

Rates and Symptoms of PTSD among Cocaine-Dependent Patients*

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ABSTRACT. *Objective:* This study evaluated lifetime traumatic events and current posttraumatic stress disorder (PTSD) symptoms in a substance abuse sample. *Method:* Participants in the study consisted of 558 (75.1% male) cocaine-dependent individuals who completed self-report measures of trauma and PTSD symptoms prior to entry into treatment. *Results:* Results showed a high number of lifetime traumatic events, even among those without PTSD. General disaster was the most prevalent. Current PTSD was found in 10.9% of the participants, with a significantly higher rate among women (21.6%) than among men (7.2%). For those with PTSD, the most prominent PTSD symptom cluster was arousal, and the most common symptoms were restricted affect, detachment and irritability. Participants with PTSD endorsed a large number of symptoms, almost double that needed to meet diagnostic criteria; however, neither number of traumas nor type of trauma was associated with

their level of PTSD symptoms. Even among those not meeting PTSD criteria, subthreshold symptoms were found, with avoidance the most prominent cluster. Sociodemographic and recent cocaine use variables did not differentiate the PTSD from non-PTSD groups. *Conclusions:* PTSD is present in a sizeable percentage of cocaine-dependent treatment-seeking patients, particularly women. Clinicians might address arousal symptoms in particular, which were the most prominent symptom cluster, and which may be exacerbated by cocaine use. Even among those without PTSD, lifetime trauma is substantial and subthreshold PTSD symptoms are common. Vulnerability to PTSD needs further study, as sociodemographic and cocaine use variables did not distinguish between PTSD and non-PTSD groups. (*J. Stud. Alcohol* 64: 601-606, 2003)

A GROWING BODY of literature documents an association between posttraumatic stress disorder (PTSD) and substance use disorder (SUD). Studies show lifetime rates of PTSD in substance abuse samples ranging from 30% to 75%, with current rates at 12% to 62% (Brady, 2001; Jacobsen et al., 2001; Najavits et al., 1997). Patients

with the dual diagnosis, compared to those with PTSD or SUD alone, show higher rates of Axis I and II disorders, psychosocial problems, inpatient substance abuse treatment admissions and medical conditions, and a worse clinical course (Brady, 2001; Jacobsen et al., 2001; Najavits et al., 1997, 1998; Ouimette et al., 1999, 2000).

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A number of studies have also evaluated specific PTSD symptom clusters among people with SUD. The clusters are Criteria B (intrusion), C (avoidance) and D (arousal). Saladin et al. (1995), for example, found higher avoidance and arousal symptoms among those with the dual diagnosis than among those with PTSD alone. Stewart et al. (1999) reported that among women specific substances were differentially related to PTSD clusters: alcohol dependence was associated with arousal, anxiolytic dependence with arousal and numbing (the latter was evaluated separately from avoidance) and analgesic dependence with arousal, intrusion and numbing. McFall et al. (1992) studying Vietnam veterans, found that alcohol problems were associated with intrusion and arousal (but not avoidance), whereas drug problems were associated with intrusion and avoidance (but not arousal).

Few studies, however, are based on large sample sizes, and most do not document specific PTSD symptom profiles or address a specific substance. This study uses data from the National Institute on Drug Abuse Collaborative Cocaine Treatment Study (NCCTS) to evaluate these issues. Specifically, we address rates of lifetime trauma and current PTSD, prominence of particular PTSD symptoms and symptom clusters, and associations between key variables and the PTSD diagnosis (sociodemographic and cocaine use variables, and type and number of traumatic events).

Method

Data were collected during the pilot and main phases of the NCCTS. This controlled, randomized, multicenter clinical trial studied the efficacy of four psychosocial treatments for cocaine-dependent outpatients: individual cognitive therapy (CT; Beck et al., 1993); individual supportive-expressive therapy (SE; Mark and Luborsky, 1992), a psychodynamic treatment derived from Luborsky (1984); individual 12-step drug counseling (IDC; Mercer and Woody, 1992) based on the 12-step addiction model; and group 12-step drug counseling (GDC; Mercer et al., 1994), also based on the 12-step addiction model. Prior reports describe the rationale and methods of the study (Crits-Christoph et al., 1997); the main outcome results (Crits-Christoph et al., 1999); and, of relevance to the current study, a clinical profile of PTSD versus non-PTSD patients at intake to the pilot phase of the trial (Najavits et al., 1998). All patients were offered 6 months of free treatment in exchange for completing the assessments: 32 group drug counseling sessions (for all patients), plus 32 individual therapy sessions (for patients in CT, SE, or IDC). Neither recruitment nor treatment was tailored for PTSD.

Participants

Participants in the current study were 558 adult outpatients who completed two types of measures: a trauma his-

tory measure and a PTSD symptom measure (described below under Measures). A total of 800 patients were treated in the NCCTS (313 during the pilot phase and 487 during the main phase). The two measures, however, were added late to the assessment battery and thus were completed by fewer participants than the full sample of 800. All met current diagnostic criteria for cocaine dependence, and all had used cocaine in the month prior to intake. All had volunteered for the study to obtain free treatment and gave written informed consent for the research. Participants were excluded if they required psychopharmacological or psychosocial treatment beyond the study's protocol; had a history of bipolar disorder, schizophrenia, or organic mental disorder; were mandated to attend treatment or were about to be incarcerated; were beyond the first trimester of pregnancy; were currently suicidal or homicidal; had a life-threatening or unstable illness; had a psychiatric hospitalization of more than 10 days in the past month; were homeless without a long-term shelter; or planned to leave the area within 2 years. Patients with substance use disorders other than cocaine dependence were included if cocaine was their primary drug of choice and they did not meet criteria for current opioid dependence. Substance use disorder diagnoses were assessed at baseline by the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, third edition (DSM-III-R) (SCID; Spitzer et al., 1992) in the pilot phase and the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) SCID (Spitzer et al., 1997) version in the main phase. Both SCID interviews were administered by master's or doctoral level diagnosticians selected and trained by the University of Pennsylvania Assessment Unit of the Center for Psychotherapy Research. All had conducted at least 10 Axis I and II SCIDs prior to hire and were evaluated and supervised weekly on the basis of videotapes of their SCID interviews. Cocaine dependence was rated for severity at baseline on a 0-8 scale adapted from the Anxiety Disorders Interview Schedule-Revised (DiNardo and Barlow, 1988) that reflects the diagnostician's evaluation of functional impairment or subjective distress. The scaling anchors are: 0 = "none," 4 = "definitely disturbing/disabling," 8 = "severely disturbing/disabling."

Measures

Measures in the current study (part of the larger battery of the NCCTS) were the Trauma History Questionnaire (THQ; Green, 1996) to assess lifetime traumatic events (Criterion A of the PTSD diagnosis), and either the PTSD Checklist (PCL; Weathers et al., 1993) or the Modified PTSD Symptom Scale (MPSSR; Falsetti et al., 1993) to assess current PTSD symptoms using DSM-IV criteria. The PCL was used for the pilot trial and the MPSSR for the main trial. Both measures were identical in their 17 items,

which represented the B, C and D criteria of PTSD. Both measures also used the same severity ratings, with each item rated from 1 ("not at all") to 5 ("extremely"). The MPSSR also includes a frequency rating ("not at all" to "5 or more times per week") for each item, but these were not analyzed in the current study. The PCL and MPSSR were administered only to those who endorsed at least one trauma on the THQ at baseline. Hereafter, this measure is termed the MPSSR for simplicity. The measures were all self-report and were collected at baseline for most subjects ($n = 531$), with 27 receiving them after baseline as a result of the late addition of the measures to the study battery. Sociodemographic information (e.g., age, race, marital status) was obtained from the baseline battery as well.

The THQ lists 23 traumatic events in three categories: 4 crime-related (e.g., mugging, robbery, house break-in witnessed), 13 general disaster and trauma (e.g., car accident, seeing someone killed or seriously injured, natural disaster such as earthquake, man-made disaster such as train crash), and 6 unwanted physical and sexual experiences (e.g., rape, physical assault). For each item, patients indicated lifetime occurrence, frequency, age of onset and any relationship to a perpetrator. Psychometric data on the THQ show high test-retest reliability of items over a 2- to 3-month period; correlations on items ranged from 0.47 to 1.00, with a mean of 0.70 (Green, 1996). Psychometric data on the PCL indicate high test-retest reliability over a 3-day period (0.96), high internal consistency (0.97), strong convergent validity with other PTSD assessments (Mississippi Scale, 0.93; PK scale of the MMPI-2, 0.77; Impact of Event Scale, 0.90; and Combat Exposure Scale, 0.46), and good diagnostic utility with the SCID (sensitivity = 0.82, specificity = 0.83, $\kappa = 0.64$ (Weathers et al., 1993). For the MPSSR, internal consistency was high in both treatment (0.96) and community samples (0.97), and concurrent validity with the SCID was strong (Falsetti et al., 1993).

To obtain a DSM-IV diagnosis of PTSD for the purpose of this study, patients had to have at least one traumatic event on the THQ (to satisfy Criterion A of the DSM-IV PTSD diagnosis) and to have scores of 3 ("moderate") or higher on the MPSSR items that represented criteria B-D of the DSM-IV PTSD diagnosis (specifically one in Criterion B "intrusive" symptoms, three in Criterion C "avoidance" symptoms; and two in Criterion D "arousal" symptoms). Only those participants with fewer than five items missing on the MPSSR were included.

Analyses

For rates of trauma and PTSD and the profile of PTSD symptoms, descriptive statistics were used as well as independent and paired-samples t tests. For the analysis of key variables (sociodemographic characteristics, recent cocaine use, severity of the cocaine dependence diagnosis and num-

ber or type of trauma) in relation to the PTSD diagnosis, two-tailed Pearson correlations were used. The significance level for all tests was 0.05.

Results

Sociodemographics

Participants were 75.1% male, with a mean (SD) age of 33.8 (6.3) years. Most were white (58.7%), with 38.1% black, 1.9% Hispanic, 0.7 Native American, and 0.6 Asian. Almost half were single (44.4%); with 29.8% married or cohabiting; and 25.8% separated, divorced, or widowed. Of the participants, 57.3% were employed; 37.1% were unemployed; and the rest were students, homemakers, disabled, or retired. They reported using cocaine a mean (SD) of 10.8 days (9.0) and spending a mean (SD) of \$1,164 (\$1,415) on cocaine during the month prior to entering the study. Their mean (SD) severity rating of the cocaine dependence diagnosis was 5.99 (1.01) on the 0-8 scale.

Prevalence of current PTSD diagnosis and lifetime trauma rates

On the basis of the THQ and MPSSR, 61 patients (10.9%) had a current DSM-IV diagnosis of PTSD. The two groups, PTSD and non-PTSD, did not differ significantly on any sociodemographic or cocaine use variable except gender, based on chi-square or independent samples t test analyses (i.e., age, race, marital status, level of employment, days of cocaine use, amount spent on cocaine or severity of the cocaine dependence diagnosis). The rate of PTSD by gender was 21.6% women (29 of the 134 women in the study) and 7.2% men (29 of the 404 men in the study), with 20 participants missing gender data. The gender difference in PTSD rate was significant per chi-square ($\chi^2 = 21.89$, 1 df, $p < .001$).

The mean number of lifetime traumas is reported in Table 1, by PTSD status as well as by the three subtypes of the THQ (crime-related, general disaster, and physical/sexual). Only crime-related trauma was not significantly higher in the PTSD group. Note, however, that these data should be interpreted in light of the fact that only participants who endorsed one or more traumas on the THQ were included in the sample for this article (see Method section).

For the full sample, men had significantly more general disaster traumas than women (mean [SD] = 3.81 [2.35] vs 2.98 [1.93], $t = 4.06$, 274.17 df, $p < .001$) and more crime-related trauma than women (mean [SD] = 1.56 [1.17] vs 1.19 [1.10], $t = 3.27$, 533 df, $p = .001$). However, women had significantly more physical and sexual trauma (mean [SD] = 1.86 [1.47] vs 0.91 [1.12], $t = -6.85$, 182.73 df, $p < .001$).

TABLE 1. Mean (standard deviation) number of traumas^a

| | PTSD (<i>n</i> = 61) | Non-PTSD (<i>n</i> = 497) | Full sample (<i>n</i> = 558) |
|--------------------------|--------------------------|-------------------------------|----------------------------------|
| Total traumas | 8.66 (3.73) | 5.98 (3.40) [‡] | 6.27 (3.53) |
| Crime-related traumas | 1.61 (1.11) | 1.47 (1.17) | 1.48 (1.16) |
| General disaster traumas | 4.84 (2.45) | 3.49 (2.24) [‡] | 3.63 (2.30) |
| Physical/sexual traumas | 2.23 (1.46) | 1.02 (1.19) [‡] | 1.15 (1.28) |

^aLifetime rates, from the Trauma History Questionnaire.

[‡]PTSD and non-PTSD groups different at $p < .001$ based on independent samples *t* test.

Symptom profile of patients with PTSD

The following analyses pertain only to the 61 participants in the PTSD group, unless otherwise indicated.

Does the number of traumas or type of trauma predict PTSD symptoms? Among these participants, the answer was no. We correlated the mean number of traumas on the THQ with the mean on the MPSSR to evaluate this question. It was not significant, nor were the correlations between the MPSSR and any of the three THQ subscales (crime, general disaster, physical/sexual abuse).

We also explored the degree of PTSD symptomatology. The mean (SD) on the MPSSR was 3.14 (0.58) out of a maximum of 5, representing a moderate level. The mean (SD) on the number of B, C and D criteria was 11.44 (3.03) out of a maximum of 17. The latter is high, given that only six criteria are necessary to obtain the diagnosis. In the group without PTSD, some PTSD symptoms were nonetheless reported. They had a mean (SD) of 1.37 (0.45) on the MPSSR and a mean (SD) of 1.63 (2.31) on the number of B, C and D criteria. These results indicate that some symptoms of PTSD were present at a subthreshold level, as is consistent with the high amount of lifetime trauma in the non-PTSD group (see Table 1).

Next, we evaluated the specific PTSD symptom clusters that were most prominent. In the PTSD group, arousal (Criterion D) was highest with a mean (SD) of 3.21 (0.75) on the MPSSR, followed by avoidance (Criterion C) with a mean (SD) of 2.96 (0.88) and intrusion (Criterion B) with a mean (SD) of 2.91 (0.75). In paired *t* tests, arousal was significantly higher than both avoidance ($t = -2.07$, 60 df, $p = .04$) and intrusion ($t = -2.68$, 60 df, $p = .009$).

By specific items on the MPSSR using the DSM-IV criteria identifiers, the five most prominent symptoms were as follows: C-6, restricted affect (mean [SD] = 3.62 [1.47]); C-5, detachment (mean [SD] = 3.52 [1.42]); D-2, irritability (mean [SD] = 3.49 [1.42]); C-7, foreshortened future (mean [SD] = 3.48 [1.43]); and B-4, psychological distress (mean [SD] = 3.48 [1.29]). The five least common were B-2, recurrent dreams (mean [SD] = 2.38 [1.34]); C-2, avoidance of activities (mean [SD] = 2.68 [1.38]); B-5, physiological reactivity (mean [SD] = 2.76 [1.43]); B-3,

reliving the event (mean [SD] = 2.79 [1.43]); and C-3, inability to recall the event (mean [SD] = 2.82 [1.37]).

Finally, we evaluated the PTSD profile of the non-PTSD group, given their subthreshold symptoms. Avoidance (mean [SD] = 1.42 [0.60]) was significantly higher than both intrusion (mean [SD] = 1.30 [0.52], $t = -4.81$, 496 df, $p < .001$) and arousal (mean [SD] = 1.34 [0.51], $t = 3.33$, 496 df, $p = .001$). The latter two were not significantly different from each other.

Discussion

This study documents a sizeable rate of current PTSD (10.9%) in a sample of 558 cocaine-dependent outpatients seeking substance abuse treatment. Multiple traumas were the norm, even among those with no PTSD. Women had triple the rate of PTSD that men had and more physical/sexual trauma, whereas men experienced more crime and general disaster trauma. These findings are consistent with prior literature and add to the general picture of a need for increased attention to PTSD in substance abuse treatment settings (Brady, 2001; Brown et al., 1999; Najavits, 2002; Triffleman, 1998). Our rate of PTSD was at the lower end of estimates in substance abuse treatment settings (Jacobsen et al., 2001; Najavits et al., 1997). This might be attributed to the outpatient nature of the sample, the high (75%) proportion of men (i.e., rates for females are uniformly higher), the research nature of the project (which may have selected a sample not typical of standard substance abuse treatment settings), and the requirement that study subjects agreed to discontinue any existing psychiatric medication and psychotherapy to be eligible for the study (which would bias the sample toward less severity on co-occurring psychiatric diagnoses).

Only gender differentiated the PTSD from the non-PTSD groups. All other sociodemographic variables (age, race, marital status and level of employment) and cocaine use variables (days used cocaine in the past month, money spent on cocaine in the past month and severity of the cocaine dependence diagnosis) were nonsignificant. Also, neither the number of traumas nor the type of trauma was associated with level of PTSD symptoms in the PTSD group. Further research is needed to better understand why some substance-dependent individuals are more vulnerable than others to developing PTSD and, in particular, what role substances play in either exacerbating or reducing PTSD symptoms.

The most prominent PTSD symptom cluster in the PTSD group was arousal, which is consistent with some prior literature in documenting high arousal rates in PTSD/SUD samples (Saladin et al., 1995; Stewart et al., 1999). The stimulant properties of cocaine can increase arousal symptoms and anxiety generally, and it would thus seem important that clinicians advise patients of these dangers. For

assessment purposes, it can be noted that both cocaine intoxication and withdrawal may have some overlap with PTSD symptoms (e.g., hypervigilance, insomnia). However, the cocaine dependence diagnosis, per se, does not overlap with PTSD; and the category of substance-induced anxiety disorders, at least in the DSM-IV, does not mention PTSD. In some cases, the assessor may want to confirm PTSD after successful withdrawal from cocaine and, according to standard clinical practice, should never conduct an assessment if the patient is acutely intoxicated on any substance. Generally, however, clinical experience suggests that the PTSD diagnosis appears quite robust in the context of substance use and withdrawal, although this issue has not been sufficiently studied (Najavits, in press). It can also be noted that, unique among psychiatric disorders, both PTSD and substance use disorder are "triggering" disorders; that is, patients feel triggered physiologically and psychologically when exposed to cues that remind them of their trauma or substance; thus, the need for interventions to help dampen arousal is crucial. Finally, it can be noted that the non-PTSD group showed some subthreshold symptoms, with avoidance being the most prominent.

This study has several notable strengths. It appears to be the largest study thus far of PTSD symptoms in a substance abuse treatment sample. Moreover, the diagnosis of cocaine dependence was rigorously assessed, and represents a homogeneous sample in primary substance. Limitations of the study include the use of self-report measures for the PTSD diagnosis, the lack of anchoring of PTSD symptoms to a specific identified trauma and the baseline assessment of PTSD (which may have coincided with cocaine use or withdrawal and thus might impact symptom reporting). Rates of lifetime trauma found in this study need to be interpreted cautiously given the study design, wherein only subjects with one or more traumas were included in the sample. The trauma rates reported here are thus likely higher than would be found in a sample that included individuals with zero traumas. Finally, this study did not have data to address time sequence of the development of PTSD in relation to substance dependence, which is an important topic for future research.

Further study of the relation between PTSD and substance use disorder is warranted, including greater exploration as to which individuals develop the dual diagnosis, how it impacts the course of recovery, and how to treat it clinically.

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