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Over the past twenty years, the number of women in prison has increased from approximately 12,000 in 1980 to over 200,000 in 2008 [1, 2, 30]. This dramatic increase has spurred interest in various characteristics of women prisoners, and led to research into the prevalence of mental health problems and disorders among them [9, 20]. As might be expected, rates of documented mental health problems and psychiatric disorders among women prisoners are higher than in the non-incarcerated female population. James and Glaze [11] note that only 12% of women in the general population suffer from mental disorders, while 73% of women in state prisons, 61% in federal prisons, and 75% in local jails have symptoms of mental disorders. Teplin et al. [20] found that nearly 80% of incarcerated women meet criteria for psychiatric disorder in their lifetimes, perhaps as a result of high rates of physical and sexual abuse in their population [3, 14, 15, 32]. Female prisoners are more than three times more likely to be diagnosed with mental health disorders than their male counterparts of whom only 55% exhibit symptoms of mental health disorders [11]. The most common disorders among female inmates include Post Traumatic Stress Disorder (PTSD), depression, and substance abuse [4]. Moreover, many suffer simultaneous disorders, with psychotic disorders and mood disorders co-occurring at very high rates [12].

The *war on drugs*, which was a reactionary policy to the crack epidemic of the 1980s and 1990s, contributed to increases in the number of incarcerated women with mental health disorders due to strong associations between victimization, mental illness, and subsequent drug use [21]. Women prisoners have been found to exhibit disproportionate rates of personality disorders when compared to matched community samples of women and their male counterparts [18]. In a systematic review of sixty-two studies of mental disorders in prisoners, Fazel and Danesh [7] found a high prevalence of personality disorders among women offenders, often more than one, with the most prevalent being antisocial personality disorder (21%). This indicates a strong association between incarceration and having been diagnosed with at least one personality disorder among women offenders. Further, antisocial personality disorder is highly correlated with narcissistic, histrionic, and obsessive-compulsive personality disorders [12]. Because women with personality disorders may have more difficulty adapting and transitioning successfully in difficult situations in general [19], and because victimization is associated with personality disorders in women prisoners, women offenders with a personality disorder may have more difficulty adapting to incarceration than women prisoners without personality disorders.

While there is little research on prison adjustment and emotional adaptation, a study by MacKenzie, Robinson and Campbell [16] assessed adjustment differences between short-term and long-term women inmates, finding that recently incarcerated women prisoners were more likely to be concerned for their safety and to become members of *play families* while incarcerated. The study also found that women with sentences shorter than four years felt less in control of their environment than women who had been in prison for more than 4 years. The latter group complained more of situational problems like boredom and lack of opportunities. Another study by Loucks and Zamble [13] examined predictors of prison misconduct in serious women offenders. Several women prisoners report the most difficult aspects of being in prison are separation from their children and the accompanying emotions, anxiety, depression, and concerns for one's own safety [8, 31].

Inability to adapt to the difficulties of living in prison is a serious issue that can lead to misconduct and other behavioral problems [5, 13]. Verona and Carbonell [25] found that Overcontrolled Hostility scores from the Minnesota Multiphasic Personality Inventory (2nd ed.) (MMPI-2) were associated with more overall aggression and anger outbursts for women prisoners. Nevertheless, few studies have explored women's ability to successfully adapt to incarceration and its association to personality characteristics, particularly Axis II personality disorders.

Current study focus

Given that a high percentage of incarcerated women suffer from personality disorders and are thus likely to have difficulty adapting to incarceration, it is crucial to better understand their condition. Applied appropriately, such information could inform adaptation of the prison context and perhaps help lessen behavior problems prison-wide. Thus, the present study sought to better understand the influence of personality disorders and impulsivity on women's ability to successfully adapt to incarceration. We analyzed the influence of personality disorders as screened with the Structured Clinical Interview for Personality Disorders (SCID-II), and impulsivity as assessed with the Barratt Impulsivity Scale (BIS) on depression and anxiety, sleeping problems, and feeling afraid of being attacked in prison among women incarcerated in a Virginia prison.

Method

Participants and Procedures

This is a secondary data analysis of data originally collected by Warren and colleagues [26, 27]. Study data was derived from structured interviews and institutional files from a sample of 805 incarcerated women at a maximum security prison in Virginia. Informed consent was obtained from all inmates in which women were told that participation is voluntary and they can decline with absolutely no punishment. Data collection took place over six months. Researchers accompanied by correctional staff who had been briefed about the nature and purpose of the study, interviewed inmates in their units. Participants signed a research protocol and were interviewed in a building utilized for educational purposes. Interviews lasted 45-60 minutes, and participants with reading challenges were offered assistance and had the questionnaire read to them. The research team utilized the institutional files to augment data for the entire prison sample [26 - 28]. Also, the original researchers used the institutional files to compare women who agreed to participate and women who decline participation in age, race, offense type, length of incarceration, and security classification. The women who agreed to participate were younger and had committed more acts of institutional misconduct. There were no differences between groups in race, type of crime committed, sentence length, or security classification [26 - 28].

Measures

Depression and anxiety: Subscale scores from the Brief Symptoms Inventory (BSI) [6] were used to assess depression and anxiety. The BSI is a self-reported tool used to identify current psychological distress symptoms in people over thirteen years of age. The anxiety and depression subscale includes the following six possible choices: 0 = Not at all, 1 = A little bit, 2 = Moderately, 3 = Quite a bit, 4 = Extremely, R = Refused. The questions include reporting the subjects' level of anxiety and depression during the past seven days. The following item is one of the questions that were used to measure anxiety: “[s]uddenly scared for no reason.” “Feeling lonely” was one of the items that were used to measure depression [6, p. 42]. Brief Symptoms Inventory (BSI) reliability and validity are considered to be acceptable. Recent studies with correctional populations have found acceptable reliability with this instrument [22 – 24]. The BSI is strongly correlated with the parent instrument, SCL-R-90, with coefficients ranging from .92 to .99 [6].

Having sleeping problems in prison: this dichotomous variable (0 = no, 1 = yes) assessed problems sleeping in prison compared to not being in prison.

Being afraid of being attacked in prison: this dichotomized variable (0 = no, 1 = yes) assessed respondent's fear of attack being greater in prison than in the community.

Personality disorders: The Structured Clinical Interview for Personality Disorders (SCID- II) screen scores was used to measure personality disorders. This tool assesses a range of personality disorders and mental states that can be covered by 119 items [10]. The SCID- II reliability and validity are considered to be acceptable. It has moderate test-retest reliability (kappas ranging from .49 to .62). In this study the Cronbach's alpha was computed for the dichotomized version of the measure ($\alpha = .73$). Table 1 shows the subscales utilized in this study. The variables are dichotomous (diagnosed=1 and not diagnosed =0) and the proportion of respondents who met the diagnosis of each subscales are represented in percentages as follows: 61% paranoid Personality disorder; 31.4% schizotypal personality disorder; 59% borderline personality; 9.1% histrionic personality disorder; 58.4% narcissistic personality disorder; 46.6% antisocial personality disorder; 35.5% avoidant personality disorder; 14.2% depended personality disorder; 59.4% obsessive-compulsive personality disorder.

Impulsivity: The Barratt impulsivity Scale (BIS) scores were used to assess impulsivity. This self-report measure consists of 34 items. Patton, Stanford, and Barratt [17] conducted validity studies with the BIS and found internal consistency coefficients ranging from .79 to .83 with the following samples: college students, substance abusers, psychiatric patients, and prison inmates. There are three subscales: non-planning, cognitive, and motor. We chose to use the non-planning and cognitive subscales because of their theoretical relevance to the dependent measures. The non-planning subscale evaluates the levels of concern for the future or future consequences of actions. The cognitive subscale evaluates the tendency to make decisions [29]. The BIS has good test-retest reliability [29]. The current study found adequate internal consistency reliability ($\alpha = .71$), which is consistent with most studies that used the BIS. As displayed in Table 1, the non-planning BIS subscale ranged from 1 to 4, ($M = 2.45$, $SD = 0.49$). The cognitive subscale ranged from 1 to 3.75, with a mean of 2.231, and a standard deviation of .528.

Statistical analysis

In order to assess the effects of various independent variables on emotional adaptation and adjustment in prison, the analyses proceeded in a series of interlocked steps. First, we conducted descriptive analyses on the characteristics of the study sample. Second, we employed Ordinary Least Squares regression analyses on two continuous dependent measures (BSI anxiety and depression scores) using aforementioned independent and control variables. Third, we executed binary logistic models by regressing the two dichotomous dependent variables (having more sleeping problems in prison and being more afraid in prison) on all independent and control (i.e., demographic) variables. Models were run using SPSS 17.0 software. Study variables were screened for missing values. Results suggested that cases were missing at random and therefore expectation maximization imputation methods were used.

Results

Table 1 provides descriptive statistics on the study sample. This sample's age distribution is 18-79 years old with a mean of 33.49 and a standard deviation of 8.45. The sample composition was as follows: Caucasians (38%), African Americans (53.5%), and other races (6.8%). Other races included Hispanics, Asians, Native Americans, biracial, and others. The variable "been in prison before" is measured dichotomously (yes=1, no=0). Thirty two percent of the population had been in prison before. The variable "area lived in before" is measured categorically and indicated that: 59.8% lived in an urban setting (city), 23.9% lived in a suburban/town setting, and 13.4% lived in a rural area. The variable "security classification" is measured categorically, and represents levels of risk of inflicting harm or damage on surroundings, people, and structure "environment", and was measured upon their admittance to the facility. Results indicated high levels of security (30.2%), medium levels of security (35.8%), and low levels of security (34%). As indicated in Table 1, 51.3% (n =413) of the population reported having trouble sleeping in prison. In addition, 22.2% (n= 179) of the population reported being afraid of being attacked in prison.

*** Insert Table 1 Here***

Depression and Anxiety in Prison

Findings from ordinary least squares (OLS) models, as reported in tables 2 and 3, indicate that both overall models were significant ($p<.001$) and explained 40.9 % of the variance in BSI-anxiety and 39.7% variance in BSI-depression. With respect to demographic variables, age was a significant predictor of BSI-anxiety ($\beta = .122$,

$p<.001$). Women older than 32 reported higher levels of anxiety than women younger than 32 years of age. With respect to race, there was a significant effect for BSI-depression ($\beta = -.075, p<.05$); Caucasian women indicated higher levels of depression. Security classification (high level) was a significant predictor for both BSI-anxiety ($\beta = .062, p<.05$) and BSI-depression ($\beta = .067, p<.05$). Being raised in a city was a significant inverse predictor of both BSI-anxiety ($\beta = -.084, p<.01$) and BSI-depression ($\beta = -.072, p<.05$).

Several personality disorders were significant predictors as well. Paranoid personality disorder was a significant predictor for BSI-anxiety ($\beta = .070, p<.05$), Schizotypal personality disorder for both BSI-anxiety ($\beta = .122, p<.001$) and BSI-depression ($\beta = .100, p<.01$), and Borderline personality disorder for both BSI-anxiety ($\beta = .220, p<.001$) and BSI-depression ($\beta = .217, p<.001$). Narcissistic personality disorder was a significant predictor for both BSI-anxiety ($\beta = -.090, p<.01$) and BSI-depression ($\beta = -.087, p<.01$). In addition, avoidant personality disorder was a significant predictor for both BSI-anxiety ($\beta = .156, p<.001$) and BSI-depression ($\beta = .221, p<.001$) and dependent personality disorder was a significant predictor of both BSI-anxiety ($\beta = .133, p<.001$) and BSI-depression ($\beta = .074, p<.05$). Both impulsivity scales were significant predictors of BSI-anxiety (nonplanning, $\beta = -.087, p<.01$ and cognitive, $\beta = .254, p<.001$); whereas, BIS-cognitive was a significant predictor for BSI-depression ($\beta = .189, p<.001$).

*** Insert Table 2 and Table 3 Here***

Sleeping and Being Afraid in Prison

Tables 4 and 5 reveal findings from the logistic regression models. These regression models tested both dichotomous variables “having trouble sleeping in prison” (*yes* = 1, *no* = 0) and “being more afraid to be attacked in prison” (*yes* = 1, *no* = 0). Fifty one percent of women experienced trouble sleeping in prison. Women who had been in prison before approximately 31% less likely to experience sleeping problems in prison than women who had not been in prison before (OR= .689 $p<0.05$). Women diagnosed with paranoid personality disorder were 62% more likely to experience problems sleeping in prison than women who were not diagnosed with paranoid personality disorder (OR= 1.62 $p<0.01$). Women diagnosed with narcissistic personality disorder were approximately 31% less likely to experience sleeping problems than women who were not diagnosed with narcissistic personality disorder (OR= .687 $p<0.05$). (See table 4).

*** Insert Table 4 Here***

Twenty-two percent of women experienced fear of being attacked in prison. Women belonging to racial minorities were 20% less likely to experience fear of being attacked in prison than Caucasian women ($OR= .800$, $p<0.05$). Women who had been in prison before were significantly less likely to experience fear of being attacked in prison than women who had not been in prison before ($OR= .417$, $p< 0.001$). Women who were diagnosed with paranoid personality disorder were more likely to experience fear of being attacked in prison than women who were not diagnosed with paranoid personality disorder ($OR= 1.63$, $p<0.05$). Women diagnosed with borderline personality disorder were approximately twice as likely to experience fear in prison as women who were not diagnosed with borderline personality disorder ($OR= 1.91$, $p<0.01$). Women diagnosed with narcissistic personality disorder were less likely to experience fear in prison than women who were not diagnosed with narcissistic personality disorder ($OR= .622$ $p<0.05$). Women diagnosed with dependent personality disorder were also more than twice as likely to experience fear of being attacked in prison than women who were not diagnosed with dependent personality disorder ($OR= 2.236$ $p<0.01$). (See table 5).

Insert Table 5 Here

Discussion

Study findings indicate that personality disorder and impulsivity are important predictors of how women adapt to incarceration. Women who enter prisons with certain personality profiles may thus be at risk for poor adjustment, along with emotional and behavioral problems within incarcerated settings. Specifically, incarcerated women diagnosed with schizotypal, borderline, avoidant, and dependent personality disorders as well as those who exhibit symptoms of cognitive-based impulsivity were more likely to have severe symptoms of anxiety and depression. Furthermore, women in prison for the first time and women meeting criteria for paranoid, borderline and dependent personality disorders were more likely to experience fear of being attacked in prison. Conversely, women diagnosed with narcissistic personality disorders reported significantly lower rates of fear of being attacked and having trouble sleeping in prison. These results indicate that incarcerated women with symptoms of narcissistic personality disorder are more likely to adapt successfully to the stressful prison environment.

Study findings contribute to the knowledge base on women's adjustment to prison in several ways.

Significant associations between many personality disorders and adjustment suggest that women enter prison with varying levels of disordered behavior and thoughts that can affect their adaptation to incarceration. As such, the relative stability of personality suggests that developmental processes earlier in the life-course carry over into the prison environment. Although there is considerable overlap between impulsivity and certain personality disorders such as borderline, histrionic, and antisocial, few research studies of women offenders have demonstrated strong links between personality and emotional adaptation behaviors while in prison. Future research would benefit from studying impulsivity as a mediator between personality disorders and symptoms of successfully adapting to prison among incarcerated women. As women prisoners exhibit high rates of personality disorders [18], present study findings confirm their importance to daily functioning while in prison [e.g., 12]. However, drawing firm conclusions regarding these relationships without due attention to diagnosing personality disorders and assessing their symptoms in the context of untreated anxiety and depression and other axis I disorders is clinically problematic.

Implications for Policy and Practice

Policy and practice in the incarcerated community are limited by institutional policies regarding day-to-day prison management, visitations, and contacts between inmates, inmate-guards, and inmate-treatment. Providers should consider the effects of personality disorders when examining behavioral adjustment in prison. Adapting prison responses to be sensitive to behaviors based on fear and anxiety, particularly for women diagnosed with personality disorders, are likely to see significant benefits such as lower violence, depression and anxiety rates. In addition, prisoner reentry programming should include extended support for women with personality disorders as this transition may again raise levels of anxiety among this population. The importance of treatment for women offenders while in prison is especially crucial given that recent research suggests that mental health treatment received while incarcerated is more plentiful and accessible than treatment offered in many communities. For example, Blitz, Wolff & Papp [3] investigated whether women in a New Jersey Correctional Facility with mental health needs were more likely to receive treatment in prison or in the community. This study revealed that 80 percent of women who needed mental health care received it in prison. Women also noted that their access to treatment in prison was greater than their treatment access in the community.

Highly defined symptoms and disorders will have a wide range of implications on continuity of care and support for the psychological well-being of this population both during incarceration and post-release. This is part of a sequence that facilitates links with evidence-based treatments - a necessary step towards improved outcomes. At a social policy level, the process of screening new inmates using well validated mental, psychological, and behavioral diagnoses procedures must be revisited, as well as the post-diagnosis application of appropriate mental health support. Development of mechanisms to address the mental health needs of this population could reduce behavioral infractions within the prison. Supportive counseling and orientation upon entry into the system may benefit women with diagnosed personality disorders or impulsivity problems. Better adjustment within secured facilities may result in women better embracing treatment services offered in prison. With aims to reduce recidivism, the prison system could benefit from overcoming obstacles such as poor adaptation and adjustment in order to affect real change among female offenders during their time spent incarcerated.

Limitations

The present results need to be considered in light of certain limitations. First, secondary data analysis restricts the breadth and specificity of measures available to assess emotional adaptation to incarceration; future research would benefit from employing more extensive measures, especially treatment data on axis I disorders. Moreover, research that investigates differential predictors of internal and external adaptive mechanisms as predicted through preexisting or developing personality disorders would be helpful. Second, though a large sample, we are not sure to the extent to which present study findings are generalizable to other samples of incarcerated women. As such, replication in other samples of women offenders is necessary. Despite these limitations, present study findings provide evidence of the role of personality disorders and impulsivity in relation to emotional adaptations in prison for women. This knowledge is useful for understanding various profiles of women who may have more difficulty with prison life. Adjusting prison policies and structures to address the anxiety and fear experienced by this subgroup may increase positive adjustment, and ultimately, may relate to more positive behavior change.

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