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Cocaine Dependence with and without PTSD among subjects in the
National Institute on Drug Abuse Collaborative Cocaine Treatment Study

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Running head: Cocaine dependence and PTSD

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The NIDA Collaborative Cocaine Treatment Study is a National Institute on Drug Abuse (NIDA) funded Cooperative Agreement involving four clinical sites, a Coordinating Center, and NIDA staff. The Coordinating Center at the University of Pennsylvania includes: Paul Crits-Christoph, Ph.D. (PI), Lynne Siqueland, Ph.D. (Project Coordinator), Karla Moras, Ph.D. (Assessment Unit Director), Jesse Chittams, M.A. (Director of Data Management/ Analysis), Larry R. Muenz, Ph.D. (Statistician). The collaborating scientists at the Treatment Research Branch, Division of Clinical and Research Services at NIDA are Jack Blaine, M.D. and Lisa Simon Onken, Ph.D. The four participating clinical sites are: University of Pennsylvania - Lester Luborsky, Ph.D.(PI), Jacques P. Barber, Ph.D. (Co-PI), Delinda Mercer, M.A. (Project Director); Brookside Hospital - Arlene Frank, Ph.D. (PI), Stephen F. Butler (Co-PI), Sarah Bishop, M.A (Project Director); Harvard Medical School, McLean Hospital and Massachusetts General Hospital - Roger D. Weiss, M.D. (PI), David R. Gastfriend, M.D. (Co-PI), Lisa M. Najavits, Ph.D. (Project Director), Margaret Griffin (Research Associate); University of Pittsburgh/Western Psychiatric Institute and Clinic- Michael Thase, M.D. (PI), Dennis Daley, M.S.W. (Co-PI), Ishan M. Salloum, M.D. (Co-PI), and Judy Lis, M.S.N (Project Director). The Training Unit Heads of Cognitive Therapy Training Unit are: Aaron T. Beck, M.D. (University of Pennsylvania) and Bruce S. Liese, Ph.D. (University of Kansas Medical Center); Heads of Supportive-Expressive Therapy Training Unit: Lester Luborsky, Ph.D. and David Mark, Ph.D. (University of Pennsylvania); Heads of the Individual Drug Counseling: George Woody, M.D. (Veterans Administration/University of Pennsylvania Medical School) and Delinda Mercer, M.A (University of Pennsylvania); and Heads of Group Drug Counseling Unit: Delinda Mercer, Dennis Daley (University of Pittsburgh/Western Psychiatric Institute and Clinic), and Gloria Carpenter, M.Ed., (Treatment Research Unit- University of Pennsylvania). The Monitoring Board consists of Larry Beutler, Ph.D, Jim Klett, Ph.D., Bruce Rounsaville, M.D., and Tracie Shea, Ph.D. The contributions of John Boren, Ph.D., NIDA, the project officer for this cooperative agreement, are also gratefully acknowledged. The preparation of this manuscript was funded in part by NIDA grants U18-DA07090, U18-DA07663, U18-DA07673, U18-DA07693, U18-DA07085, and DA-08631; and NIMH Career Development Award K02-MH00756.

Objectives. This study (1) examines the prevalence of lifetime traumatic events and current posttraumatic stress disorder (PTSD) symptoms among treatment-seeking cocaine-dependent outpatients, and (2) compares patients with and without PTSD in current substance use, psychopathology, and sociodemographic characteristics. Method. Subjects were 122 adult cocaine-dependent outpatients who were participating in a treatment outcome study of psychosocial therapy. In addition to standard self-report and interview measures of psychopathology and substance use, subjects completed a Trauma History Questionnaire and PTSD Checklist prior to entry into treatment. Results. Lifetime trauma events were high in this cohort (mean = 5.7), and were gender-related, with men having more general disaster and crime-related traumas and women more physical and sexual abuse. Twenty percent of the cohort met DSM-III-R criteria for current PTSD diagnosis based on self-report measures (with a rate of 30% among women and 15% among men). Patients with PTSD, in comparison to non-PTSD patients, evidenced significantly higher rates of co-occurring Axis I and II disorders, interpersonal problems, medical problems, resistance to treatment, and psychopathology symptoms (with the latter the most consistent area of difference between the two groups, as well as providing the best prediction of PTSD status in a logistic regression). However, the groups did not differ significantly in current substance use or sociodemographic characteristics. Conclusions. Findings underscore the value of screening substance abusers for PTSD since a small but significant number potentially requiring additional treatment are apt to be identified. Further studies of the relationship between PTSD and substance abuse appear warranted.

The relationship between post-traumatic stress disorder (PTSD) and substance use disorder (SUD) has become an increasingly prominent clinical and research concern. Patients presenting for treatment of either PTSD or SUD have relatively high comorbidity for the other disorder, with specific estimates depending on the population surveyed, the time frame in question, and the assessments used (1). Estimates of current DSM-III-R PTSD in mixed-gender SUD samples ranges from 12% to 34% (2-4). (In samples of women alone, the rates rise to 43% to 59% (3, 5, 6), perhaps reflecting women's higher rate of PTSD in general and higher rate of PTSD once exposed to trauma (7, 8). Not only have studies shown high rates of PTSD among patients with substance use disorders, but also high rates of substance use disorders among patients with PTSD. In three major community studies that used DSM-III-R criteria, each surveying from 1,500 to 3,400 women (8-10), drug use disorder was 3.1 to 4.5 times more likely among women with PTSD than among women without PTSD. Alcohol use disorder was also high, with odds ratios from 2.4 to 3.1.

Moreover, substances typically perceived as more severe (i.e., cocaine and opioids) consistently show a higher association with trauma and the diagnosis of PTSD than do less severe substances such as marijuana or alcohol (2, 4, 5, 11-14). Even a family history of substance use problems is a risk factor for exposure to traumatic events (7).

With greater awareness of the prevalence of these co-occurring disorders has come increasing attention to assessment (15, 16) and treatment concerns. Treatment programs have begun to be developed specifically for such patients (13, 17-19), and several studies have explored their clinical characteristics. Rounsaville et al. (20) found that 31% of 363 opioid addicts had histories of childhood trauma, and that this subgroup showed more impaired psychological, medical, employment, family and social functioning than opioid addicts without histories of childhood trauma. Brady et al. (21) compared 30 women with PTSD to 25 women without PTSD, all of whom were in substance abuse treatment. They found that the former group had higher Addiction Severity Index scores (22), higher rates of comorbid affective disorder, and lower compliance with aftercare. Brown et al. (3) found PTSD patients to have a higher rate of inpatient substance abuse treatment utilization than non-PTSD patients. Najavits et al. (23) compared 28 women with current PTSD and substance use disorder to 29 women with PTSD alone. The dual diagnosis group evidenced more criminal behavior and more lifetime risk factors (though a lower rate of major depression) than patients with PTSD alone.

The goal of the present study was to explore clinical characteristics of cocaine-dependent patients with and without co-occurring PTSD. Greater understanding of these subgroups may lead to improved case finding, greater awareness of the range of sequelae typical of these conjoint disorders, and more sophisticated treatments. Specifically, this study attempted to identify differences between cocaine-dependent outpatients with and without PTSD, using a battery of measures that extends the existing literature: a description of types of traumas and PTSD symptoms experienced, a wide range of substance abuse and psychiatric symptom measures, assessment of interpersonal functioning, cognitions, motivation for treatment and perceived need for treatment, use of self-help groups, and emotional reactions to the patients by their therapists.

METHOD

Data for this study were collected during the pilot phase of the NIDA Collaborative Cocaine Treatment Study (NCCTS) (24). The NCCTS was designed as a randomized, controlled multicenter clinical trial to study the efficacy of four psychosocial treatments for cocaine-dependent outpatients: individual cognitive therapy (CT) (25), individual supportive-expressive

therapy (SE) (Mark D & Luborsky L, unpublished manuscript), individual 12-step drug counseling (IDC) (Mercer D & Woody G, unpublished manuscript) and group 12-step drug counseling (GDC) (Mercer D, Carpenter G, Daley D, Patterson C & Volpicelli J, unpublished manuscript). During the pilot phase of the study, staff were trained and study protocols were developed.

Subjects. Subjects in the study were 122 adult outpatients who completed two trauma measures, the Trauma History Questionnaire (THQ) (26) and the PTSD Checklist (PCL) (27). (The measures were completed by only 122 of the 313 pilot phase subjects of the NCCTS because of their late addition to the assessment battery). All subjects met DSM-III-R criteria for cocaine dependence and all had used cocaine in the past month. All had volunteered for the study to obtain free treatment and gave written informed consent for the research. Subjects were excluded if they required psychopharmacological or psychosocial treatment outside of the study's protocol; had a history of bipolar disorder, schizophrenia, or organic mental disorder; were mandated to attend treatment or impending incarceration; 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 two 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 DSM-III-R criteria for current opioid dependence. Substance use disorder diagnoses were assessed at baseline by the Structured Clinical Interview for DSM-III-R (SCID) (28), administered by master's- or doctoral-level diagnosticians. SCID diagnosticians were 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 based on videotapes of their SCID interviews.

Procedure. All patients participated in three phases of treatment. The initial "stabilization" phase consisted of 2-5 times per week individual case management and twice-weekly group drug counseling (lasting 1-8 weeks). During this time, patients were required to provide three consecutive urine screens clean of all substances of abuse and to complete a diagnostic assessment to progress to the next, "active", phase of treatment. The "active" phase of treatment consisted of 32 sessions of group drug counseling and 36 sessions of individual treatment over six months (either CT, SE, or IDC). A final "booster" phase of 3-6 sessions over 3-6 months was provided to help patients maintain their gains in treatment. Treatments were not tailored in any way for PTSD. Patients completed assessments at intake (their first contact with the study), baseline (at the end of the stabilization phase, as part of the process of randomization to the active phase), and monthly thereafter. They were required to provide observed urine screens at each group session.

Measures. Measures in the current study (part of the larger battery of the pilot phase of the NCCTS) were as follows. For assessment of trauma history and diagnosis of PTSD, two measures were used, both of which were collected at baseline and were self-report format (due to constraints on interview staff resources). The Trauma History Questionnaire (THQ) (26) lists 23 traumatic events in three categories: four crime-related (e.g., mugging, robbery, house break-in witnessed), 13 general disaster and trauma (e.g., car accident, natural disasters), and six 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 two- to three-month period; correlations on items ranged from .47 to 1.00, with a mean of .70 (26). PTSD

symptoms were assessed using the PTSD Checklist (PCL) (27), on which patients rate the degree to which they have experienced each DSM-III-R symptom in the past month on a 5-point scale. The PCL was administered only to patients who endorsed at least one trauma on the THQ. Psychometric data on the PCL indicate high test-retest reliability over a 3-day period (.96), high internal consistency (.97), strong convergent validity with other PTSD assessments (Mississippi Scale, .93; PK scale of the MMPI-2, .77; Impact of Event Scale, .90; and Combat Exposure Scale, .46), and good diagnostic utility with the SCID (sensitivity = .82, specificity = .83, kappa = .64 (27)). To obtain a DSM-III-R 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-III-R PTSD diagnosis) and to have scores of 3 or higher on the PCL items that represented Criteria B-D of the DSM-III-R PTSD diagnosis (specifically one in Criterion B “intrusive” symptoms, three in Criterion C “avoidance” symptoms; and two in Criterion D “arousal” symptoms).

Other domains assessed in the present study were psychiatric, substance use, sociodemographic, and reactions to treatment (all self-report measures unless otherwise indicated). Psychiatric disorders and symptoms were assessed from the SCID (Axis I substance use, affective, anxiety, and eating disorders; and Axis II disorders) (28); the Beck Depression Inventory (BDI) (29); the Beck Anxiety Inventory (BAI) (30); the Brief Symptom Inventory (BSI) (31); the Global Assessment of Functioning, as rated by trained research assistants (GAF) (32); and the Inventory of Interpersonal Problems (IIP) (33).

Substance use measures were as follows: Urine screens were obtained twice weekly for the first two months post-randomization, and once weekly for the four months thereafter. The urine results for that week were counted as negative only if all scheduled urines were done that week and all were negative (i.e., none were missing). If any of the scheduled urines were positive for cocaine, that week was counted as positive. If any urine was missing, it was assumed to be positive for cocaine, thus providing a conservative estimate of drug use. Supervised urine screen results were analyzed at a NIDA-approved laboratory by enzyme-multiplied immunoassay technique with gas chromatography-mass spectroscopy confirmation of positives. A total score was obtained by the percent of positive urines across the stabilization phase, for cocaine alone and also for any of six drugs (cocaine, amphetamines, barbiturates, benzodiazepines, marijuana, opioids). The Addiction Severity Index-5th edition (ASI) (22) interview was administered by research assistants to assess the severity of drug and alcohol use and five related problem areas (family/social, legal, psychological, employment, and medical). The Addiction Recovery Scale measured attitudes and behaviors relevant to recovery from substance dependence (ARS) (Mercer D, Carpenter G & Barber J, unpublished scale). Beliefs about Substance Abuse assessed thoughts associated with substance use (BSA) (Wright F, unpublished scale). The Relapse Prediction Scale listed situations, such as being at a party, for which the patient rated strength of substance-use urges and likelihood of using (RPS) (Wright F, unpublished scale). The Weekly Self-Help Scale assessed the number of and participation in self-help activities (WSH) (Weiss RD & Albeck J, unpublished scale). The Recovery Attitudes and Treatment Evaluator--Clinical Evaluation--Research version evaluated motivation for addictions treatment via a structured interview conducted by trained research assistants (RAATE-CE-R) (34).

Sociodemographic information was obtained from the Cocaine Inventory (a measure of sociodemographic data, as well as current and lifetime substance use, cravings and likelihood of use) (CI) (Bristol-Myers Squibb, unpublished scale).

All of the above measures were analyzed for patients in the study who had completed both the THQ and the PCL. All measures were completed at baseline, except the following: the Screening Interview and the Addiction Severity Index were collected at intake; the Weekly Self-Help Scale was collected weekly during the “stabilization” phase; Ratings of Emotional Attitudes to Clients by Treaters was collected at session 5 after randomization; and urine screens were collected up to three times per week during the stabilization phase.

Analyses. Data analyses were organized by three main questions: What are the sociodemographic and substance-use characteristics of the cohort? What is the prevalence of traumatic events and PTSD diagnoses in the cohort (and how do these vary by gender)? How do cocaine dependent patients with PTSD compare to those without PTSD on a variety of objective and subjective measures? The first two questions were addressed by descriptive statistics. For the third question, two sets of analyses were conducted. First, a simple analysis was conducted using independent t-tests and chi square analyses, with the Bonferroni correction family-wise to decrease the Type I error rate. Second, a more conservative analysis was conducted via logistic regression. We selected, with replacement, 300 bootstrap (35) samples of size 122 from the 122 study subjects. For each sample, a forward stepwise logistic regression model was chosen using the thirteen candidate independent variables that were significant predictors of PTSD in univariate analyses (as per the previous “simple” analysis described above) and had no more than ten missing observations. (The 13 variables that met these criteria are noted in a footnote to Table 1.) To control the variable-to-sample size ratio (36), the forward selection process was stopped at four variables. Specificity was set to as close to .70 or above as possible, separately by sample (tied values of covariates precluded choosing precisely .70).

RESULTS

Sociodemographics. Subjects were 65% male, with a mean age of 32.6 years (sd = 6.2). 61.5% of subjects were Caucasian, 33.6% African-American, and 4.1% Hispanic. Half were single (50.0%), with 28.1% married or cohabitating and 21.0% separated or divorced; more than half of the subjects were employed (57%). They reported using cocaine 11.7 days (sd = 8.7), and spending an average of \$1,493 on cocaine during the month prior to entering the study (sd = \$1,671).

Prevalence of current PTSD diagnosis and lifetime trauma rates. Twenty-five patients (20.5%) had a current DSM-III-R diagnosis of PTSD (based on the THQ and PCL). The rate of PTSD by gender was 30.2% women (13 of the 43 women in the study) and 15.2% men (12 of the 79 men in the study). For all patients, the mean number of lifetime traumas was 5.7 out of the 23 listed on the THQ (sd = 3.9). By categories of traumatic events, the most frequent were general disaster and trauma (mean = 3.2 ; sd = 2.4), followed by crime-related (mean = 1.2; sd = 1.1), and physical/sexual (mean = 1.2; sd = 1.4). Men had significantly more general disaster and trauma (mean = 3.89 for men vs. 2.00 for women, $t=4.32$, $p<.001$) and crime-related (mean = 1.42 for men vs. 0.90 for women, $t=2.38$, $p=.019$); women had significantly more physical and sexual trauma (mean = 0.92 for men vs. 1.66 for women, $t=-2.87$, $p=.013$).

Characteristics of patients with and without PTSD

Sociodemographic characteristics. The two groups did not differ significantly on sociodemographic variables (age, marital status, ethnicity, or employment status) except for gender (52.0% women in the PTSD group versus 30.9% women in the non-PTSD group, $X^2=3.88$, $p=.049$)

T-test comparisons. Independent t-tests were conducted as a first, basic comparison of the PTSD and non-PTSD groups on the main study variables. Results of this analysis are

displayed in Table 1 and indicate that in all significant comparisons of the PTSD and non-PTSD groups, the former were more symptomatic. A summary of specific results is as follows (referencing only those results that passed the Bonferroni level to control for Type I error).

Trauma measures. Not surprisingly, the two groups differed on the trauma measures, that is, the Trauma History Questionnaire and the Posttraumatic Stress Disorder Checklist (both of which were used to define the PTSD diagnosis).

Substance abuse measures. Within the substance use domain, they differed on five variables: the Addiction Severity Index medical and psychological subscales and the Recovery Attitudes and Treatment Evaluator total score and psychiatric and family/social subscales.

Psychopathology measures. On psychopathology measures, they were significantly different on virtually all variables analyzed. That is, the PTSD group was more severe on the total number of Axis I disorders on the SCID (and also on major depression), the total number of Axis II disorders diagnosed on the SCID (and also obsessive compulsive personality disorder), the Beck Depression Inventory, the Beck Anxiety Inventory, the Brief Symptom Inventory total, the Hamilton Rating Scale for Depression (17-item), and the Inventory of Interpersonal Problems. Patients with PTSD also reported that treatment for psychological problems was more important than did non-PTSD patients on the Addiction Severity Index ($t=-5.17$, $df=112$, $p<.001$).

Logistic regression analysis. We also conducted a logistic regression to evaluate more conservatively which of the 13 variables among those found significant in Table 1 were most consistently related to the PTSD diagnosis. Of the 300 bootstrap runs, the most common model contained only the Beck Depression Inventory total score and the Brief Symptom Inventory global scale, with sensitivity at 80%.

DISCUSSION

Our results can be summarized as several main findings. We found a 20.5% rate of PTSD (based on self-report) in this study of cocaine-dependent outpatients. When analyzed by gender, women had the highest rate of PTSD at 30%, with men at 15%. Patients with PTSD were more symptomatic than non-PTSD patients in every significant comparison of the two groups. The most consistent finding was in psychopathology symptoms, a domain in which the PTSD and non-PTSD groups differed significantly on nearly every variable. Moreover, the Beck Depression Inventory and the Brief Symptom Inventory provided a particularly consistent and sensitive prediction of PTSD status in the logistic regression bootstrap analysis (our more conservative test of the PTSD versus non-PTSD groups). Surprisingly, however, PTSD patients did not differ from non-PTSD patients in sociodemographic characteristics or current substance use. We also found men to have a higher number of general disaster and crime-related traumas than women, and women to have a higher number of physical and sexual traumas, across the sample as a whole. The mean incidence of lifetime traumas in the full sample (5.7) was remarkably high.

To our knowledge, these results are the first published account of PTSD symptoms in cocaine-dependent patients, and provide a broader range of descriptive findings than has previously been available on any study of co-occurring PTSD and substance use disorder. Because patients were studied in the course of a standardized, multisite clinical trial, the level of rigor in patient sampling and diagnostic assessment was high. The sociodemographic characteristics of our patients indicate a racially diverse mix, a relatively high percentage of women for a substance dependence study, and a fairly wide range of addiction severity and employment status. All conclusions, however, must be tempered by the limitations of the study:

the small subgroup on which comparisons were made (i.e., only 25 patients in the PTSD group), the potential for Type I error due to the number of comparisons conducted in some analyses, the use of several scales that have not yet been psychometrically validated, and occasional missing data on some variables. In addition, the use of self-report PTSD measures (albeit with some previous validation using interview methods) precluded clinical judgment to fully ascertain the PTSD diagnosis, such as the sometimes difficult determination of whether Criterion A was met. The use of various self-report measures may also have capitalized on PTSD patients' tendency to perhaps overreport symptoms.

It is notable that the rate of PTSD in this study is consistent with other published rates in the literature despite variations among studies in sampling and assessment. The finding that women had twice the rate of PTSD than did men is also consistent with existing literature. In this report, we might have expected the incidence of PTSD to be underestimated due to the use of self-report rather than an interview method for that diagnosis, exclusion criteria that may have resulted in less severe patients than in other clinical settings (e.g., the requirement that patients not be in concurrent treatments during their participation in this study), assessments that were conducted at the start of treatment when awareness or willingness to disclose PTSD may have been limited, and the restricted set of outpatients who successfully completed the stabilization phase and reached randomization. We thus speculate that in non-research settings, rates of the PTSD/substance dependence dual diagnosis might likely be higher. The high mean rate of traumas in the group as a whole--5.7-- alerts us to such potential, as well as to the complicated interaction of trauma and substance abuse lifestyles.

A surprising finding was the absence of difference for the PTSD and non-PTSD groups on substance abuse measures and sociodemographic characteristics. It might have been expected that the PTSD subgroup would be more severe in these domains. The fact that all subjects were volunteers for outpatient substance abuse treatment, however, may have narrowed the range (and thus the ability to find results) in the substance use domain.

With regard to assessment, screening for PTSD in substance dependent patients may be facilitated by use of brief self-report measures such as were used in this study to obtain a provisional diagnosis of PTSD. Such screening may be particularly important given reports that PTSD is often not assessed in substance abuse treatment settings (37).

Future research will be needed to confirm these results, as well as to explore the relationship between drug of choice and PTSD, to examine change over time in PTSD and substance use symptoms (e.g., does abstinence lead to increased PTSD symptoms?), to unravel the causal order of the two disorders, and to study the relationship of these comorbid diagnoses to treatment outcome. We echo the mandate suggested by other writers (1, 21, 38) for increased clinical and research attention to this important subgroup.

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Table 1. PTSD (n=25) versus Non-PTSD (n=97) patients on Trauma, Substance Use, and Psychopathology

Questionnaire	Non-PTSD mean (sd)	PTSD mean (sd)	t, df
<u>TRAUMA MEASURES</u>			
Trauma History Questionnaire (THQ; n=118) (SR)^f			
Total: Total Traumas Reported	5.15 (3.71)	8.17 (3.97)^{****a}	-3.39, 115^b
Subscales: Crime-Related Events	1.14 (1.15)	1.68 (1.00)*	-1.99, 116
General Disasters and Trauma	3.02 (2.38)	4.14 (2.42)*	-2.52, 106
Physical and Sexual Experiences	0.89 (1.12)	2.46 (1.46)^{***}	-4.31, 24.5^c
Post-Traumatic Stress Disorder Checklist (PCL; n=114) (SR)			
Total: All Symptoms	1.60 (0.47)^b	3.24 (0.50)^{***}	-15.14, 114
Subscales: Intrusive Symptoms (Criteria B)	1.63 (0.75)	3.12 (0.68)^{***}	-8.97, 112
Avoidance Symptoms (Criteria C)	1.60 (0.54)	3.34 (0.56) ^{***}	-14.04, 112
Arousal Symptoms (Criteria D)	1.57 (0.57)	3.21 (0.78)^{***}	-9.92, 31.9^c
Age of 1st Trauma Reported on THQ (n=108) (SR)	13.19 (7.52)	8.41 (9.39)*	2.52, 106
<u>SUBSTANCE USE MEASURES</u>			
Addiction Severity Index (ASI; n=119) (IV)			
Subscales: Medical •^g	0.14 (0.23)	0.32 (0.31)^{***}	-3.26, 117^d
Psychological •	0.16 (0.20)	0.40 (0.23) ^{***}	-5.09, 116
Recovery Attitude and Treatment Evaluator-Clinical Evaluation (RAATE; n=117) (IV)			
Total •	1.53 (0.35)	1.82 (0.34)^{***}	-3.55, 115
Subscales: Acuity of Psychiatric/Psychological Problems •	1.31 (0.49)	1.96 (0.72)^{***}	-4.02, 25.6^c
Social/Family Environmental Status •	1.75 (0.45)	2.30 (0.65) ^{***}	-3.39, 26.0 ^c
<u>PSYCHOPATHOLOGY MEASURES</u>			
Structured Clinical Interview- DSM-III-R: (SCID; n=112) (IV)			
Axis I (n=112): Number of DSM-III-R Axis I Diagnoses •	3.24 (1.63)	4.41 (1.82)^{**}	-2.94, 110^e
Major Depression	12.2% (n=11)	45.5% (n=10) ^{***}	X ² =12.82
Sedative Dependence	1.1% (n=1)	9.1% (n=2)*	X ² =4.32
Simple Phobia	2.2% (n=2)	13.6% (n=3)*	X ² =5.40
Axis II (n=112): Number of DSM-III-R Axis II Diagnoses •	0.28 (0.60)	0.95 (1.73)^{**}	-3.06, 110
Antisocial Personality	0.0% (n=0)	4.5% (n=1)*	X ² =4.13
Obsessive-Compulsive Personality	0.0% (n=0)	17.6% (n=3)^{***}	X²=13.15
Paranoid Personality	2.8% (n=2)	23.5% (n=4)*	X ² =9.42
Passive-Aggressive Personality	2.8% (n=2)	17.6% (n=3)*	X ² =5.73
Schizotypal Personality	0.0% (n=0)	5.9% (n=1)*	X ² =4.28
Beck Depression Inventory (Total) (BDI; n=118) (IV) •	7.25 (6.24)	15.79 (9.15)^{***}	-4.32, 28.7^c
Beck Anxiety Inventory (Total) (BAI; n=111) (IV) •	4.15 (5.04)	12.48 (10.96)^{***}	-3.47, 23.2^c
Brief Symptom Inventory (Total) (BSI; n=118) (SR) •	0.37 (0.44)	1.14 (0.74)^{***}	-4.80, 25.8^e
Global Assessment of Functioning (GAF; n=105) (IV) •	61.58 (8.72)	55.70 (9.02) ^{**}	2.70, 103
Hamilton Depression Scale - 17 Item (HAM-D; n=119) (IV) •	5.46 (5.38)	12.36 (6.61)^{***}	-5.43, 117
Inventory of Interpersonal Problems (Total) (IIP; n=119) (SR) •	0.98 (0.58)	1.47 (0.64)^{**}	-3.71, 117

a * p≤.05; ** p≤.01; *** p≤.001

b Bold items meet family-wise Bonferroni's correction level of significance for trauma measures (p<.0056)

Cocaine dependence and PTSD

- c Separate variance estimate used
- d Bold items meet family-wise Bonferroni's correction level of significance for substance use measures ($p < .0033$)
- e Bold items meet family-wise Bonferroni's correction level of significance for psychopathology measures ($p < .0042$)
- f (IV) = Interview by trained interviewer; (SR) = Self-Report questionnaire
- g Bulleted (●) variables were included in the logistic regression analysis

Note: The following measures were not significant: Percent positive drug screens for cocaine or for any drug; Addiction Severity Index: Employment, Alcohol, Drug, Legal, and Family/Social subscales; Addiction Recovery Scale; Beliefs About Substance Abuse; Relapse Prediction Scale; Weekly Self-Help: Percent attending self-help; RAATE Subscales: Resistance to Treatment, Resistance to Continuing Care, and Acuity of Biomedical Problems; REACT.