CI)	Adjusted p-value	Casual Partners n (%)	Main Partners n (%)	Adjusted Odds Ratio <sup>2</sup> (95% CI)	Adjusted p-value
Condom frequency during insertive anal sex:								
Every time	108 (58.7)	145 (50.0)	2.6 (1.4, 4.8)	0.012	148 (59.2)	139 (40.5)	3.9 (2.2, 7.1)	<.001
Some of the time	40 (21.7)	56 (19.3)	1.9 (1.0, 3.8)		43 (17.2)	74 (21.6)	1.9 (0.9, 3.7)	
Rarely/Never	36 (19.6)	89 (30.7)	Ref		59 (23.6)	130 (37.9)	Ref	
Used a condom during last insertive anal sex:								
Yes	147 (70.3)	216 (64.5)	1.6 (1.1, 2.4)	0.028	209 (69.7)	224 (54.8)	2.7 (1.7, 4.3)	<.001
No	62 (29.7)	119 (35.5)	Ref		91 (30.3)	185 (45.2)	Ref	
<u>Vaginal Sex (among those with female partners)</u>								
Ever had vaginal sex:								
Yes	9 (81.8)	7 (53.8)	3.9 (0.6, 25.3)	0.159	17 (73.9)	23 (88.5)	0.4 (0.1, 2.2)	0.298
No	2 (18.2)	6 (46.2)	Ref		6 (26.1)	3 (11.5)	Ref	
Condom frequency during vaginal sex:								
Every time	5 (71.4)	0	--	NC <sup>3</sup>	7 (50.0)	5 (29.4)	4.1 (0.5, 34.9)	0.313
Some of the time	2 (28.6)	2 (40.0)	--		2 (14.3)	1 (5.9)	4.6 (0.3, 64.0)	
Rarely/Never	0	3 (60.0)			5 (35.7)	11 (64.7)	Ref	
Used a condom during last vaginal sex:								
Yes	7 (77.8)	1 (14.3)	21.0 (1.5, 293.3)	0.0236	10 (58.8)	7 (30.4)	3.4 (0.6, 17.6)	0.153
No	2 (22.2)	6 (85.7)	Ref		7 (41.2)	16 (69.6)	Ref	

<sup>1</sup> Each outcome variable (row) in the table served as the dependent variable in a multivariable model that included sexual partner type and significant ( $p < 0.05$ ) covariates (this includes respondent characteristics, e.g., age, sexual orientation, race/ethnicity, relationship status, who the respondent has lived with, ever been homeless, number of partners, ever use of alcohol and other substances, ever receiving money for sex, history of sex with/without a condom, history of an STI, and HIV testing history; partner characteristics, e.g. age, race/ethnicity, number of partner, and HIV status; and when available, drug and alcohol use during sex). Only the odds ratio associated with the sexual partner type, with main partner as the reference group, is shown for each model.

<sup>2</sup> For the models with respondents with a main partner only or a casual partner only, each respondent contributes a single observation to the analysis (either for a main partner, or for a casual partner). For the models with respondents with both a main and a casual partner, each respondent contributes two observations to the analysis: one for their most recent main partner, and one for their most recent casual partner. Odds ratios shown are associated with the category "casual partner" (relative to "main partner").

<sup>3</sup> Not calculated due to small sample and cell sizes.