Symptom Patterns Related to Traumatic Exposure Among Female Inmates With and Without a Diagnosis of Posttraumatic Stress Disorder

Janet I. Warren, DSW, Ann Booker Loper, PhD, and Irina Komarovskaya, PhD

Our study examines the trauma-related experiences of 203 female prison inmates, most of whom had experienced chronic trauma throughout their lives but among whom only 51 percent met diagnostic criteria for PTSD. We used the two groups to study differences in trauma exposure and pre-existent psychopathology as they related to the emergence of full diagnostic criteria for PTSD. We also used the entire sample to explore the factor structure and endorsement frequencies of each symptom category as it related to trauma exposure. Our analyses indicated that the PTSD group differed from the non-PTSD group in the number of life traumas each group had experienced and the pre-existence of borderline personality disorder. Five symptoms accurately differentiated the two groups, with an 86 percent correct classification: recurrent thoughts, amnesia, loss of interest, difficulty concentrating, and a heightened startle response. An exploratory factor analysis further suggested two primary factors: intrusion and arousal. We apply our findings to the naturalistic versus interactional debate surrounding the disorder and reflect on the endorsement frequencies as they might inform our understanding of malingering as it occurs in legal and forensic settings.

The publication of the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III)[1] in 1980 has been described as a revolutionary act that changed the role and purpose of psychiatric diagnosis in America.[2] Separating itself from over 200 years of heavily laden theoretical explanations and descriptions of mental disease, it sought to eradicate the sway of etiology in favor of symptom-based description of conditions that were believed to be distinct and unique in their presentation. This radi-

cal change in perspective reflected a growing interest in psychiatric research and the need for standardized definitions that would allow for the reliable definition and comparison of conditions that were believed to reflect a zone of rarity, or constellation of behaviors that was categorically distinct from normal behavior.

Posttraumatic stress disorder (PTSD) was one of the new diagnoses that appeared in this context, positioned on the continuum of anxiety disorders but differentiated from it by its explicit connection to a particular traumatic event. This description, which associated the symptoms with a traumatic cause, contradicted the fundamental atheoretical philosophy of the extensive DSM revisionary enterprise.[2] Nonetheless, advocates for the condition were able to win the concessions necessary for its inclusion based on the condition's perceived historical significance and the clinical and financial needs of a significant number of returning Vietnam veterans.[3]

Dr. Warren is Professor of Psychiatry and Neurobehavioral Sciences, University of Virginia, Charlottesville, VA; Dr. Loper is Professor of Psychology, Curry School of Clinical and School Psychology, University of Virginia, Charlottesville, VA; and Dr. Komarovskaya is Postdoctoral Fellow in Forensic Psychology, Bellevue Hospital, New York City, NY. This research was funded by Grant 98-DE-VX-0027 from the National Institute of Justice, Office of Justice Programs, U.S. Department of Justice, to the University of Virginia. Points of view expressed in this article are those of the authors and do not necessarily represent the official position or policy of the U.S. Department of Justice. Address correspondence to: Janet I. Warren, DSW, Institute of Law, Psychiatry and Public Policy, P.O. Box 800660, UVA Health Systems, Charlottesville, VA 22908-0660. E-mail: jiw@virginia.edu

Since its formal recognition as a distinct and specific syndrome, the diagnosis has been characterized by debate and controversy both in research and clinical practice. The naturalistic position embraces the diagnosis and argues that PTSD is a naturally occurring response to extreme trauma reflected in human physiology and biology worldwide. Yehuda and McFarlane,[4] who advocate the diagnosis, contend:

> . . .[B]iological findings have provided objective validation that PTSD is more than a politically or socially motivated conceptualization of human suffering. Indeed, biological observations have delineated PTSD from other psychiatric disorders and have allowed a more sophisticated description of the long-term consequences of traumatic events [Ref. 4, p xi].

McFarlane[5] observes that the intrusive experiences associated with the disorder are unique and distinct from other psychiatric syndromes and can be tied specifically to the experience of the stressor. He references the success of disorder-specific treatments and contends that consistent measurable biology of PTSD characterized by hypothalamic-pituitary-adrenal (HPA) axis dysfunction and imbalances in cortisol regulation can be found among almost all those who report the various symptom patterns.

In contrast, McNally[6] argues that the syndrome derives from multiple interactive factors that are not unique or categorical:

> Yet, it is likely that PTSD is neither a natural kind nor purely socially constructed kind. There is a third possibility. PTSD may count as an interactive kind.[7] Unlike natural kinds found in nature, interactive kinds are affected by the very process of classification itself. . . . According to this perspective, PTSD is not "discovered" in nature, but co-created via the interaction of psychobiology and the cultural context of classification [Ref. 6, p 11].

Cautioning against "conceptual bracket creep," advocates of this position point both to the inconsistency of the basic assumptions embedded within the diagnosis and to its fluctuating appearance across types of traumatic events and their cultural contexts. These researchers question the disorder's implicit acceptance of an adversity-related stress model of behavior that assumes that trauma leads to psychiatric illness and that the more the trauma or stress, the greater the likelihood that pathologic symptoms will develop in response to it.[8] While acknowledging the physiological and psychological reactivity demonstrated by some individuals, they also point to the genetic loading of almost 30 percent found with PTSD in war veterans,[9] its comorbidity with other psychiatric conditions such as anxiety disorder and antisocial personality disorder,[10] and the association of its appearance among those with low intelligence and other functional deficits.[11]

Another sphere of controversy centers on the diagnosis' three-factor description of trauma-related symptoms (i.e, re-experiencing, avoidance and numbing, and physiological hyperarousal). Numerous studies have demonstrated a consistent relationship between heightened psychophysiological reactivity to cues reminiscent of a traumatic event.[12] However, as with the other criteria, there is inconsistency in this relationship, with over 40 percent of individuals with the diagnosis failing to reflect any form of physiological reactivity.[13] The re-experience of intrusive memories has also been found to be influenced by maladaptive appraisals of trauma and its aftermath and disturbances in autobiographical memory both are generalizable and nonspecific.[14,15] Moreover, factor analysis studies of the symptom criteria have indicated two- to five-factor solutions, suggesting that multiple diagnostically distinct solutions could be good fits for the data.[16–21]

A final point of contention centers on the exclusively self-reported nature of the symptoms and the apparent ease with which they can be malingered. Observing that little effort is needed to answer yes or no to a commonly known and easily accessible list of symptoms, many forensic practitioners question the legal and financial repercussions that have been afforded this diagnosis by the courts. Resnick *et al.* summarize this position, observing that "PTSD is an easy disorder to fake" (Ref. 22, p 112). They reflect on its subjective and self-reported nature and point to the success rate of naïve respondents in qualifying for this diagnosis 86 to 94 percent of the time when directed by researchers to dissemble.[23] Hall and Hall[24] point to the 2 million PTSD citations that can be found in a single PTSD Web search and describe the relevance of an in-depth examination of the flashbacks, dreams, amnesia, substance abuse, and treatment-seeking behavior of the individual, in forming the most accurate assessment of the validity of the symptom picture presented by the patient. Foa *et al.*[25] studied a group of assault victims and found that 60 percent reported sleep disturbance; 38 percent reported nightmares; and 45 percent reported flashbacks, associated with the traumatic event. They contrasted this inconsistent endorsement of symptoms with the patterns observed among the victims of the Aleutian Enterprise incident, which resulted

in the sinking of a large fishing vessel off the coast of Alaska. These plaintiffs endorsed insomnia, nightmares, and flashbacks 100 percent of the time, a pattern that was later found to emanate from coaching by the attorneys and sharing of symptoms among the plaintiffs.[26]

These diagnostic debates are of interest when exploring the differences and similarities demonstrated by the traumatized women in our study, some of whom met diagnostic criteria for PTSD and some of whom did not. Was this a reflection of individual differences in psychiatric morbidity and prior life experience or a reflection of disputable diagnostic rigor and noncategorical symptom descriptions? Prior research has demonstrated that female prison inmates have been subjected to a range and intensity of traumatic life events that far exceed that of the general population and that the occurrences are spread over multiple periods of their lives. Given these attributes, we were interested in exploring the individual and symptomatic factors that differentiated between these two groups as they might inform the theoretical questions concerning the syndromal integrity of the PTSD diagnosis. We were also interested in reviewing common symptom patterns among a group of trauma-exposed women who were not seeking treatment and who were not contemporaneously involved in any form of criminal adjudication or civil litigation.

Trauma and PTSD Among Incarcerated Women

Several studies have documented high rates of physical and sexual trauma among incarcerated women, ranging from 40 to 90 percent, a rate almost double that of women living in the community.[27–33] Results released by the Bureau of Justice Statistics on a nationally representative sample of female offenders[34] indicated that 43 percent of the incarcerated women reported physical and/or sexual assault before incarceration, with 34 percent reporting lifetime physical abuse, and 34 percent reporting lifetime sexual abuse. Similarly, the Report on Women in Prison[35] indicated that 40 percent of federal female inmates and 57 percent of state female inmates described having been sexually or physically abused before their period of incarceration. In a study of female prison inmates, Zlotnick[33] found that 48.2 percent of her sample met criteria for PTSD at the time of the study, and an additional 20 percent met

criteria at some point during their lifetimes. However, she found that the diagnosis of PTSD was embedded in a complex pattern of psychiatric morbidity, including major depression, borderline personality disorder, lifetime substance use, and somatization.

Comorbidity of PTSD With Axis II Disorders

The association between a childhood history of trauma and the emergence of some form of personality disorder is well established, although research has begun to document the complex set of gene-environment interactions that contribute to this etiological pattern.[36] Johnson et al.[37] found that women who experienced childhood sexual abuse demonstrated higher frequencies of avoidant, antisocial, and dependent personality disorders. Bierer et al.[38] found that childhood emotional abuse and neglect were broadly represented among personality disorders and were often associated with indices of clinical severity among patients with borderline personality disorder.

Some evidence suggests that a diagnosis of PTSD, rather than history of trauma, is associated with an increased likelihood of personality disorders.[39] Owens and Chard[40] found an association between PTSD and paranoid, schizotypal, borderline, avoidant, and dependent personality disorders in a sample of adult females with histories of childhood sexual abuse. Other researchers have explored borderline personality disorder as a trauma-related disorder,[41,42] with Zanarini et al.[43] arguing that PTSD is a common, although not universal, comorbid disorder among patients with borderline personality disorder. This relationship may well be bidirectional, with trauma leading to borderline personality disorder (BPD), and BPD and other Cluster B personality disorders contributing to higher levels of risk-taking and resultant trauma. Both traumatic histories and personality disorders are overrepresented among incarcerated individuals.[44–46]

Goals of the Present Study

We sought to build on the various diagnostic debates about the PTSD diagnosis while exploring the etiology and phenomenology of the trauma-related experiences, as described by the women in our two samples. We examined the differences in exposure to

trauma, comorbid psychopathology, and criminal and prison-related behavior of traumatized women who met the criteria for PTSD and that of traumatized women who did not. Our goal was to understand the effects of trauma on the life experiences of these disadvantaged women and to offer some empirical support to the diagnostic challenges embedded in this component of DSM nomenclature.

Methods

Sample and Recruitment Procedures

Women at a maximum-security state prison were invited to participate in a study of women coping in prison, a research study designed to examine the relationship between different forms of psychopathology and institutional adjustment and risk for violent behavior within the prison setting. From the initial contact, 802 inmates, a group that represented approximately 80 percent of the prison census, agreed to participate in the study. From this initial screening, 261 women were identified for clinical assessment based on their responses to the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) Personality Disorders Screen (SCID-II Screen) and the Brief Symptom Inventory (BSI), a 53-item, self-report psychiatric inventory. Data from institutional files were used to compare the women who agreed to participate in the study and those who did not as to age, race, offense type, and length of sentence. As summarized in an earlier publication, the research sample was slightly younger and had more counts of institutional misconduct, but did not differ on the variables of race (i.e, minority or not), violent criminal offending, sentence, or security classification from the general population of the prison.[47]

The SCID-II was used to screen in the inmates who self-reported symptoms suggestive of at least one personality disorder and the BSI to screen out those who self-reported symptoms of a psychotic illness. We had initially anticipated identifying a control group of at least 50 nonpsychotic women who did not meet the criteria for any personality disorders. However, our analysis of the screening data indicated that we could not locate 50 women in the larger sample of 802 women who did not self-report symptoms suggestive of at least one personality disorder. Of this group, 261 inmates underwent structured clinical assessment of personality disorders, and of that group 201 inmates participated in further interviews that explored criteria of PTSD and various types of substance abuse disorders. The decline in participation reflects the attrition that occurred naturally within the institution over an 18-month period due to the release of inmates and their transfer to other institutions.

Written informed consent was obtained from each of the women for each stage of data collection. The consent forms were written at a sixth-grade reading level, as assessed with Flesch-Kincaid software. Because this software requires only a 75 percent comprehension level at each designated grade level, we also read the consent materials to any inmates who demonstrated a slower rate of reading when observed within the larger group. All of the consent forms had been reviewed and approved by the University IRB Research Committee to ensure that they met all state and federal guidelines concerning research conducted among prison inmates. The confidentiality of the data was protected by federal statute based on the funding provided to the project by the Department of Justice.

As is typical in studies of incarcerated samples, most of the inmates (68%) were of minority status. The average age was 33.2 years (SD 8.96), and more than one-half of the women (52.6%) had not completed high school. There were no differences in any of these demographic variables between inmates who met criteria for PTSD and those who did not.

Assessment Instruments

Diagnostic Interview for DSM-IV-PTSD Module (DIS-PTSD) and Substance Abuse and Dependency Module (DIS-SAD)

The psychometric properties of the DIS have been studied extensively, including test-retest reliability studies, test-comparison studies, longitudinal studies, and factor analysis studies. These are summarized individually in the DIS manual.[48]

The DIS-PTSD queries respondents about 14 different types of traumatic events and their psychological responses to the events that they found the most distressing and disruptive. For the purposes of the present study, we categorized the inmates as either meeting or not meeting criteria for PTSD. They were deemed to meet the criteria if their retrospectively reported traumatic events and associated symptoms met the diagnostic criteria for PTSD.

The DIS-SAD closely follows the language and logic of the DSM-IV for assessing drug dependence, drug abuse, alcohol dependence, and alcohol abuse. Inmates are queried primarily about their past but also their present level of use of chemical substances and consequent functional impairments.

All of the DIS interviews were conducted by a single graduate student in clinical psychology who administered only the PTSD and substance abuse sections of the DIS after a careful review of the instrument and repeated practice sessions with her clinical supervisor.

Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II)

The SCID-II is a semistructured interview used for diagnosing the 10 DSM-IV Personality Disorders.[49] Studies of the structured clinical interview indicate good to excellent test-retest reliability,[50] and research within a prison population has found that the various personality disorder (PD) diagnoses are related to violence within the institution and prior criminal history.[51]

Training on the SCID-II involved a series of training sessions, mock interviews using the SCID-II Clinical Interview, and double coding of 10 inmate interviews by each interviewer. The presence of personality pathology was calculated by using both continuous and diagnostic scoring. The intraclass correlation coefficients (ICCs) for the 58 double-coded interviews ranged from 0.77 to 0.98 for the continuous scorings. The ICCs for the diagnostic cutoffs were substantially lower, ranging from 0.45 for schizoid personality disorder to 0.93 for antisocial personality disorder, with a unique ICC of -0.01 for schizotypal personality disorder, the latter being largely an artifact of the diagnosis occurring once in the 58 cases coded for reliability. To ensure a rigorous assessment of personality pathology, only the diagnostic cutoffs were used in the statistical analyses.

Brief Symptom Inventory (BSI)

The BSI[52] is a 53-item measure of mental health symptoms at a particular point in time. It contains nine scales, including somatization, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobia, paranoid ideation, and psychoticism. A continuous score that includes all the nine scales plus four general distress symptoms comprises the Global Severity Index. Test-retest reliability has been found to range from 0.68 (somatization) to 0.91 (phobic anxiety),[52–54] and research in prison has demonstrated that the BSI correlates with measures of prison adjustment, self-reported violence in the institution, and violent and nonviolent prison infractions.[46]

Victimization During Childhood and Before Incarceration (VCI)

The VCI is a questionnaire designed for the current study that queried the women on prior experiences with rape, sexual assault, incest, and nonsexual physical assault by an adult or other child before the age of 18 years and recent experiences (within the six months before incarceration) of rape, sexual assault, nonsexual physical assault, robbery, or theft. The data collected for the two periods were then summarized. We chose to create a very brief victimization screen, as it had to be completed in less than three minutes, and none of the existing trauma measures offered this degree of screening brevity.

Prison Violence Inventory (PVI)

The Prison Violence Inventory[46,47] is a measure of the amount of violence experienced and perpetrated by an inmate since arriving at a correctional institution. It includes yes/no questions concerning making threats; throwing objects at another inmate; pushing, grabbing, shoving, slapping, kicking, biting, or choking another inmate or guard; hitting with a fist or beating; forcing someone to have sex; threatening with a weapon; spreading rumors that are not true; telling lies to get another inmate in trouble; and stealing. The PVI provides three cumulative scores (physical violence, threats, and sexual assault) that can be combined into a total score. The measure has been used in a large sample ($n = 802$) of maximum-security female inmates. It demonstrates significant correlations with the Prison Adjustment Inventory[47] and the number of incidents of violent institution misconduct ($r = 0.35$), societal rule violations ($r = 0.25$), and institutional rule violations ($r = 0.32$).[46]

Prison Adjustment Questionnaire (PAQ)

The PAQ,[55] is a two-part measure. In the first segment, items were designed to assess adjustment in prison compared with adjustment in the community. These items included discomfort around inmates and correctional officers, feelings of anger, fear of being attacked, incidents of illness and injury, trouble sleeping, involvement in physical fights and arguments, and feelings of being taken advantage of by others. Prior research in female prison popula-

Table 1 Worst Trauma Identified by Each Inmate and Its Relationship to a Diagnosis of PTSD

Trauma	Trauma in Entire Sample*	Subsample: Trauma Judged Worst	Subsample: Trauma Judged Worst and PTSD Diagnosis
Violence victim	148 (73.6)	19 (12.8)	6 (31.6)
Shot or stabbed	70 (34.8)	11 (15.7)	4 (36.4)
Mugged	124 (62.7)	7 (05.6)	2 (28.6)
Held captive	43 (21.4)	1 (02.3)	0 (00.0)
Sexual assault victim	122 (60.7)	38 (31.1)	27 (71.1)
Sexual assault by relative	61 (30.3)	21 (34.4)	15 (71.4)
Sexual assault by non-relative	95 (47.3)	18 (18.9)	12 (70.6)
Disaster	55 (27.4)	0 (0.0)	0 (0.0)
Natural disaster	53 (27.4)	0 (0.0)	—
Hazardous materials	1 (0.5)	0 (0.0)	—
Illness/accident	94 (47.3)	10 (10.5)	1 (09.1)
Life-threatening illness	21 (10.4)	4 (19.0)	0 (00.0)
Serious accident	80 (39.8)	6 (06.3)	1 (16.7)
Harm to other	188 (93.5)	103 (54.2)	56 (54.4)
Seen serious injury/death	122 (60.7)	39 (32.0)	21 (53.8)
Unexpected discovery of dead body	30 (14.9)	3 (10.0)	1 (33.3)
Sudden death of friend/relative	172 (85.6)	53 (30.5)	30 (56.6)
Terrible event of friend/relative	86 (42.8)	8 (09.3)	4 (50.0)
Domestic violence	93 (46.3)	6 (06.5)	3 (50)
Other*	62 (30.8)	16 (25.8)	10 (55.6)

Entire sample *n* = 195 of 203. Data are the number of subjects (percentage of those experiencing each trauma).

tions suggests a two- rather than three-factor structure and significant relationships between self-reported psychological distress and prior incarceration for violent crime.[46]

Criminal History

Criminal history was assessed to determine whether the participant had been incarcerated for a violent crime including murder; a violent crime not including murder; and violent crimes including the various degrees of murder, attempted murder, abduction, malicious wounding, felony assault, simple assault, abuse and cruelty, and child abuse.

Institutional Misconduct

A file review was conducted for each inmate to ascertain the number of institutional tickets they had obtained between the time that the prison opened in April 1998 and the close of data collection in January 2000. Each count of institutional misconduct was assigned to one of three categories: violent infractions, nonviolent infractions that violate societal rules (e.g., theft), and behaviors that are rule infractions only because of the incarcerated status of the women (e.g., smoking in a nondesignated area or refusing to report for work).

Results

Of the 201 women in the sample, 195 (97%) reported exposure to at least one type of trauma that met diagnostic standards for the prerequisite Criterion A of the PTSD diagnosis. As a unified group, the women reported experiencing a mean of 5.5 traumatic experiences (SD 2.60) that fell across all 10 trauma types. Table 1 depicts the categories and specific types of traumas reported, those that were thought to be the worst trauma experienced by each inmate, and if these specific traumas were associated with a diagnosis of PTSD.

Nearly three-quarters of the sample, or 148 inmates, reported some previous exposure to violent victimization, most often involving some type of mugging. However, only a small portion of this group judged this experience to be the worst event they had experienced, and only six individuals from that group reported symptoms consistent with PTSD. By contrast, 188 inmates reported experiencing trauma associated with witnessing or experiencing harm to others, and of those, more than half indicated these traumas to be the worst of their recollection, with 56 of the inmates reporting symptoms consistent with a PTSD. Among the inmates who reported sexual victimization (*n* = 122), approximately one-third (*n* = 38) indicated this trauma to be their worst, with 27 meeting the criteria for PTSD. Women rarely reported traumas associated with natural disaster or serious illnesses or accidents to be the worst trauma that they had experienced, with only one inmate reporting sufficient

symptoms to meet criteria for life event PTSD diagnosis based on a serious automobile accident.

Because of the nature of the PTSD interview, only inmates who indicated that they had experienced at least one trauma were queried further regarding subsequent symptoms. Among this group of 195 women, inmates who met criteria for PTSD reported a greater number of traumas (t (df = 193) = 5.47, $p < .001$). Inmates who qualified for a PTSD diagnosis reported an average of 6.55 traumas (SD 2.19), while those who reported trauma that did not result in a PTSD diagnosis reported an average of 4.76 traumas (SD 2.38). Likewise, inmates who met criteria for PTSD reported a greater variety of traumas (t (df = 193) = 4.99, $p < .001$). Inmates who qualified for a PTSD diagnosis reported an average of 3.48 of 5 different categories of trauma (SD .96), while those whose reported trauma that did not result in PTSD reported an average of 2.71 categories of trauma (SD 1.19). We used logistic regression to explore whether both of these factors combined contributed to the diagnosis for PTSD and found that it was the number of traumas (B = 0.263, Wald = 5.29, $p < .05$), as opposed to the diversity of traumas (B = 0.249, Wald = 1.12, $p = .29$), that exerted the primary effect on the manifestation of PTSD-related symptoms.

Table 2 describes the specific symptoms reported by inmates who did and did not meet the criteria for a PTSD diagnosis. Recurrent intrusive thoughts of the experience, a symptom that is often generically associated with PTSD, was common both among those who met the criteria for PTSD and among those who did not. Amnesia, a symptom also often associated with some type of dissociation during a traumatic event, was found to be uncommon in both groups, with only 29 and 7 percent of the two groups, respectively, reporting this symptom.

Logistic regression was used to evaluate which symptoms most strongly distinguished between inmates who did or did not meet the criteria. Our primary interest in this analysis was to determine which specific symptoms, with other symptoms statistically controlled, explained most of the variance between the two groups. Results indicated that six symptoms were strongly associated with the diagnosis: "I kept thinking of it when I didn't want to" (B = −3.10, Wald = 6.84, $p < .01$); "I had amnesia and forgot all or part of it" (B = −2.29, Wald = 7.70, $p < .01$); "I lost interest in activities that I once

Table 2 Endorsement of PTSD Criteria by Inmates with PTSD Diagnosis and Inmates with No PTSD Diagnosis (N = 195)

	Symptom Present n (%)	
PTSD Diagnostic Criteria	PTSD Life Event (n = 103)	No PTSD Life Event (n = 92)
Re-experience symptoms		
Recurrent intrusive thoughts	100 (97.1)	76 (82.6)
Recurrent distressing dreams	82 (79.6)	38 (41.3)
Re-experience of trauma	89 (86.4)	43 (46.7)
Psychological distress at exposure to cues	96 (93.2)	55 (59.8)
Physical distress at exposure to cues	88 (85.4)	41 (44.6)
Avoidance symptoms		
Avoidance of thoughts	87 (84.5)	50 (54.3)
Avoidance of places	87 (84.5)	40 (43.5)
Amnesia	30 (29.1)	6 (06.5)
Diminished interest in activity	86 (83.5)	28 (30.4)
Detachment and estrangement	95 (92.2)	44 (47.8)
Restricted affect	71 (68.9)	30 (32.6)
Sense of foreshortened future	63 (61.2)	21 (22.8)
Arousal symptoms		
Sleep difficulty	91 (88.3)	42 (45.7)
Irritability/anger	85 (82.5)	47 (51.1)
Difficulty concentrating	96 (93.2)	39 (42.4)
Hypervigilance	76 (73.8)	59 (64.1)
Exaggerated startle response	78 (75.7)	27 (29.3)

N = 195. Sample includes only inmates who reported at least one trauma and were therefore queried on PTSD criteria. Data are the number experiencing the symptom (percentage of total group).

thought were important" (B = −1.53, Wald = 9.60, $p < .01$); "I had difficulty with concentration" (B = −1.67, Wald = 6.07, $p < .05$), and "I became jumpy or easily startled" (B = −1.56, Wald = 7.91, $p < .01$). Similar to a model with all symptoms as predictors, these five predictors led to an overall classification accuracy of 86.7 percent.

We examined how many of these particular salient symptoms were evident in our sample of PTSD inmates. Of the 103 women who met criteria for PTSD, 99 (96.1%) reported at least three of these five symptoms, and all of the subsample reported at least two symptoms. By contrast, of the 98 women who did not meet the criteria for PTSD, 35 (35.3%) reported at least three of these marker symptoms.

As summarized in Table 2, more than half of the women in both the PTSD and non-PTSD groups reported sexual and physical abuse before 18 years of age. There appeared to be no relationship between these early abuse experiences and the later emergence of PTSD. Similarly, early physical abuse was reported by 36 percent of the PTSD group and 38 percent of the non-PTSD group.

Table 3 Exploratory Factor Analysis of Symptom/Criteria Structure for All Traumatized Women

PTSD Symptom and Criteria Set	Factor 1 Intrusion	Factor 2 Arousal
C5 Detachment and estrangement	.596	.390
D3 Difficulty concentrating	.615	.348
B4 Distress at exposure to symbolic event	.598	.200
B5 Physiological reactivity to symbolic event	.595	.294
C2 Efforts to avoid activities and events	.551	.198
C1 Efforts to avoid thoughts and feelings	.527	.152
B3 Feeling like event is reoccurring	.513	.199
C4 Diminished interest and participation	.454	.377
B1 Keeps thinking about it	.398	.017
C7 Sense of foreshortened future	.343	.481
B2 Distressing dreams of event	.305	.602
D5 Exaggerated startle response	.273	.558
C3 Inability to remember parts of the trauma	−.024	.519
D1 Difficulty falling or staying asleep	.434	.445
D2 Irritability or outbursts of anger	.338	.408
C6 Restricted affect, for example, love	.308	.416
D4 Hypervigilance	.156	.224

$n = 195$.

To explore the factor structure of the symptoms associated with trauma exposure, we conducted an exploratory factor analysis using the entire group of 195 women who reported being exposed to at least one traumatic event. We used principal axis factoring and varimax rotation that yielded a two-factor model with Eigen values greater than 1.0. The rotated factor solution explained approximately 34 percent of the variance. Hypervigilance did not have sufficient loading on either factor, with one item, sleep difficulty, cross loading on the two factors above .40 and three more at above .35 (detachment, concentration, and diminished interest). Although there was a correlation between the two factors ($r = 0.32$, $p < .001$), it was not of significant magnitude to require oblique rotation. Factor loadings for individual items are summarized in Table 3. Intrusion and arousal, two factors identified in earlier research, capture to some extent the two factors identified in the current analyses.

In exploring the relationship with the 10 personality disorders, we found that inmates with PTSD were judged to have fewer schizoid personality disorder symptoms ($t = 2.47$, $df = 199$, $p < .05$) and more symptoms of both borderline personality disorder ($t = 2.32$, $df = 199$ $p < .05$) and avoidant personality disorder ($t = 2.08$, $df = 199$, $p < .05$).

On a symptom level, these associations in PTSD reflect significant correlations between avoiding reminders and avoidant PD ($r = 0.172$, $p = .02$); amnesia and borderline PD ($r = −0.328$, $p = .48$);

and loss of interest in activities and avoidant PD ($r = 0.179$, $p = .013$), schizoid PD ($r = −0.173$, $p = .016$), and borderline PD ($r = 0.158$, $p = .028$). Inmates with a diagnosis of PTSD also reported more alcohol dependence symptoms than did inmates without the diagnosis ($t = 2.33$, $df = 199$, $p < .05$). However, there were no differences between the two groups in alcohol dependence diagnosis, drug dependence diagnosis, or number of drug-related symptoms.

There were no differences between the two groups in self-reported symptoms of mental illness, as measured by either the subscales of the Global Severity Index of the Brief Symptom Inventory (BSI). Inmates with PTSD scored significantly higher on the Spielberger Trait Anger subscale ($t = 2.27$, $df = 135$, $p < .05$).

Of theoretical interest is the relationship between the trauma exposure and the pre-existent or perhaps resultant clinical features of an individual's psychological condition. To further explore this relationship, we conducted a logistic regression that examined the combined significance of clinical factors, early abuse, and the level of trauma exposure. We found that only the total number of traumas ($B = 0.37$, Wald $= 24.03$, $p < .001$) and a diagnosis of borderline personality disorder ($B = 0.90$, Wald $= 4.81$, $p < .05$) significantly predicted a diagnosis of PTSD.

We also explored the inmates' prison adjustment and behavior and their criminal histories. The data indicate no differences in the two-factor scales of the Prison Adjustment Questionnaire (PAQ) developed in earlier research: the Conflict and Emotional Distress factors.[47] Similarly, no differences were found between the PTSD and non-PTSD groups in their institutional violent and nonviolent infractions through either official or self-report. The two groups (i.e., PTSD and non-PTSD) differed in rule violations in the institution, with the PTSD group being less often involved in institutional infractions involving rule violations only ($F = 17.87$, $t = 2.59$, $df = 190$, $p < .01$). The criminal history of the two groups was comparable. There were no significant differences in violent offenses including murder, violent offenses excluding murder, and nonviolent offenses.

Discussion

Our data illustrate the controversy surrounding the diagnosis of posttraumatic stress disorder. There

are indications of the adversity-related stress model in the experience of these women as reflected in the impact that the number of traumatic life events exert on the emergence of this constellation of symptoms. Women who experience more trauma were more likely to meet the diagnostic criteria for PTSD. However, equally compelling was our finding that the pre- or comorbid existence of a personality disturbance was associated with the development of this particular constellation of symptoms. The women who met the diagnostic criteria for BPD were more likely than the women with other personality disorders to report symptoms that met the diagnostic criteria for PTSD. Our sample did not contain enough women who were free of any PD diagnosis to expand this observation to such women, although it might be assumed that this trend would be observed in a less impaired population. Our findings underscore that exposure to trauma is not of itself sufficient to create PTSD and that many women experience many of the same symptoms without meeting full diagnostic criteria.

The specificity of the association of PTSD with BPD in particular further suggests that there is an association between the emotional dysregulation and affective instability that characterizes BPD experience and the wide range of symptoms that define PTSD. This finding may have relevance to the evaluation of PTSD in the context of civil litigation where the debate becomes polarized between the diagnosis of PTSD and the co-occurrence of borderline-related symptoms. These two different diagnoses become grist within the adversarial dynamic of the court, with the former being used to argue for a trauma-related and acute condition and the latter for a long-standing and multidetermined pattern of personality maladjustment. The impact of the other two PDs, avoidant and schizoid, were found to be associated with self-reported withdrawal and loss of interest in activities, suggesting that these symptoms are related more to extant personality profiles than to depression, as suggested by some researchers.

The presence of comorbidity was further illustrated in the exploratory factor analyses that were conducted with our data. Perhaps most important, we found, as have other researchers, no indication of the three-factor symptom cluster that is embedded in the formal diagnosis of PTSD (i.e, re-experiencing, avoidance, and arousal). Our findings more closely resembled in structure those of Taylor et al.,[21] who identified a two-factor model made up of intrusion and arousal. While our individual factors loaded differently from those reported by these authors, they did reflect a similar sense of struggling with intrusive memories and the psychological and physiological arousal that accompanies this process. The specific differences in item loading may be to some extent an artifact of our sample's being made up only of women. There is clearly a sex-related loading in these symptoms, with women found to have at least twice the rate of PTSD in all of the community studies that have been conducted in the United States, Germany, and Sweden. A similar overrepresentation of women has also been found in community studies of borderline personality disorder, suggesting that the pairing of the two diagnoses may have created sex-specific trends within our data.

The experience of the inmates within our sample also illustrates the broad range of symptoms that develop in response to trauma, even when these symptoms are not equated with a diagnosis of PTSD. We found within our sample no symptoms that were associated with trauma exposure solely in the PTSD group and no category of symptoms that received full endorsement by the majority of inmates who ultimately received a diagnosis of PTSD. Our PTSD sample endorsed a mean of 4.4 (of 5) symptoms of re-experiencing, 5.0 (of 7) symptoms of avoidance, and 4.1 (of 5) symptoms of arousal symptoms. The non-PTSD group of women endorsed the same type of symptoms but with less frequency and less consistency across the various clusters. This finding has significance to our more general understanding of trauma and the processes that are involved in seeking to resolve these experiences over time. It does not appear that our data support the premise of a zone of rarity, as is implied in the psychiatric diagnosis. Rather, our data support Ian Hacking's interactional hypothesis,[7] which suggests that human experiences are classified in ways that reflect personal experience combined with social and cultural needs.

This psychiatric labeling of particularly severe reactions to trauma has historically served us well in defining our responses to individuals who have been traumatized by their war experiences. Beginning with the Boer War and extending through the Iraq War, we have used this constellation of symptoms to define the injury, which we are addressing through psychological treatment and financial support. Undoubtedly, this use of the DSM has served to define and solidify our responsibility to others in a humane

way. However, the relevance of this diagnosis to other financially motivated decisions and the role it has adopted in popular culture suggests that it is also open to misinterpretation and imprecision. Perhaps even more important, its categorical basis suggests that the human response to trauma is an all or nothing affair and that the struggles of those who do not fit this particular classification are of less importance to us psychiatrically, culturally, and legally.

In terms of individual experience, we were surprised to find that most of the women in our sample did not identify being mugged, shot, raped, or the target of domestic violence as the subjectively worst type of trauma that they had experienced. Rather, most of our inmates reported that observing a serious injury or death of another was the worst trauma they had experienced. It is possible that this type of attribution reflects a difference between the sexes in the importance that is ascribed to interpersonal relationships by women in contrast to men. It may also reflect the psychological numbing that follows chronic exposure to different forms of violence. Whatever their meaning, these data underscore the ability of these women to adapt to the most traumatic of life's circumstances and yet to continue to experience themselves as individuals who are most clearly defined by their relationship with and to others. This finding may have significance for the interventions that we use in the face of extreme trauma and violence and the importance we might optimally ascribe to maintaining and developing relationships as the means by which the resolution of trauma can be best achieved.

In terms of the symptoms that best differentiated our PTSD and non-PTSD groups, we found that there were five symptoms that could be used to classify each woman with an 86.7 percent correct classification: the presence of amnesia (29% by the PTSD groups and 7% of the non-PTSD group), recurrent intrusive memories (97% of the PTSD group and 83% of the non-PTSD group), a diminished interest in activities (84% versus 30%), difficulty in concentrating (93% versus 42%), and the presence of an exaggerated startle response (76% versus 29%). These findings do not suggest any apparent theoretical or clinical distinction between the two groups and hence again suggest a difference that is more quantitative than qualitative.

The finding concerning amnesia is rather interesting, although of limited clinical significance because of the small sample size. It does, nonetheless, hark back to the early attempts to treat war neurosis through efforts to bring the traumatic memory into consciousness and to cure the individual through trauma-related abreaction. The presence of intrusive memories as a defining characteristic of the PTSD constellation also embodies Kardiner's 1941 seminal attribution of Freud's repetition compulsion as a cornerstone of the inner logic[2] of the PTSD diagnosis. This theoretical construct seeks to describe the mind's efforts to resolve trauma through the replaying of the traumatic event in an effort to transform and assimilate its meaning.

Of interest in the inquiry as it pertains to the ease with which symptoms of PTSD can be malingered was the finding that only 2.9 percent of the sample that met the criteria for PTSD endorsed 100 percent of the symptoms of PTSD. As summarized in Table 2, most inmates who met the diagnostic criteria did so by endorsing the majority but not all of the symptoms in each of the three categories. These ranged from a high of 88 percent of the re-experiencing symptoms to a low of 71 percent of the avoidance symptoms. These frequencies suggest that the clinical criteria cluster differently in different individuals. This finding may have relevance to efforts to identify malingered illness where, as seen in the Aleutian Enterprise, 100 percent endorsement of all symptoms was associated with attorney coaching and symptom sharing among litigants.

From a purely criminological perspective, our data were consistent in demonstrating no relationship between PTSD, adjustment, and behavior in prison, at least among our female inmates. The women with PTSD did not adjust more poorly to prison and were less inclined to be involved in rule infraction behavior. Earlier research conducted in this sample suggests that many of these women felt safer in prison than they did when living in the community and that they experienced prison as a relatively safe place in which to mend from experiences that occurred when living in the community. There was also no relationship with PTSD and any type of violent behavior either as reflected in their criminal history or by self-report, a finding that is indicative of an elusive relationship between exposure to trauma and violent behavior in general. Obviously, our sample reported extremely high levels of exposure to trauma, and each subject was incarcerated at a maximum-security prison. However, these factors were not indications

that being the victim of physical violence either as a child or as an adult predisposed these particular women to higher rates of violence toward others.

In closing, we would like to identify the limitations of our study. Our diagnosis of PTSD was based on a retrospective assessment of lifetime trauma and the psychological reactions to it, a procedure that is known to create errors in memory and subjective assessments of complex human emotions. This procedure, however, is not uncommon in PTSD research and reflects a clinical assessment that is believed to be superior to paper and pencil self-report measures of the symptom clusters. It is also difficult to assert that the participants' reports of their experiences were completely veridical. It is possible that some participants could have dissembled about their past, even after they were told that their reports would be kept confidential and anonymous. Our sample was also of limited size and reflects the experience only of women approached in a highly unique prison setting. It may be that the relationships we have observed are specific to this particular disadvantaged group who have also lived a life compounded by limited resources, curtailed life opportunities, and interpersonal relationships that are often tumultuous and violent. Despite these limitations, we hope that our description of this traumatized group will help to inform understanding of the effects of chronic trauma and the meaning and significance of this highly salient diagnosis to the comprehension of psychiatric nomenclature.

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