



Published in final edited form as:

Sex Transm Dis. 2016 May ; 43(5): 317–323. doi:10.1097/OLQ.0000000000000433.

Borderline Personality Disorder Symptom Severity and Sexually Transmitted Infection and HIV Risk in African American Incarcerated Men

Joy D Scheidell, MPH¹, Carl W Lejuez, PhD², Carol E Golin, MD^{3,4}, Marcia M Hobbs, PhD⁵, David A Wohl, MD⁵, Adaora A Adimora, MD^{5,6}, and Maria R Khan, PhD¹

¹Division of Comparative Effectiveness and Decision Science, Department of Population Health, New York University School of Medicine, New York, New York ²Center for Addictions, Personality, and Emotion Research, University of Maryland, College Park, Maryland ³Division of General Internal Medicine and Epidemiology, Department of Medicine, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina ⁴Department of Health Behavior, UNC Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina ⁵Division of Infectious Disease, University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, North Carolina ⁶Department of Epidemiology, UNC Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Abstract

Background—Sexually transmitted infections (STI)/HIV rates are disproportionately high among men involved in the criminal justice system. Mental health disorders, including personality disorders, are also elevated among inmates. Borderline personality disorder (BPD) may be an important risk factor for STI/HIV, yet remains relatively understudied, particularly among inmates.

Methods—We used baseline data from Project DISRUPT, a cohort study of African American men being released from prison in North Carolina who were in heterosexual relationships at prison entry (n=189), to assess their STI/HIV risk in the six months before incarceration and BPD symptoms focused on emotional lability and relationship dysfunction. We created a continuous BPD symptom severity score and a dichotomous BPD indicator split at the top quartile of the score (BPD-TQ) to examine associations between BPD and STI/HIV outcomes using logistic regression. We also examined associations between individual symptoms and outcomes.

Results—After adjustment for socio-demographics and antisocial personality disorder, BPD-TQ was associated with sexual risk behaviors including multiple partnerships (AOR=2.58, 95% CI: 1.24–5.36) and sex with non-monogamous partners (AOR=2.54, 95% CI: 1.17–5.51). Prevalence of previous STI (47.5% vs. 29.6%) and prevalent chlamydial infection (6.9% vs. 3.1%) appeared higher in those in BPD-TQ, though the associations were not statistically significant. Associations

Corresponding Author, Joy D Scheidell, MPH, 227 E. 30th Street, # 628Q, New York, NY 10016, Phone: 646-501-2892, Fax: 212-263-4983, Joy.Scheidell@nyumc.org.

Conflict of Interest Statement: All authors have no conflicts of interest to disclose.

were similar with the continuous score. BPD symptoms most associated with STI/HIV risk were abandonment worry, mood swings, and shifts in opinions.

Conclusions—BPD is strongly associated with STI/HIV risk in this sample. Researchers should further evaluate the relationship between STI/HIV and BPD, in addition to mood disorders.

Keywords

borderline personality disorder; sexually transmitted infection; HIV; men; incarceration

Introduction

Sexually transmitted infections (STI), including HIV, are a significant public health issue in the United States (US) and individuals involved in the criminal justice system are disproportionately affected. In 2010, over 90% of the inmates living with HIV in US prisons were men [1] and the prevalence of STIs such as chlamydia and gonorrhea are much higher among male inmates compared to the general population [2]. There is a need to identify and address modifiable risk factors that drive high infection rates among men involved in the criminal justice system.

In non-criminal justice populations, individuals with mental health disorders report increased rates of STI/HIV and associated risk behaviors, including multiple partnerships and sex trade [3–5]. Mental health disorders examined in STI/HIV research typically include psychotic and mood disorders [3]. One important omission has been personality disorders [4, 6, 7], and even when they have been addressed, research was generally limited to antisocial personality disorder (ASPD) and/or psychopathic personality traits. Borderline personality disorder (BPD) may be particularly important yet remains understudied as an STI/HIV risk factor in public health disciplines. Personality disorders are sometimes more difficult to treat than other mental health disorders, but treatments for BPD are actually quite promising and can be applied if the proper assessment is undertaken to make the diagnosis [8].

BPD is characterized by a persistent pattern of instability in interpersonal relationships, self-image, and impulse control [9]. Studies in the fields of clinical psychology and psychiatry suggest that BPD's inherent traits of impulsivity and emotional dysregulation lend themselves to increased sexual risk-taking and may be a significant factor in STI/HIV transmission [10–13]. Comorbid substance use disorders (SUD) further increase risk [14, 15].

Mental health disorders, including BPD, may be especially important for STI/HIV risk in inmates, given that the prevalence of mental health disorders is five times higher among inmates than in the general population [16]. Approximately 1.8% of the general population is diagnosed with BPD, whereas a much higher proportion of inmates are estimated to have the disorder [17]. Most studies on BPD in incarcerated populations have focused on women and identified up to 55% of incarcerated women have the disorder [17]. Prevalence studies among incarcerated men are limited, but suggest the prevalence is approximately 20% [17,

18]. Symptoms of BPD, such as impulsivity, are prevalent among inmates, even without meeting diagnostic criteria [17].

No studies have examined the relationship between BPD and STI/HIV risk in an adult male criminal justice population to our knowledge. Due to evidence of the link between BPD and STI/HIV risk, high rates of BPD in incarcerated populations including among males, and the scarcity of research on the topic, there is a clear need to examine the association between BPD symptoms and STI/HIV risk among men involved in the criminal justice system. Findings may point to the need for researchers and practitioners focused on STI/HIV risk in correctional populations to more systematically measure symptoms of BPD in addition to more commonly measured symptoms of mood disorders to identify those at risk for ST/HIV.

We used baseline data from Project DISRUPT, a longitudinal cohort study among African American men incarcerated in North Carolina [19], to evaluate the relationship between BPD symptoms and STI/HIV risk. DISRUPT's primary aim is to assess the influence of incarceration-related relationship dissolution on STI/HIV risk after release. The aim of the current analysis was to measure associations between BPD symptoms as reported on a modified version of the Borderline Evaluation of Severity over Time (BEST; see method section for modification details) and sexual risk behaviors, as well as self-reported and biologically-confirmed STI. We also aimed to explore whether specific BPD symptoms were particularly strong correlates of STI/HIV risk because it may be feasible for screening tools used in clinical and research settings to include only 1–2 select indicators.

Materials and Methods

Study Design

From September 2011 through January 2014, participants were recruited from minimum and medium security facilities in the North Carolina Department of Public Safety (NCDPS). Audio-computer assisted self-interview (ACASI) surveys were administered at the baseline (in prison) study visit by trained research assistants and urine was collected for STI testing. Study activities were approved by the Institutional Review Boards of the requisite institutions.

Study Sample

Potential participants were eligible for the study if they were male; African American; at least 18 years of age; had currently been in prison three years or less; scheduled to be released within two months; HIV-negative at prison intake; not currently incarcerated for rape, kidnapping or murder; not considered a risk to research staff; lived freely in the community for at least six months prior to current incarceration; able to communicate in English and provide informed consent; and in a heterosexual, committed partnership at the time of prison entry. Of the 1480 men screened, 477 were eligible to participate. The primary reasons for ineligibility were having been incarcerated more than one month in the six months prior to the current incarceration and lack of a female committed partner [19]. Of those, 207 enrolled, with most eligible inmates declining participation due to lack of time or

interest. Valid data and STI test results were available for 189 baseline surveys included in this analysis.

Measures

BPD Symptom Severity—We measured BPD symptom severity using a modified version of the Borderline Evaluation of Severity over Time (BEST) [20]. Because of the large number of measures in this study and the associated participant burden, we chose to include 5 items from BEST (items were taken from the BEST Pfohl et al., 2009 “Thoughts and Feelings” and “Behaviors-Negative” scales). Based on this study’s focus on relationship dynamics, the second author (CWL) chose items that best addressed the emotional lability and relationship dysfunction (e.g., major shifts in opinions of others and going to extremes to keep someone from leaving). Selected items (with their item number from Pfohl et al. 2009 BEST in parentheses) focused on occurrence in the past 30 days of: a) worrying someone was planning to leave you (item 1); b) major shifts in opinions about others (item 2); c) severe mood swings daily (item 4); d) going to extremes to keep someone from leaving (item 9); and e) temper outbursts or problems with anger (item 12). Response options ranged from 1: none/slight to 5: extreme and were summed to create a score. We used multiple imputation to impute the summed score for the 16 participants who were missing at least one response [21]; analyses indicated those with imputed scores did not differ from those with complete responses based on age, antisocial personality, or joblessness and associations between BPD indicators and outcomes were consistent when those with imputed scores were excluded. Scores ranged from 5 to 25, with increasing scores indicating increasing BPD symptom severity. The standardized Cronbach’s alpha coefficient for the scale is 0.84, indicating acceptable reliability [22]. We also created a dichotomous indicator, based on the top quartile (score = 10) of the summed score, to capture those with the highest BPD symptom severity. We analyzed both the continuous BPD symptom severity score and the dichotomous indicator of the top quartile of BPD symptom severity (BPD-TQ).

Sexual Risk Behaviors—Sexual risk behaviors are self-reported and concern the six months before incarceration. Multiple partnerships were defined as having ≥ 2 sex partners. Concurrent partnerships were report of sex with one person during the same time period the participant was also having sex with someone else. Sex trade involvement was defined as either buying/selling sex to male or female partners for money, drugs, or housing. Sex while intoxicated was report of having sex while high or drunk at least once.

Sex with risky partners was three separate measures: sex with partners who had ever sold sex; sex with partners who were not monogamous; and sex with partners who ever had an STI. Responses to each question were categorized to “definitely”, “probably”, or “maybe” had engaged in the behavior versus those answering “probably not”, “definitely not”, or “don’t know”.

Sexually Transmitted Infection—Self-reported previous STI diagnosis was having ever been told they had a disease that you can get from having sex. Chlamydia and trichomoniasis results were obtained from the urine specimen via nucleic acid amplification

test (APTIMA Combo 2 assay and *Trichomonas vaginalis* analyte-specific reagents, Hologic, Inc.).

Socio-demographic, Substance Use, and Mental Health Indicator Covariates

We examined age, joblessness (defined as lack of a full or part time job), homelessness, concern about having enough food for himself or family, and marital status in the six months before incarceration as potential covariates.

Participants reporting they consumed ≥ 5 standard drinks on a typical day in the six months before incarceration were defined as binge drinking on a typical day. We defined history of crack/cocaine, ecstasy, and injection drugs as any prior use.

We measured depressive symptoms using a 5-item version of the original 20-item Center for Epidemiological Studies-Depression (CES-D) scale [23] on which participants reported how they felt in the six months before incarceration for items such as feeling depressed or could not shake off the blues. Responses were summed to create a score (range 0 to 5). Scores were cut at ≥ 4 , the calibrated equivalent of the original CES-D score indicative of depressive symptoms. “Elevated stress while living in the community” was based on the sum of the participants’ ratings of stress due to ten items, such as violence or housing, and was dichotomized at the 75th percentile. Antisocial personality disorder (ASPD) was measured using the Structured Clinical Interview for DSM-IV (SCID-II) module [24].

Analyses

We used bivariate analyses to calculate the prevalence of BPD by socio-demographics and mental health indicators. Logistic regression was used to estimate the odds ratios (OR) and 95% confidence intervals (CI) for associations between BPD symptom severity, with separate models for the continuous and dichotomous indicators, and STI/HIV risk. We also used logistic regression in exploratory analyses to estimate associations between the five individual BPD symptoms and outcomes, in which each symptom was treated as continuous and increasing levels indicating increasing amount of severity for that symptom. Analyses used SAS 9.3 (SAS Institute Inc. Cary, NC). Adjusted models include age, joblessness, and ASPD. We controlled for ASPD given its important theoretical link with BPD but did not control for depressive symptoms and stress as they likely play a role in the link between BPD and STI/HIV risk.

Results

Sample Characteristics

Mean age was 34.4 years (Table 1). Participants with BPD symptom severity in the top quartile (BPD-TQ) were significantly younger compared to participants with scores in the lower quartiles. Twice as many participants with BPD-TQ were jobless and reported concern about having enough food.

Binge drinking in the six months before incarceration and lifetime history of crack/cocaine use did not differ based on BPD-TQ. Those with BPD-TQ appeared to report increased

prevalence of lifetime history of ecstasy and injection drug use (ecstasy: 24% versus 35%; injection drug use: 3% versus 9%), though the difference was not statistically significant.

The prevalence of depressive symptoms was two times higher in those with BPD-TQ (60% versus 27%) and significantly more men with BPD-TQ reported elevated stress. ASPD co-occurred with BPD symptom severity, with 30% of those with BPD-TQ meeting criteria for ASPD.

BPD Symptom Severity and STI/HIV Risk

Continuous BPD Symptom Severity Indicator—In adjusted models, each unit increase in BPD symptom severity was significantly associated with 7% increase in the odds of multiple partnerships and concurrent partnerships (Table 2). Increasing BPD symptom severity was associated with increased odds of sex with non-monogamous partners (AOR=1.09, 95% CI: 1.01–1.18) and with sex with partners who sell sex, though this association was no longer significant after adjustment (AOR=1.11, 95% CI: 0.99–1.25). Increasing BPD symptom severity was associated with 8% increase in the odds of previous STI (AOR=1.08, 95% CI: 1.01–1.17).

Dichotomous BPD Symptom Severity Indicator—Associations between the dichotomous BPD indicator (BPD-TQ) and sexual risk behaviors were similar to those found with the continuous score (Table 2). After adjustment, participants with BPD-TQ had over twice the odds of multiple (AOR=2.58, 95% CI: 1.24–5.36) and concurrent partnerships (AOR=2.50, 95% CI: 1.23–5.08). Odds of sex with partners who sell sex were increased in participants with BPD-TQ (AOR=10.71, 95% CI: 2.19–52.43). BPD-TQ was also associated with sex with non-monogamous partners (AOR=2.54, 95% CI: 1.17–5.51). The associations of BPD-TQ with self-reported previous STI (AOR=2.02, 95% CI: 0.99–4.15) and prevalent chlamydia (AOR=2.19, 95% CI: 0.46–10.45) were in the expected direction, although they were not significant at the 0.05 level.

Certain BPD symptoms appeared to be particularly strong correlates of STI/HIV risk (Table 3). For each unit increase in the level of severity of “worrying that someone is planning to leave you”, the odds of sex with partners who sell sex increased almost 60% (AOR=1.58, 95% CI: 1.01–2.46). This BPD symptom was also associated with sex with non-monogamous partners (AOR=1.34, 95% CI: 1.01–1.77). Increasing severity of “major shifts in opinions about others” was associated with increased odds of multiple partnerships (AOR=1.39, 95% CI: 1.06–1.81), sex with partners who sell sex (AOR=1.96, 95% CI: 1.23–1.30), and sex with non-monogamous partners (AOR=1.71, 95% CI: 1.27–2.31). “Major shifts in opinions about others” was associated with increased odds of previous STI (AOR=1.40, 95% CI: 1.08–1.83). Increasing severity of mood swings was associated with multiple partnerships (AOR=1.39, 95% CI: 1.03–1.87), concurrent partnerships (AOR=1.47, 95% CI: 1.03–1.82), and sex with non-monogamous partners (AOR=1.37, 95% CI: 1.02–1.85).

Discussion

In this sample of African American men incarcerated in North Carolina, those with elevated severity of BPD symptoms faced disproportionate odds of sexual risk behaviors and STI. BPD was strongly and consistently associated with a variety of risk behaviors and self-reported previous STI. For example, those at greatest BPD risk, in the top quartile for symptom severity, had three to five times the odds of multiple and concurrent partnerships and sex with high-risk partners. BPD symptoms remained strongly associated with sexual risk behaviors after adjustment for socio-demographic factors and ASPD, suggesting that untreated BPD symptoms may contribute to elevations in risk. Our study is among the first to assess the relationship between BPD symptoms and STI among male inmates and findings highlight the need for further careful assessment using valid and reliable measures. Though our study focused on African American men given the disproportionately high burden of STI in this group, we hypothesize findings are important for male inmates regardless of race.

Our findings point to the need for more frequent measurement of personality disorders, in addition to mood disorders, among both men and women in populations at high risk of STI/HIV, such as prison inmates. STI/HIV researchers and clinicians may fail to assess BPD symptoms because SCID-based instruments, the gold standard for personality assessment, are lengthy and time consuming. An important finding of the current research is that a short screener may be effective in identifying BPD symptoms that increase STI/HIV risk and inclusion of a few items measuring symptoms of BPD may be feasible for screening purposes of identifying those at increased risk of STI/HIV in the research setting.

Strong associations between BPD and STI/HIV risk observed here are consistent with previous research. In a study of outpatients at an internal medicine clinic, individuals with BPD reported higher numbers of lifetime sexual partners than those without BPD [10]. In our sample, those with elevated BPD symptom severity were more likely to report sex with non-monogamous partners and with those who sell sex. Just one other study examined BPD and high-risk sexual partners, but found only women with both BPD and SUD reported higher prevalence of risky sexual partners [15]. We found BPD was associated with self-reported previous STI, as have others [15], and that biologically-confirmed chlamydial infection demonstrated a similar relationship. However, our small sample with a low prevalence of infection was not powered to detect statistically significant differences in biologically assessed STI, though we hypothesize associations would be similar and significant in a larger sample. Our findings suggest substance use is a potentially important mediating pathway between BPD and elevated STI risk; those with BPD appeared to have an elevated prevalence of lifetime history of ecstasy and injection drug use, and their odds of sex while intoxicated were approximately three times higher than those without BPD. Taken together, our results indicate this brief BPD scale may be useful for identifying individuals with STI/HIV risk behaviors.

A key feature of BPD is impulsivity, which is predictive of later psychopathology and negative health outcomes for those with the disorder [25]. Almost half of a sample of female psychiatric patients with BPD reported impulsively entering into casual sexual relationships

[11] and BPD is associated with measures of sexual impulsivity, such as early sexual debut [26]. Impulsivity was the most prevalent BPD symptom reported in another incarcerated sample [17]. Although we did not assess impulsivity directly, we found that symptoms of BPD that may be indicative of impulsivity, such as mood swings and major shifts in opinions, were most associated with STI/HIV risk. Our findings reinforce the idea that interventions seeking to reduce comorbidities associated with psychiatric illness in which impulsivity is a key component, including BPD, may need to focus on that aspect of the disorder [27].

To our knowledge, this is the first study to explore potential trends between specific BPD symptoms or criterion and STI/HIV risk outcomes. The strongest and most consistent correlates of STI/HIV risk were mood swings and worry about abandonment, followed by shifting opinions of others. Specifically, mood swings— one of original BEST items previously identified as differential for BPD [20] — was a risk factor for multiple and concurrent partnerships, and sex with a high-risk partners. Inclusion of this single item may serve as a potentially important indicator of STI/HIV risk. Given the identification of 1–2 items, assessment of BPD symptoms is made feasible across a range of research and clinical settings.

Though BPD was once regarded as untreatable [8], interventions across a range of perspectives, including interpersonal such as Systems Training for Emotional Predictability and Problem Solving (STEPPS) [28] and behavioral such as Dialectical Behavioral Therapy (DBT) [29], have shown promise in reducing impulsivity and negative outcomes associated with the disorder. Interventions aiming to lower BPD symptom severity may decrease STI/HIV risk by reducing impulsivity [30]. Moreover, DBT has been adapted for unique populations, including those with substance use disorders [31], which may be particularly relevant for incarcerated populations in which substance abuse and sex while intoxicated is common.

The findings of our study must be interpreted in the context of a number of limitations. Findings may not be generalizable, as our cohort of heterosexual African American men who were in committed partnerships at the time of incarceration in North Carolina is not representative of all incarcerated men. While our measurement of BPD symptom severity used a selection of BEST items that has not been used in previous studies, it included items from the original BEST that were most indicative of the aspects of BPD of interest in our study. Clinical diagnosis or use of the entire BEST instrument would have been preferable but was not feasible for the current study given the already high burden on participants from our full assessment battery. However, the items selected were done so with our population in mind and indicate that even a brief selection of core items has genuine utility. Future studies should continue to measure and validate brief screening tools in criminal justice populations. We were not adequately powered to detect significant associations for some outcomes, such as biologically-confirmed infections, especially after adjustment. Sexual risk behaviors may be underestimated due to social desirability and/or recall bias, as participants were asked to report behaviors that occurred during the six months before they were incarcerated. However, the sample's median sentence length was approximately five months and 75% of

the sample was serving less than one year, thus somewhat minimizing the potential recall bias.

In conclusion, our study is the first to examine severity of BPD symptoms and STI/HIV risk behaviors in a sample of incarcerated men and demonstrate that BPD is associated with STI/HIV risk in this population. Findings indicate the field of STI/HIV research should assess BPD symptoms and interventions focused on reducing STI/HIV risk should address personality disorders.

Acknowledgments

Funding Sources: This study was supported by NIDA R01DA028766 (PI: Khan) and the University of North Carolina Center for AIDS Research [AI050410]. Dr. Golin's salary was partially supported by K24 HD06920. Laboratory testing for STIs was supported in part by the Southeastern Sexually Transmitted Infections Cooperative Research Center grant U19-AI031496 from the National Institute of Allergy and Infectious Diseases.

References

- Centers for Disease Control and Prevention. [cited 2015 September] HIV Among Incarcerated Populations. 2015. Available from: <http://www.cdc.gov/hiv/group/correctional.html>
- Centers for Disease Control and Prevention. [cited 2014 July] STDs in persons entering corrections facilities. 2011. Available from: <http://www.cdc.gov/std/stats10/corrections.htm#foot4>
- Meade CS, Sikkema KJ. HIV risk behavior among adults with severe mental illness: a systematic review. *Clin Psychol Rev.* 2005; 25(4):433–457. [PubMed: 15914265]
- Erbelding EJ, et al. The prevalence of psychiatric disorders in sexually transmitted disease clinic patients and their association with sexually transmitted disease risk. *Sexually Transmitted Diseases.* 2004; 31(1):8–12. [PubMed: 14695951]
- Erbelding EJ, et al. High rates of depressive symptoms in STD clinic patients. *Sexually Transmitted Diseases.* 2001; 28(5):281–284. [PubMed: 11354267]
- Sacks MH, Dermatis H. Acute psychiatric illness: Effects on HIV-risk behavior. *Psychosocial Rehabilitation Journal.* 1994; 17:5–19.
- Magidson JF, et al. Relationship between psychiatric disorders and sexually transmitted diseases in a nationally representative sample. *Journal of Psychosomatic Research.* 2014; 76(4):322–328. [PubMed: 24630184]
- Silk KR. Augmenting psychotherapy for borderline personality disorder: The STEPPS program. *American Journal of Psychiatry.* 2008; 165(4):413–415. [PubMed: 18381909]
- Lieb K, et al. Borderline personality disorder. *Lancet.* 2004; 364(9432):453–461. [PubMed: 15288745]
- Sansone RA, Lam C, Wiederman MW. The Relationship between Borderline Personality Disorder and Number of Sexual Partners. *J Pers Disord.* 2011; 25(6):782–788. [PubMed: 22217224]
- Hull JW, Clarkin JF, Yeomans F. Borderline Personality-Disorder and Impulsive Sexual-Behavior. *Hospital and Community Psychiatry.* 1993; 44(10):1000–1002. [PubMed: 8225264]
- Harned MS, et al. The Prevalence and Correlates of Sexual Risk Behaviors and Sexually Transmitted Infections in Outpatients With Borderline Personality Disorder. *Journal of Nervous and Mental Disease.* 2011; 199(11):832–838. [PubMed: 22048134]
- Sansone RA, Wiederman MW. Borderline personality symptomatology, casual sexual relationships, and promiscuity. *Psychiatry (Edgmont).* 2009; 6(3):36–40. [PubMed: 19724753]
- Chen EY, et al. Sexually transmitted disease rates and high-risk sexual behaviors in borderline personality disorder versus borderline personality disorder with substance use disorder. *J Nerv Ment Dis.* 2007; 195(2):125–129. [PubMed: 17299299]
- De Genna NM, et al. Race and Sexually Transmitted Diseases in Women With and Without Borderline Personality Disorder. *Journal of Womens Health.* 2011; 20(3):333–340.

16. Fazel S, Danesh J. Serious mental disorder in 23 000 prisoners: a systematic review of 62 surveys. *Lancet*. 2002; 359(9306):545–550. [PubMed: 11867106]
17. Black DW, et al. Borderline personality disorder in male and female offenders newly committed to prison. *Compr Psychiatry*. 2007; 48(5):400–405. [PubMed: 17707246]
18. Blackburn R, Coid JW. Empirical clusters of DSM-III personality disorders in violent offenders. *J Pers Disord*. 1999; 13(1):18–34. [PubMed: 10228924]
19. Khan MR, et al. STI/HIV sexual risk behavior and prevalent STI among incarcerated african american men in committed partnerships: The significance of poverty, mood disorders, and substance use. *AIDS Behav*. 2015; 19(8):1478–1490. [PubMed: 25863467]
20. Pfohl B, et al. Reliability and validity of the Borderline Evaluation of Severity Over Time (BEST): a self-rated scale to measure severity and change in persons with borderline personality disorder. *J Pers Disord*. 2009; 23(3):281–293. [PubMed: 19538082]
21. Rubin, DB. Multiple Imputation for Nonresponse in Surveys. Wiley-Interscience. , editor. Hoboken, New Jersey: Wiley & Sons Inc; 1987.
22. Nunnally, JC.; Bernstein, IH. Psychometric theory. 3rd. New York: McGraw-Hill; 1994.
23. Radloff L. The CES-D scale: a self-report depression scale for research in the general population. *Appl Psychol Meas*. 1977; 1:385–401.
24. First MB, et al. The Structured Clinical Interview for Dsm-Iii-R Personality-Disorders (Scid-Ii) .1. Description. *J Pers Disord*. 1995; 9(2):83–91.
25. Links PS, Heslegrave R, van Reekum R. Impulsivity: Core aspect of borderline personality disorder. *J Pers Disord*. 1999; 13(1):1–9. [PubMed: 10228922]
26. Sansone RA, et al. Borderline personality symptomatology and sexual impulsivity. *International Journal of Psychiatry in Medicine*. 2008; 38(1):53–60. [PubMed: 18624017]
27. Moeller FG, et al. Psychiatric aspects of impulsivity. *American Journal of Psychiatry*. 2001; 158(11):1783–1793. [PubMed: 11691682]
28. Blum N, et al. STEPPS: A cognitive-behavioral systems-based group treatment for outpatients with borderline personality disorder - A preliminary report. *Compr Psychiatry*. 2002; 43(4):301–310. [PubMed: 12107867]
29. Linehan MM. Dialectical Behavior-Therapy for Borderline Personality-Disorder - Theory and Method. *Bulletin of the Menninger Clinic*. 1987; 51(3):261–276. [PubMed: 3580661]
30. Blum N, et al. Systems Training for Emotional Predictability and Problem Solving (STEPPS) for outpatients with borderline personality disorder: A randomized controlled trial and 1-year follow-up. *American Journal of Psychiatry*. 2008; 165(4):468–478. [PubMed: 18281407]
31. Dimeff LA, Linehan MM. Dialectical behavior therapy for substance abusers. *Addict Sci Clin Pract*. 2008; 4(2):39–47. [PubMed: 18497717]

Summary

A study of African American men incarcerated in North Carolina found that borderline personality disorder symptom severity was associated with STI/HIV risk behaviors and self-reported previous STI.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 1

Socio-demographics and mental health by elevated borderline personality disorder symptoms among 189 African American men aged 19–60 years incarcerated in North Carolina

Characteristic	Total (n=189) Number (Percent)	Low BPD Symptoms (n=129) Number (Percent)	BPD Symptom Severity in Top Quartile (BPD-TQ) (n=60) Number (Percent)	P value ^b
Socio-demographics in the Six Month Prior to Incarceration				
Age^a	34.5 (9.7)	35.7 (10.3)	32.0 (7.7)	0.0067
Joblessness	70 (37.0)	38 (30.4)	32 (56.1)	0.0009
Considered Self to Be Homeless	34 (18.0)	20 (15.9)	14 (24.6)	0.1617
Concerned about Having Enough Food for Self/ Family	43 (22.8)	23 (18.6)	20 (35.1)	0.0152
Married	34 (18.0)	26 (20.6)	8 (14.0)	0.2878
Substance Use				
Binge Drinking on a Typical Day in Six Months Prior to Incarceration	38 (20.1)	23 (19.2)	15 (28.3)	0.1809
History of Crack/Cocaine Use	73 (38.6)	51 (40.2)	22 (37.9)	0.7738
History of Ecstasy Use	51 (27.7)	31 (24.4)	20 (35.1)	0.1346
History of Injection Drug Use	9 (4.9)	4 (3.2)	5 (8.6)	0.1086
Mental Health in the Six Month Prior to Incarceration				
Depressive Symptoms	54 (28.6)	25 (19.8)	29 (50.0)	<0.0001
Elevated Stress (75th Percentile) While Living in the Community	50 (26.6)	21 (16.4)	29 (48.3)	<0.0001
Antisocial Personality Disorder	28 (14.8)	11 (8.5)	17 (28.3)	0.0004

Abbreviations: SD=Standard Deviation; BPD=Borderline Personality Disorder

^aMean and standard deviation

^bp value is T-test for age; all other p values are for Chi-square/Fisher's Exact Test as appropriate

Table 2

Elevated borderline personality disorder symptom severity and sexually transmitted infection risk in the six months prior to incarceration among 189 African American men aged 19–60 years incarcerated in North Carolina

Outcome	Continuous BPD Symptom Severity Score	BPD Symptom Severity in Top Quartile (BPD-TQ) ^b		
	AOR and 95% CI ^a	Percent with Outcome	OR and 95% CI	AOR and 95% CI ^a
Multiple Partnerships	1.07 (1.00, 1.16)*			
Low BPD Symptoms		36.1	1.00	1.00
BPD Symptoms in Top Quartile		63.6	3.10 (1.60, 6.02)***	2.58 (1.24, 5.36)**
Concurrent Partnerships	1.07 (1.00, 1.15)*			
Low BPD Symptoms		25.4	1.00	1.00
BPD Symptoms in Top Quartile		53.6	3.39 (1.75, 6.56)***	2.50 (1.23, 5.08)**
Sex Trade Involvement	1.07 (0.97, 1.18)			
Low BPD Symptoms		10.2	1.00	1.00
BPD Symptoms in Top Quartile		11.9	1.18 (0.45, 3.13)	1.33 (0.43, 4.08)
Sex with Partners who Sell Sex	1.11 (0.99, 1.25)			
Low BPD Symptoms		3.3	1.00	1.00
BPD Symptoms in Top Quartile		15.5	5.42 (1.59, 18.43)**	10.71 (2.19, 52.43)**
Sex with Non-Monogamous Partners	1.09 (1.01, 1.18)**			
Low BPD Symptoms		16.4	1.00	1.00
BPD Symptoms in Top Quartile		39.7	3.35 (1.65, 6.83)***	2.54 (1.17, 5.51)**
Sex with Partners who Ever Had an STI	1.04 (0.91, 1.18)			
Low BPD Symptoms		4.9	1.00	1.00
BPD Symptoms in Top Quartile		10.3	2.23 (0.69, 7.25)	3.42 (0.94, 12.38)*
Sex while Intoxicated	1.07 (0.95, 1.19)			
Low BPD Symptoms		77	1.00	1.00
BPD Symptoms in Top Quartile		93	3.96 (1.32, 11.87)**	2.97 (0.94, 9.34)*
Self-Reported Previous STI	1.08 (1.01, 1.17)**			
Low BPD Symptoms		29.6	1.00	1.00
BPD Symptoms in Top Quartile		47.5	2.15 (1.13, 4.07)**	2.02 (0.99, 4.15)*
Prevalent Chlamydia	1.02 (0.87, 1.19)			
Low BPD Symptoms		3.1	1.00	1.00
BPD Symptoms in Top Quartile		6.9	2.29 (0.55, 9.52)	2.19 (0.46, 10.45)
Prevalent Trichomoniasis	0.98 (0.80, 1.22)			
Low BPD Symptoms		4.7	1.00	1.00
BPD Symptoms in Top Quartile		3.5	0.73 (0.14, 3.71)	1.73 (0.27, 11.19)

Abbreviations: OR=Odds Ratio; AOR=Adjusted Odds Ratio; CI=Confidence Interval; STI=Sexually Transmitted Infection; BPD=Borderline Personality Disorder.

^aAdjusted for age, joblessness, and antisocial personality disorder

^b Borderline personality disorder symptom score split at the 75th percentile (scores ≥ 10); Low BPD symptoms (n=129) and High BPD symptoms (n=60)

*
p value < 0.10;

**
p value < 0.05;

p value < 0.001

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3

Borderline personality disorder symptom severity and associations with sexually transmitted infection risk among 189 African American men aged 19–60 years incarcerated in North Carolina

Symptoms	OR and 95% CI	AOR and 95% CI ^a
Multiple Partnerships		
Worry Someone is Planning to Leave You	1.19 (0.93, 1.52)	1.14 (0.88, 1.48)
Major Shifts in Opinions about Others	1.36 (1.06, 1.75)**	1.26 (0.97, 1.64)*
Severe Mood Swings	1.39 (1.06, 1.83)**	1.39 (1.03, 1.87)**
Going to Extremes to Keep Someone from Leaving	1.14 (0.87, 1.49)	1.05 (0.78, 1.40)
Temper Outbursts/Problems with Anger	1.45 (1.08, 1.96)**	1.31 (0.95, 1.81)*
Concurrent Partnerships		
Worry Someone is Planning to Leave You	1.17 (0.92, 1.50)	1.07 (0.83, 1.40)
Major Shifts in Opinions about Others	1.51 (1.17, 1.94)**	1.39 (1.06, 1.81)**
Severe Mood Swings	1.48 (1.13, 1.93)**	1.47 (1.03, 1.82)**
Going to Extremes to Keep Someone from Leaving	1.19 (0.92, 1.56)	1.08 (0.81, 1.44)
Temper Outbursts/Problems with Anger	1.55 (1.16, 2.08)**	1.34 (0.99, 1.83)*
Sex Trade Involvement		
Worry Someone is Planning to Leave You	1.34 (0.96, 1.87)*	1.31 (0.90, 1.91)
Major Shifts in Opinions about Others	1.33 (0.94, 1.89)	1.34 (0.93, 1.94)
Severe Mood Swings	1.19 (0.82, 1.73)	1.15 (0.76, 1.74)
Going to Extremes to Keep Someone from Leaving	1.22 (0.84, 1.76)	1.24 (0.83, 1.85)
Temper Outbursts/Problems with Anger	1.41 (0.76, 1.71)	1.19 (0.76, 1.87)
Sex with Partners who Sell Sex		
Worry Someone is Planning to Leave You	1.57 (1.08, 2.29)**	1.58 (1.01, 2.46)**
Major Shifts in Opinions about Others	1.80 (1.20, 2.72)**	1.96 (1.23, 3.10)**
Severe Mood Swings	1.49 (1.00, 2.24)*	1.43 (0.89, 2.29)
Going to Extremes to Keep Someone from Leaving	1.14 (0.73, 1.79)	1.14 (0.70, 1.86)
Temper Outbursts/Problems with Anger	0.94 (0.54, 1.64)	0.90 (0.48, 1.69)
Sex with Non-Monogamous Partners		
Worry Someone is Planning to Leave You	1.41 (1.08, 1.83)**	1.34 (1.01, 1.77)**
Major Shifts in Opinions about Others	1.81 (1.36, 2.41)**	1.71 (1.27, 2.31)**
Severe Mood Swings	1.48 (1.12, 1.95)**	1.37 (1.02, 1.85)**
Going to Extremes to Keep Someone from Leaving	1.09 (0.81, 1.47)	0.99 (0.72, 1.36)
Temper Outbursts/Problems with Anger	1.25 (0.93, 1.68)	1.04 (0.75, 1.45)
Sex with Partners who Ever Had an STI		
Worry Someone is Planning to Leave You	1.20 (0.79, 1.83)	1.30 (0.84, 2.01)
Major Shifts in Opinions about Others	1.31 (0.86, 2.01)	1.45 (0.93, 2.26)
Severe Mood Swings	0.93 (0.55, 1.58)	1.01 (0.59, 1.75)
Going to Extremes to Keep Someone from Leaving	0.91 (0.51, 1.62)	0.99 (0.55, 1.78)
Temper Outbursts/Problems with Anger	0.72 (0.34, 1.52)	0.76 (0.35, 1.66)
Sex While Intoxicated		

Symptoms	OR and 95% CI	AOR and 95% CI ^a
Worry Someone is Planning to Leave You	1.30 (0.89, 1.89)	1.19 (0.81, 1.75)
Major Shifts in Opinions about Others	1.39 (0.97, 2.01)*	1.27 (0.87, 1.84)
Severe Mood Swings	1.23 (0.85, 1.80)	1.08 (0.73, 1.61)
Going to Extremes to Keep Someone from Leaving	1.42 (0.88, 2.28)	1.26 (0.77, 2.05)
Temper Outbursts/Problems with Anger	1.37 (0.86, 2.18)	1.17 (0.73, 1.89)
Self-Reported Previous STI		
Worry Someone is Planning to Leave You	1.23 (0.96, 1.58)*	1.19 (0.91, 1.54)
Major Shifts in Opinions about Others	1.41 (1.10, 1.81)**	1.40 (1.08, 1.83)**
Severe Mood Swings	1.32 (1.02, 1.71)**	1.24 (0.94, 1.64)
Going to Extremes to Keep Someone from Leaving	1.22 (0.93, 1.60)	1.18 (0.88, 1.57)
Temper Outbursts/Problems with Anger	1.22 (0.93, 1.62)	1.18 (0.87, 1.60)
Prevalent Chlamydia		
Worry Someone is Planning to Leave You	0.93 (0.50, 1.71)	0.92 (0.48, 1.74)
Major Shifts in Opinions about Others	1.00 (0.57, 1.75)	0.97 (0.53, 1.78)
Severe Mood Swings	1.33 (0.79, 2.22)	1.28 (0.74, 2.22)
Going to Extremes to Keep Someone from Leaving	0.80 (0.36, 1.80)	0.79 (0.35, 1.81)
Temper Outbursts/Problems with Anger	1.25 (0.72, 2.16)	1.18 (0.64, 2.18)
Prevalent Trichomoniasis		
Worry Someone is Planning to Leave You	1.10 (0.62, 1.94)	1.26 (0.66, 2.40)
Major Shifts in Opinions about Others	0.72 (0.34, 1.51)	0.80 (0.38, 1.72)
Severe Mood Swings	0.81 (0.38, 1.74)	0.91 (0.40, 2.08)
Going to Extremes to Keep Someone from Leaving	0.69 (0.25, 1.93)	0.81 (0.29, 2.30)
Temper Outbursts/Problems with Anger	0.85 (0.37, 1.97)	1.11 (0.47, 2.65)

Abbreviations: OR=Odds Ratio; AOR=Adjusted Odds Ratio; CI=Confidence Interval; STI=Sexually Transmitted Infection

^a Adjusted for age, joblessness, and antisocial personality disorder

* p value < 0.10;

** p value < 0.05;

*** p value < 0.001