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Intimate partner violence and substance use risk among young men who have sex with men: The P18 Cohort Study

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Abstract

Objectives—Substance use is prevalent among young men who have sex with men (YMSM) and may be associated with intimate partner violence (IPV). Experiences of IPV are associated with several adverse health conditions among adult MSM, but there is a gap in knowledge about this relationship among YMSM which warrants further investigation.

Methods—This study employs baseline data from a prospective cohort study to examine lifetime experiences of IPV in relation to substance use in the previous 30 days among $n=528$ YMSM in New York City from 2009–11. To examine the extent to which IPV (any experiences, victimization, and perpetration) are related to substance use (alcohol, marijuana, stimulant, and other drugs) in the last 30 days, distinct 2-step multinomial logistic regression models, controlling for sociodemographic differences, were constructed.

Results—44.3% reported lifetime IPV experience, with 39.2% of reporting victimization and 30.5% reporting perpetration. IPV is associated with a 1.6 increased odds of 2 or more instances of alcohol use, a 1.6–1.8 increased odds of 2 or more instances of marijuana use, a 1.8–2.5 increased odds of 2 or more instances of stimulant use, and a 4.1–6.1 increased odds of 2 or more instances of other substance use.

Conclusion—Findings highlight the strong association between IPV and increased frequency of substance use among YMSM and provide support that violence may exist as part of a syndemic facing YMSM. Prevention and intervention strategies may be improved by addressing substance use in the context of IPV and other related health challenges.

Keywords

Intimate partner violence; substance use; YMSM

1. INTRODUCTION

Substance use is highly prevalent among young gay, bisexual, and other non-identified young men who have sex with men (YMSM). One recent nationally representative study finds that more than half of YMSM, who were between the ages of 15 and 24, engaged in binge drinking in the last year, with over 10% reporting illicit drug use (e.g., cocaine, crack, etc.) in the last year (Brewster and Tillman, 2012). Substance use, which is associated with a host of long-term psychological and physical health problems in other populations, may pose an even greater risk for YMSM, as they already experience a disproportionate amount of physical and mental health difficulties (Institute of Medicine, 2011; SAMSHA, 2013).

Substance use among YMSM is also noteworthy in terms of its timing. Specifically, in addition to adolescence being a critical period of physical, emotional, and cognitive development, YMSM often struggle with the processes of coming out and negotiating a stigmatized sexual identity during this time (Arnett, 2000). In light of this population's elevated rates of substance use and the ways in which substance use may exacerbate their heightened physical and mental health burdens, it is important to identify factors that may place YMSM at increased risk for substance use.

Substance use among YMSM is associated with a number of psychosocial stressors (e.g., verbal harassment), with YMSM who identify as ethnic and racial minorities at even greater risk to experience these psychosocial stressors as compared with their White YMSM counterparts (Wong et al., 2010). Substance use is also associated with other social problems bearing mental and physical health consequences among YMSM, such as at-school victimization, homelessness, and suicidality (Bontempo and d'Augelli, 2002; Cochran, et al., 2002; Noell and Ochs, 2001). Moreover, substance use may be situated within a larger constellation of interrelated health problems that compromise the overall well-being of YMSM (Halkitis et al., 2013c).

In addition to the aforementioned health risks, intimate partner violence (IPV), and its relation to substance use, warrants additional attention among YMSM. The occurrence and persistence of IPV poses a significant threat to the physical and mental health of YMSM. However, only a few studies examine factors associated with IPV among YMSM, highlighting a gap in our understanding of this health risk during emerging adulthood, an especially vulnerable period of development (Arnett, 2000). An analysis of nationally representative data indicates that approximately 25% of male and female adolescents in same-sex relationships report IPV in the previous 18 months (Halpern, et al., 2004). Findings from a recent study of urban YMSM indicate that nearly 40% report lifetime experiences of IPV victimization and 31% report perpetration (Stults et al., 2015). When analyzing specific types of IPV, one study reveals that approximately 12% of YMSM report physical violence and 4% report sexual violence from a current male partner (Stephenson, 2010). Among adult men who have sex with men (MSM) more generally, IPV is commonly reported, with lifetime prevalence rates ranging from 32% to 82%, and is associated with a range of health outcomes, including increased likelihood of substance use, HIV infection, depression, and other psychological conditions (Houston and McKirnan, 2007; Buller, et al., 2014; Li et al., 2012; Pantalone, et al., 2012). Methodological inconsistencies across studies make it difficult to assess differences in outcomes by type of IPV experiences. For example, many studies do not include items about IPV perpetration. This is important, as some studies indicate that these experiences often overlap and may be mutually reinforcing (Archer, 2000; Stults et al., 2015). Also, many studies only include items about physical victimization, thereby failing to capture experiences of emotional or verbal abuse.

Despite the clear linkages to poor mental health outcomes, the relationship between IPV and substance use among YMSM is understudied (World Health Organization, 2010). The bulk of extant information on this relationship is derived from studies of heterosexual or adult MSM populations. For example, in a national sample of heterosexual couples, IPV and substance use is associated with depression, posttraumatic stress disorder, and HIV-infection

(Campbell, 2002). Among adult MSM, reports of IPV are associated with increased alcohol (Klostermann et al., 2011; Peralta et al., 2009) and illicit substance use and abuse (Buller et al., 2014; Houston et al., 2007; Li et al., 2012; Wong et al., 2010). However, these studies are limited because they do not look at the relationship between IPV and substance use among MSM during emerging adulthood, a developmentally vulnerable period, and one characterized by inherent risks that may be exacerbated by the unique stressors facing sexual minority youth (Arnett, 2000).

The current study addresses the gap in the extant literature by examining the association between IPV and substance use among a sample of YMSM (ages 18–19) living in New York City, from 2009–11, while controlling for sociodemographic differences in substance use (i.e., race/ethnicity and SES) that have been previously identified in other studies (Houston and McKirnan, 2007; Ramachandran et al., 2010; Wong et al., 2010; Feldman et al., 2007; Finnerman and Stephenson, 2013; Houston and McKirnan, 2007; Greenwood et al., 2002). Thus, the objectives of the present study are to 1) describe the prevalence of IPV experiences and substance use frequency among YMSM, and 2) assess associations between IPV and the likelihood of having engaged in substance use (i.e., alcohol, marijuana, stimulants, and other drugs) in the last month. We hypothesize that experiences of IPV are associated with increased frequency of substance use, even after controlling for sociodemographic differences among YMSM.

2. METHODS

This study uses baseline data from a larger cohort study titled Project 18 (P18). P18 is a prospective cohort study designed to describe syndemic production in a diverse, urban sample of similarly-aged YMSM living in New York City, over the course of emerging adulthood. Complete study details and methods are described in prior publications (Halkitis et al., 2013a, 2013b). Briefly, study recruitment and data collection took place from July 2009 to May 2011. Participants were recruited using both active (e.g., online, LGBT pride events, etc.) and passive (e.g. flyers) methods from the Greater New York City area (i.e., the five boroughs and surrounding areas). This community-based sampling method helped to increase the diversity of our sample. A total of 2,068 people were screened for eligibility, and $n=600$ were eligible for participation. By design, we recruited YMSM who were ages 18 and 19 at the time of baseline, which is defined as the beginning of emerging adulthood (Arnett, 2000). Eligibility requirements also stated that participants must be biologically male, have a reported an HIV-negative or unknown status, and have had at least one reported same-sex sexual encounter in the previous 6 months. For the present study, $n=70$ participants were excluded because they reported not ever having had a boyfriend or intimate partner, and $n=2$ participants had missing data on more than one substantive variable, resulting in a final analytic sample of $n=528$. Written informed consent was obtained from all participants. A federal Certificate of Confidentiality was granted by the Department of Health and Human Services and the New York University Institutional Review Board approved the study protocol.

At the baseline assessment, participants completed an audio computer-assisted self-interviewing (ACASI) survey that included sociodemographic, mental health, and

psychosocial measures. In order to obtain data on substance use and sexual behaviors during the previous 30 days, a study staff member administered a calendar-based recall instrument known as the Timeline Followback (TLFB). The TLFB has been shown to increase the accuracy of behavioral data compared to other assessment modalities (Sobell and Sobell, 1996).

2.1 Measures

2.1.1. Demographic characteristics—First, participants were asked to self-report their race(s) and whether they identified as Hispanic/Latino. Those who self-reported Hispanic/Latino ethnicities were categorized as Hispanic/Latino, irrespective of self-reported race. Participants who identified as Asian/Pacific Islander, Black, White, mixed race, or other race were grouped as non-Hispanic/Latino. Using this information, one categorical variable for race/ethnicity was created with the following groups: White non-Hispanic, Black non-Hispanic, Hispanic/Latino, and mixed/other race. Perceived familial socioeconomic status was measured using a 5-point Likert scale (i.e., lower, lower middle, middle, upper middle, upper), which was later categorized as lower, middle, and upper perceived familial SES. The use of perceived familial SES, as opposed to actual familial income, is warranted in this study, as prior studies have shown that perceptions of familial income are as reliable as actual income in terms of predicting health outcomes.

2.1.2. Alcohol and other drug use—Substance use behavior during the previous 30 days was ascertained using the TLFB (Sobell and Sobell, 1996). Participants were asked to report on the use of the following substances: alcohol, marijuana, inhalant nitrates (“poppers”), powder cocaine, crack cocaine, ecstasy, gamma-hydroxybutyric acid (GHB), ketamine, heroin, rohypnol, methamphetamine, and misuse of prescription drugs (i.e., opiates, benzodiazepines, barbiturates, stimulants) during the 30 days preceding the study interview. For these analyses, we summed the total number of days that participants stated using alcohol, marijuana, stimulants (i.e., powder cocaine, crack cocaine, methamphetamine, ecstasy, and misuse of prescription stimulants), and all other drugs (e.g., GHB, ketamine, misuse of non-stimulant prescription drugs, etc.) to create four summary variables with scores indicating the number of days on which a particular substance category was used in the previous 30 days. This method of categorization is consistent with substance use classifications in the Diagnostic and Statistical Manual, 5th edition (American Psychiatric Association, 2013). Next, given the non-normal distribution of substance use behaviors, including a large number of zeroes, these items were categorized into three potential outcomes for analytic purposes: (0) no instances in the last 30 days, (1) one instance in the last 30 days, and (2) 2 or more instances in the last 30 days. This method minimizes skew while maintaining variability and has been used in previous studies (Blum et al., 2000).

2.1.3. Intimate partner violence—Intimate partner violence was measured using a modified version of the Conflict Tactics Scale (Feldman, et al., 2008), which includes three yes/no questions regarding victimization and three yes/no questions regarding perpetration:

1. Have you ever been insulted or verbally abused by a lover or boyfriend?
2. Have you ever been hit, kicked, or slapped by a lover or boyfriend?

3. Have you ever been sexually abused or raped by a lover or boyfriend?
4. Have you ever insulted or verbally abused a lover or boyfriend?
5. Have you ever hit, kicked, or slapped a lover or boyfriend?
6. Have you ever sexually abused or raped a lover or boyfriend?

The three items pertaining to victimization and the three items pertaining to perpetration were collapsed to create two distinct dichotomous variables (“IPV Victimization” and “IPV Perpetration”), which indicate at least one type of lifetime victimization or perpetration experience. Given the young age of this sample, as well as the strong correlation between experiences of victimization and perpetration in this sample ($\Phi = .60$ $p < .01$), a third variable was created to capture any type of IPV experience (“Any IPV”), regardless of victim or perpetrator status. This approach of grouping participants has been used in previous research (Carvalho et al., 2011; Stults et al., 2015) and is justified given the dearth of research in this area.

2.2 Analytic Plan

First, descriptive analyses were conducted to provide estimates of substance use across all four categories. Next, bivariate analyses were used to determine independent associations between IPV types (any IPV, IPV victimization, IPV perpetration), as well as between IPV, substance use (alcohol, marijuana, stimulants, and other drugs), and the covariates of interest (race/ethnicity and SES). Finally, to examine the extent to which IPV was related to substance use in this sample of YMSM, 12 distinct 2-step multinomial logistic regression models were constructed. These distinct models examined the independent effects of (1) any IPV, (2) IPV victimization, and (3) IPV perpetration on each of the 4 substance use variables: alcohol, marijuana, stimulants, and other drugs. From these analyses, unadjusted odds ratios were obtained to assess independent associations between IPV and the covariates of interest with the four substance use outcome variables. Next, in each model, covariates were entered in the first step and IPV was entered in the second step. These models provided adjusted odds ratios (AOR) for the relationship between distinct types of IPV and different substance use outcome after controlling for race/ethnicity and SES. Model fit was assessed using Nagelkerke R^2 . UORs and AORs are shown in Table 3.

3. RESULTS

3.1 Sample Characteristics

Table 1 provides a summary of the sample ($n = 528$) by race/ethnicity and perceived familial SES. Overall, the sample is comprised of predominantly non-White YMSM ($n = 376$, 71.2%), aged 18–19. Of those who identified as non-White, 16.3% identified as Black non-Hispanic, 40.3% as Hispanic, and 14.6% as mixed/other race. Within the overall sample, 34.1% reported lower perceived familial SES, 36.6% middle SES, and 29.4% upper SES. Black non-Hispanic (53.5%), Hispanic (40.8%), and mixed/other race participants (31.2%) reported a higher proportion of lower SES than White non-Hispanic respondents. See Table 1 for a further breakdown of perceived familial SES across race/ethnicity.

3.2 Intimate Partner Violence

In this sample, 44.3% of participants reported at least one type of lifetime IPV experience. Specifically, 39.2% of YMSM reported IPV victimization and 30.5% reported IPV perpetration. Further examination of these data indicate that IPV victimization and perpetration are significantly associated ($\Phi = .60$ $p < .01$) with each other, with 25.4% reporting both victimization and perpetration experiences.

3.3 Substance Use

As seen in Table 2, in this sample, 21.4% of respondents reported 0 instances of alcohol use in the last 30 days, 14.8% reported 1 instance, and 63.6% reported 2 or more instances. Regarding marijuana use, 55.1% reported 0 instances in the last 30 days, 10.2% reported 1 instance, and 34.5% reported 2 or more instances. 88.4% of participants reported 0 instances of stimulant use in the last 30 days, 5.5% reported 1 instance, and 5.9% reported 2 or more instances. Finally, regarding all other substances, 96.6% of participants reported 0 instances of other substance use in the last 30 days, 1.1% reported 1 instance, and 2.1% reported two or more instances. Bivariate analyses indicate significant differences in alcohol and marijuana use by race, with White non-Hispanic men reporting the highest prevalence of 2 or more instances of either substance. There are also significant differences in alcohol use by perceived familial SES, with upper SES respondents reporting the highest prevalence of 2 or more instances.

3.4 Multivariable Modeling

Unadjusted odds ratios (Table 3) between distinct types of substance use and IPV indicate a high level of association between lifetime experiences of IPV and use of marijuana, stimulants, and other substances in the last 30 days. However, no significant association was detected for lifetime experience of IPV and alcohol use in the last 30 days. Across all four substance use variables, reported White non-Hispanic race/ethnicity and upper SES is associated with higher odds of engaging in 2 or more instances of substance use in the last 30 days.

3.4.1. Any IPV—In multinomial models adjusting for race/ethnicity and SES, the model differentiating levels of alcohol use achieved significance ($\chi^2(12) = 45.25$, $p < .001$; Nagelkerke $R^2 = 9.9\%$). Individuals reporting any IPV were more likely to report engaging in 2 or more instances of alcohol use in the last 30 days as compared to no instances (AOR = 1.61, 95% CI = 1.03–2.53). The model fit for marijuana use achieved significance ($\chi^2(12) = 31.39$, $p = .002$; Nagelkerke $R^2 = 6.9\%$). In this model, individuals reporting any IPV indicated higher odds of engaging in 2 or more instances of marijuana use in the last 30 days as compared to no instances (AOR = 1.76, 95% CI = 1.20–2.58). The model differentiating levels of stimulant use from any IPV achieved significance ($\chi^2(12) = 27.45$, $p = .007$; Nagelkerke $R^2 = 8.8\%$). Individuals reporting any IPV were more likely to report engaging in 1 instance of stimulant use in the last 30 days as compared to no instances (AOR = 3.49, 95% CI = 1.58–8.36). The model fit for other substance use was not statistically significant ($\chi^2(12) = 17.74$, $p = .12$; Nagelkerke $R^2 = 11.9\%$). However, individuals reporting any IPV

indicated higher odds of engaging in 2 or more instances of other substance use in the last 30 days as compared to no instances (AOR = 6.14, 95% CI = 1.29–29.17).

3.4.2. IPV Victimization—The model differentiating levels of alcohol use from IPV victimization achieved significance ($\chi^2(12) = 44.41$, $p < .001$; Nagelkerke $R^2 = 9.7\%$). Individuals reporting IPV victimization were marginally significantly ($p = .054$) more likely to report engaging in 2 or more instances of alcohol use in the last 30 days as compared to no instances (AOR = 1.58, 95% CI = (.99–2.51)). The model fit for marijuana use achieved significance ($\chi^2(12) = 29.35$, $p = .003$; Nagelkerke $R^2 = 6.4\%$). For marijuana use, individuals reporting IPV victimization indicated higher odds of engaging in 2 or more instances of marijuana use in the last 30 days as compared to no instances (AOR = 1.62, 95% CI = 1.10–2.38). The model differentiating levels of stimulant use from IPV victimization was statistically significant ($\chi^2(12) = 20.96$, $p = .051$; Nagelkerke $R^2 = 6.7\%$). Individuals reporting IPV victimization were more likely to report engaging in 1 instance of stimulant use in the last 30 days as compared to no instances (AOR = 2.24, 95% CI = 1.04–4.84). The model fit for other substance use did not achieve statistical significance ($\chi^2(12) = 14.80$, $p = .25$; Nagelkerke $R^2 = 9.9\%$). Regarding other substance use, individuals reporting IPV victimization indicated higher odds of engaging in 2 or more instances of other substance use in the last 30 days as compared to no instances (AOR = 4.15, 95% CI = 1.07–16.12).

3.4.3. IPV Perpetration—The model differentiating levels of alcohol use from IPV perpetration achieved significance ($\chi^2(12) = 44.51$, $p < .001$; Nagelkerke $R^2 = 9.7\%$). Individuals reporting IPV perpetration were not significantly more likely to report engaging in 1 or 2 or more instances of alcohol use in the last 30 days as compared to no instances (AOR = 1.57, 95% CI = .96–2.56). The model fit for marijuana use achieved significance ($\chi^2(12) = 27.80$, $p = .006$; Nagelkerke $R^2 = 6.1\%$). Regarding marijuana use, individuals reporting IPV perpetration indicated higher odds of engaging in 2 or more instances of marijuana use in the last 30 days as compared to no instances (AOR = 1.62, 95% CI = 1.08–2.44). The model differentiating levels of stimulant use from IPV perpetration achieved significance ($\chi^2(12) = 28.69$, $p < .01$; Nagelkerke $R^2 = 9.1\%$). Individuals reporting IPV perpetration were more likely to report engaging in 1 instance (AOR = 3.05, 95% CI = 1.42–6.58) and 2 or more instances of stimulant use in the last 30 days (AOR = 2.45, 95% CI = 1.15–5.24) as compared to no instances. The model fit for other substance use did not achieve statistical significance ($\chi^2(12) = 17.18$, $p = .143$; Nagelkerke $R^2 = 11.5\%$). Regarding other substance use, individuals reporting IPV perpetration indicated higher odds of engaging in 2 or more instances of other substance use in the last 30 days as compared to no instances (AOR = 5.03, 95% CI = 1.41, 17.95).

4. DISCUSSION

Our findings indicate that lifetime experiences of IPV, regardless of victim or perpetrator status, significantly increases odds of recent substance use 1.5 to 6-fold. Specifically, any IPV and IPV victimization increase risk for alcohol use, any IPV and IPV perpetration increase risk for stimulant use, and all three IPV statuses (i.e., any IPV, IPV victimization, and IPV perpetration) increase risk marijuana use in the last 30 days. Finally, although the

overall model fits predicting use of other substances (i.e., heroin, GHB, ketamine, poppers, rohypnol, and misuse of prescription opiates, benzodiazepines, barbiturates, and stimulants) were statistically significant, the frequency of other substance use was substantially lower than that of alcohol, marijuana, and stimulants, thereby reducing the statistical power of these analyses.

These findings indicate that almost half of our sample report experiences of lifetime IPV. Prevalence rates of IPV among YMSM vary from study to study due to differences in methodologies. Our estimates are notably higher than most of those from national studies involving samples of less diverse or older MSM (Carvalho et al., 2011; Halpern et al., 2004; Mustanski et al., 2007).

Experiences of IPV are associated with increased frequency of substance use, controlling for known differences in race/ethnicity and perceived familial SES. Although we cannot draw any causal conclusions regarding the link between IPV and substance use, the time frames utilized in our measures enable us to infer some temporal precedence. Specifically, IPV is assessed with items regarding lifetime experiences, whereas substance use is only measured for the last 30 days.

4.1 The relationship between IPV and substance use

Our findings reveal that victims and perpetrators of IPV are at greater risk for increased substance use as they enter emerging adulthood, as compared to individuals who report no IPV experience. Emerging adulthood, a vulnerable and transitional period of development from ages 18 to 25, is characterized by greater sensation-seeking, developmental transitions (e.g., moving in with a dating partner), and greater independence; all of which may in turn exacerbate the preexisting risk for substance use and abuse incurred as a result of experiencing IPV (Arnett, 2000; Tucker et al., 2005).

Increased substance use may also predispose YMSM to increased risk for experiences of IPV. There is a lack of research regarding this mechanism among YMSM; however, studies have demonstrated that alcohol and other substance use are predictive of both victimization and perpetration experiences among heterosexual men (Ali and Naylor, 2013; Chase, et al., 2003; Fals-Stewart, et al., 2003; Kantor and Straus, 1987, 1989; Pan et al., 1994; Russell et al., 1989; Schumacher, et al., 2003; Schumacher et al., 2001; Stith et al., 2004; Thompson and Kingree, 2006). Substance use may also serve as a coping mechanism in response to experiences of IPV. Again, there is a dearth of research related to this mechanism among YMSM, yet the use of substances to cope with violence is established among adult women (Testa et al., 2003; Kaysen et al., 2007).

As other researchers suggest (Kilpatrick, et al., 1997; Polusny and Follette, 1995), we hypothesize that substance use exists in a reciprocal feedback loop with IPV. In other words, substance use augments risk for experiences of IPV, and those experiences, in turn, promote increased risk of substance use.

Importantly, our analyses support results of past research suggesting that experiences of victimization and perpetration often overlap (Archer, 2000). The nature of our instruments

prevent us from knowing whether respondents in our sample experienced victimization and perpetration of IPV with the same partner(s). However, our results suggest that substance use is similarly associated with both types of IPV experiences and thus should be taken into account when assessing the overall mental and physical health of YMSM.

4.2 Risk accorded by IPV

Our analyses reveal that within a population of YMSM already at heightened risk for substance use, those who have experienced IPV are at even greater risk of using substances (Greenwood et al., 2001; Outlaw et al., 2011; Thiede et al., 2003; Ueno, 2010; Wong et al., 2010, 2010; Institute of Medicine, 2011). Yet, for YMSM, substance use may synergistically interact with other known adverse health experiences (e.g., HIV/AIDS, mental health problems, etc.) that disproportionately affect sexual minority men, in what has come to be known as a syndemic (Halkitis, 2013b; Halkitis et al., 2011; Herrick et al., 2013; Mustanski et al., 2007; Singer, 1994; Stall et al., 2008, 2003). Experiences of IPV may further magnify this population's already increased risk for the aforementioned physical and mental health disparities. In accordance with syndemic theory, individuals with higher mental health burdens also demonstrate heightened risk or vulnerability to risk in other areas (Mustanski, et al., 2007; Singer, 1994; Stall et al., 2008; Halkitis et al., 2010). Therefore, we posit that those who experience IPV likely demonstrate greater mental health burdens, which in turn heighten their likelihood of engaging in substance use. Said otherwise, the mental health and psychosocial burdens experienced by YMSM likely mediate the relationship between IPV and substance use.

4.3 Future research

The literature regarding IPV among sexual minority men is limited but growing. Most studies examining IPV and substance use are cross-sectional. Consequently, causal mechanisms and developmental trajectories cannot be ascertained. We recommend that future studies employ longitudinal methodologies in order to better understand the dynamic relationship between IPV and substance use, particularly for this population (Ali and Naylor, 2013).

We encourage future researchers to explore the differences in associations between different IPV statuses and substance use outcomes. We also encourage future research to examine potential sociodemographic differences in substance use among YMSM.

Additionally, we recommend that future studies examine how relevant individual (e.g., history of childhood mistreatment), dispositional trait (e.g., impulsivity), and mental health (e.g., posttraumatic stress disorder) variables influence IPV and substance use over time. Finally, though we posit a potential link between IPV and other health consequences related to substance use (e.g., risk for HIV/AIDS), future studies can directly examine these associations of violence and substance use as part of a larger syndemic facing YMSM.

4.4 Implications

These findings have several implications for prevention and intervention. First, although many settings (e.g., primary care providers, LGBT organizations, and HIV/STI testing sites)

screen YMSM for substance use and abuse, few sites also screen for IPV. We suggest that screening for IPV should be conducted routinely, as it is a demonstrated risk factor for increased substance use along with other adverse mental health experiences (Coker et al., 2002). Thus, better screening tools to identify victims or perpetrators of partner violence should be developed for use with sexual minority young men.

Our analyses reveal that, even at age 18–19, IPV is a common experience among YMSM. Given that many existing interventions for IPV victims were designed for women and may not be effective for other groups of individuals (McClennen, 2005), there is a clear need for the development of interventions tailored to the unique needs of this population of MSM. Furthermore, although interventions have been designed for heterosexual male perpetrators of IPV, few have been adapted to meet the needs of male perpetrators in same-sex relationships (Barner and Carney, 2011).

Finally, a recent analysis finds that, compared to women, there are fewer resources available to men who have experienced IPV (Stop Abusive and Violent Environments, 2010). For example, some domestic violence shelters and service organizations do not allow men on their premises out of concern for their female clients' comfort and perceived safety. Even among organizations that do provide support to men who have experienced IPV, it is likely that few offer services attuned to the specific needs of YMSM. We advocate for expansion of these resources, as the extant literature indicates that many IPV exist in a web of interlocking health problems disproportionately affecting this vulnerable population.

4.5 Limitations

Key study limitations ought to be noted prior to drawing final conclusions. First, IPV experiences should not be construed as directly causal in their relationship to the outcome variables of substance use. Rather, these experiences can be viewed as part of a causal path, as these experiences are likely associated with higher levels of psychosocial burdens, which in turn may augment substance use. Specific psychological (e.g., posttraumatic stress) or individual trait-level factors (e.g., impulsivity) that may help to explain the relationship between IPV and substance use were not included in this analysis.

Our measure of substance use is subject to limitations. First, substance use was measured using recall data. Although this method can be problematic when assessing frequency of substance use on a continuous scale, our analyses employ trichotomized versions of the substance use variables, which likely reduces error due to recall. We also note that other aspects of substance use (e.g., mode of ingestion) were not included in our analyses. Finally, our analyses do not differentiate between other potentially important aspects of substance use (e.g., substance abuse or dependence, volume, etc.).

Our measure of IPV is also subject to three important limitations. First, these analyses grouped experiences of IPV victimization and perpetration (e.g., emotional/verbal, physical, and sexual) into three broader categories (IPV victimization, perpetration, and any IPV). In preliminary analyses, we examined more specific models in relation to our outcome variables (i.e., 24 distinct models). In the models distinguishing between different IPV victimization and perpetration types, we find nearly the same pattern of results. As such, for

the purposes of brevity and parsimony, we believe it is best to present the models with experiences of victimization and perpetration grouped together.

Second, we have analyzed our independent variable, IPV status, dichotomously (i.e., no lifetime experience of IPV or any lifetime experience of IPV). We decided on this approach with a full understanding that the measurement of IPV experience is fraught with complexities. Although this classification lacks specificity (i.e., it does not assess recency, frequency, or severity of IPV experiences), we believe that the dearth of research in this area, and the vulnerability of the population in question, warrants being more inclusive regarding what constitutes IPV.

Third, our measure of IPV uses several items that assess participants' perceptions of abuse, rather discrete behaviors (e.g., "Have you ever been insulted or verbally abused by a lover or boyfriend?"). It is possible that our participants underreported their experiences of IPV, depending on how they define abuse. As such, our findings regarding the relationship between IPV and substance use may be biased.

Finally, given the relatively small proportion of Asian, Pacific Islander, and mixed/other race participants in our sample, we collapsed these groups into a single category and termed it "mixed/other race." We acknowledge this as a limitation and caution any interpretation of findings related specifically to this racial/ethnic group.

4.6 Conclusion

Our findings for this cohort of YMSM are consistent with previous studies in heterosexual and adult MSM populations suggesting that IPV is strongly associated with substance use. However, they contribute to the extant literature in several key ways. First, few studies examine experiences of IPV in relation to substance use in emerging adult YMSM, a critical period of life during which the developmental trajectories of IPV and substance use may be heavily influenced. Second, our analyses assessed the relationship between IPV and substance use while controlling for known racial/ethnic and SES differences in substance use. This is important because, in our sample, White non-Hispanic and upper SES YMSM report greater frequency of substance use, as compared to non-White and lower SES YMSM. Finally, few studies examining IPV among YMSM have utilized community-based sampling, a method that helps to ensure inclusivity and diversity. Our sampling of urban YMSM is noteworthy because urban contexts expose YMSM to multiple stressors that place them at risk for IPV, substance use, and other health disparities (Stall et al., 2003; Mustanski et al., 2007).

Our findings suggest that lifetime experiences of IPV are significantly associated with substance use in the last 30 days. Moreover, these findings are consistent with a theory of syndemics (Halkitis et al., 2013), wherein these health states are linked to other physical and mental health issues disproportionately burdening YMSM. Said otherwise, given that IPV and substance use are independently well-established risk factors for a number of health challenges, including HIV and depression (Buller et al., 2014; Campbell, 2002; Li et al., 2012; Pantalone et al., 2012), they may function synergistically to even further heighten risk. Consequently, these experiences should not be treated in isolation.

Moving forward, YMSM may benefit from a more holistic approach to the many overlapping health challenges they face. Researchers and healthcare providers must recognize the complex interplay between behavioral, psychosocial, and structural factors affecting the well-being of sexual minority young men. More specifically, it is important to develop better screening tools and interventions that are tailored to the unique needs of YMSM victims and perpetrators of IPV. Key points of access for YMSM (e.g., HIV/STI testing sites, LGBT-related organizations, and primary care providers) may be helpful identifying and appropriately referring those affected by IPV and substance use. Additionally, we advise further research into the factors that mediate the relationship between IPV and substance use, and examine the impact of different types of IPV on substance use, in order to better understand this link, and in order to tailor screening tools and treatments accordingly.

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HIGHLIGHTS

- Relationship between intimate partner violence (IPV) and recent substance use among young men who have sex with men (YMSM) is examined
- IPV is associated with increased frequency of recent substance use among YMSM
- Substance use prevention and interventions should account for risk conferred by IPV
- IPV and substance use may exist within a larger syndemic burdening YMSM

Table 1

Distribution of Sample Race/Ethnicity by SES Among 528 YMSM, Baseline Data P18 Cohort Study, 2009-11

	Black non-Hispanic % (n)	White non-Hispanic % (n)	Hispanic % (n)	Mixed/other race % (n)	Total % (n)
Perceived familial SES					
Lower	53.5 (46)	15.1 (23)	40.8 (87)	31.2 (24)	34.1 (180)
Middle	32.6 (28)	32.9 (50)	41.8 (89)	33.8 (26)	36.6 (193)
Upper	14.0 (12)	52.0 (79)	17.4 (37)	35.1 (27)	29.4 (155)
Total	16.3 (86)	28.8 (152)	40.3 (213)	14.6 (77)	100 (528)

Table 2

Frequencies of Substance Use 30 Days Prior to Assessment Among 528 YMSM, Baseline Data P18 Cohort Study, 2009-11

	0 instances % (n)	1 instance % (n)	2 + instances % (n)	Missing % (n)
Alcohol	21.4 (113)	14.8 (78)	63.6 (336)	.2 (1)
Marijuana	55.1 (291)	10.2 (54)	34.5 (182)	.2 (1)
Stimulants	88.4 (467)	5.5 (29)	5.9 (31)	.2 (1)
Other Substances	96.6 (510)	1.1 (6)	2.1 (11)	.2 (1)

Table 3

Unadjusted OR (95% CI) and Parameter Estimates [Adjusted OR (AOR), 95% CI] from Multinomial Logistic Regressionsa of IPV Experiences on Substance Use Behavior Among 528 YMSM, Baseline Data P18 Cohort Study, 2009-11

	Alcohol				Marijuana			
	UOR		AOR		UOR		AOR	
	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances
Any IPV	.96 (.53, 1.75)	1.52 (.98, 2.34)	0.96 (.53, 1.75)	1.61b (1.03, 2.53)	.89 (.49, 1.62)	1.76c (1.21, 2.56)	.93 (.51, 1.71)	1.76c (1.20, 2.58)
Race/Ethnicity								
Hispanic/Latino	1.04 (.44, 2.45)	.36c (.20, .66)	1.11 (.46, 2.68)	.41c (.22, .77)	.56 (.28, 1.12)	.70 (.45, 1.10)	.63 (.30, 1.31)	.70 (.43, 1.13)
Black	.94 (.37, 2.44)	.21d (.10, .42)	1.00 (.37, 2.70)	.25d (.12, .52)	.66 (.28, 1.56)	.68 (.38, 1.21)	.75 (.30, 1.89)	.67 (.36, 1.24)
Asian/Other	.85 (.30, 2.38)	.31c (.15, .65)	.87 (.31, 2.46)	.33c (.16, .70)	.39 (.15, 1.04)	.36c (.19, .68)	.41 (.14, 1.11)	.35c (.18, .67)
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SES								
Low	.84 (.38, 1.86)	.43c (.24, .77)	.82 (.36, 1.89)	.59 (.31, 1.10)	.60 (.28, 1.27)	.98 (.62, 1.54)	0.68 (.30, 1.55)	1.02 (.61, 1.69)
Middle	.80 (.36, 1.75)	.42c (.24, .75)	.78 (.35, 1.73)	.51b (.28, .92)	.72 (.36, 1.42)	.57b (.36, .91)	.78 (.38, 1.58)	.58b (.36, .96)
High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Other Substances								
	UOR		AOR		UOR		AOR	
	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances
Any IPV	3.63c (1.58, 8.36)	1.68 (.81, 3.49)	3.49c (1.50, 8.09)	1.76 (.83, 3.72)	2.62 (.47, 14.41)	5.88b (1.26, 27.51)	2.47 (.44, 13.83)	6.14b (1.29, 29.17)
Race/Ethnicity								
Hispanic/Latino	1.74 (.66, 4.60)	.43b (.19, .99)	1.66 (.58, 4.69)	.50 (.21, 1.23)	1.04 (.17, 6.28)	.20b (.04, .96)	.77 (.12, 5.13)	.16b (.03, .84)
Black	1.10 (.30, 4.01)	.31 (.09, 1.09)	1.07 (.27, 4.20)	.35 (.09, 1.33)	*	.24 (.03, 1.99)	*	.20 (.02, 1.85)
Asian/Other	1.22 (.33, 4.47)	.23 (.05, 1.02)	1.20 (.32, 4.48)	.24 (.05, 1.09)	.95 (.09, 10.69)	.27 (.03, 2.26)	.87 (.08, 10.03)	.25 (.03, 2.14)
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SES								
Low	1.37 (.55, 3.40)	.56 (.24, 1.29)	1.03 (.38, 2.77)	.73 (.28, 1.85)	1.72 (.15, 19.20)	.86 (.21, 3.51)	2.09 (.17, 26.33)	1.45 (.31, 6.83)
Middle	.74 (.27, 2.03)	.30b (.11, .78)	.62 (.22, 1.77)	.34b (.13, .94)	2.42 (.25, 23.50)	.60 (.13, 2.74)	2.65 (.26, 27.44)	.88 (.18, 4.19)
High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Alcohol								
	UOR		AOR		UOR		AOR	
	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances
Any IPV	.96 (.53, 1.75)	1.52 (.98, 2.34)	0.96 (.53, 1.75)	1.61b (1.03, 2.53)	.89 (.49, 1.62)	1.76c (1.21, 2.56)	.93 (.51, 1.71)	1.76c (1.20, 2.58)
Race/Ethnicity								
Hispanic/Latino	1.04 (.44, 2.45)	.36c (.20, .66)	1.11 (.46, 2.68)	.41c (.22, .77)	.56 (.28, 1.12)	.70 (.45, 1.10)	.63 (.30, 1.31)	.70 (.43, 1.13)
Black	.94 (.37, 2.44)	.21d (.10, .42)	1.00 (.37, 2.70)	.25d (.12, .52)	.66 (.28, 1.56)	.68 (.38, 1.21)	.75 (.30, 1.89)	.67 (.36, 1.24)
Asian/Other	.85 (.30, 2.38)	.31c (.15, .65)	.87 (.31, 2.46)	.33c (.16, .70)	.39 (.15, 1.04)	.36c (.19, .68)	.41 (.14, 1.11)	.35c (.18, .67)
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SES								
Low	.84 (.38, 1.86)	.43c (.24, .77)	.82 (.36, 1.89)	.59 (.31, 1.10)	.60 (.28, 1.27)	.98 (.62, 1.54)	0.68 (.30, 1.55)	1.02 (.61, 1.69)
Middle	.80 (.36, 1.75)	.42c (.24, .75)	.78 (.35, 1.73)	.51b (.28, .92)	.72 (.36, 1.42)	.57b (.36, .91)	.78 (.38, 1.58)	.58b (.36, .96)
High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Marijuana								
	UOR		AOR		UOR		AOR	
	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances
Any IPV	.96 (.53, 1.75)	1.52 (.98, 2.34)	0.96 (.53, 1.75)	1.61b (1.03, 2.53)	.89 (.49, 1.62)	1.76c (1.21, 2.56)	.93 (.51, 1.71)	1.76c (1.20, 2.58)
Race/Ethnicity								
Hispanic/Latino	1.04 (.44, 2.45)	.36c (.20, .66)	1.11 (.46, 2.68)	.41c (.22, .77)	.56 (.28, 1.12)	.70 (.45, 1.10)	.63 (.30, 1.31)	.70 (.43, 1.13)
Black	.94 (.37, 2.44)	.21d (.10, .42)	1.00 (.37, 2.70)	.25d (.12, .52)	.66 (.28, 1.56)	.68 (.38, 1.21)	.75 (.30, 1.89)	.67 (.36, 1.24)
Asian/Other	.85 (.30, 2.38)	.31c (.15, .65)	.87 (.31, 2.46)	.33c (.16, .70)	.39 (.15, 1.04)	.36c (.19, .68)	.41 (.14, 1.11)	.35c (.18, .67)
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SES								
Low	.84 (.38, 1.86)	.43c (.24, .77)	.82 (.36, 1.89)	.59 (.31, 1.10)	.60 (.28, 1.27)	.98 (.62, 1.54)	0.68 (.30, 1.55)	1.02 (.61, 1.69)
Middle	.80 (.36, 1.75)	.42c (.24, .75)	.78 (.35, 1.73)	.51b (.28, .92)	.72 (.36, 1.42)	.57b (.36, .91)	.78 (.38, 1.58)	.58b (.36, .96)
High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

	Alcohol						Marijuana					
	UOR			AOR			UOR			AOR		
	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances
	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances
Victimization	.97 (.52, 1.80)	1.56 (1.00, 2.44)	.96 (.52, 1.80)	1.58 (.99, 2.51)	.84 (.45, 1.56)	1.67c (1.15, 2.44)	.86 (.46, 1.61)	1.62b (1.10, 2.38)				
Race/Ethnicity												
Hispanic/Latino	1.04 (.44, 2.45)	.36c (.20, .66)	1.11 (.46, 2.69)	.42c (.22, .79)	.56 (.28, 1.12)	.70 (.45, 1.10)	.63 (.30, 1.31)	.71 (.44, 1.16)				
Black	.94 (.37, 2.44)	.21d (.10, .42)	1.00 (.37, 2.70)	.25d (.12, .53)	.66 (.28, 1.56)	.68 (.38, 1.21)	.74 (.30, 1.87)	.68 (.37, 1.27)				
Asian/Other	.85 (.30, 2.38)	.31c (.15, .65)	.87 (.31, 2.46)	.34c (.16, .71)	.39 (.15, 1.04)	.36c (.19, .68)	.41 (.15, 1.10)	.36c (.18, .69)				
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
SES												
Low	.84 (.38, 1.86)	.43c (.24, .77)	.82 (.36, 1.89)	.59 (.31, 1.10)	.60 (.28, 1.27)	.98 (.62, 1.54)	.69 (.31, 1.57)	1.03 (.62, 1.71)				
Middle	.80 (.36, 1.75)	.42c (.24, .75)	.77 (.35, 1.73)	.51b (.28, .93)	.72 (.36, 1.42)	.57b (.36, .91)	.78 (.38, 1.59)	.59b (.36, .97)				
High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
	Stimulants						Other Substances					
	UOR			AOR			UOR			AOR		
	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances	1 instance	2+ instances
Victimization	2.34b (1.09, 5.02)	1.36 (.66, 2.83)	2.24b (1.04, 4.84)	1.34 (.64, 2.84)	1.60 (.32, 8.02)	4.27b (1.12, 16.30)	1.48 (.29, 7.51)	4.14b (1.07, 16.12)				
Race/Ethnicity												
Hispanic/Latino	1.74 (.66, 4.60)	.43b (.19, .99)	1.71 (.61, 4.84)	.51 (.21, 1.24)	1.04 (.17, 6.28)	.20b (.04, .96)	.81 (.12, 5.36)	.17b (.03, .90)				
Black	1.10 (.30, 4.01)	.31 (.09, 1.09)	1.09 (.61, 4.81)	.35 (.09, 1.34)	*	.24 (.03, 1.99)	*	.22 (.02, 2.00)				
Asian/Other	1.22 (.33, 4.47)	.23 (.05, 1.02)	1.24 (.33, 4.63)	.24 (.05, 1.10)	.95 (.09, 10.69)	.27 (.03, 2.26)	.87 (.08, 10.10)	.27 (.03, 2.30)				
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
SES												
Low	1.37 (.55, 3.40)	.56 (.24, 1.29)	1.09 (.41, 2.92)	.76 (.30, 1.92)	1.72 (.15, 19.20)	.86 (.21, 3.51)	2.21 (.18, 27.86)	1.45 (.31, 6.79)				
Middle	.74 (.27, 2.03)	.30b (.11, .78)	.65 (.23, 1.83)	.35b (.13, .96)	2.42 (.25, 23.50)	.60 (.13, 2.74)	2.71 (.26, 27.84)	.86 (.18, 4.05)				
High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
	Alcohol						Marijuana					
	UOR			AOR			UOR			AOR		

	Alcohol						Marijuana					
	UOR			AOR			UOR			AOR		
	1 instance	2+ instances	1 instance	1 instance	2+ instances	2+ instances	1 instance	1 instance	2+ instances	1 instance	1 instance	2+ instances
Perpetration	.89 (.46, 1.73)	1.38 (.86, 2.22)	.89 (.46, 1.74)	.89 (.46, 1.74)	1.57 (.96, 2.56)	.92 (.48, 1.79)	1.54b (1.03, 2.28)	1.01 (.52, 1.97)	1.62b (1.08, 2.44)			
Race/Ethnicity												
Hispanic/Latino	1.04 (.44, 2.45)	.36c (.20, .66)	1.12 (.46, 2.71)	.40c (.21, .75)	.70 (.45, 1.10)	.63 (.30, 1.31)	.68 (.42, 1.10)					
Black	.94 (.37, 2.44)	.21d (.10, .42)	1.01 (.37, 2.71)	.24d (.11, .50)	.66 (.28, 1.56)	.76 (.30, 1.89)	.64 (.34, 1.18)					
Asian/Other	.85 (.30, 2.38)	.31c (.15, .65)	.88 (.31, 2.48)	.31 (.15, .67)	.39 (.15, 1.04)	.41 (.15, 1.11)	.33c (.17, .64)					
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
SES												
Low	.84 (.38, 1.86)	.43c (.24, .77)	.82 (.36, 1.89)	.61 (.32, 1.13)	.98 (.62, 1.54)	.68 (.30, 1.53)	1.06 (.64, 1.76)					
Middle	.80 (.36, 1.75)	.42c (.24, .75)	.78 (.35, 1.73)	.51 b (.28, .92)	.57b (.36, .91)	.77 (.38, 1.57)	.59b (.36, .97)					
High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
	Stimulants						Other Substances					
	UOR			AOR			UOR			AOR		
	1 instance	2+ instances	1 instance	1 instance	2+ instances	2+ instances	1 instance	1 instance	2+ instances	1 instance	1 instance	2+ instances
Perpetration	3.16c (1.48, 6.74)	2.11b (1.01, 4.41)	3.05c (1.42, 6.58)	2.45b (1.15, 5.24)	2.38 (.47, 11.91)	4.16b (1.20, 14.21)	2.32 (.45, 11.96)	5.03b (1.41, 17.95)				
Race/Ethnicity												
Hispanic/Latino	1.74 (.66, 4.60)	.43b (.19, .99)	1.52 (.53, 4.34)	.47 (.19, 1.17)	1.04 (.17, 6.28)	.20b (.04, .96)	.71 (.10, 4.80)	.14b (.03, .75)				
Black	1.10 (.30, 4.01)	.31 (.09, 1.09)	.94 (.24, 3.73)	.32 (.08, 1.24)	*	.24 (.03, 1.99)	*	.17 (.02, 1.58)				
Asian/Other	1.22 (.33, 4.47)	.23 (.05, 1.02)	1.05 (.28, 3.93)	.22b (.05, .99)	.95 (.09, 10.69)	.27 (.03, 2.26)	.78 (.07, 9.03)	.21 (.02, 1.79)				
White	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
SES												
Low	1.37 (.55, 3.40)	.56 (.24, 1.29)	1.10 (.41, 2.97)	.73 (.29, 1.85)	1.72 (.15, 19.20)	.86 (.21, 3.51)	2.24 (.18, 28.14)	1.59 (.34, 7.49)				
Middle	.74 (.27, 2.03)	.30b (.11, .78)	.61 (.21, 1.76)	.34b (.12, .94)	2.42 (.25, 23.50)	.60 (.13, 2.74)	2.69 (.26, 28.04)	.95 (.20, 4.57)				
High	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			

a0 instances is reference category. bp 0.05; cp 0.01; dp 0.01. IPV, intimate partner violence.