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Borderline Personality Disorder and Violent Crime: The Moderating Role of Sex and Race

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ABSTRACT

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People receiving treatment for substance use disorders (SUD) are at risk of justice involvement. Although it is well-established that borderline personality disorder (BPD) increases risk for criminal involvement, it is unclear whether this relationship exists among people with SUDs. Furthermore, prior research has found sex and race differences in the relationships between BPD and justice involvement as well as violence, but these moderators have not been explored within a substance using sample. The current study utilized a sample receiving SUD treatment to examine whether BPD is associated with prior violent charges and, if race and sex moderated this relationship. Results indicated that presence of BPD was associated with violent charges, and there may be sex differences in this relationship (*OR* = 4.04, *95% CI* = .90; 18.18, *p* = .069). This study contributes to knowledge of how BPD increases risk for violent charges among people receiving SUD treatment.

TABLE OF CONTENTS

Chapter 1. Introduction

In 2020, the National Survey on Drug Use and Health (NSDUH) estimated that 40.3 million individuals aged 12 or older in the United States had a substance use disorder (SUD) in the past year. It has been well established that substance use is related to both violence and violent crime (De Lisi et al., 2015; Friedman, 1998; Goldstein, 1985; Macdonald et al., 2008) and that people with SUDs are grossly overrepresented in the criminal legal system (Tsai & Gu, 2019). In fact, violent incidents and incarceration are common disruptions that occur during substance use treatment (Erikson et al., 2009) and are related to dropout (Sung et al., 2001). However, there has been limited research identifying factors that increase risk for violent crime among people with SUDs who are receiving treatment. A specific subsample of individuals with SUDs who may be particularly at risk for engaging in violent acts are those with borderline personality disorder (BPD), which increases risk for both violence and criminal involvement (Mancke et al., 2017; Moore et al., 2017; Sansone et al., 2012; Sansone et al., 2014). Research has yet to explore the degree to which having a BPD diagnosis increases risk for violent crime among people receiving SUD treatment, and which individuals with BPD may be most at risk (i.e., sex/race differences). This study aims to address these gaps to help clarify the association between personality disorder diagnoses and the risk of violent crime among people with SUDs, and ultimately prevent treatment failures due to violent incidents or incarceration.

Prevalence of Borderline Personality Disorder

Borderline personality disorder (BPD) is a psychiatric disorder that is characterized by a pervasive pattern of instability of interpersonal relationships, self-image, and affect, and is marked by impulsivity (American Psychiatric Association [APA], 2013). Epidemiological studies using community samples have found that prevalence rates of BPD in the general

population range from 1-6% (Black et al., 2007; Ellison et al., 2018; Leichsenring et al., 2011; Lieb et al., 2004). Studies drawing from criminal justice-involved samples have found much higher prevalence rates, ranging from 15-45%, which vary in part due to whether symptom inventories or diagnostic interviews were used to diagnose BPD (Black et al., 2007; Conn et al., 2010; Drapalski et al., 2009). Regarding the overlap between SUDs and BPD, one review of 3267 individuals with a current SUD or in treatment for substance use found that 26.7% also met criteria for BPD (Trull et al., 2018). Studies drawing from justice-involved samples have found even higher levels of comorbidity, with 28-63.6% and 42-72.7% of justice-involved individuals with BPD having comorbid alcohol use disorder (AUD) and drug use disorder (DUD) respectively (Chapman & Cellucci, 2007; Wetterborg et al., 2015). Thus, it is evident that BPD is highly prevalent among both justice-involved samples as well as those receiving substance use treatment.

BPD and Violence

Although many people with BPD never engage in any violent behavior, aggression and violence can be part of the symptom set for some people with BPD. Several studies have found that BPD traits such as anger, impulsivity, and desire to avoid abandonment are significantly associated with violence (defined as 'the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation', Gonzalez et al., 2016; Sarkar, 2019, p. 578). It has also been well-established that emotion regulation difficulties are prominent in individuals with BPD and contribute to many symptoms and difficulties associated with BPD (Haliczer et al., 2019; Linehan, 1993). More specifically, some have posited that emotion regulation difficulties may increase the likelihood

of experiencing anger, which in turn also increases risk for aggression (Mancke et al., 2017). Relevantly, studies evaluating violence have found that BPD symptoms are indirectly related to aggression via emotion dysregulation (Garofalo et al., 2016; Newhill et al., 2012; Scott et al., 2014).

Regarding justice involvement, multiple studies have shown that BPD symptoms are associated with criminal charges in general (Moore et al., 2017), including disorderly conduct, driving under the influence, drug use violations (i.e., possession, sale, or use of illegal drugs), and public intoxication (Sansone et al., 2012; Sansone et al., 2014). More relevantly, BPD symptoms are also associated with violent charges like simple and aggravated assault (Sansone et al., 2012). Much of the research evaluating BPD and justice involvement for violent charges has been conducted in relation to intimate partner violence (IPV) (Gonzalez et al., 2016; Hines et al., 2016). Research has found that borderline personality traits (e.g., instability of self and relationships, anger, impulsivity, emotional volatility) are a positive predictor in the perpetration of physical, psychological, and sexual IPV (Hines, 2008). Additionally, one study found that women who were court- mandated to participate in violence intervention programs had 20.3 times greater odds of having BPD than women in the general population (Stuart et al., 2006). One reason people with BPD become involved in the justice system may be due to engagement in violent behaviors during times of emotional distress or interpersonal conflict (Mancke et al., 2017). Dysregulated anger and aggression are diagnostic criteria for BPD, and multiple studies have shown that people with BPD have increased risk of engaging in illegal aggressive behaviors like domestic assault (Gonzalez et al., 2016). However, research has rarely examined engagement in *violent crime more broadly* among people with BPD, especially among those who also have co-occurring SUDs.

Other Factors Contributing to Violent Crime

When exploring the relationship between BPD and violent crime risk among people with SUDs, it is important to consider other factors that contribute to violence risk more broadly. Relevant to the current study, these factors include substance use and antisocial personality disorder (ASPD). As previously mentioned, it has been well-established that substance use is related to violence and violent crime (De Lisi et al., 2015; Friedman, 1998; Macdonald et al., 2008). Goldstein (1985) theorized that substance use is related to violence in three ways. First, it is related pharmacologically, which involves the effects of the substance itself such as changes to the brain and neurotransmitters. Next, it is related economically, which refers to the acts that are committed in order to obtain the substance. Lastly, substance use and violence are related in a systemic manner, which involves the subculture of use and distribution. Many studies have found that substance use is related to interpersonal violence (Cartier et al., 2006; Macdonald et al., 2008, McKetin et al., 2020). Regarding studies drawing from samples receiving SUD treatment, violent incidents are not uncommon as one study comprised of 571 individuals in drug treatment found that almost half experienced at least one violent incident within the past year (Erikson et al., 2009). Additionally, a systematic review conducted by Zhong and colleagues (2020) examined individual drug use disorders well as polydrug use disorders and found that the latter was associated with a higher risk of violence. With regard to violent crime specifically, several studies have demonstrated that substance use is related to violent offending (Cartier et al., 2006; Hakansson & Jesionowska, 2018; McKetin et al., 2020; Thomas et al., 2013), with poly-substance use being linked to higher violent crime risk (Pape et al., 2021; Zhong et al., 2020).

Antisocial personality disorder (ASPD) is another well-documented risk factor for aggression, violence, and violent crime that overlaps with BPD (Gonzalez et al., 2016; Moore et

al., 2017; Newhill et al., 2009b; Sarkar, 2019; Scott et al., 2014) and SUD (Chapman & Celllucci, 2007; Howard et al., 2020). ASPD is characterized by a failure to conform to lawful behavior and an egocentric lack of concern for others (APA, 2013). Research shows that among people with SUDs, antisocial traits predict violent behavior and criminal justice involvement (Chapman & Celluci, 2007; Dykstra et al., 2015). ASPD is present among 10-91% of people with BPD (Banzhaf et al., 2012; Wetterborg et al., 2015) and there is considerable overlap in characteristics such as impulsivity, aggressive behavior, and difficulties regulating emotions (Scott et al., 2014). Studies have found that individuals with comorbid ASPD and BPD have more contact with the criminal justice system (Howard et al., 2020), and an increased risk of violence (Freestone et al., 2012; Newhill et al., 2009b) and externalized aggression (Kolla et al., 2017).

Some studies have found that after controlling for ASPD, the link between BPD and violence is attenuated (Newhill et al., 2009b) and others have found that ASPD symptoms are more strongly correlated with criminal charges than BPD symptoms (Moore et al., 2017). Conversely, some studies have found that even after controlling for antisocial features, BPD is still associated with violent behavior. For example, Newhill and colleagues (2012) conducted a study consisting of individuals in various inpatient psychiatric hospitals and found that over the 1-year follow-up period, 73% of those with BPD had engaged in either violent or aggressive acts. More specifically, 66% of those with BPD only and 88% of those with comorbid BPD and ASPD engaged in such acts. Thus, ASPD is a relevant factor in understanding the link between BPD and violent crime among people with SUDs.

Potential Moderators

BPD, Sex, and Violent Crime

Research with justice-involved samples has consistently found higher rates of BPD in women (i.e., 52-54%) compared to men (26-42%; Black et al., 2007; Conn et al., 2010). Additionally, studies have found a stronger relationship between BPD symptoms and violence among women compared to men, suggesting that, "women are more susceptible to becoming violent with increasing BPD traits" (Gonzalez et al., 2016, p. 7). Interestingly, Weinstein and colleagues (2012) evaluated self-reported partner aggression in a community sample of 872 adults and found BPD symptoms were related to partner aggression only for women, suggesting that sex moderates the relationship between BPD symptoms and IPV.

In addition, studies have found that BPD and violence may be related through different mechanisms between sexes. Studies evaluating sex differences in violence and aggression among people with BPD have found inconsistent results. Gonzalez and colleagues (2016) found that for men with BPD, paranoid ideation was associated with violence whereas for women, unstable relationships were associated with such. Sher and colleagues (2019) found that men with BPD scored higher than women on the total Buss-Perry Aggression Questionnaire (BPAQ) and the physical aggression subscale of the BPAQ. Conversely, other studies have found no sex differences in levels of aggression among those with BPD (Silberschmidt et al., 2014). Thus, studies assessing differences in levels of aggression between men and women in BPD samples have found varying results, with some indicating that men have higher levels of aggression and others finding no such differences.

Regarding other factors, men with BPD are more likely to be diagnosed with comorbid ASPD than women, which has aggression and violent behavior as part of its symptom set (Sher

et al., 2019; Silberschmidt et al., 2014; Zlotnick et al., 2008). Although rates vary, studies have found that between 32 and 91% of men meet criteria for comorbid ASPD and BPD while 10 to 26% of women meet such criteria (Banzhaf et al., 2012; Sher et al., 2019; Wetterborg et al., 2015). On the other hand, studies with justice-involved samples have found that women tend to exhibit more BPD traits than men (Sarkar et al., 2019). Additionally, as previously mentioned, studies drawing from community samples have found a significantly higher linear increase between BPD traits and violence in women compared to men (Gonzalez et al., 2016). Hence, BPD traits may have a greater impact on violence in women compared to men.

In sum, it is evident that BPD is more common among women in both community and justice-involved samples (Sansone et al., 2012) and that the association between BPD traits and violence is stronger for women (Gonzalez et al., 2016). In addition, there are sex differences in the various mechanisms by which BPD is related to justice-involvement and violence (Gonzalez et al., 2016). Research evaluating aggression has found varying results, with some studies finding no differences between men and women (Silberschmidt et al., 2014) and others reporting that males with BPD have higher levels of aggression (Sher et al., 2019).

BPD, Race, and Violent Crime

There is a very limited amount of research evaluating racial and ethnic differences among people with BPD. Chavira and colleagues (2003) conducted a study consisting of individuals who were currently receiving or had previously received psychological or psychiatric services and found that Hispanic participants had disproportionately more BPD diagnoses compared to Caucasian and African American participants. On the other hand, another study with a nationally representative sample in the U.S. found that BPD was present in 5% of Native American, 3.5% of Black, 2.7% of White, 2.5% of Hispanic, and 1.2% of Asian American individuals (Tomko et

al., 2014). However, other studies have found no racial/ethnic differences in rates of BPD (Haliczer et al., 2020).

Regarding symptoms and factors related to justice-involvement, research has found varying results. Some studies have found racial differences in rates of violence among people with BPD (Klassen & O'Connor, 1989), and one study showed that Hispanic individuals with BPD reported intense anger, affective instability, and unstable relationships more frequently than White individuals with BPD (Chavira et al., 2003). However, the majority of more recent studies find no such differences (Newhill et al., 2009a).

Of relevance, Newhill and colleagues (2009a) found that Black individuals experienced more affective intensity, emotion dysregulation, and thoughts of interpersonal violence than White individuals with BPD. However, differences in affective intensity and emotion dysregulation were nonsignificant after controlling for treatment setting, substance use, and other mood problems. Furthermore, they noted, "because of institutional racism and stereotyped assumptions about race and mental illness, we suspect that individuals of color with BPD may be more likely to end up in the criminal justice system rather than a source of psychiatric health care as a result of their behavior problems" (Newhill et al., 2009a, p. 94).

Another study conducted by De Genna and Feske (2013) evaluated racial differences among 83 women with BPD. They found that Black women scored higher than White women on measures of how often angry feelings were expressed in aggressive behaviors (i.e., anger expression out scale of the State-Trait Anger Expression Inventory-2 [STAXIY]) and frequency of aggressive behaviors (MacArthur Community Violence Instrument [MACVI]). Furthermore, they found that Black women were more likely to have a comorbid diagnosis of drug use disorder as well as exhibit higher rates of ASPD symptoms compared to White women. It should

be noted that authors used the "code of the streets" theory to explain race/ethnicity differences in violence among people with BPD. This theory involves a "multilevel process in which macrostructural patterns of disadvantage, racial inequity, and limited economic opportunities foster a street culture that is conducive to violence", specifically in that such "conditions lead to a sense of hopelessness and cynicism about societal rules and their application, thereby resulting in a street culture that undermines mainstream conventional norms" (Stewart & Simons, 2010, p. 570). In short, this theory posits that poor social conditions (i.e., discrimination, poverty, isolation, broken families) contribute to a subculture of "code of the streets", where violence, respect, and retaliation are emphasized.

Hence, studies investigating racial and ethnic differences in BPD have found inconsistent results (Haliczer et al., 2019; Tomko et al., 2014). Nevertheless, research has found some racial differences in emotion regulation factors (Haliczer et al., 2020), thoughts of interpersonal violence (Newhill et al., 2009a), substance use, and frequency of aggressive behaviors (De Genna & Feske, 2013) among people with BPD. It should be noted that the previously mentioned studies which found racial differences also emphasized the importance in considering culture and exposure to discrimination and oppression in interpreting such differences.

Current Study

The personality factors that are associated with violent crime among people with SUDs are not well-understood, despite research suggesting that a BPD diagnosis increases risk for violence and criminal involvement across settings and samples. The current study first aims to fill this gap by evaluating the relationship between BPD and violent charges among a SUD treatment sample. Moreover, given that research has found sex and race differences in BPD prevalence, traits, and relationship to violence, the current study also seeks to determine whether

such differences moderate the relationship between BPD and violent criminal charges in a substance using sample. Due to the relevance of ASPD and substance use to violent crime, both will be analyzed as covariates. Among people receiving treatment for SUD, we predict that (a) individuals with a BPD diagnosis will be more likely to report prior violent charges, and (b and c) sex and race will moderate the relationship between BPD and violent charges. Given that previous research has found a stronger relationship between BPD symptoms and violence for women, in addition to social expectations (i.e., when women act violently it does not align with societal expectations of how women should act), it is predicted that women with BPD will report having more violent charges. Due to racial disparities in the criminal justice system, it is hypothesized that Black individuals with BPD will report more prior violent charges than White individuals with BPD.

Chapter 2. Method

Participants and Procedures

Participants included 223 inpatients in a residential SUD treatment facility in central Mississippi. Standard treatment at this facility drew on strategies from Alcoholics Anonymous and Narcotics Anonymous in addition to groups that covered a variety of topics such as coping skills and relapse prevention. This treatment facility required complete abstinence from drugs and alcohol, with the exception of nicotine and caffeine. No patients were receiving medication-assisted treatment for their SUD at the time of this study and methadone maintenance was not available at this facility. Patients were not permitted to leave the facility apart from scheduled activities.

Participants ranged in age from 18 to 65 (M=34.43, SD=10.43). In terms of sex, 51.6% were male (n=112) and 48.4% were female (n=105). Regarding race, 60.5% identified as White/Caucasian (n=135), 36.3% as Black/African American (n=82), 0.4% as Asian/Southeast Asian (n=1), 1.4% as Hispanic/Latino (n=3), and 0.9% as Native American (n=2). Lastly, 33.6% (n=73) and 39% (n=83) of participants met criteria for BPD and ASPD, respectively, with 16.9% (n=36) meeting criteria for both disorders. The number of substance use disorders participants had ranged from 0 to 9. Due to small sample sizes within the other races, we limited our sample to Black/African American and White/Caucasian individuals, resulting in a final analyzed sample of 217 (See table 1).

All procedures were reviewed and approved by the Institutional Review Boards of the University of Mississippi Medical Center and the Mississippi State Hospital. Eligibility criteria included a) reported dependence on alcohol and/or cocaine, b) obtained a score of ≥ 24 on the Mini-Mental Status Exam (Folstein et al., 1975), and c) exhibited no current psychotic disorders

(as determined by the Mini International Neuropsychiatric Interview; Sheehan et al., 1998). Individuals who met inclusion criteria were provided with information regarding study procedures and the associated risks as part of obtaining written informed consent. To limit possible interference of withdrawal symptoms, eligible participants for this study were recruited no sooner than 72 hours after entry in the facility. This study involved three separate sessions conducted on separate days, which included a pre-test, stress induction, and post-test. Data used in the present study comes from the baseline questionnaire, which participants were compensated $25 for. All interviews were administered by post-baccalaureate or doctoral-level clinical assessors trained to reliably assess personality and other mental health disorders and all interviews were reviewed by a PhD level clinician, with diagnosis confirmed in census meetings.

Measures

Demographic Information

All participants completed a demographics form including sex, age, race/ethnicity, marital, education, and income in the past year. Sex and race were used in the current study as moderators and other demographics were considered as covariates. (See Table 1).

Table 1

Demographic Information (n=217)

	n (%)	Mean (SD)	Actual Range
Sociodemographics			
Age		34.43 (10.43)	18-65
Sex			
Male	112 (51.6%)		
Female	105 (48.4%)		
Race/Ethnicity			
White/Caucasian	135 (60.5%)		
Black/African American	82 (36.8%)		
Household Income			
Less than $9,999	106 (49.8%)		
$10,000-$19,999	37 (17.4%)		

$20,000-$29,999	17 (8.0%)		
$30,000-$39,999	16 (7.3%)		
$40,000-$49,999	11 (5.2%)		
$50,000-$59,999	6 (2.8%)		
$60,000-$69,000	5 (2.3%)		
$70,000-$79,999	4 (1.9%)		
$80,000-$89,999	3 (1.4%)		
$90,000-$99,999	1 (0.5%)		
$100,000 or more	7 (3.3%)		
Education			
None	1 (0.5%)		
1st to 8th grade	9 (4.2%)		
Some high school	49 (22.7%)		
High school graduate	37 (17.1%)		
G.E.D	37 (17.1%)		
Some college	51 (23.6%)		
Technical or business school	12 (5.6%)		
College graduate	14 (6.5%)		
Some graduate school	3 (1.4%)		
Graduate or professional degree	3 (1.4%)		
Variables			
BPD (present)	73 (33.6%)		
ASPD (present)	83 (39.0%)		
Substance Use Disorder Severity		2.76 (1.74)	0-9
Violent Charges			
Yes	49 (25.5%)		
No	151 (75.5%)		

BPD and ASPD

The Diagnostic Interview for Personality Disorders (DIPD-IV) was administered to determine whether people met criteria for BPD and ASPD (which was included as a relevant covariate). Each DSM-IV criterion for BPD and ASPD was assessed through the use of one or more questions and was rated on a 3-point scale (0=*not present*, 1=*subthreshold*, and 2=*present*). Consistent with the DSM-IV (APA, 2000), participants who had a score of two on at least five of the nine BPD criteria were determined to have BPD. Participants who had a score of two on at least three of the conduct criteria and at least three of the adult criteria were determined to have a

lifetime history of ASPD. BPD and ASPD were coded dichotomously as 0=absent and 1=present.

Violent Crime

The legal status section of the Addiction Severity Index (ASI; McLellan et al., 1980) was used to evaluate self-reported violent criminal charges. The ASI assesses substance use and its consequences and is widely used in both research and clinical settings (Makela, 2003). For the purposes of this study, only items evaluating violent charges out of a longer list of possible charges were used (e.g., "How many times in your life have you been arrested and charged with rape?", "How many times in your life have you been arrested and charged with assault?"). Charges were considered to be violent based on the Bureau of Justice Statistics definition of violent crime, which includes murder, rape, sexual assault, robbery, and assault (Bureau of Justice Statistics [BJS], 2021).

Substance Use Severity

A count variable of SUDs was created based on the SUD module of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I/P) which determines the lifetime and current presence of SUDs. The SUD module of the SCID has shown good validity (Kranzler et al., 1996) and high inter-rater reliability (Skre et al., 1991).

Data Analytic Plan

Sociodemographics linked to violent crime (e.g., income, age), ASPD, and substance use severity (i.e., number of SUDs) were considered as potential covariates. Bivariate correlations were conducted to examine relationships between potential covariates, the independent variable, moderators, and the dependent variable. To examine whether presence of BPD is associated with

prior violent charges, a dichotomous variable of violent charges was created to represent whether individuals reported having been charged with assault, murder, rape, or robbery as an adult.

Two logistic regressions were conducted to test hypothesis 1 (i.e., individuals with BPD will be more likely to report lifetime violent charges). The first model only included the main effect of BPD on violent charges and the second model included all covariates that were significantly related to either BPD or violent charges at the bivariate level.

Two hierarchical logistic regressions were used to test hypotheses 2 and 3 (i.e., sex/race will moderate the relationship between BPD and violent charges). Interaction terms were created by centering each moderator and independent variable and then multiplying BPD*sex and BPD*race. The first hierarchical logistic regression included BPD and sex in the first block and the interaction between BPD*sex in the second block. The second hierarchical logistic regression was conducted with BPD, sex, and covariates in the first block, and the interaction between BPD*sex in the second block. The third hierarchical logistic regression included BPD and race in the first block and the interaction between BPD*race in the second block. A fourth hierarchical regression was conducted, including covariates which were entered in the first block with BPD and race. The second block consisted of the interaction between BPD*race. Interactions significant at the .10 level were graphed and probed by conducting split file correlations and running simple slopes analyses.

Power

Post-hoc power analysis using G*Power 3.1 (Fault et al., 2009) was conducted to determine the statistical power achieved with this sample size (n=217). Cohen (1988) specified effect size guidelines as small (0.2), moderate (0.5), and large (0.8). The alpha level was set to

$p<.05$. For all proposed analyses, post hoc analysis revealed that this study had 0.99, 1.0, and 1.0 power in detecting small, moderate, and large effect sizes, respectively.

Chapter 3. Results

Preliminary Analyses

A total of 217 cases were included in analyses. Regarding presence of violent charges, 1 (0.5%) participant reported a prior charge of homicide, 3 participants (1.6%) reported a prior charge of rape, 9 participants (4.7%) reported a prior charge of robbery, and 40 participants (20.7%) reported a prior charge of assault. Bivariate correlations are displayed in Table 2. Education, age and total household income were not significantly correlated with BPD or violent charges. ASPD (r=.18, p=.012) and SUD severity (r=.22, p=.002) were significantly correlated with violent charges. Thus, ASPD and SUD severity were included in all models as covariates. The presence of violent charges was significantly correlated with BPD (r=.14, p=.044). BPD and sex were significantly correlated (r=-.18, p=.009), showing that females were more likely to have BPD. BPD and race were not significantly correlated (r=-.02, p=.771). Assumptions of multicollinearity were check through tolerance and VIF values, which were all within normal limits. Missing data were handled using listwise deletion; a total of 17 cases (7.8% missing) were excluded.

Table 2

Correlations between Variables

	1	2	3	4	5	6[a]	7[a]	8	9
1. BPD	1								
2. ASPD	.15*	1							
3. Race	-.18**	-.09	1						
4. Sex	-.02	.15*	.17*	1					
5. Age	-.09	-.13	.23**	-.02	1				
6.Education[a]	.05	-.15*	-.24**	-.19**	.06	1			

7. Household Income[a]	.03	.02	-.18**	-.18**	-.08	.13*	1		
8. SUD Severity	.17*	.15*	-.38**	-.03	-.10	.15**	.04	1	
9. Violent Charges (Y/N)	.14*	.18*	-.03	.21**	-.10	-.05	.04	.22**	1

Note [a] Indicates that Kendall's tau was reported. BPD and ASPD were coded as 0=absent and 1=present. Race was coded as 0=White and 1=Black. Sex was coded as 0=female and 1=male. Education ranged from 1 (none) to 10 (graduate or professional school). Household income ranged from 0 ($0-9,999) to 10 ($100,000 or more).
* significant at the 0.05 level
** significant at the 0.01 level

BPD and Violent Charges

A logistic regression was conducted to assess the effect of BPD on the likelihood of having a violent crime charge. The overall model was statistically significant, ($\chi^2(1) = 3.96$, p=.047) explaining 2% of the variance in violent charges (*Cox and Snell* R^2 = .02) and correctly predicting 2.9% of cases (*Nagelkerke* R^2 = .029). Results indicated that individuals with BPD were almost twice as likely to report prior violent charges (*OR* = 1.96, *95% CI* = 1.01-3.78, p = .046) (see Table 3). When introducing the covariates, the overall model remained significant ($\chi^2(3)$= 16.01, p = .001), explaining 7.7% of the variance in violent charges (*Cox and Snell* R^2 = .77) and correctly predicting 11.5% of cases (*Nagelkerke* R^2 = .115). Individuals with greater SUD severity (*OR* = 1.30, *95% CI* = 1.07-1.57, p = .008) as well as individuals with ASPD (*OR* = 2.03, *95% CI* = 1.03- 4.00, p = .040) were more likely to report previous violent charges (see Table 3). However, results indicated that BPD was no longer a significant predictor in the model once ASPD and SUD severity were accounted for.

Table 3

Logistic Regression of the Relationship between BPD and Violent Crime (n=200)

				95% CI		
Variable	B	SE	Exp(B)	Lower Bound	Upper Bound	*p*
No Covariates						
BPD	.67	.34	1.96	1.01	3.78	.046*

With Covariates						
BPD	.46	.35	1.58	.80	3.15	.191
SUD Severity	.26	.10	1.30	1.07	1.57	.008**
ASPD	.71	.35	2.03	1.03	4.00	.040*

* significant at the 0.05 level
** significant at the 0.01 level

Sex as a Moderator

The first model with BPD and sex predicting violent charges, not involving covariates, was statistically significant (χ^2 (3) = 16.40, $p < .001$) explaining 7.9% of the variance in violent charges (*Cox and Snell* R^2 = .079) and correctly predicting 11.7% of cases (*Nagelkerke* R^2 = .117). Results indicated that those with BPD were 4.64 times more likely to report previous violent charges (*OR* = 4.64, *95% CI* = 1.44-14.97, p = .010). Additionally, men were 5.3 times more likely to report previous violent charges (*OR* = 5.30, *95% CI* = 1.86-15.12, p = .002). The interaction between BPD*Sex was not statistically significant. The next model, controlling for SUD severity and ASPD, was statistically significant (χ^2 (5) = 27.57, $p < .001$) explaining 12.9% of the variance in violent charges (*Cox and Snell* R^2 = .129) and correctly predicting 19.2% of cases (*Nagelkerke* R^2 = .192). Individuals with BPD were 4.06 times more likely to report previous violent charges (*OR* = 4.06, *95% CI* = 1.22-13.56, p = .023), men were 5.45 times more likely to report previous violent charges (*OR* = 5.45, *95% CI* = 1.83-16.20, p = .002), and those with greater SUD severity were 1.34 times more likely to report violent charges (*OR* = 1.34, *95% CI* = 1.09-1.64, p = .005). The interaction between BPD*Sex was not statistically significant (*OR* = 4.04, *95% CI* = .90; 18.18, p = .069), however, because the p value was close to statistical significance and indicated support for our hypothesis, we probed the interaction via posthoc correlations and graphing (see Table 4 and Figure 1). Correlational analyses revealed that among women, there was a significant relationship between presence of BPD and previous violent charges (r = .28, p = .006). For men, there was no significant correlation between presence of

BPD and prior violent charges. A graph of this interaction is displayed in Figure 1, showing that there was a stronger relationship between BPD and violent charges for women than for men. Additional posthoc correlational analyses found that among women, there was a significant relationship between number of BPD criteria endorsed and previous violent charges (r = .21, p = .043) whereas no such relationship existed for men (r = .11, p = .296). The interaction odds ratio is considered to be a medium effect size (Chen et al., 2010).

Table 4

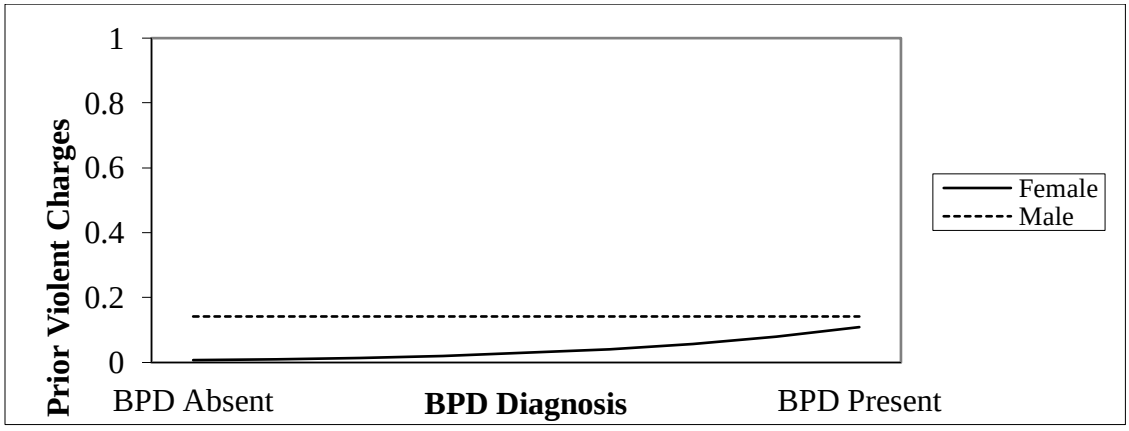
Moderated Logistic Regression of the Relationship between BPD, Sex, and Violent Crime (n=200)

				95% CI		
Variable	B	SE	Exp(B)	Lower Bound	Upper Bound	*p*
No Covariates						
BPD	1.54	.60	4.64	1.44	14.97	.010*
Sex	1.67	.54	5.30	1.86	15.12	.002*
BPD * Sex	-1.28	.74	.28	.07	1.19	.085
With Covariates						
BPD	1.40	.62	4.06	1.22	13.56	.023*
Sex	1.70	.56	5.45	1.83	16.20	.002**
SUD Severity	.29	.10	1.34	1.10	1.64	.005**
ASPD	.58	.36	1.78	.88	3.58	.108
BPD * Sex	1.40	.77	4.04	.90	18.18	.069

* significant at the 0.05 level
** significant at the 0.01 level

Figure 1

Interaction Graph Between BPD, Sex, and Violent Crime



Race as a Moderator

The overall model of the logistic regression involving race as a moderator was not statistically significant. The model for the second logistic regression, including ASPD and SUD severity as covariates, was statistically significant, (χ^2 (5) = 17.97, p = .003) explaining 8.6% of the variance in violent charges (*Cox and Snell* R^2 = .086) and correctly predicting 12.8% of cases (*Nagelkerke* R^2 = .128). SUD severity was significantly associated with violent charges (*OR* = 1.32, *95% CI* = 1.07-1.62, p = .009), indicating that those with greater substance use severity were 1.32 times more likely to report previous violent charges. Additionally, those with ASPD were 1.98 times more likely to report previous violent charges (*OR* = 1.98, *95% CI* = 1.0-3.92, p = .051). BPD, race, and the interaction between BPD*race were not statistically significant (see Table 5).

Table 5

Moderated Logistic Regression of the Relationship between BPD, Race, and Violent Crime (n-200)

				95% CI		
Variable	B	SE	Exp(B)	Lower Bound	Upper Bound	*p*
No Covariates						
BPD	.27	.41	1.31	.58	2.95	.511
Race	-.52	.46	.59	.24	1.45	.254
BPD * Race	1.2	.73	3.32	.8	13.781	.098
With Covariates						
BPD	.21	.43	1.23	.53	2.86	.624
Race	-.04	.50	.96	.36	2.53	.930
SUD Severity	.28	.11	1.32	1.07	1.62	.009**
ASPD	.68	.35	1.98	1.0	3.92	.051
BPD * Race	.87	.75	2.39	.55	10.43	.250

* significant at the 0.05 level
** significant at the 0.01 level

Chapter 4. Discussion

The current study drew from a sample of people with SUD to examine whether individuals with BPD were more likely to have a history of violent charges. This study also sought to evaluate sex and race as moderators of the relationship between BPD and previous violent charges. It was hypothesized that women with BPD would be more likely to report previous violent charges than men with BPD, and that Black individuals with BPD would be more likely to have previous violent charges than White individuals with BPD. Our results partially supported these hypotheses.

BPD and Violent Charges

Among individuals in SUD treatment, being diagnosed with BPD was related to having a history of violent charges at the bivariate level and in main effects models (with no covariates), which is consistent with some literature evaluating violence and risk factors related to such. Specifically, previous studies have found that BPD symptoms are related to simple and aggravated assault charges (Sansone et al., 2012) and the perpetration of IPV (Gonzalez et al., 2016; Hines, 2008). However, BPD diagnosis was not associated with violent charges beyond ASPD and SUD severity when these covariates were included in the model. This is in contrast to some studies which have shown that BPD diagnosis contributes unique variance to the prediction of violent behavior above and beyond ASPD (Newhill et al., 2012). However, this finding is consistent with the results of another study that found BPD was no longer a significant predictor of IPV perpetration after introducing ASPD into analyses (Jackson et al., 2015). This makes sense, as ASPD is strongly related to violent and nonviolent criminal involvement, possibly leaving little unique variance for borderline features to explain. The finding that BPD was no longer a significant predictor of violent charges when SUD severity was included as a covariate

is in contrast to some previous literature suggesting BPD predicts violence above SUDs. For example, one study assessed violence among a nationally representative sample and found that individuals with BPD were 2.4 times more likely than those without BPD to engage in violence directed at others, even after controlling for AUD and DUDs (Harfort et al., 2018). Results of the current study suggest SUD severity was generally more important in the relationship to violent crime than BPD diagnosis among people in treatment for SUD.

Moderators of BPD and Violent Crime

In evaluating the relationship between BPD and violent crime, there may be sex differences between males and females. Although the interaction between BPD*Sex was not statistically significant in the regression model including covariates, it was close to significant (p=.069) and indicated support for our hypothesis. Specifically, there was a significant positive relationship between the presence of BPD and prior violent crime for women only. Posthoc analyses showed that there was also a significant positive relationship between number of BPD criteria participants met and previous violent charges for women only. This is consistent with studies using community samples that have found there is a higher linear increase between BPD traits and violence in women compared to men (Gonzalez et al., 2016). Other studies have found similar results in that BPD symptoms are related to IPV only for women (Weinstein and colleagues, 2012). There are various possible explanations for why women with BPD may report having more violent charges than males with BPD.

This may be explained by gender norms, as some researchers have stated that "the femininity stereotypes (e.g., weakness, submission, domestication, nurturance, and 'ladylike' behavior) are basically incompatible with qualities valued in the criminal underworld…while the dividing line between what is considered masculine and what is criminal is often thin"

(Steffensmeier & Allan, 1996). Thus, when women act violently, they may be more likely to receive a violent charge because that form of behavior does not align with what is expected. Alternatively, it may be due to differences in how men and women meet criteria for BPD, as different combinations of criteria can result in diagnosis (Boggs et al., 2005).

Both models assessing race as a moderator in the relationship between BPD and violent charges were not significant. This is consistent with previous research that has found no racial differences in rates of violence or diagnosis among individuals with BPD (Haliczer et al., 2020; Newhill et al., 2009a). However, our results are inconsistent with other research on mechanisms between BPD and violence. For example, previous studies have found racial differences in emotion regulation difficulties (Haliczer et al., 2020) frequency of aggressive behaviors, comorbid SUDs, and rates of ASPD symptoms (De Genna & Feske, 2013).

Strengths, Limitations, and Future Directions

This study contributes to the dearth of literature examining the relationship between BPD and criminal justice involvement, especially among high-risk samples of people with SUDs. It is also the first study, to our knowledge, to evaluate the roles of sex and race in the relationship between BPD and prior violent charges. Additionally, as previously mentioned, most studies evaluating violent charges have specifically done so within the realm of IPV. We built upon this literature by evaluating more types of violent crime (i.e., murder, assault, robbery, rape).

Despite these strengths, there are also limitations. First, due to small sample sizes, we were only able to compare Black and White individuals, thus results do not generalize to other racial or ethnic groups. Future studies should include more racial and ethnic groups in comparing the moderating role of race in the relationship between BPD and violent charges. In addition, research, including the current study, has only evaluated whether BPD is associated with *any*

prior violent charges rather than the number or types of prior violent charges, which would have provided additional information about the nature of this relationship. The number of people reporting any violent charges in this sample was low (24.5%), thus requiring the use of a dichotomous violent charge variable. A higher risk sample with more violent charges would be necessary to investigate this question; this is a direction for future research. Further, assessing violent incidents and charges that occur during the course of substance use treatment episodes would provide additional insights relevant to substance use treatment failure.

Conclusions and Clinical Implications

Overall, the results of this study contribute to research on personality factors contributing to violent criminal involvement, specifically among people receiving SUD treatment. Regarding clinical implications, it has been well-established that individuals with BPD often exhibit high treatment drop-out rates, including in substance use treatment settings (Tull & Gratz, 2012). Future research should focus on clinical practices that reduce dropout rates among individuals with BPD in substance use treatment, especially women. Results also contribute to existing research on risk factors for involvement in violent crime, which may in turn, also help inform policy on prevention and treatment of those at risk.

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