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Childhood Maltreatment, Perceived Stress, and Stress-Related Coping in Recently Abstinent Cocaine Dependent Adults

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Abstract

The authors examined associations between a personal history of childhood maltreatment and the perceived stress and stress-coping styles of recently abstinent and treatment-engaged cocaine dependent adults. Fifty men and 41 women at an inpatient treatment and research facility were administered the short form of the Childhood Trauma Questionnaire (D. P. Bernstein & L. Fink, 1998; D. P. Bernstein et al., 2003), the Perceived Stress Scale (S. Cohen, T. Kamarck, & R. Mermelstein, 1983), and the COPE Questionnaire (C. S. Carver, M. R. Scheier, & J. K. Weintraub, 1989). Simple and multiple linear regression analyses were used to analyze relationships while adjusting for relevant covariates. Findings indicate that overall childhood maltreatment severity was significantly associated with greater perceived stress and greater use of avoidance stress-coping strategies. These findings suggest that having a history of childhood maltreatment may influence how recently abstinent cocaine dependent individuals experience and cope with stress. Stress and stress-coping focused interventions may be particularly indicated for cocaine dependent individuals with histories of childhood maltreatment.

Keywords

stress; coping; childhood maltreatment; cocaine; prevalence

Rates of childhood maltreatment are higher in substance abusers than in the general population. Using the Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein & Fink, 1998; Bernstein et al., 2003) to assess childhood maltreatment in a community sample of active drug users, Medrano, Hatch, Zule, and Desmond (2002) found that 53% of women and 23% of men were sexually abused, 53% of women and 43% of men were physically abused, 58% of women and 39% of men were emotionally abused, 52% of women and 50% of men were physically neglected, and 65% of women and 52% of men were emotionally neglected. Using the same methodology, Paivio and Cramer (2004) found in an undergraduate sample that 19.3% of women and 11.8% of men were sexually abused, 15.7% of women and 22.2% of men were physically abused, 37.5% of women and 30.1% of men were emotionally abused, 14.6% of women and 16.3% of men were physically neglected, and 37.5% of women and 45.1% of men were emotionally neglected. A larger percentage of women than men experienced sexual abuse in the drug abusing sample, and women reported a greater extent of sexual and emotional abuse compared with men in the undergraduate sample.

Substance abusers, in addition to having higher rates of childhood maltreatment than members of the general population, have been found to have levels of psychological distress that increase with increasing severity of all types of childhood maltreatment (Medrano et al., 2002). This association is important considering that stress increases an individual's vulnerability to

addiction and addiction relapse (Goeders, 2003; Sinha, 2001; Wills & Hirky, 1996). For cocaine abusers in particular, relapse rates have typically exceeded 45% (McKay, Alterman, Mulvaney, & Koppenhaver, 1999), and stress has been associated with cocaine craving (Sinha, Catapano, & O'Malley, 1999; Sinha, Fuse, Aubin, & O'Malley, 2000), duration of cocaine use (Karlsgodt, Lukas, & Elman, 2003), and cocaine relapse (McMahon, 2001; Sinha, 2001; Sinha, Garcia, Paliwal, Kreek, & Rounsaville, 2006; Wallace, 1989). There is also evidence that the way in which people cope with stress is related to substance use. For example, researchers have found that greater use of avoidance stress-coping strategies (i.e., disengaging from investing effort to cope with a problem) is related to a greater likelihood of drug use initiation, higher levels of ongoing drug use, and a greater probability of relapse, whereas greater use of active stress-coping strategies (i.e., taking steps to deal with a problem) most consistently functions to protect individuals from substance use initiation and relapse (Wagner, Myers, & McIninch, 1999; Wills & Hirky, 1996).

Childhood maltreatment may influence substance use behavior through its effect on stress and coping. There is emerging evidence that childhood maltreatment may negatively affect the maturation of self-regulatory systems that enable an individual to modulate and tolerate aversive emotional states (Cicchetti & Toth, 2005; Hein, Cohen, & Campbell, 2005). Childhood maltreatment may disrupt neurobiological development and elevate subjective stress by biologically altering the brain's response to stress (Bugental, 2004; DeBellis, 2002; Heim & Nemeroff, 2001; Heim et al., 2000; Sinha, 2005; Wills & Hirky, 1996). Childhood maltreatment may also affect an individual's characteristic style of coping with stress so that he or she may be more likely to rely upon maladaptive strategies, such as avoidance of problems, wishful thinking, and social withdrawal, rather than active strategies, such as seeking information and advice from others (Bal, Crombez, Van Oost, & Debourdeaudhuij, 2003; Futa, Nash, Hansen, & Garbin, 2003; Krause, Mendelson, & Lynch, 2003; Leitenberg, Gibson, & Novy, 2004; Thabet, Tischler, & Vostanis, 2004).

Elevated stress and maladaptive coping related to childhood maltreatment may translate to greater substance use behavior by making the coping motives of substance use appear more attractive (Wills & Hirky, 1996). Indeed, substance users commonly report using psychoactive substances such as alcohol, cannabis, and cocaine to cope with stress and regulate affect (Boys, Marsden, & Strang, 2001). Furthermore, coping motives for substance use have been found to mediate the relationship between childhood maltreatment and substance use problems (Grayson & Nolen-Hoeksema, 2005; Schuck & Widom, 2001). Because greater stress and maladaptive coping may increase the chances of using substances as a stress-coping strategy, it is important to examine how childhood maltreatment is related to subjective stress and stress coping in cocaine dependent individuals in order to improve cognitive-behavioral interventions in cocaine dependence. However, an examination of these associations in cocaine dependent adults has not been conducted thus far.

Therefore, we examined associations between a personal history of childhood maltreatment (overall exposure to sexual abuse, physical abuse, emotional abuse, physical abuse, and emotional neglect) and the perceived stress and stress-coping styles of recently abstinent cocaine dependent adults. We administered measures of childhood maltreatment, perceived stress, and stress-coping to cocaine dependent individuals seeking treatment at an inpatient research and treatment facility. We hypothesized that greater severity of childhood maltreatment would be related to a greater tendency to use maladaptive avoidance stress-coping strategies (e.g., mental and behavioral disengagement) and a lower tendency to use adaptive problem and emotion-focused stress-coping strategies (e.g., planning, problem solving, seeking out social support). Furthermore, we hypothesized that greater severity of childhood maltreatment would be related to greater perceived stress. These hypotheses were tested after accounting for relevant covariates that may also influence stress and stress-related coping.

Method

Participants

Fifty men and 41 women ($N = 91$) seeking inpatient treatment for cocaine dependence were recruited to participate in the study. All participants met diagnostic criteria for current cocaine dependence, which was determined by interview using the Structured Clinical Interview for DSM-IV Axis I Disorders (First, Spitzer, Gibbon, & Williams, 1995). Recent cocaine use was confirmed by positive urine toxicology screens upon study enrollment. Participants were excluded if they were currently dependent on anything other than cocaine, alcohol, or nicotine. Those requiring an immediate alcohol detoxification were excluded. Individuals taking medications for medical conditions and those on medications for comorbid psychiatric disorders were also excluded. This final exclusion was initiated in order to ensure a primary substance dependent sample and not a primary psychiatric sample with comorbid substance use problems. The study protocol was approved by the Yale University Human Investigation Committee, and all participants signed written informed consent statements. Demographics, sample characteristics, and lifetime rates of co-occurring disorders are displayed in Table 1.

Procedure

Those who met the study criteria (around one third of those screened) and signed informed consents were admitted to the Clinical Neuroscience Research Unit of the Connecticut Mental Health Center for 2–4 weeks of inpatient substance abuse treatment and research participation. The Clinical Neuroscience Research Unit is a locked inpatient treatment and research facility with no access to alcohol or drugs and very limited access to visitors. All participants underwent an initial medical evaluation and were administered research assessments at the end of their 1st week.

Measures

CTQ-SF—The CTQ-SF is a retrospective self-report questionnaire that consists of 25 clinical items used to assess the extent to which respondents experienced five types of negative childhood experiences: physical, sexual, and emotional abuse, and physical and emotional neglect. Each clinical subscale is made up of five items, and severity scores for each subscale can range from 5 to 25. A summary score can also be calculated using all 25 clinical items to quantify the severity of overall childhood maltreatment (Scher, Stein, Asmundson, McCreary, & Forde, 2001). The summary score was used in the current study as an index of overall maltreatment severity; this score takes into account scores from all five clinical subscales. Bernstein and Fink (1998) reported good internal consistency and test–retest reliability of the measure. In our sample, internal consistency coefficient (standardized Cronbach’s alpha) for overall childhood maltreatment was .87.

Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983)—The PSS is a 14-item self-report questionnaire that assesses the degree to which recent life situations are appraised as stressful. Respondents are asked to indicate how often they have felt or thought a certain way in the past month (e.g., “In the last month, how often have you been upset because of something that happened unexpectedly?”) on a 5-point scale that ranges from 0 (*never*) to 4 (*very often*). Responses are then summed to indicate the level of perceived (subjective) stress. The PSS has demonstrated adequate internal and test–retest reliability (Cohen et al., 1983). In our sample, standardized Cronbach’s alpha was .80.

COPE Questionnaire (Carver, Scheier, & Weintraub, 1989)—The COPE Questionnaire is a 53-item self-report measure of the different ways people tend to respond to stress. Participants are asked to indicate the extent to which they engage in various behaviors (“I try to come up with a strategy about what to do; I pretend that it has not really happened”)

when faced with problems on a 4-point scale that ranges from 1 (*Don't do this at all*) to 4 (*Do this a lot*). The original scales and factors described by Carver et al. (1989) were used for our analyses. Five scales (four items each) measure aspects of problem-focused coping (active coping, planning, suppression of competing activities, restraint coping, and seeking of instrumental social support); five scales measure emotion-focused coping (seeking of emotional social support, positive reinterpretation, acceptance, denial, turning to religion); and three scales measure coping responses that are arguably less useful or avoidant (focus on and venting of emotions, behavioral disengagement, mental disengagement). In our sample, standardized Cronbach's alpha was .89, .83, and .70 for problem-focused coping, emotion-focused coping, and avoidance coping, respectively.

Timeline followback—Frequency and average daily amount of crack/cocaine and alcohol use were documented using a 90-day timeline followback substance use calendar (Sobell & Sobell, 1996), a reliable instrument used to assess self-reported substance use in drug abusing populations (Fals-Stewart, O'Farrell, Freitas, McFarlin, & Rutigliano, 2000).

Data Analysis Plan

Using validated methods (Paivio & Cramer, 2004), we established prevalence rates for each type of childhood maltreatment by using the recommended cut-scores for low severity on each clinical subscale of the CTQ-SF (Bernstein & Fink, 1998). Scores above the recommended cut-scores were considered cases of the particular type of abuse or neglect measured by the subscales. The cut-scores are as follows: sexual abuse (5), physical abuse (7), emotional abuse (8), emotional neglect (9), and physical neglect (7). Next, we determined whether participants met the cutoff for zero to all five types of childhood maltreatment.

In studying relationships between a personal history of childhood maltreatment and the perceived stress and stress-coping styles of cocaine dependent adults, we considered a number of covariates. We considered gender as a potential covariate because research indicates gender differences with respect to how substance abusing individuals respond to stressful situations (Pelissier & Jones, 2006; Timko, Finney, & Moos, 2005). Women have also been found to be more likely than men to seek social support, to accept responsibility, and to escape when faced with very stressful situations (Pelissier & Jones, 2006). Substance abusing women also report more extended family stressors and fewer spousal resources than men (Timko et al., 2005), and they exhibit higher levels of psychological stress than men (Medrano et al., 2002). We examined race and educational status as potential covariates because research indicates race differences in reports of pain and strategies for coping with pain that are mediated by educational attainment (Cano, Mayo, & Ventimiglia, 2006). Racial differences have also been found with respect to how individuals with a stressful occupation (e.g., law enforcement) cope with workplace stress (Haarr & Morash, 1999). We considered age as a potential covariate because research indicates age differences in how individuals cope with stress (e.g., Blanchard-Fields, Stein, & Watson, 2004; Derks, de Leeuw, Hordijk, & Winnubst, 2005). We examined employment status as a potential covariate because occupation and work organization conditions can be a considerable source of stress (Marchand, Demers, & Durand, 2005). Finally, because using substances to cope with stress may hinder the development of a more adaptive stress-coping repertoire (Wills & Hirk, 1996), we included the age at which subjects first began using alcohol and cocaine and subjects' recent use patterns of these substances (frequency and amount) as possible covariates.

We examined associations between relevant baseline demographics and substance use variables and each coping factor and PSS score. If any variable was associated with a specific coping factor and/or the PSS score, we controlled for that particular variable while conducting the analyses. Pearson correlations (for continuous variables) and analyses of variance (for

categorical variables) were used to examine associations of different covariates (demographics and substance use variables) with the three coping factors and the PSS score. Simple linear regression analysis was used to examine associations between severity of overall childhood maltreatment (as measured by the overall CTQ-SF summary score) and the dependent variables (as measured by the COPE Questionnaire and PSS) if none of the demographic or substance use variables was significantly associated with the dependent variable. Multiple linear regression analysis was used if any of the demographic or substance use variables were significantly associated with the dependent variables.

Results

Prevalence and Severity of Childhood Maltreatment

Means, standard deviations, and prevalence rates of each type of childhood maltreatment are presented in Table 2.

Covariates

Ethnicity was associated with level of perceived stress, $F(2, 88) = 6.30, p < .01$. Post hoc analysis using the Tukey-Kramer method to adjust for multiple comparisons indicated that the group consisting of non-Caucasians and non-African Americans ($M = 34.9, SD = 11.4$) reported greater perceived stress than African Americans ($M = 25.4, SD = 7.1$), $t_{\text{means}} = -3.48, p < .01$, and Caucasians ($M = 27.9, SD = 7.1$), $t_{\text{means}} = -2.41, p < .05$. Additionally, employment status was associated with level of perceived stress, $F(1, 89) = 6.62, p < .02$, with employed subjects reporting higher levels of stress ($M = 30.9, SD = 7.4$) than unemployed subjects ($M = 26.0, SD = 7.8$). None of the covariates were associated with coping.

Associations Between Overall Childhood Maltreatment Severity and Perceived Stress

The multiple regression analysis with indicators for ethnicity and employment status included in the model indicated that the overall relationship was significant (adjusted $R^2 = 0.27, R^2 = 0.30$), $F(4, 86) = 9.21, p < .01$. With covariates (ethnicity and employment status) held constant, perceived stress was positively associated with severity of overall childhood maltreatment (partial $R^2 = 0.11$), $t(86) = 4.04, p < .01$. The partial R^2 value suggests that out of the overall 30% variance explained by this multiple linear regression model, 11% was explained by childhood maltreatment. Of the remaining variance, 10% was explained by employment status (partial $R^2 = 0.10$), $t(86) = 2.9, p < .01$, and 9% was explained by ethnicity: Caucasians (partial $R^2 = 0.05$), $t(86) = 3.36, p < .01$; African Americans (partial $R^2 = 0.04$), $t(86) = 2.53, p < .02$.

Associations Between Overall Childhood Maltreatment Severity and Stress-Related Coping

The simple linear regression analysis with avoidance coping as the dependent variable and overall childhood maltreatment severity as the independent variable indicated a significant relationship (adjusted $R^2 = 0.07, R^2 = 0.08$), $F(1, 89) = 7.59, p < .01$. Overall childhood maltreatment severity was positively associated with greater use of avoidance coping strategies, $t(89) = 2.76, p < .01$. No significant relationships were found between overall childhood maltreatment severity and the use of problem-focused or emotion-focused coping strategies.

Discussion

Consistent with previous findings (Medrano et al., 2002), all types of childhood maltreatment were highly prevalent in our cocaine dependent sample. Most cocaine dependent inpatients reported multiple types of childhood maltreatment, and only 15% reported no maltreatment at all. In addition, the prevalence of childhood maltreatment was higher than that found in a

normative undergraduate sample (Paivio & Cramer, 2004), and severity scores for overall childhood maltreatment were higher than those reported by a racially mixed community sample of men and women (see Scher et al., 2001).

Our findings suggest that the severity of overall childhood maltreatment experienced by recently abstinent cocaine dependent adults has a significant relationship with perceived stress and avoidance coping in adulthood. Specifically, childhood maltreatment explained 11% of the variance in perceived stress and 7% of the variance in avoidance coping. Considering that greater levels of acute stress increases cocaine craving (Sinha et al., 1999, 2000) and risk of cocaine relapse (McMahon, 2001; Sinha, 2001; Sinha et al., 2006; Wallace, 1989), those with the most severe childhood maltreatment histories may be more susceptible to stress-related problems including cocaine relapse.

Our findings suggest that having a more severe childhood maltreatment history may result in a greater sensitivity to stress that could make cocaine use more negatively reinforcing and result in a potentially treatment-resistant group of patients. Although effective cognitive-behavioral coping skills treatments for cocaine addiction are available (e.g., Carroll, 1998), the current findings suggest that for this group of patients, basic coping skills training may not be adequate in decreasing distress and avoidant coping in order to decrease substance use and relapse. Additional interventions that focus on stress tolerance, altering appraisals of stress, stress desensitization, and affect and emotion regulation skills may be of particular benefit to patients with childhood maltreatment histories.

The fact that childhood maltreatment is a preventable phenomenon that occurs early in life and affects psychological functioning well into adulthood makes our findings relevant to clinical practice with children as well. Early identification and treatment of maltreated children may help prevent stress sensitivity or the development of a less adaptive style of coping. Assessment of coping ability and the implementation of coping skills and stress tolerance training may also be indicated for maltreated children in an effort to increase their coping efficacy and decrease their vulnerability to stress later in life.

It is important to note the following limitations. First, the amount of variance captured by childhood maltreatment is minimal, and the findings are based on a relatively small sample size. Furthermore, these findings may not generalize to other drug dependent samples or nonclinical samples of cocaine dependent adults. Also, the reports of childhood maltreatment relied on retrospective self-report data, and it is unclear whether self-reports represent true histories. However, confidentiality was ensured, and participants had no study-related reason to misrepresent their childhood maltreatment histories. We also want to note that retrospective findings in child maltreatment research, while limited, should not be disregarded because prospective designs require maltreatment survivors to be identified and followed and some sort of intervention is ethically required (Kendall-Tackett & Becker-Blease, 2004). In effect, identified children may be very different from children who are not identified, and retrospective studies may measure a segment of the population that is missed by prospective studies (Kendall-Tackett & Becker-Blease, 2004). Another limitation of our study is that the correlational analysis precludes speculation about causality. Many factors in addition to child maltreatment, such as genetics, biological responses to stress, and such social factors as parental modeling, may have contributed to our findings. Future studies may benefit by examining the relative contribution of these other factors to the development of substance use disorders. Finally, because we excluded individuals who were taking medications for psychiatric or medical conditions, the results may not generalize to a more severe, dually diagnosed population, a population that may have evidenced an even stronger relationship between childhood maltreatment and perceived stress and stress-coping.

Although the specific relationships found in this study were moderate, it is important to note that the experience of childhood maltreatment is a distal factor. There may be more proximal factors, such as altered stress reactivity as a result of early trauma or repeated experiencing of trauma in adulthood that may contribute to, or account for, a larger amount of variance in the way cocaine dependent individuals perceive and cope with stress. Nevertheless, the relationships found may have direct implications for addiction prevention and treatment. Ultimately, recently abstinent cocaine dependent individuals who sustained the most severe childhood maltreatment may be most susceptible to stress-related problems, including cocaine relapse.

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Table 1

Demographics and Sample Characteristics (N = 91)

Measure	Data
Age (<i>M, SD</i>)	36.5 (6.0)
Gender (<i>n, %</i>)	
Men	50 (55.0%)
Women	41 (45.0%)
Ethnicity (<i>n, %</i>)	
Caucasian	29 (31.9%)
African American	53 (58.3%)
Other	9 (9.9%)
Employment status (<i>n, %</i>)	
Employed	22 (24.2%)
Unemployed	69 (75.8%)
Years of education (<i>M, SD</i>)	12.4 (1.5)
Years of cocaine use (<i>M, SD</i>)	8.9 (5.7)
Number of days cocaine used in last 90 days(<i>M, SD</i>)	45.1 (26.0)
Amount of cocaine used per occasion in last 90 days(<i>g; M, SD</i>)	1.2 (1.2)
Years of alcohol use (<i>M, SD</i>)	17.6 (24.8)
Number of days alcohol used in last 90 days(<i>M, SD</i>)	23.4 (24.6)
Amount of alcohol used per occasion in last 90 days(<i>no. drinks; M, SD</i>)	5.2 (4.9)
Route of cocaine use (<i>n, %</i>)	
Smoked	83 (91.2%)
Other	8 (8.8%)
Lifetime psychiatric/substance use disorders (<i>n, %</i>)	
PTSD	15 (17.4%)
Other anxiety disorder	12 (14.0%)
Major depressive disorder	17 (19.8%)
Cannabis dependence	30 (34.9%)
Opioid dependence	4 (4.7%)
Alcohol dependence	47 (54.7%)

Note. PTSD = posttraumatic stress disorder.

Table 2

Means, Standard Deviations, and Prevalence of Childhood Maltreatment

	Overall (N = 91)			Men (n = 50)			Women (n = 41)		
	M	SD	P	M	SD	P	M	SD	P
Sexual Abuse (C = 5) ^a	8.8	5.9	40.2	7.1	4.4	28.0	11.0	7.0	54.8
Physical Abuse (C = 7)	9.6	5.3	53.3	10.1	5.2	62.0	9.0	5.2	42.9
Emotional Abuse (C = 8)	11.4	5.8	56.5	10.8	5.2	56.0	12.2	6.3	57.1
Physical Neglect (C = 7)	7.7	2.8	44.6	7.9	2.9	50.0	7.5	2.6	38.1
Emotional Neglect (C = 9)	11.5	5.1	59.8	11.5	5.3	56.0	11.6	4.9	64.3
Overall maltreatment	49.0	18.5		47.5	16.1		51.2	20.9	
Total types of maltreatment(% meeting cutoffs)									
No maltreatment			15.2			12.0			19.1
Any one maltreatment type			13.0			14.0			11.9
Any two maltreatment types			21.7			24.0			19.0
Any three maltreatment types			18.5			22.0			14.3
Any four maltreatment types			15.2			16.0			14.3
All five maltreatment types			16.3			12.0			21.4

Note. C = cut-score for low abuse and neglect recommended by Bernstein and Fink (1998); P = percent of the sample above C.

^aSexual abuse means for men versus women: $t(66.4) = 3.10, p < .01$. Prevalence of sexual abuse for men versus women: $\chi^2(1) = 6.80, p < .01$.