Childhood Trauma, Psychiatric Disorders, and Criminal Behavior in Prisoners in Germany: A Comparative Study in Incarcerated Women and Men

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Objectives: Previous studies indicate high rates of childhood trauma experiences as well as of mental disorders among prisoners. In this study, we investigate (1) the prevalence of different kinds of early traumatic experiences in female and male incarcerated prisoners, (2) their associations with mental disorders, and (3) their associations with characteristics of criminal behaviors.

Method: The Childhood Trauma Questionnaire, Structured Clinical Interviews for DSM-IV Axis I and II Disorders, and Symptom Checklist-90-Revised (current psychopathology) were administered, and the subjects' criminal and arrest histories were obtained. All assessments were performed between May 1, 2002, and June 1, 2003.

Results: Comparable sample groups of 63 incarcerated women and 76 men participated. Apart from low rates of short stay prisoners and foreign nationals, the sample was comparable with all prisoners in North-Rhine Westfalia (largest state in Germany). A history of at least 1 type of moderate or severe childhood trauma was reported by 50.4% of the prisoners. In 86.3%, ≥ 1 lifetime Axis I disorder was found (current, 83.5%), and a high mean number of comorbid diagnoses was found (mean ± SD lifetime = 3.6 ± 3.3, current = 2.9 ± 2.7). In 53.2% of the sample, at least 1 Axis II (personality) disorder was diagnosed. The numbers of comorbid Axis I lifetime and current disorders as well as the number of lifetime Axis II disorders were significantly ($p < .001$) associated with the severity of childhood trauma history, indicating a dose-response relationship. Negative associations were observed between the severity of childhood trauma and age at first offense.

Conclusion: Severity of childhood trauma experiences is associated with the presence and number of Axis I and Axis II mental disorders and may play a crucial role in the development of these disorders.

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Childhood adverse events and traumata in prisoners have been widely reported. In a study of 301 sentenced male offenders, two thirds reported incidents of childhood victimization such as physical and sexual abuse as well as neglect.[1] In a study of 601 sentenced offenders, Dutton and Hart[2] noted that 41% had experienced severe childhood abuse.

In addition, a high proportion of prisoners have been found to suffer from severe mental disorders, with prevalence rates exceeding those in the general population. In their meta-analytic overview of 62 studies of 12 countries, Fazel and Danesh[3] found psychotic disorders in 4% of females and 3.7% of males and major depression in 12% and 10%, respectively. Several further studies reported prevalence rates of substance use disorders (SUD) ranging from 25% to 40%.[4–6] Zlotnick[7] and Cauffman et al.[8] reported that two thirds (68% and 65%) of female inmates suffered from lifetime/chronic posttraumatic stress disorder (PTSD). Teplin et al.[9] showed a 3-fold prevalence rate of PTSD in female inmates as compared with the general female population. High prevalence rates of personality disorders (47% in females and 65% in males) were also reported in prisoners, with antisocial personality disorder in 47% of male and 21% of female inmates as well as borderline personality disorder in 25% of female prisoners.[3]

It has remained unclear whether the high rates of mental disorders seen in prisoners are associated with child-

hood adverse and/or traumatic experiences. In the general population, substantial evidence of such an association was reported for Axis I[10] as well as for Axis II mental disorders.[11] Few studies focused on the association of childhood trauma and criminal behaviors: Rivera and Widom[12] showed childhood victimization to be a significant risk factor for violent crimes as well as for juvenile delinquency. In the Dutton and Hart study,[2] the incidence of violent crimes perpetrated was twice as high in victimized offenders as in those without such experiences.

The aim of this study was to comprehensively investigate the prevalence of different types of childhood trauma as well as Axis I and II psychiatric disorders including current psychopathology in female and male incarcerated prisoners. We hypothesized that prevalence and comorbidity rates of mental disorders as well as characteristics of criminal behaviors are associated with the presence or absence of childhood trauma history or even with its severity.

METHOD

Study Environment

In 2002, there were 902 places for all types of imprisonment of women (678 places for incarceration) in North-Rhine Westfalia (NRW),[13] the largest state in Germany with 18.5 million inhabitants (about 23% of the total German population). The investigation took place in the prison Bielefeld Brackwede I, which manages nearly all types of short- and long-term incarcerations. It comprises 69 places for women and 481 places for men who are not allowed to leave the prison at all during their stay (in Germany, there are also prisons for persons who are—for example, at the end of their time of imprisonment—allowed to leave the prison during the daytime, e.g., to work outside). The total occupancy on May 1, 2002, (index day) was 105 women and 584 men. After admission, all prisoners undergo a medical examination and a clinical assessment of their medical and psychiatric history including previous treatments.

Study Design, Sample Stratification, and Procedure

This institutional epidemiologic investigation was designed to study all women who were incarcerated on May 1, 2002. Because the number of men exceeded the number of women in the prison, and in order to investigate comparable samples of male and female participants, male inmates were not randomly enrolled but were enrolled only if they met matching criteria according to age (< 21, 21–25, 26–30, 31–40, 41–50, > 50 years) and type and duration of incarceration (detention pending trial, imprisonments < 6 months, 6–12 months, 13 months–5 years, 6–15 years, > 15 years). Nationality was also considered as a criterion when a male prisoner of the same nationality was present. Because not all chosen male prisoners could be studied in time during the first study period, the procedure was repeated on February 1, 2003, and the male subsample was completed. On this day, 582 men were incarcerated. Because more men than the number of women met matching criteria, the number of the male participants is somewhat greater (see below). All examinations were performed between May 1, 2002, and June 1, 2003. Participants were informed that no treatment could be offered by the study team. All participants gave written informed consent. The study was approved by the Ministry of Justice of North-Rhine Westfalia. Subjects received financial remuneration of ¤10 for their efforts.

Sample

Of the 105 enrolled female prisoners, 2 had too little knowledge of the German language, 31 refused to participate, and 9 were discharged before the examination could be completed. Sixty-three female prisoners completed the examination. Of all 197 enrolled male prisoners, 8 had too limited language capacities, 36 refused to participate, and 75 were discharged before examination. One male prisoner was deemed to be too dangerous to be examined, and 1 suffered from a severe medical condition and died some months later. Seventy-six male prisoners completed the examination. Basic data were obtained from all participants as well as from primarily enrolled nonparticipants and could be compared: In neither gender were there significant group differences regarding age, family status, religion, or types of offenses (numbers and rates of the nonparticipants available from the authors on request). However, female and male participants had a greater number of previous convictions ($t = 3.8$, $p < .001$, and $t = 2.1$, $p < .05$) and a longer term of current incarceration ($\chi^2 = 19.6$, $df = 6$, $p < .01$ and $\chi^2 = 40.5$, $df = 5$, $p < .001$) than nonparticipants. These differences are a consequence of our strategy of stratification because short stay prisoners were more likely to be discharged before being studied and short stays at prison are more likely in those with few or no previous convictions. In addition, the rate of non-German Europeans was greater among male nonparticipants than among male participants ($\chi^2 = 11.9$, $df = 2$, $p < .01$).

On March 31, 2002, 653 female and 11,830 male persons (Statistisches Bundesamt Deutschland [Federal Bureau of Statistics Germany][13]) were incarcerated in NRW. Based on the data provided by the Ministry of Justice NRW, we compared our sample (only participants) with these total prison populations for both genders separately. Our female subsample did not differ with regard to age ($\chi^2 = 7.8$, $df = 4$, NS) or nationality ($\chi^2 = 0.6$, $df = 1$, NS), but it did show a lower proportion of short current incarcerations ($\chi^2 = 29.7$, $df = 4$, $p \leq .001$), i.e., the proportion of those with incarceration below 6 months was 9.6% versus 36.6% in all NRW prisoners. The age distribution of our male subsample moderately differed from that of the total male population ($\chi^2 = 13.2$, $df = 4$, $p \leq .025$), while

the proportion of foreign nationals was substantially smaller in the subsample (6.6% vs. 30.6%; $\chi^2 = 12.0$, df = 1, $p \leq .001$). This was a consequence of our strategy of constituting a comparable male sample. Furthermore, incarcerations <6 months were also less frequent in our male subsample than in the total male population (7.9% vs. 23.1%; $\chi^2 = 13.4$, df = 4, $p \leq .01$).

Assessment

Apart from a separate sheet for demographic characteristics, an instrument for the assessment of the legal history was developed. Sources of information were the subjects themselves as well as the prison's records of the subjects' legal and medical history. Childhood trauma history was assessed by means of the Childhood Trauma Questionnaire (CTQ),[14] a self-report inventory covering experiences of emotional and physical abuse, sexual abuse, and emotional as well as physical neglect during childhood and youth. The 28 items are presented using 5-point Likert-type scales with the response options "never true," "rarely true," "sometimes true," "often true," and "very often true." The CTQ was extensively investigated in different and large clinical and nonclinical populations and was found to be a valid and reliable instrument (e.g., test-retest reliability, intraclass correlation coefficients r = 0.76 to 0.86).[14]

Lifetime and current (6 months) psychiatric diagnoses were obtained with the Structured Clinical Interviews for DSM-IV Axis I and II Disorders (SCID I and II)[15]; German versions by Wittchen and Fydrich[16] were used. Current psychopathology was assessed using the Symptom Checklist-90-Revised (SCL-90-R).[17] We also applied the DSM-IV Axis V Global Assessment of Functioning Scale (GAF) and estimated the global severity of the current psychiatric condition using the General Severity Scale by Cooper.[18] All assessments were performed by 1 psychologist (T.S.) and 2 medical doctors (B.W.; Ulrike Botthof, M.D.), all of whom had clinical psychiatric experience of more than 3 years and had been trained for the present study. Furthermore, they were under ongoing supervision by psychiatric consultants (C.-E.S., M.D.).

Statistical Analyses

Data were gathered in paper-and-pencil format and transferred to an SPSS data sheet (SPSS Inc; Chicago, Ill.). Statistical procedures were performed using SPSS version 10.0 and included the χ^2 test with Yates correction, t tests, and the 1-way procedure for univariate analyses as well as analyses of covariance (ANCOVAs) for multivariate analyses. To analyze the association between severity of childhood trauma and dependent variables (e.g., prevalence rates), a weighted CTQ global score was established (scores of all items/number of items) that can reach values from 1 to 5. In a second step, the sample was subdivided along the quartiles of this CTQ global score.

Table 1. Sample Characteristics

Characteristic	Total (N = 139)	Male (N = 76)	Female (N = 63)
Age, mean ± SD, y	34.0 ± 9.8	34.1 ± 10.6	33.9 ± 9.0
Nationality, % (N)			
German	89.2 (124)	93.4 (71)	84.1 (53)
European states	5.0 (7)	5.3 (4)	4.8 (3)
Non-European states	5.8 (8)	1.3 (1)	11.1 (7)
Marital status, % (N)			
Never married	51.1 (71)	64.5 (49)	34.9 (22)
Married	24.5 (34)	17.1 (13)	33.3 (21)
Divorced	22.3 (31)	18.4 (14)	27.0 (17)
Widowed	2.2 (3)	0.0 (0)	4.8 (3)
Religion, % (N)[a]			
Protestant	40.6 (56)	48.0 (36)	31.7 (20)
Catholic	37.0 (51)	28.0 (21)	47.6 (30)
Islamic	4.3 (6)	5.3 (4)	3.2 (2)
Others	6.5 (9)	6.7 (5)	6.3 (4)
None	11.6 (16)	12.0 (9)	11.1 (7)
Education, % (N)			
No degree (8 years of school or less)	23.7 (33)	21.1 (16)	27.0 (17)
School for the disabled	5.0 (7)	6.6 (5)	3.2 (2)
Lower degree (9 years)	18.7 (26)	18.4 (14)	19.0 (12)
High school (10 years)	8.6 (12)	10.5 (8)	6.3 (4)
Gymnasium (13 years)	3.6 (5)	3.9 (3)	3.2 (2)
University degree	2.9 (4)	3.9 (3)	3.2 (2)
Certificate of apprenticeship	37.4 (52)	35.5 (27)	39.7 (25)
Employed before arrest, % (N)	33.8 (47)	44.7 (34)	20.6 (13)

[a]Data missing for 1 male subject.

RESULTS

Demographic and Forensic Characteristics

The participating prisoners had a mean age of 34 years, and three quarters of them were unmarried (Table 1). About one quarter had limited formal education, and one third was not employed before being incarcerated. The types of criminal offenses committed differed significantly between female and male participants (Table 2). While 31.7% of the incarcerated women had committed offenses against narcotics laws, the number of men imprisoned for this type of offense was only 7.9%. The male participants were more often imprisoned because of robbery/blackmail, sexual assault, traffic offenses, and fraud/deception. The mean duration of time served during the current prison term as well as of the lifetime cumulative imprisonment was significantly longer for the male participants than for female participants (Table 2). The number of previous convictions was also significantly higher in men, and the mean age when committing the first offense was lower (16.9 vs. 19.4 years).

Trauma History

In the CTQ, a high percentage of the prisoners reported severe childhood traumatic experiences (Table 3): 23.7% suffered from severe emotional abuse, 24.5% from severe physical abuse, 33.1% from severe emotional neglect, and 5.0% from severe physical neglect. Moderate or severe childhood trauma in at least 1 of these categories was

Table 2. Criminal History

Forensic Characteristic	Total (N = 139)	Male (N = 76)	Female (N = 63)	Test Result	p
Types of criminal offenses, % (N)				$\chi^2 = 35.4$[a]	< .001
Sexual assault	3.6 (5)	6.6 (5)	0.0 (0)		
Homicide	10.8 (15)	9.2 (7)	12.7 (8)		
Physical attacks	8.6 (12)	6.6 (5)	11.1 (7)		
Larceny/embezzlement	29.5 (41)	31.6 (24)	27.0 (17)		
Robbery/blackmail	8.6 (12)	11.8 (9)	4.8 (3)		
Receiving of stolen goods	1.4 (2)	0.0 (0)	3.2 (2)		
Fraud/deception	10.8 (15)	13.2 (10)	7.9 (5)		
Forgery of documents	1.4 (2)	1.3 (1)	1.6 (1)		
Other offenses	3.6 (5)	6.6 (5)	0.0 (0)		
Narcotic drugs law	18.7 (26)	7.9 (6)	31.7 (20)		
Traffic offenses	2.9 (4)	5.3 (4)	0.0 (0)		
Duration of current imprisonment, mean ± SD (range), mo	21.4 ± 31.2 (0–221)	26.0 ± 38.1	16.0 ± 18.9	t = 2.0	< .05
Age at first offense,[b] mean ± SD (range), y	18.1 ± 7.5 (6–48)	16.9 ± 6.5	19.4 ± 8.4	t = 2.0	.051
No. of previous convictions, mean ± SD (range)	3.8 ± 4.3 (0–21)	4.8 ± 4.8	2.5 ± 3.2	t = 3.4	.001
Lifetime duration of imprisonment, mean ± SD (range), mo	47.0 ± 52.3 (0–312)	65.5 ± 62.8	25.4 ± 22.1	t = 5.0	< .001

[a]df = 10.
[b]Whether or not offense led to legal proceedings.

Table 3. Types and Severity of Early Traumatization, Childhood Trauma Questionnaire, % (N)

Type of Trauma	Total (N = 139)	Male (N = 76)	Female (N = 63)	Significance[a] χ^2	p
Emotional abuse				1.9	NS
None	46.0 (64)	50.0 (38)	41.3 (26)		
Low	22.3 (31)	19.7 (15)	25.4 (16)		
Moderate	7.9 (11)	9.2 (7)	6.3 (4)		
Severe	23.7 (33)	21.1 (16)	27.0 (17)		
Physical abuse				0.3	NS
None	51.1 (71)	50.0 (38)	52.4 (33)		
Low	17.3 (24)	18.4 (14)	15.9 (10)		
Moderate	7.2 (10)	7.9 (6)	6.3 (4)		
Severe	24.5 (34)	23.7 (18)	25.4 (16)		
Sexual abuse				10.4	.016
None	77.0 (107)	84.2 (64)	68.3 (43)		
Low	5.8 (8)	6.6 (5)	4.8 (3)		
Moderate	7.9 (11)	6.6 (5)	9.5 (6)		
Severe	9.4 (13)	2.6 (2)	17.5 (11)		
Emotional neglect				3.8	NS
None	30.2 (42)	23.7 (18)	38.1 (24)		
Low	24.5 (34)	25.0 (19)	23.8 (15)		
Moderate	12.2 (17)	13.2 (10)	11.1 (7)		
Severe	33.1 (46)	38.2 (29)	27.0 (17)		
Physical neglect				0.9	NS
None	59.7 (83)	56.6 (43)	63.5 (40)		
Low	30.9 (43)	34.2 (26)	27.0 (17)		
Moderate	4.3 (6)	3.9 (3)	4.8 (3)		
Severe	5.0 (7)	5.3 (4)	4.8 (3)		

[a]df = 3.
Abbreviation: NS = nonsignificant.

reported by 50.4% of the prisoners. There were no gender differences apart from sexual abuse, which was more often reported by female subjects, with moderate or severe sexual abuse in 27.0% (compared to 9.2% by male subjects).

Trauma History and Mental Disorders

In 86.3% of all participants, we found at least 1 lifetime Axis I mental disorder, and in 83.5%, at least 1 current Axis I mental disorder, i.e., during the last 6 months (Tables 4 and 5). The current but not lifetime prevalence was associated with the severity of childhood trauma history, i.e., with the CTQ total score. We also observed a significant association between severity of trauma and the number of comorbid Axis I lifetime and current disorders. This association is characterized as a nonlinear dose-response relationship. Gender played a significant role with higher rates of lifetime and current Axis I disorders in female prisoners.

More specifically, regarding Axis I diagnostic categories, we found significant associations between the severity of childhood trauma and prevalence rates of lifetime and current SUD and lifetime and current anxiety disorders. These latter effects were mainly due to the association between childhood trauma severity and PTSD prevalence rates (Tables 4 and 5). It is noteworthy that neither lifetime nor current prevalence rates of psychotic or affective disorders were associated with childhood trauma history at the $p < .01$ level.

Prevalence rates of any as well as the mean number of personality disorders also significantly increased with an increasing severity of childhood trauma experiences ($p < .001$ each, Table 4). The same was true for the prevalence of cluster B and cluster C disorders, specifically for antisocial personality disorder ($p = .001$) and borderline personality disorder ($p = .023$). In addition, gender had a significant effect, with a higher number of personality disorders in female than in male subjects.

Analyses of the GAF scores yielded a significantly lower level with increasing severity of childhood trauma history ($p = .001$), while the SCL-90-R Global Severity Index was positively associated ($p = .021$, Table 5).

Trauma History and Criminal History

The different types of criminal offenses leading to the current incarceration were not clearly associated with

Table 4. Severity of Traumatization and Prevalence of Lifetime DSM-IV Mental Disorders

Disorder	Total (N = 139)	Severity of Traumatization (CTQ total score, subgroups indicate quartiles) None (N = 34)	Low (N = 35)	Moderate (N = 35)	Severe (N = 35)	Significance[a] Test Result	p
Any Axis I lifetime disorder, % (N)	86.3 (120)	79.4 (27)	82.9 (29)	91.4 (32)	91.4 (32)	$\chi^2 = 3.3$	NS
No. of Axis I disorders, mean ± SD	3.6 ± 3.3	2.3 ± 2.7	2.6 ± 2.5	3.9 ± 3.3	5.5 ± 3.5	F = 9.6	< .001[b]
Substance use disorder, % (N)	77.7 (108)	61.8 (21)	65.7 (23)	88.6 (31)	94.3 (33)	$\chi^2 = 15.8$	.001
Psychotic disorder, % (N)	15.1 (21)	11.8 (4)	11.4 (4)	22.9 (8)	14.3 (5)	$\chi^2 = 2.2$	NS
Any affective disorder, % (N)	36.0 (50)	29.4 (10)	31.4 (11)	34.3 (12)	48.6 (17)	$\chi^2 = 3.3$	NS
Major depression, % (N)	21.6 (30)	11.8 (4)	20.0 (7)	22.9 (8)	31.4 (11)	$\chi^2 = 4.1$	NS
Any anxiety disorder, % (N)	44.6 (62)	29.4 (10)	37.1 (13)	40.0 (14)	71.4 (25)	$\chi^2 = 14.5$	.002
PTSD, % (N)	38.8 (54)	23.5 (8)	31.4 (11)	34.3 (12)	65.7 (23)	$\chi^2 = 15.0$	.002
Personality disorders							
Any personality disorder, % (N)	53.2 (74)	35.3 (12)	37.1 (13)	57.1 (20)	82.9 (29)	$\chi^2 = 20.6$	< .001
No. of personality disorders, mean ± SD	1.5 ±1.9	0.9 ± 1.4	0.8 ± 1.3	1.6 ± 2.2	2.5 ± 2.1	F = 7.1	< .001[c]
Cluster A, % (N)	27.3 (38)	23.5 (8)	17.1 (6)	25.7 (9)	42.9 (15)	$\chi^2 = 6.4$	NS
Cluster B, % (N)	43.2 (60)	32.4 (11)	28.6 (10)	42.9 (15)	68.6 (24)	$\chi^2 = 13.9$	.003
Borderline personality disorder, % (N)	22.3 (31)	26.5 (9)	8.6 (3)	17.1 (6)	37.1 (13)	$\chi^2 = 9.5$	.023
Antisocial personality disorder, % (N)	31.7 (44)	11.8 (4)	25.7 (9)	34.3 (12)	54.3 (19)	$\chi^2 = 15.7$	.001
Cluster C, % (N)	22.3 (31)	8.8 (3)	11.4 (4)	28.6 (10)	40.0 (14)	$\chi^2 = 13.4$	.004

[a]df = 3.
[b]Analysis of covariance (ANCOVA) with sex as covariate: sex had a significant effect (female 5.1 ± 3.2, male 3.3 ± 2.8; F = 17.7, df = 1, p < .001).
[c]ANCOVA with sex as covariate: sex had a significant effect (female 3.1 ± 1.6, male 2.2 ± 2.0; F = 13.0, df = 1, p < .001).
Abbreviations: CTQ = Childhood Trauma Questionnaire, NS = nonsignificant, PTSD = posttraumatic stress disorder.

early trauma history. No associations were found regarding either the number of previous convictions or the lifetime months of arrest (Table 6), which were both higher in male subjects (Table 2). However, there was a significant negative association of the severity of trauma history and the age at first offense, with a mean age of 21 years in subjects with no or less severe trauma experiences and a mean age of 15 years in those with moderate or severe childhood trauma experiences. Gender did not have an effect.

DISCUSSION

In this investigation, we observed a complex pattern of lifetime and current mental disorders as well as of personality pathology in the vast majority of incarcerated female and male prisoners. Eighty-eight percent suffered from at least 1 current Axis I and/or Axis II disorder with a considerable psychopathologic burden. Substance use disorders, with a current prevalence of 71%, and anxiety disorders (27%) represented the most frequent diagnostic classes in both genders. These figures found in incarcerated prisoners are extremely high compared with those in the general population (for Germany, see Meyer et al.[19] and Wittchen and Jacobi[20]). In general, our results are in agreement with findings in previous studies[3,21] in prison environments that revealed throughout high prevalence rates of mental disorders, although our results are at the upper end of the scale.

At 21%, a high proportion of the participants fulfilled the diagnostic criteria of current PTSD, and this rate even doubled when prisoners with lifetime PTSD were taken into account. The importance of traumatic events in incarcerated men and women also became apparent in the high rate of persons with childhood trauma experiences. Nearly half of the participants, 45%, reported severe or moderate emotional neglect; 32% reported severe or moderate physical abuse; 32% reported severe or moderate emotional abuse; 17% reported severe or moderate sexual abuse; and another 9% suffered severe or moderate physical neglect. This widespread burden of childhood trauma history and PTSD in our sample as well as in previous investigations[1,2,7–9] reflects the duality, for female more than male prisoners, of being victims as well as criminal offenders.

As some prisoners who were asked to participate refused after reading the CTQ, our results might even indicate an underestimation of traumatic experiences.

With growing severity of childhood trauma history we observed a significant increase in the prevalence and number of various lifetime and current Axis I disorders and in the prevalence and number of personality disorders as well as in the global severity of current psychopathology. Thus, the severity of childhood trauma seems to be associated with mental disorders as well as with a comorbidity pattern in the sense of a (nonlinear) dose-response relationship. In particular, this was true for SUD and anxiety disorders including PTSD, while such a relationship could not be observed regarding psychotic and affective disorders. Among the personality disorders, prevalence of borderline personality disorder and antisocial personality disorder was associated with trauma severity. These results are in agreement with studies in nonprison environments. Duran et al.[22] administered the Childhood Trauma Questionnaire as well as the Composite International Diagnostic Interview to 234 North American Indian women

Table 5. Severity of Traumatization, Prevalence of Current DSM-IV Mental Disorders, and Current Psychopathology

	Severity of Traumatization (CTQ total score, subgroups indicate quartiles)					Significance[a]	
Clinical Characteristic	Total (N = 139)	None (N = 34)	Low (N = 35)	Moderate (N = 35)	Severe (N = 35)	Test Result	p
Any current Axis I disorder, % (N)	83.5 (116)	70.6 (24)	80.0 (28)	88.6 (31)	94.3 (33)	$\chi^2 = 8.0$	.046
No. of Axis I disorders, mean ± SD	2.9 ± 2.7	1.6 ± 1.8	2.2 ± 2.2	3.5 ± 3.0	4.4 ± 3.1	F = 8.7	< .001[b]
Substance use disorder, % (N)	71.2 (99)	55.9 (19)	57.1 (20)	82.9 (29)	88.6 (31)	$\chi^2 = 14.7$	.002
Psychotic disorder, % (N)	7.9 (11)	5.9 (2)	5.7 (2)	11.4 (4)	8.6 (3)	$\chi^2 = 1.0$	NS
Any affective disorder, % (N)	17.3 (24)	17.6 (6)	14.3 (5)	5.7 (2)	31.4 (11)	$\chi^2 = 8.4$	.038
Major depression, % (N)	12.9 (18)	8.8 (3)	11.4 (4)	5.7 (2)	25.7 (9)	$\chi^2 = 7.3$	NS
Any anxiety disorder, % (N)	27.3 (38)	17.6 (6)	20.0 (7)	25.7 (9)	45.7 (16)	$\chi^2 = 8.6$	.036
PTSD, % (N)	20.9 (29)	11.8 (4)	14.3 (5)	20.0 (7)	37.1 (13)	$\chi^2 = 8.3$	.041
SCL-90-R, global severity index, mean ± SD	0.77 ± 0.60	0.7 ± 0.7	0.7 ± 0.4	0.7 ± 0.5	1.0 ± 0.7	F = 3.4	.021[c]
Global Assessment of Functioning, mean ± SD	56 ± 12	61 ± 13	59 ± 12	54 ± 10	51 ± 12	F = 5.8	.001[d]

[a]df = 3.
[b]Analysis of covariance (ANCOVA) with sex as covariate: sex did not have a significant effect (female 3.6 ± 2.5, male 3.4 ± 2.8; F = 0.81, df = 1, p = .37).
[c]ANCOVA with sex as covariate: sex did not have a significant effect (female 0.80 ± 0.64, male 0.75 ± 0.57; F = 0.81, df = 1, p = .37).
[d]ANCOVA with sex as covariate: sex had a significant effect (female 53.3 ± 9.6, male 58.7 ± 13.8; F = 13.0, df = 1, p < .001).
Abbreviations: CTQ = Childhood Trauma Questionnaire, NS = nonsignificant, PTSD = posttraumatic stress disorder, SCL-90-R = Symptom Checklist-90-Revised.

Table 6. Severity of Traumatization and Criminal History

	Severity of Early Traumatization (CTQ total score, subgroups indicate quartiles)					Significance		
Forensic Characteristic	Total (N = 139)	None (N = 34)	Low (N = 35)	Moderate (N = 35)	Severe (N = 35)	Test Result	df	p
Types of criminal offenses, % (N)						$\chi^2 = 44.0$	30	.047
Sexual assault	3.6 (5)	2.9 (1)	5.7 (2)	2.9 (1)	2.9 (1)			
Homicide	10.8 (15)	5.9 (2)	20.0 (7)	5.7 (2)	11.4 (4)			
Physical attacks	8.6 (12)	11.8 (4)	0 (0)	11.4 (4)	11.4 (4)			
Larceny/embezzlement	29.5 (41)	20.6 (7)	25.7 (9)	34.4 (12)	37.1 (13)			
Robbery/blackmail	8.6 (12)	5.9 (2)	14.3 (5)	0 (0)	14.3 (5)			
Receiving of stolen goods	1.4 (2)	5.9 (2)	0 (0)	0 (0)	0 (0)			
Fraud/deception	10.8 (15)	14.7 (5)	14.3 (5)	8.6 (3)	5.7 (2)			
Forgery of documents	1.4 (2)	0 (0)	2.9 (1)	0 (0)	2.9 (1)			
Other offenses	3.6 (5)	2.9 (1)	2.9 (1)	8.6 (3)	0 (0)			
Narcotic drugs law	18.7 (26)	23.5 (8)	14.3 (5)	22.9 (8)	14.3 (5)			
Traffic offenses	2.9 (4)	5.9 (2)	0 (0)	5.7 (2)	0 (0)			
Age at first offense,[a] mean ± SD, y	18 ± 8	21 ± 6	21 ± 10	15 ± 5	15 ± 7	F = 6.5	3	< .001[b]
No. of previous convictions, mean ± SD	3.8 ± 4.3	3.9 ± 4.5	2.8 ± 3.2	5.1 ± 5.7	3.3 ± 3.0	F = 1.8	3	.149[c]
Lifetime months of imprisonment, mean ± SD	47 ± 52	37 ± 35	46 ± 53	44 ± 34	61 ± 75	F = 1.6	3	.186[d]

[a]Whether or not having led to legal proceedings.
[b]Analysis of covariance (ANCOVA) with sex as covariate: sex did not have a significant effect (F = 3.2, df = 1, p = .074); see Table 2.
[c]ANCOVA with sex as covariate: sex had a significant effect (F = 10.0, df = 1, p = .002); see Table 2.
[d]ANCOVA with sex as covariate: sex had a significant effect (F = 23.1, df = 1, p < .001); see Table 2.
Abbreviation: CTQ = Childhood Trauma Questionnaire.

and also reported a dose-response relationship between the severity of child maltreatment and lifetime diagnosis of Axis I disorders that was even more pronounced for lifetime PTSD, SUD, and mood disorders. Langeland et al.[23] investigated 155 treatment-seeking alcoholics and also reported an association of the severity of childhood abuse with comorbid PTSD and with suicide attempts in females as well as with comorbid PTSD, social phobia, and agoraphobia, and with dysthymia in males.

In addition, our data revealed a low age at first offense to be significantly related to the severity of childhood traumata, while neither the type of offenses nor the lifetime or current length of imprisonment were clearly associated with childhood trauma history.

The association between trauma, psychiatric disorder, and deviant behavior is complex and not, as yet, completely understood. There is evidence of a close relationship between PTSD symptoms (e.g., increased baseline arousal and anger levels, lowered thresholds of agitation and irritability) and an increased risk of violent behaviors, making an incarceration more likely.[24] Furthermore, childhood victimization increases the risk not only

for PTSD but also for SUD, probably due to the stress-dampening effects of drugs and alcohol that make it easier to cope with PTSD symptoms.[25,26] As drug usage can not only relieve but also exacerbate and potentiate PTSD symptoms, these 2 disorders might interact in a complex manner. In addition, substance abuse plays a crucial role in criminal behaviors through increasing violent behaviors as well as increasing the risk of criminal activities to secure the needed substances.[24] These mechanisms make perpetuation of traumatic experiences more probable and incarceration more likely.

One limitation of this study is that trauma history data were based exclusively on self-report and could not be validated by independent sources of information. A further limitation is the small sample size, which makes it difficult to generalize the results. Given the high prevalence rates of mental disorders, it was not probable that an association of presence or absence of Axis I disorders with childhood trauma history would be found. On the other hand, the sample was fairly comparable with the prison population of the 18 million inhabitants of the state of North-Rhine Westfalia, Germany—apart from underrepresentation of foreign prisoners and prisoners with short durations of current incarceration. Nevertheless, more studies and studies with greater sample sizes are needed to even more extensively investigate trauma histories in prisoners.

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