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Patterns of Mood and Personality Factors and Associations With STI/HIV-Related Drug and Sex Risk Among African American Male Inmates

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Abstract

Background—Research on the association between antisocial personality disorder (ASPD) with comorbid mental disorders and sexually transmitted infection (STI)/HIV risk among inmates is scant despite the high prevalence of psychopathology and of STI/HIV in this population.

Methods—We used baseline data from Project DISRUPT, a cohort study conducted among incarcerated African American men ($n=207$), to measure associations between ASPD and STI/HIV risk. We also conducted latent class analyses (LCAs) to identify subgroups defined by ASPD with comorbid stress, depression, and borderline personality disorder symptoms and measured associations between latent class membership and STI/HIV risk.

Results—Approximately 15% had ASPD and 39% reported depression. Controlling for sociodemographics, stress, and depression, ASPD was independently associated with illicit [AOR=3.23, 95% confidence interval (CI): 1.18–8.87] and injection drug use (AOR: 5.49, 95% CI:

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Declaration of interest

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1.23–24.42) but not with sexual risk. LCAs suggested that those at high risk of ASPD were likely to experience co-morbid mental disorders. ASPD comorbid with these disorders was linked to drug and sex risk.

Conclusions—STI/HIV prevention for inmates should incorporate diagnosis and treatment of ASPD and comorbid disorders, and interventions to address ASPD-related factors (e.g., impulsivity) that drive STI/HIV risk.

Keywords

Antisocial personality disorder; HIV; incarceration; sexually transmitted diseases

Individuals involved in the criminal justice system, including those incarcerated in jail and prison or on probation/parole, experience disproportionate rates of sexually transmitted infections (STIs) and HIV (Centers for Disease Control and Prevention, 2011; Satterwhite, Joesoef, Datta, & Weinstock, 2008). The dual epidemics of criminal justice involvement and STI/HIV are concentrated among African Americans. As a result of racial bias in arrest, sentencing, and incarceration (Fellner, 2013), African American men are six times more likely to be incarcerated versus whites (Bureau of Justice Statistics, 2014). This population also experiences the highest rates of STI/HIV (Centers for Disease Control and Prevention, 2014). There is a continued need to identify underlying factors that contribute to STI/HIV-related behaviors and infection among African Americans involved in the criminal justice system (Khan, Epperson, & Comfort, 2012).

A substantial proportion of individuals involved in the criminal justice system have antisocial personality disorder (ASPD) (Fazel & Danesh, 2002), a risk factor for STI/HIV-related drug use and sexual risk behaviors (e.g., noninjection and injection drug use, multiple/concurrent sexual partnerships, and sex trade involvement) (Brooner, Greenfield, Schmidt, & Bigelow, 1993; Kelley & Petry, 2000) and STI/HIV infection. ASPD is a persistent pattern of antisocial behaviors featuring disregard for and violation of the rights and feelings of others (Hare, Hart, & Harpur, 1991). The disorder is characterized by impulsivity and lack of concern for the consequences of one's actions, which often leads to involvement in the criminal justice system and has direct implications for STI/HIV risk (Rosenblum, 2014). Those with ASPD are more likely to use injection drugs and engage in unsafe injection (Brooner, Bigelow, Strain, & Schmidt, 1990), use noninjection drugs, and, in turn, to engage in multiple sexual partnerships and sex trade (Compton, Cottler, Shillington, & Price, 1995; Gill, Nolimal, & Crowley, 1992) and to be infected with STI/HIV (Brooner et al., 1993; Erbeling, Hutton, Zenilman, Hunt, & Lyketsos, 2004). One prior study on ASPD and STI/HIV risk conducted in a sample of substance-abusing juvenile offenders indicated that those with high psychopathy reported more substance use and unprotected sex as well as less favorable attitudes toward condoms and intentions to engage in safer sex (Malow et al., 2007).

Despite high levels of ASPD among inmates, research on ASPD and STI/HIV-related risk in this population is scant and to our knowledge, no prior study has examined these associations among African American adults involved in the criminal justice system. We need improved understanding of the degree to which adult offenders with ASPD experience

heightened STI/HIV risk in order to target testing, treatment, and prevention programming. Evidence that ASPD is an independent correlate of STI/HIV risk among inmates would suggest STI/HIV prevention programming should incorporate methods specific to the antisocial tendencies and perceptions that underlie risk-taking.

While ASPD is an independent risk factor for STI/HIV risk, the disorder also frequently co-occurs with other psychopathology that may work in concert with ASPD to exacerbate STI/HIV risk. ASPD is often dually diagnosed with borderline personality disorder (BPD) (Black et al., 2007; Black, Gunter, Loveless, Allen, & Sieleni, 2010). Like ASPD, BPD features impulsivity (Links, Heslegrave, & van Reekum, 1999; Swann, Lijffijt, Lane, Steinberg, & Moeller, 2009) and is linked to increased drug use (Hasin et al., 2011) and sexual risk (Harned, Pantalone, Ward-Ciesielski, Lynch, & Linehan, 2011; Hull, Clarkin, & Yeomans, 1993; Sansone, Lam, & Wiederman, 2011). Likewise, ASPD frequently co-occurs with depression, a risk factor for drug use, sexual risk behaviors and STI/HIV (Erbelding, Hummel, Hogan, & Zenilman, 2001; Khan et al., 2009; Stiffman, Dore, Earls, & Cunningham, 1992). ASPD is also associated with experiencing stressful life circumstances such as relationship difficulties and unemployment, and with decreased ability to engage in appropriate coping strategies in the face of stress (Bijttebier & Vertommen, 1999; Ireland, Brown, & Ballarini, 2006; National Collaborating Centre for Mental Health, 2010). Stress and poor coping are associated with STI/HIV risk (Mazzaferro et al., 2006; Sinha, 2001). Studies in high-risk populations have identified a syndemic effect of multiple mental disorders on substance use and sexual risk (Stall et al., 2003), yet no comparable study has been conducted among inmates. Research that identifies the degree to which ASPD may work not only independently but also together with other disorders or symptomatology to influence STI/HIV risk is needed to plan effective interventions.

The purpose of this study was to measure associations among ASPD, other mental disorder symptoms, and STI/HIV-related drug use and sexual risk among participants of Project DISRUPT (Dissolution of Intimate Stable Relationships Unique to the Prison Term), a cohort study conducted among African American men incarcerated in North Carolina who were in committed heterosexual partnerships at prison entry. Understanding the importance of mental disorders in the STI/HIV risk of inmates in committed partnerships is particularly important given those in committed partners are protected to some degree from STI/HIV risk, yet there is evidence that mental disorders may erode this protection from risk (Khan, Behrend, Adimora, Weir, Tisdale, et al., 2011; Khan, Behrend, Adimora, Weir, White, et al., 2011). We aimed to describe associations between ASPD and STI/HIV-related risk behaviors.

In addition, we aimed to use latent class analysis (LCA) to explore the patterns of co-occurrence of ASPD with stress and symptoms of two common disorders in this population—depressive disorder and BPD (Black et al., 2007; Fazel & Danesh, 2002)—and evaluate the association between mental disorder latent class membership and STI/HIV risk. Because no prior studies have explored mental disorder class membership and STI/HIV risk among male inmates, we made no hypotheses regarding how specific groups would relate to substance use and sexual risk behaviors, though we did hypothesize that increased symptom severity would be associated with increased risk, as has been demonstrated in other

populations. Identifying the patterns of mental disorder symptoms and their severity could inform tailoring and customizing STI/HIV prevention programming to address the specific needs of inmates.

Methods

Study design and sample

We used baseline data from Project DISRUPT ($N = 207$) (Khan et al., 2015). Participants were recruited from the North Carolina Department of Public Safety (NCDPS) minimum and medium security prisons from September 2011 through January 2014. At baseline, participants completed audio-computer assisted self-interviewing (ACASI) survey and provided urine for STI testing. Study activities were approved by the Institutional Review Boards at requisite institutions including the NCDPS.

Approximately 1480 potential participants were screened for eligibility. Eligible participants were African American men at least 18 years old who were in a committed heterosexual partnership and HIV-negative at prison entry, had currently been incarcerated less than 3 years, lived free in the community for 6 months before the current incarceration, and were soon to be released. To ensure study staff safety, inmates who were incarcerated for forcible rape, murder 1 or 2, and kidnapping were ineligible. Of those screened, 477 were eligible and 207 enrolled. Common reasons potential participants declined participation were a lack of time and not wanting to be followed after release. Due to data corruption, the current analysis includes 189 baseline surveys.

Measures

Antisocial personality disorder—We measured ASPD using a Structured Clinical Interview for DSM-IV Axis II (SCID-II) module-based instrument (First, Spitzer, Gibbon, & Williams, 1995), which assesses 22 indicators of ASPD in areas including disregard for other's safety and remorselessness. Endorsement of 3 indicators from adolescence and 3 indicators during adulthood is considered ASPD.

Stress and other mental disorder symptoms—Depression was measured with a modified five-item version of the 20-item Center for Epidemiologic Studies Depression (CES-D) scale (Perreira, Deeb-Sossa, Harris, & Bollen, 2005), on which participants rated how often they felt depressive symptoms in the six months before incarceration. Positive responses were reverse-coded and all responses were summed (range 0–15). The summed score was dichotomized at 4, the calibrated cut-point based on the original CES-D (range 0–60, with scores 16 indicative of depression) (Lincoln, 2011). Participants rated stress felt living in the community on a 1–10 scale for seven topics: housing, food security, health, employment, violence, criminal justice involvement, and in general. Responses were summed to create a score (range 7–70). Participants reported the severity of problems caused by BPD symptoms such as mood swings or temper outbursts using a five-item modified version of the Borderline Evaluation of Severity over Time (BEST) (Blum, Pfohl, St. John, Monahan, & Black, 2002). Responses were summed (range 5–25). We used multiple imputations to impute summed BPD symptom severity and depression scores for

participants with incomplete responses (Rubin, 1987). Approximately 8% ($n = 16$) were incomplete for BPD symptom severity and 7% ($n = 14$) were incomplete for depression.

STI/HIV-related drug use and sexual risk—Unless otherwise indicated, drug use and sexual risk behaviors pertain to the 6 months before incarceration. Participants reported the number of standard drinks consumed on a typical day, which we dichotomized as ≥ 5 drinks *versus* < 4 drinks to indicate binge drinking (National Institute on Alcohol Abuse and Alcoholism, n.d.). We defined lifetime illicit drug use as any prior use of cocaine, crack, ecstasy, and/or hallucinogens. Lifetime injection drug use was defined as any injection of drugs not prescribed by a doctor.

Multiple/concurrent sexual partnerships were defined as vaginal/anal sex with ≥ 2 partners and/or having vaginal/anal sex with one person during an overlapping time period the participant was having sex with someone else. We defined sex trade involvement as buying or selling sex for money, housing, or drugs. Prior STI was defined as report of ever being told they had a disease one can get from having sex, like gonorrhea or chlamydia.

Sociodemographics and lifetime criminal justice history—We examined sociodemographics and lifetime criminal justice history as potential covariates. Specifically, sociodemographics include age; joblessness, defined as lack of full or part-time employment; and food insecurity, defined as concern about having enough food to feed himself/family in the 6 months before incarceration. Lifetime criminal justice history indicators include the number of times previously incarcerated in jail or prison; number of years spent in prison, which was measured using categories of “ < 1 month,” “1–5 months,” “6–11 months,” “1–5 years,” or “ > 5 years,” and collapsed into > 5 years *versus* ≤ 5 years; and currently incarcerated for a violent crime based on NCDPS data.

Statistical analyses

We conducted univariate analyses to describe sociodemographics and criminal justice history, and bivariate analyses to calculate the prevalence of those indicators and STI/HIV-related drug use and sexual risk by ASPD status. Logistic regression was used to calculate odds ratios (OR) and 95% confidence intervals (CI) for associations between ASPD, stress and other mental disorder symptoms, and STI/HIV-related outcomes. Multivariate models adjusted for age and joblessness, given joblessness was associated with ASPD and outcomes. Also, we estimated models that further adjusted for stress and depression to assess the independent associations between ASPD and outcomes. Analyses were conducted using SAS 9.3 (SAS Institute Inc. Cary, NC).

Because ASPD commonly co-occurs with other mental disorders symptoms, we sought to identify grouping of individuals based on mental disorder symptom severity and evaluate associations between group membership and STI/HIV risk outcomes. Using MPlus version 7.1 (Muthén & Muthén, 1998–2007), we conducted LCAs to identify classes of mental-disorder symptom severity based on ASPD, BPD symptom severity, depression, and stress. BPD symptom severity and stress scores were included as continuous indicators, while ASPD and depression were dichotomous. We estimated two, three, and four class solutions and considered model statistics as well as interpretability when selecting the optimal number

of the classes. We used multivariate logistic regression to examine the associations between latent class membership and STI/HIV risk outcomes.

Results

Participant sociodemographic characteristics and lifetime criminal justice history

Approximately 15% ($n = 28$) of participants met criteria for ASPD (Table 1). The mean age in the sample was 34.4 years. Odds of joblessness were over two times higher in those with ASPD (OR = 2.47, 95% CI: 1.09–5.60). Approximately 36% of participants with ASPD reported food insecurity compared to 21% without ASPD, though the association did not reach significance (p value = 0.08). Criminal justice history did not differ by ASPD status.

Associations between ASPD and STI/HIV-related drug use and sexual risk

ASPD was independently associated with specific STI/HIV-related drug use and sexual risk behaviors (Table 2). The disorder was strongly associated with lifetime illicit drug use, even after adjustment for sociodemographics, depression, and stress (AOR = 3.23, 95% CI: 1.18–8.87). The odds of lifetime injection drug use were increased among those with ASPD (OR = 5.07, 95% CI: 1.27–20.21) and this association remained after adjustment for sociodemographics, depression, and stress (AOR = 5.49, 95% CI: 1.23–24.42). In analyses adjusted for sociodemographics, the odds of sex trade involvement (AOR = 3.25, 95% CI: 1.05–10.10) and prior STI (AOR = 2.80, 95% CI: 1.20–6.51) were elevated among those with ASPD. Notably, these relationships lost significance in models further adjusting for other mental health symptoms.

Associations between ASPD and stress and other mental disorder symptoms

Those with ASPD experienced increased stress and other mental disorder symptoms, including almost three times the odds of depression (AOR = 2.82, 95% CI: 1.20–6.62; Table 3).

Mental disorder symptom severity latent class membership

The three class solution was determined to best fit the data, based on both the fit statistics and interpretability (Table 4). The first latent class ($n = 99$; “low psychopathology”) was characterized by relatively low levels of all the mental health indicators (ASPD: 3%; depression 8.8%; estimated mean score for stress: 19.9; estimated mean score for BPD symptom severity: 6.7). The second class ($n = 65$; “general psychopathology”) was defined by moderate risk of ASPD (23.4%) and increased BPD symptom severity (estimated mean score 8.9), with high prevalence of depression (69.6%) and an estimated mean stress score of 32.9. The third class ($n = 25$; “general psychopathology + BPD”) demonstrated similar levels of mental health factors as the second class, but was distinguished by approximately twice the estimate mean score for BPD symptom severity. Specifically, the prevalence of ASPD and depression in this class were 35.6% and 74%, respectively, the estimated mean stress score was 38.4, and the estimated mean score for BPD symptom severity was 18.5.

Associations between mental disorder symptom severity latent class membership and STI/HIV-related drug use and sexual risk

In analyses adjusted for age and joblessness, membership in the general psychopathology disorder class was not associated with drug use, but was associated with three times the odds of multiple/concurrent sexual partnerships (AOR = 3.14, 95% CI: 1.56–6.32) and approximately five times the odds of sex trade involvement (AOR = 4.78, 95% CI: 1.40–16.20; Table 5).

Membership in the general psychopathology + BPD class was not associated with binge drinking or illicit drug use, but was associated with lifetime injection drug use (AOR = 6.18, 95% CI: 1.23–30.97). General psychopathology + BPD class membership was strongly linked to sex risk behaviors, including multiple/concurrent partnerships (AOR = 2.90, 95% CI: 1.10–7.62), sex trade involvement (AOR = 7.09, 95% CI: 1.65–30.54), and prior STI (AOR = 3.66, 95% CI: 1.44–9.28).

Discussion

In this sample of African American men incarcerated in North Carolina who were in committed relationships at prison entry, 15% met criteria for ASPD. Those with ASPD experienced greater vulnerability to drug use, sexual risk behaviors, and prior STI and hence constitute a priority population for STI/HIV testing, treatment, and prevention. Results from this cross-sectional analysis suggest ASPD may be an independent driver of illicit and injection drug use, and comorbidity with other mental-disorder symptoms to drive sexual risk. Some associations between mental disorder symptom severity and STI/HIV risk were staggering; membership in the general psychopathology + BPD class was associated with seven times the odds of injection drug use and sex trade involvement. Results suggest ASPD in the context of other mental disorder symptoms should be addressed to improve well-being and reduce STI/HIV risk taking.

In extant literature from general and psychiatric samples, those with ASPD are more likely to experience comorbid BPD (Black et al., 2010; Zanarini et al., 1998), and personality disorders influence depression, stress, and anxiety (Farabaugh et al., 2005; Hirschfeld, 1999). DISRUPT participants with ASPD also demonstrated increased depression, stress, and BPD symptoms, and we found membership in the latent class featuring the highest levels of mental health symptom severity conferred increased odds of STI/HIV-related drug use and sexual risk. Others have also documented that co-occurrence of mental disorders, as well as increasing symptom severity, are associated with elevated STI/HIV risk. For example, in a sample of inpatients with substance use disorder, increasing severity of posttraumatic stress disorder symptoms increased the risk of unprotected sex and sex trade (Weiss, Tull, Borne, & Gratz, 2013). In a New Zealand birth cohort, psychiatric comorbidity was associated with increased risk of unprotected sex with multiple partners (Ramrakha, Caspi, Dickson, Moffitt, & Paul, 2000). While one would hypothesize that increasing mental health symptom severity is linked to greater HIV risk behavior, no known studies have examined this among men involved in the criminal justice system despite the high prevalence of both mental disorders and STI/HIV-related substance use and sexual risk behavior in this population. Our findings indicate those with multiple mental disorders and

elevated symptom severity are a priority population for STI/HIV prevention intervention programming in the criminal justice system.

We found that the general psychopathology + BPD class demonstrated the greatest odds of sexual risk behavior, in addition to associations with illicit drug use. This class's level of BPD symptom severity was twice as high as the general psychopathology class, yet levels of ASPD, depression, and stress were relatively similar. We are not able to determine if there is an interactive effect between ASPD and BPD on sexual risk in our sample, though it is possible the comorbidity of ASPD and high levels of BPD symptom severity may be uniquely associated with sexual risk behavior. Impulsivity is featured in both antisocial and BPDs, and co-occurring ASPD and BPD may exhibit profiles of impulsivity specific to each disorder that impact STI/HIV-related risk. Research suggests that the symptoms of mental disorders, including ASPD and BPD, are differentially related to impulsivity (Swann, Lijffijt, Lane, Steinberg, & Moeller, 2013) and that the mechanisms underlying impulsivity vary across disorders (Swann, Lijffijt, Lane, Steinberg, & Moeller, 2011). Beyond impulsivity alone, the combination of features of BPD, such as emotional dysregulation may result in elevated sexual risk-taking (Malow et al., 2007; Messman-Moore, Walsh, & DiLillo, 2010).

While US jails and prisons must provide mental health care for inmates, the screening and treatment methods are highly variable (U.S. Department of Justice, 2007) and mental illness often goes undetected (Teplin, 1990). The high prevalence of mental disorders among criminal justice populations indicates this is a missed opportunity. Treatment of comorbid mental disorders improves outcomes for those with ASPD (National Collaborating Centre for Mental Health, 2010). Our results suggest addressing antisocial behaviors with treatment of co-occurring mental disorder symptoms and skills building in coping with stress may be critical to reducing risk in a population that is highly vulnerable to STI/HIV. Personality disorders are difficult to treat but interventions for personality disorders such as BPD are effective (Linehan, 1987; Linehan et al., 2006) and may have implications for addressing the STI/HIV risk of those with ASPD given the overlap in symptoms between the two disorders. In addition, members of our group have developed and evaluated interventions designed to reduce distress intolerance and impulsivity, key features of ASPD and BPD that are linked to drug and sex risk and these intervention approaches have been effective in populations with high prevalence of both ASPD and BPD (Bornovalova, Gratz, Daughters, Hunt, & Lejuez, 2012). Finally, even though all participants had a committed partner at prison entry, those with ASPD may not consider ways in which their own actions may impact the health and wellbeing of their partner (Gutman, McDermut, Miller, Chelminski, & Zimmerman, 2006). Interventions that address the mental health factors driving STI/HIV-related risk behaviors of the inmate could also be beneficial to the STI/HIV risk of their committed partner.

The prevalence of ASPD in our sample was 15%, the lower range reported within other incarcerated samples (Black, Arndt, Hale, & Rogerson, 2004; Black et al., 2010; Blackburn & Coid, 1999; Fazel & Danesh, 2002), though much higher than levels of 0.5–5.8% in the general population (Compton, Conway, Stinson, Colliver, & Grant, 2005; Grant et al., 2004). Our sample's prevalence is partly a result of Project DISRUPT's eligibility criteria. Each participant had to have a committed partner at prison entry to be eligible for study inclusion,

and antisocial tendencies inhibit ability to form personal commitments. Yet the strong associations demonstrated in our sample indicate the results likely apply to other incarcerated populations and the population-level impact of ASPD on STI/HIV risk may be considerable, as up to half of inmates have the disorder (Fazel & Danesh, 2002).

This study faces a number of limitations. First, findings may not be generalizable to other incarcerated samples given our relatively restrictive eligibility criteria. Residual confounding from unmeasured factors is possible. The cross-sectional study design is a further limitation, such that we could not determine the temporal ordering of confounding factors (e.g., joblessness), ASPD, and STI/HIV risk. The small sample size and low prevalence of ASPD made it difficult to detect independent associations between the disorder and outcomes. Assessment of mental health was based on self-reported measures not intended for diagnoses and therefore represents symptom severity rather than disorder status. Finally, recall and social desirability bias could influence estimates. Our mental health measures concerned the time frame six months prior to incarceration, though recollection could have been influenced by current circumstances and there may be underreporting of risk behaviors due to their sensitive nature.

Conclusions

In conclusion, this is the first study to our knowledge to assess associations among ASPD, stress and other mental-disorder symptoms, and STI/HIV-related drug use and sexual risk in incarcerated adult males. Results indicate that African American inmates in committed partnerships diagnosed with ASPD are particularly vulnerable to STI/HIV-related drug use and sexual risk. The results suggest that ASPD is an independent risk factor for illicit and injection drug use and that comorbidity with other disorders may drive sexual risk. STI/HIV prevention among inmates would benefit from increased diagnosis of ASPD, treatment of comorbid disorders, and interventions to address antisocial tendencies underlying risk taking and infection.

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Table 1
Sociodemographics and Lifetime criminal justice history by antisocial personality disorder (ASPD) diagnosis among incarcerated African American men in committed partnerships ($N = 189$).

Characteristic	Total sample ($n = 189$)		Non-ASPD ($n = 161$)		ASPD ($n = 28$)		OR (95% CI) for association with ASPD	p value
	Mean (SD)	N (%) ^a	Mean (SD)	N (%) ^a	Mean (SD)	N (%) ^a		
Sociodemographics								
Age	34.4 (9.6)		34.8 (9.6)		33.0 (10.4)		0.98 (0.94, 1.02)	0.37
Joblessness (6 months before incarceration)		59 (28.5)		54 (33.5)		16 (57.1)	2.47 (1.09, 5.60)	0.03
Food insecurity (6 months before incarceration)		43 (22.8)		33 (20.5)		10 (35.7)	2.16 (0.90, 5.15)	0.08
Lifetime criminal justice history								
Number of times previously incarcerated	6.3 (10.5)		6.2 (11.1)		6.7 (6.1)		1.00 (0.97, 1.04)	0.81
Spent more than 5 years in prison		35 (18.5)		27 (16.8)		8 (28.6)	1.97 (0.78, 4.94)	0.15
Currently incarcerated for violent offense		51 (27.1)		41 (25.6)		10 (35.7)	1.61 (0.69, 3.78)	0.27

^aMay not sum to 189 (100%) due to missing values.

Table 2

Odds ratios (ORs) and 95% confidence intervals (CI) for associations between ASPD and STI/HIV-related substance use and sexual risk among incarcerated African American men in committed partnerships (Project DISRUPT; $N=189$).

Characteristic	% with outcome	OR (95% CI)	Adjusted for sociodemographics ^a	Additionally adjusted for depression and stress ^b
5 drinks on typical day in the six months before incarceration				
Non-ASPD	23.8	1.00	1.00	1.00
ASPD	17.4	0.68 (0.22, 2.12)	0.57 (0.18, 1.86)	0.51 (0.15, 1.70)
Lifetime illicit drug use				
Non-ASPD	52.2	1.00	1.00	1.00
ASPD	78.6	3.35 (1.29, 8.72)	3.72 (1.39, 9.96)	3.23 (1.18, 8.87)
Lifetime injection drug use				
Non-ASPD	3.2	1.00	1.00	1.00
ASPD	14.3	5.07 (1.27, 20.21)	6.01 (1.41, 25.64)	5.49 (1.23, 24.42)
Multiple/concurrent sexual partnerships				
Non-ASPD	46.1	1.00	1.00	1.00
ASPD	47.1	1.56 (0.69, 3.52)	1.44 (0.62, 3.67)	1.05 (0.43, 2.58)
Sex trade involvement				
Non-ASPD	8.9	1.00	1.00	1.00
ASPD	21.4	2.81 (0.98, 8.07)	3.25 (1.05, 10.10)	1.49 (0.42, 5.27)
Prior STI				
Non-ASPD	31.9	1.00	1.00	1.00
ASPD	55.6	2.67 (1.17, 6.13)	2.80 (1.20, 6.51)	2.25 (0.93, 5.54)

^aAdjusted for age and joblessness.

^bAdjusted for age, joblessness, stress score, and depression.

Table 3

ORs and 95% CI for associations between ASPD, stress and other mental disorder symptoms among incarcerated African American men in committed partnerships (Project DISRUPT; $N= 189$).

	% with outcome	Mean (SD)	Unadjusted OR (95% CI)	Adjusted ^a OR (95% CI)
Depression (score 4)				
Non-ASPD	34.8		1.00	1.00
ASPD	64.3		3.38 (1.46, 7.80)	2.82 (1.20, 6.62)
Stress level while in community				
Non-ASPD		25.6 (12.6)	1.00	1.00
ASPD		34.8 (15.5)	1.05 (1.02, 1.08)	1.05 (1.01, 1.08)
BPD symptom severity score				
Non-ASPD		8.5 (4.1)	1.00	1.00
ASPD		12.0 (5.7)	1.15 (1.06, 1.24)	1.13 (1.04, 1.22)

^aAdjusted for age and joblessness.

Table 4

Latent class analysis fit statistics.

Model	AIC	BIC	SS-BIC	Entropy	LMRT <i>P</i> value	BLRT <i>P</i> value
Two class	3457.993	3496.894	3458.883	0.934	0.0001	0.0000
Three class	3417.122	3472.232	3418.834	0.762	0.0129	0.0000
Four class	3396.361	3467.679	3397.994	0.795	0.2245	0.0000

Table 5

Associations between mental disorder symptom severity latent class and STI/HIV-related substance use and sexual risk in the six months before incarceration among incarcerated African American men in committed partnerships (Project DISRUPT; $N = 189$).

	% with outcome	OR (95% CI)	AOR ^a (95% CI)
5 drinks on typical day in the six months before incarceration			
Low psychopathology ($n = 99$)	19.3	1.00	1.00
General psychopathology ($n = 65$)	23.8	1.31 (0.60, 2.86)	1.39 (0.62, 3.10)
General psychopathology + BPD ($n = 25$)	27.3	1.57 (0.53, 4.60)	1.65 (0.55, 4.97)
Lifetime illicit drug use			
Low psychopathology ($n = 99$)	51.6	1.00	1.00
General psychopathology ($n = 65$)	58.5	1.32 (0.70, 2.50)	1.33 (0.69, 2.57)
General psychopathology + BPD ($n = 25$)	68.0	2.00 (0.79, 5.06)	2.12 (0.81, 5.51)
Lifetime injection drug use			
Low psychopathology ($n = 99$)	3.2	1.00	1.00
General psychopathology ($n = 65$)	3.1	0.97 (0.16, 6.00)	0.94 (0.15, 5.81)
General psychopathology + BPD ($n = 25$)	16.0	5.84 (1.22, 28.08)	6.18 (1.23, 30.97)
Multiple/concurrent sexual partnerships			
Low psychopathology ($n = 99$)	34.8	1.00	1.00
General psychopathology ($n = 65$)	60.9	2.93 (1.51, 5.66)	3.14 (1.56, 6.32)
General psychopathology + BPD ($n = 25$)	62.5	3.13 (1.23, 7.93)	2.90 (1.10, 7.62)
Sex trade involvement			
Low psychopathology ($n = 99$)	4.2	1.00	1.00
General psychopathology ($n = 65$)	16.9	4.63 (1.41, 15.28)	4.78 (1.40, 16.20)
General psychopathology + BPD ($n = 25$)	20.00	5.69 (1.40, 23.09)	7.09 (1.65, 30.54)
Prior STI			
Low psychopathology ($n = 99$)	28.7	1.00	1.00
General psychopathology ($n = 65$)	36.9	1.45 (0.74, 2.85)	1.62 (0.81, 3.23)
General psychopathology + BPD ($n = 25$)	56.0	3.16 (1.27, 7.82)	3.66 (1.44, 9.28)

^a Adjusted for age and joblessness.