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Exposure to Community Violence and Substance Use among Black Men who have Sex with Men: Examining the Role of Psychological Distress and Criminal Justice Involvement

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Abstract

Young Black MSM (YBMSM) are disproportionately affected by violence, criminal justice involvement, and other structural factors that also increase vulnerability to HIV. This study examined associations between exposure to community violence (ECV) and substance use, psychological distress, and criminal justice involvement (CJI) and tested whether CJI and psychological distress mediated the association between ECV and problematic substance use among YBMSM in Chicago, IL. Respondent driven sampling was used to recruit a sample of 618 YBMSM (aged 16–29) from majority Black neighborhoods on the South Side of Chicago between June 2013 and July 2014. Weighted logistic regression was used to assess the independent effects of community violence exposure, psychological distress, and criminal justice involvement on substance use outcomes. Indirect effects were assessed via path analysis in Mplus version 7.1, using the weighted least squares with mean and variance adjustment (WLSMV) estimator and incorporating sampling weights and clustering. Over 90% reported lifetime exposure to at least one type of violence, 41% had history of criminal justice involvement, and substance use was common. Almost one-third reported daily or more frequent marijuana use; 17% reported substance use related problems and drug use other than marijuana. ECV was directly and positively associated with criminal justice involvement, psychological distress, and problematic substance use. Furthermore, the association between ECV and problematic substance use was mediated by increased CJI and psychological distress. HIV prevention interventions for YBMSM should

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address the underlying contextual drivers of substance use and psychological distress, including violence exposure and criminal justice involvement.

Keywords

HIV; violence; incarceration; substance use; mental health

Introduction

Recent estimates indicate that lifetime HIV risk among Black men who have sex with men (MSM) is nearly 5 times that of White MSM, (Hess, Hu, Lansky, Mermin, & Hall, 2017) and meta-analysis based modeling predicts 61% HIV prevalence among Black MSM by age 40 (Matthews et al., 2015). Young Black MSM (YBMSM) are also disproportionately affected by numerous social and structural factors, including violence exposure, substance use, and incarceration, which may independently or synergistically increase and maintain HIV disparities (Millett, Flores, Peterson, & Bakeman, 2007; Millett et al., 2012).

Black youth are at particularly high risk for violence exposure (Wright, Fagan, & Pinchevsky, 2013), partly attributable to disproportionate representation in neighborhoods marked by high rates of community violence and constrained resources (Centers for Disease Control and Prevention.; Federal Bureau of Investigation Uniform Crime Reports.). Estimates suggest between 50 and 96% of male adolescents of color witness violence in their communities (Fehon, Grilo, & Lipschitz, 2001; Gorman-Smith, Henry, & Tolan, 2004; Margolin & Gordis, 2000). Furthermore, numerous studies have found associations between exposure to community violence (herein referred to as ECV) and HIV-related risk behaviors among youth, including MSM (Quinn, Voisin, Bouris, & Schneider, 2016; Voisin, Chen, Fullilove, & Jacobson, 2015; Voisin, Hotton, & Neilands, 2013; Voisin, Patel, Hong, Takahashi, & Gaylord-Harden, 2016; Voisin et al., 2007).

Young Black men have disproportionate contact with law enforcement and the criminal justice system (Valera, Epperson, Daniels, Ramaswamy, & Freudenberg, 2009), and some research suggests that Black MSM are more likely than White MSM to experience criminal justice involvement (CJI) (Lim, Sullivan, Salazar, Spaulding, & DiNenno, 2011) though CJI does not appear to explain racial disparities in HIV (Oster et al., 2011; Sullivan et al., 2014). However, high rates of incarceration among Black MSM (Brewer et al., 2014a, 2014b) underscore the importance of understanding the impact of CJI on HIV risk among YBMSM, particularly during re-entry into the community (Freudenberg, 2001; McCarthy, Myers, Reeves, & Zack, 2016; Robertson, Stein, & Baird-Thomas, 2006). Incarceration is also associated with poverty and unemployment (Adimora & Schoenbach, 2005; Roberts), violence and trauma (Jones et al., 2007; Roberts), mental illness and substance abuse (McCarthy et al., 2016), and sexual risk (Jones et al., 2007), factors also linked to HIV and other STIs (Adimora & Schoenbach, 2005; McCarthy et al., 2016).

Substance use may be a coping mechanism to counteract stress and psychological trauma caused by criminal justice encounters and violence exposure and may also link these factors with HIV risk (Agnew, 2002; Kaufman, 2009). Research has demonstrated a link between

community violence exposure and substance use among Black adolescents (Cooley-Strickland et al., 2009; Gorman-Smith et al., 2004; Wright et al., 2013) and MSM (Brewer et al., 2014b; Phillips et al., 2013). Substance use is consistently associated with condomless sex among young MSM (B. S. Mustanski, Newcomb, Du Bois, Garcia, & Grov, 2011), and high rates of marijuana use have been observed among YBMSM and linked to HIV risk behavior (Morgan et al., 2015). Experiences of sexual orientation and race-based discrimination, CJI, and violence, all of which are disproportionately faced by YBMSM, are associated with increased substance use (McCarthy et al., 2016; Wong, Schrager, Holloway, Meyer, & Kipke, 2013). Furthermore, the link between substance use and CJI may be particularly important for Black men due to disparities in convictions and sentencing of drug-related crimes (P. A. Wilson et al., 2014).

Exposure to community violence (ECV), CJI, substance use, and psychological distress co-occur within the context of structural inequality and social disadvantage. High rates of violence and incarceration are concentrated in low resourced neighborhoods where there has been significant economic disinvestment and job loss (W. J. Wilson, 2012). HIV risk among YBMSM should be understood within the context of these socio-structural factors (P. A. Wilson et al., 2014). The intersection of violence, substance abuse, and HIV within the context of urban poverty is well documented among MSM (Dyer et al., 2012; Parsons, Grov, & Golub, 2012; Stall et al., 2003; Tsai & Venkataramani, 2016). However, the mechanisms by which ECV and CJI impact substance use and other risk behaviors among MSM overall and YBMSM in particular remain incompletely understood.

This study aims to understand associations between ECV, substance use, CJI, and psychological distress, and whether CJI and psychological distress mediate the association between ECV and problematic substance use among a sample of YBMSM in Chicago, IL. We hypothesized that exposure to community violence would directly increase the odds of substance use and that CJI and psychological distress would mediate the association between ECV and substance use

Materials and Methods

Data were collected as part of a study that investigated the impact of social networks on the drug and sexual risk behaviors of YBMSM. Detailed descriptions of sampling, recruitment, and data collection have been previously published (Khanna, Schumm, & Schneider, 2017). Briefly, respondent driven sampling (RDS) (Heckathorn, 1997; Magnani, Sabin, Saidel, & Heckathorn, 2005) was used to recruit a sample of YBMSM from majority Black neighborhoods on the South Side of Chicago between June 2013 and July 2014. Initial recruits (“seeds”) were selected from a variety of social spaces utilized by YBMSM, including community organizations, health clinics, and virtual spaces such as Facebook. Respondents were eligible if they: self-identified as African American or Black; were born male; were between ages 16 and 29; reported oral or anal sex with a male within the past 24 months; and were willing and able to provide informed consent. Respondents were given vouchers to recruit up to 6 others, and received $60 for participation and $20 for each additional recruit enrolled. Recruitment occurred over 58 weeks, resulting in 618 eligible respondents recruited in chains up to 13 waves in length. The median number of recruits was

2 (range 0–6); of 62 seeds, 38 (61.2%) recruited at least one additional participant. Convergence (i.e., equilibrium) was reached after 2–4 waves and homophily values were low to moderate (<0.3) for all variables used in the analysis.

Measures

Sociodemographics included age, educational attainment (current student, less than high school, high school or GED equivalent, or some college/college degree), and annual income (dichotomized as <$20,000 vs. ≥ $20,000 per year since the majority reported very low income)

Exposure to Community Violence—ECV was assessed using 7 items measured on a 7-point scale from "0" to "6 or more times" reflecting lifetime frequency of violence exposure. Items were summed, with higher scores reflecting higher ECV. Items included "Witnessed a gun related incident", "Had a close friend or relative die violently", and "Been a victim of violence". Cronbach's alpha in our sample was 0.88. Violence exposure was examined as a binary variable dichotomized about the median (>18 vs. ≤18) due to skewness in the distribution. However, analyses using binary and continuous versions yielded similar results, so regression models and path analyses treated ECV as a continuous variable to maximize power.

Substance use—Participants reported any vs. no use of marijuana, ecstasy, methamphetamine, crack/cocaine, heroin, prescription opioids, psychedelics, and other drugs in the past 12 months. We also assessed marijuana use frequency on a 10-point scale from "never" to "several times a day". For analysis we created a 3-category variable for marijuana use: "Never", "Moderate (less than daily use)", and "High (daily or more frequent use)". Finally, participants reported, on a 5-point scale ranging from "Never" to "Daily or almost daily", how often their alcohol or substance use led to health, social, legal, or financial problems. For analysis, problematic alcohol or drug use was categorized as any vs. none. All substance use variables were correlated, and we created a composite variable for analysis to reflect problem substance use: daily marijuana use, any drug use other than marijuana, or any drug or alcohol problems vs. none of these.

Psychological Distress—Psychological distress was assessed using the Brief Symptom Inventory 18-item scale (BSI-18), which measures past week psychological symptoms (Derogatis). Participants rated the degree to which they experienced somatic symptoms, anxiety, and depression on a 5-point scale from "Not at all" to "Extremely". Items were summed to create an overall score, and sum scores were calculated for each of the three subscales. Cronbach's alpha for the global score was 0.93. For depression, we also calculated T-scores, with values > 62 indicating presence of depression (Derogatis). Findings were similar using the BSI-18 global score and each of the subscales, including the binary depression indicator; only results based on the global score are presented.

Criminal Justice Involvement—CJI was assessed using the question "Have you ever been detained, arrested, or spent time in jail or prison (yes/no)"?

Statistical Analysis

Bivariate and multivariable analyses were conducted using the survey (-*svy*-) commands in STATA version 14.1 (StataCorp., 2015) to account for the RDS design, specifying the *pweights* option with Giles Sequential Sampling weights (Gile, 2011; Gile, Johnston, & Salganik, 2014). Weighted frequencies for categorical variables and means and standard deviations for continuous variables were calculated for the sample overall and according to CJI history (yes/no) and ECV as a binary variable (high vs. low using the median split). We compared those with and without CJI history and high vs. low ECV using design-adjusted Wald tests (chi-square tests for categorical variables and t-tests for continuous variables). Logistic regression was used to assess the independent effects of community violence exposure, psychological distress, and criminal justice involvement on substance use outcomes using Taylor-linearized (robust) variance estimation. To assess mediation, path analysis was conducted using Mplus version 7.1(Muthén & Muthén, 1998–2015). Models were fitted using weighted least squares with a mean and variance adjustment (WLSMV estimator) due to the presence of binary mediator and outcome variables, and incorporated sampling weights and clustering by recruitment chain. Due to the asymmetric distribution of the indirect effects, confidence intervals were calculated using the bias-corrected bootstrap method with 5000 replicates, and point estimates were determined statistically significant when the 95% ($p<0.05$) or 99% ($p<0.01$) confidence interval excluded 0. For each direct and indirect effect, we report the unstandardized regression coefficient (B) and 95% confidence interval, as well as the standardized regression coefficient (β). All models were adjusted for age and annual income.

Results

Sample Characteristics

The analytic sample included 617 YBMSM; one individual from the original sample was excluded due to missing information on CJI history. Participants ranged in age from 16–29 (median, 23) (Table 1). The majority (62.3%) reported an annual household income of < $10,000, and 41% reported a history of criminal justice involvement. In the past 12 months, 73.6% reported any marijuana use and 31% daily use, 16.5% reported substance use other than marijuana, and 17% reported drug or alcohol related problems. The mean ECV score was 2.8 (SD 1.6). Over 90% reported lifetime exposure to at least one type of violence, including victimization of themselves (62%) or a close friend or family member [e.g., being robbed/attacked (81%); seriously injured (64%), or killed (60%)]; or witnessing violence [e.g., seeing someone being beaten (70%), seeing a dead body (42%), or witnessing a gun-related incident (54%)].

Associations between community violence exposure, criminal justice involvement, and substance use

In bivariate analysis, CJI history was associated with older age and higher levels of ECV. Both ECV and CJI history were associated with higher prevalence of psychological distress, marijuana and other substance use, and substance and alcohol use related problems (Table 1).

Adjusted for age and income, ECV (as a continuous exposure) was associated with increased odds of problematic substance use (adjusted odds ratio [aOR] 1.03; 95% CI 1.01–1.05). This association was attenuated when CJI history and psychological distress were added to the model (Table 2). Psychological distress (aOR 1.03; 95% CI 1.00–1.05) and CJI history (aOR 2.73; 95% CI 1.68–4.45) were also independently associated with increased odds of problematic substance use.

Path analyses indicated statistically significant direct effects from ECV to CJI (B 0.02; 95% CI 0.008, 0.04; β 0.24) and psychological distress (B 0.14; 95% CI 0.05, 0.29; β 0.15). There were also statistically significant direct paths from CJI (B 0.36 95% CI 0.15, 0.51; β 0.37) and psychological distress (B 0.01; 95% CI 0.003, 0.03; β 0.13) to problematic substance use. Finally, we found statistically significant indirect effects from ECV to problematic substance use via CJI (B 0.01 95% CI 0.003, 0.02; β 0.01) and psychological distress (B 0.002 95% CI 0.00, 0.01; β 0.02) (Table 3, Figure 1).

Discussion

ECV was highly prevalent and was directly associated with criminal justice involvement, psychological distress, and problematic substance use among YBMSM in our sample. Our results suggest that the association between ECV and problematic substance use may be partially explained by increased CJI and psychological distress. Understanding the intersection of CJI and ECV among YBMSM may aid in developing interventions that address the social and structural factors underlying HIV disparities. Interventions to address substance use among YBMSM should consider underlying influences, including psychological distress and violence exposure within the context of criminal justice involvement. Resilience-focused interventions could address the effects of community violence exposure at the individual level by enhancing adaptive coping skills and increasing social support, and at the community by level by improving social capital and neighborhood cohesion (P. A. Wilson et al., 2014).

Research on substance use among Black MSM most frequently examines crack/cocaine and heroin, more commonly used among older men, with less scholarship exploring substance use among YBMSM (Morgan et al., 2015). While reported crack/cocaine and heroin use in our sample was low (<5%), frequent marijuana use (31%) and substance use related problems (17%) were more prevalent. While our analysis did not examine sexual risk outcomes, previous research has demonstrated associations between alcohol and marijuana use and sexual risk behavior among young men of color with CJI (Valera et al., 2009) and recent research suggests that among YBMSM specifically, use of marijuana as a sex drug is common and is associated with increases in condomless and group sex (Morgan et al., 2015). Thus, while differences in substance use do not explain HIV disparities (Millett et al., 2007; Millett et al., 2012), among YBMSM, the impact of substance use on HIV risk warrants continued attention, though it should be considered in a broader social context.

Similar to other cohorts of YBMSM (Brewer et al., 2014a, 2014b; Lim et al., 2011), CJI history was common (41%) in our study. Furthermore, 62% of those with CJI history had been detained on multiple occasions, and multiple episodes of CJI were associated with

higher levels of violence exposure, psychological distress, and substance use (not shown). The effects of CJI among YBMSM extend beyond HIV risk, impacting mental health, social and economic opportunities, and general well-being (Schneider, Lancki, & Schumm, 2017). Facilitated by a culture of racism, segregation, and inequality, the criminal justice system contributes to the continued marginalization of Black men with subsequent health and social consequences, including poverty and violence (Golembeski & Fullilove, 2005; Roberts). Our findings suggest a need for continued focus on the health and social implications of CJI among YBMSM.

Our findings are consistent with results from a recent study which demonstrated associations between substance use, mental illness, and violence among a racially diverse sample of young MSM, though their measure of violence differed from ours and focused on experiences of sexual-orientation based victimization, childhood sexual abuse, and intimate partner violence (B. Mustanski et al., 2016). The study linked an underlying latent syndemic factor comprised of substance use, mental illness, and violence, to sexual risk behavior, though the effect was larger among White MSM (rho=0.27), than among Black (rho=0.21) and Latino MSM (rho=0.14), and they found no association with incident HIV or STI after adjusting for race/ethnicity (B. Mustanski et al., 2016). YBMSM reported higher levels of sexual-orientation related physical victimization and childhood sexual abuse but had lower rates of substance use, depression, and fewer sexual partners than White MSM, suggesting that individual-level factors (i.e., substance use, mental illness) are unlikely to explain racial disparities in HIV risk, and may also have less predictive utility among young MSM of color (B. Mustanski et al., 2016). Our study demonstrated clustering of ECV, CJI, psychological distress, and substance among YBMSM, but further research is needed to determine whether and how (e.g., independently co-occurring, mutually enhancing, or mutually causal) they contribute to the disproportionate burden of HIV among YBMSM (Tsai & Venkataramani, 2016).

Several limitations warrant mention. Data were collected at a single time point, and temporality cannot be determined. Some associations are likely bidirectional. For example, ECV may lead to increased substance use to cope with psychological distress, but increased substance use could also lead to increases in violence exposure resulting from illegal activities or social context associated with substance use. Similarly, pathways between ECV and CJI may be bidirectional and mutually reinforcing. Our measures of ECV and CJI assessed lifetime exposure, though the effect of violence on health outcomes among YBMSM may depend on the timing and type of violence exposure. Likewise, we assessed lifetime history of CJI using a single measure, but duration, frequency, and type of CJI are likely also important. Our measure of criminal justice exposure was very broad, and included experiences of detention, arrest, and time spent in jail or prison. These represent very diverse experiences which could differentially impact psychological distress, substance use, and other risk behavior. More specific and nuanced measurement of ECV and CJI would help to clarify these associations in future studies. Finally, while the RDS design yielded a sample that was fairly representative of the population of YBMSM in Chicago (Schneider et al., 2017), generalizability to other geographic settings may be limited.

Despite these limitations, this was among the first studies to examine the pathways between ECV and substance use among YBMSM, with a specific focus on CJI and psychological distress. Our findings demonstrate clustering of these factors among YBMSM and highlight the importance of considering psychosocial and contextual influences when addressing the health and social needs of this vulnerable population. The continued high prevalence of HIV among YBMSM within the context of ongoing structural disparities is alarming and demands a unique, comprehensive approach to prevention.

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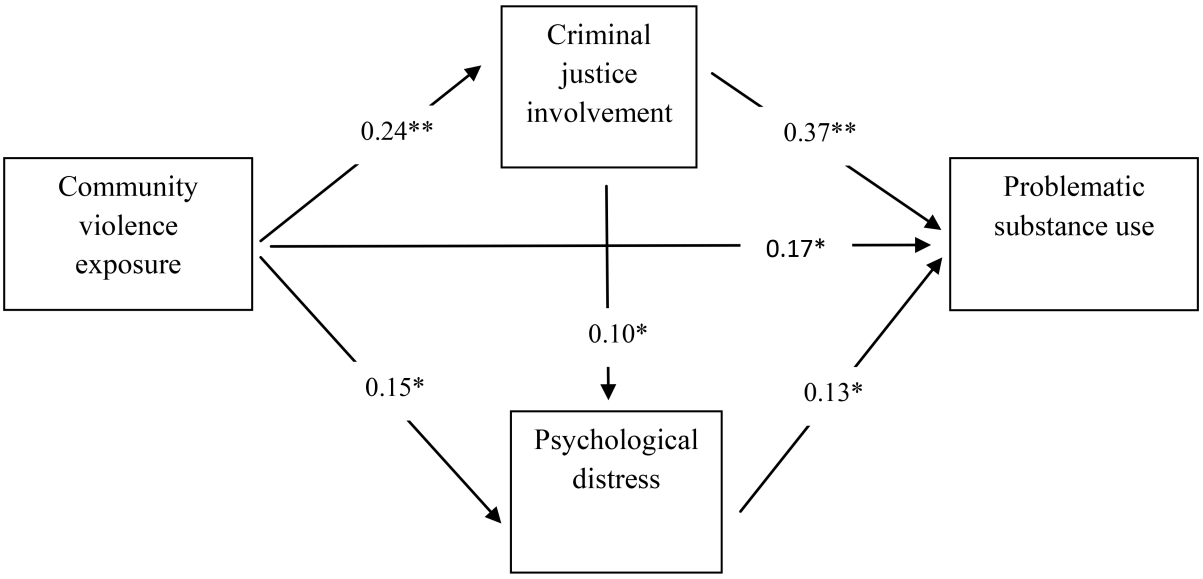

*p<0.05 (95% BC bootstrap CI excludes 0)
** p<0.01 (99% BC bootstrap CI excludes 0)

Figure 1:
Standardized coefficients for direct effects from path model linking community violence exposure with substance use via criminal justice involvement and psychological distress

Table 1:

Associations between criminal justice involvement history, community violence exposure, sociodemographics, and substance use (N=617), uConnect, Chicago 2013–2016

	Total[a]	CJI History[b]		ECV History[c]	
		CJI History	No CJI History	High	Low
Age, years, Mean (SD)	22.7 (3.3)	23.4 (3.3) **	22.3 (3.2)	22.8 (3.3)	22.9 (3.3)
Education					
Less than high school	8.4	11.0	6.5	6.4	8.2
HS graduate	38.4	37.3	39.2	40.4	39.1
More than HS	53.2	51.7	54.3	53.1	52.7
Annual income					
<10,000	62.3	60.8	63.4	65.0	58.5
10–19,999	21.1	24.6	18.9	20.7	22.0
≥20,000	16.5	14.6	17.8	14.3	19.5
CJI History[b]	41.0	--	--	51.7 ***	31.6
Community violence exposure[c]**, Mean (SD)**	2.8 (1.6)	3.3 (1.8) ***	2.6 (1.4)	--	--
Psychological distress[d]	7. 6 (10.6)	8.9 (12.4) *	6.6 (9.2)	9.0 (12.5) **	6.1 (8.6)
Any marijuana use, past 12m	73.6	88.7 ***	63.1	79.7 *	68.1
Marijuana use frequency, past 12m					
Never	29.4	15.6 ***	39.0	26.2 ^	32.0
Less than daily	39.2	43.6	36.1	36.5	41.7
Daily or more	31.4	40.7	24.9	37.2	26.3
Drug or alcohol problems, past 12m	17.0	29.0 ***	7.3	22.4 *	12.9
Any drug use other than marijuana, past 12m[e]	16.5	27.0 ***	9.2	21.1 ^	13.6

[a] Weighted proportion or mean (SD) using Giles Sequential Sampling Weight. Weighted and unweighted sample proportions were similar, suggesting that the sample was fairly representative of the target population.

[b] Criminal justice involvement history was defined as ever (vs. never) having been detained, arrested, or spent time in jail or prison.

[c] Exposure to community violence was based on 7 items measured on a 7-point scale from "0" to "6 or more times" reflecting lifetime frequency of violence exposure (e.g., "witnessed a gun related incident", "been a victim of violence"). Dichotomized about the median for bivariate analysis (High, ≥ 18 vs. low, <18).

[d] Psychological distress based on the Brief Symptom Inventory 18-item scale (BSI-18), a continuous measure of past week psychological symptoms. (Derogatis)

[e] Includes ecstasy, methamphetamine, crack, cocaine, heroin, poppers, prescription opioids, or psychedelic drugs

Abbreviations: ECV, exposure to community violence, CJI, criminal justice involvement

^ p<0.10;

* p<0.05;

** p<0.01;

*** p<0.001

P-values were estimated using design-adjusted Wald tests (chi-square tests for categorical variables and t-tests for continuous variables).

Table 2:

Logistic regression results: Association of community violence exposure, criminal justice involvement, and psychological distress with problematic substance use, N=617

	Problematic substance use[a] Undadjusted OR (95% CI); p-value	**Problematic substance use[a] Adjusted OR (95% CI); p-value**
Community violence exposure[b]	1.04 (1.02–1.06); <0.001	1.03 (1.01–1.05); <0.001
Psychological distress[c]	1.03 (1.01–1.06); 0.003	1.03 (1.00–1.05); 0.032
Criminal justice involvement history[d]	3.12 (2.01–4.82); <0.001	2.73 (1.68–4.45); <0.001
Age	1.11 (1.04–1.19); 0.002	1.06 (0.98–1.14); 0.165
Income <$20,000	1.16 (0.65–2.09); 0.615	1.21 (0.64–2.31); 0.556

a. Problematic substance use was defined as any vs. none of: daily marijuana use, any drug use other than marijuana, or any drug or alcohol related problems in the past 12 months.

b. Exposure to community violence was analyzed as a continuous variable using 7 items measured on a 7-point scale from "0" to "6 or more times" reflecting lifetime frequency of violence exposure (e.g., "witnessed a gun related incident", "been a victim of violence").

c. Psychological distress based on the Brief Symptom Inventory 18-item scale (BSI-18), a continuous measure of past week psychological symptoms. (Derogatis)

d. Criminal justice involvement history was defined as ever (vs. never) having been detained, arrested, or spent time in jail or prison.

Abbreviations: CVE, community violence exposure; CJI, criminal justice involvement; OR, odds ratio; CI, confidence interval

Table 3:

Path analysis linking community violence exposure and substance use via criminal justice involvement and psychological distress

Dependent variable	Independent variable		B	95% CI (B)	β	p-value
Direct effects						
Criminal justice involvement[a]	Community violence exposure[b]		0.02	0.008, 0.04	0.24	**
Psychological distress[c]	Community violence exposure		0.14	0.05, 0.29	0.15	*
Problematic substance use[d]	Community violence exposure		0.02	0.004, 0.03	0.17	*
Problematic substance use	Criminal justice involvement		0.36	0.15, 0.51	0.37	**
Psychological distress	Criminal justice involvement		1.02	−0.17, 1.83	0.10	*
Problematic substance use	Psychological distress		0.01	0.003, 0.03	0.13	*
Indirect effects						
Dependent variable	**Mediator**	**Independent variable**				
Problematic substance use	Criminal justice involvement	Community violence exposure	0.01	0.003, 0.02	0.01	**
Problematic substance use	Psychological distress	Community violence exposure	0.002	0.00, 0.01	0.02	*
Problematic substance use	Psychological distress	Criminal justice involvement	0.01	0.002, 0.04	0.01	*

*p<0.05 (95% BC bootstrap CI excludes 0)

**p<0.01 (99% BC bootstrap CI excludes 0)

B indicates unstandardized regression coefficient; β indicates standardized regression coefficient

a. Criminal justice involvement history was defined as ever (vs. never) having been detained, arrested, or spent time in jail or prison.

b. Exposure to community violence was analyzed as a continuous variable using 7 items measured on a 7-point scale from “0” to “6 or more times” reflecting lifetime frequency of violence exposure (e.g., “witnessed a gun related incident”, “been a victim of violence”).

c. Psychological distress based on the Brief Symptom Inventory 18-item scale (BSI-18), a continuous measure of past week psychological symptoms. (Derogatis)

d. Problematic substance use was defined as any vs. none of: daily marijuana use, any drug use other than marijuana, or any drug or alcohol related problems in the past 12 months.