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Gender Specific Associations Between Types of Childhood Maltreatment and the Onset, Escalation and Severity of Substance Use in Cocaine Dependent Adults

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Abstract

We examined associations between types of childhood maltreatment and the onset, escalation, and severity of substance use in cocaine dependent adults. In men ($n = 55$), emotional abuse was associated with a younger age of first alcohol use and a greater severity of substance abuse. In women ($n = 32$), sexual abuse, emotional abuse, and overall maltreatment was associated with a younger age of first alcohol use, and emotional abuse, emotional neglect, and overall maltreatment was associated with a greater severity of substance abuse. There was no association between childhood maltreatment and age of nicotine or cocaine use. However, age of first alcohol use predicted age of first cocaine use in both genders. All associations were stronger in women. Findings suggest that early intervention for childhood victims, especially females, may delay or prevent the early onset of alcohol use and reduce the risk for a more severe course of addiction.

Keywords

Childhood maltreatment; gender differences; substance use

Childhood maltreatment is associated with the use and misuse of a variety of substances (1–4). However, the child maltreatment literature is limited by its historically disproportionate focus on sexual and physical abuse and its placement of emotional abuse and neglect to the periphery of investigations (5). Given that child neglect is most prevalent form of maltreatment, it is striking that it is not understood as well as other forms of maltreatment (6). Additionally, because emotional abuse was deemed less damaging than physical forms of maltreatment and because it was difficult to identify and define, until recently many researchers have not explicitly included this form of abuse in their studies (7,8). This critique is not meant to imply that the continued study of sexual and physical abuse is unwarranted. Rather, this research trend suggests that there is a greater need for investigation of the impact of all types of maltreatment on substance use development.

The manner by which childhood maltreatment influences substance use may be best explained by stress-coping models of addiction. According to Wills and Hirky (9), living in an environment with few models of adaptive coping and experiencing negative life events may place individuals at risk for substance use by elevating stress, reducing reinforcement from the social environment, and making the coping functions of substance use appear more attractive. Childhood maltreatment fits into this model as an aversive early life experience that can increase an individual's risk for experimental drug use and later addiction.

Therefore, an important avenue of investigation would be to examine the influence of all types of childhood maltreatment on the age at which individuals first use various substances and the age at which they escalate to regular use of substances. Understanding these relationships is important from a prevention standpoint because certain types of childhood maltreatment may differentially place individuals at risk for initiating use of different drugs across the lifespan. Also, while several studies have been conducted to identify the stages of drug use, less has been done to identify the risk factors underlying progression to heavier use of substances or progression of use from one drug to another (10).

To this end, we retrospectively examined relationships between a personal history of childhood maltreatment and the age of first use and age of onset of regular use of alcohol, nicotine, and cocaine in an inpatient sample of cocaine dependent adults. Additionally, we examined whether childhood maltreatment is related to the lifetime severity of substance use. We examined data reflecting a history of nicotine and alcohol use because of findings indicating that individuals tend to use nicotine and alcohol before initiating the use of illicit substances such as cocaine (11). Furthermore, researchers have found that the earlier an individual begins using substances that are legal for adults, the more that individual will be at risk for using illicit substances (12).

The sample included cocaine dependent adults who were participating in a comprehensive study examining the effects of stress on cocaine relapse. By ensuring that all participants were cocaine dependent, we could retrospectively examine the influence of childhood maltreatment on the progression of drug involvement from “lower stage” or “gateway” drugs such as alcohol and nicotine to cocaine, a “higher stage” drug. Further, since much research suggests that relationships between childhood maltreatment and substance use problems are stronger in women (3,4,13–17), we conducted our analyses separately by gender. We hypothesized that childhood maltreatment severity would be negatively associated with the age of first substance use and age of onset of regular substance use and positively associated with lifetime substance use severity. We also hypothesized that associations would be stronger in women.

METHOD

Participants and Procedure

Participants were treatment-seeking men ($n = 55$) and women ($n = 32$) who met DSM-IV criteria for current cocaine dependence. Eligible participants were admitted to an inpatient treatment and research facility where they were administered a large assessment battery. The study protocol was approved by the Yale University School of Medicine Human Investigation Committee, and participants provided written informed consent.

MEASURES

Childhood Trauma Questionnaire-Short Form (CTQ-SF)

The CTQ-SF (18,19) consists of 25 clinical items that assess the extent to which respondents experienced childhood physical, sexual, and emotional abuse and physical & emotional neglect. Scores from each item are summed to quantify the severity of maltreatment in each domain. A summary score can also be calculated using all 25 clinical items to quantify the severity of overall childhood maltreatment. In our sample, coefficient alpha for the clinical scales are reported as follows: sexual abuse (.94), physical abuse (.84), emotional abuse (.88), physical neglect (.51), and emotional neglect (.85).

Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I)

The SCID-I (20) is a structured clinical interview for the diagnosis of Axis I mental disorders. The SCID-I was used to assess lifetime psychiatric and substance use disorders in the sample. Further, a substance use severity variable was created by summing the number of alcohol and cocaine abuse and dependence criteria subjects endorsed experiencing over their lifetime.

Demographics Interview

A demographics interview form was used to collect information regarding participants' past substance use. Information regarding the age of first use and the age of onset of regular use of substances was used in our analyses (for alcohol and cocaine, regular use was defined as using substances at least three times per week. For nicotine, regular use was defined as using daily).

DATA ANALYSIS PLAN

Chi-squared analyses, independent samples t-tests, and Wilcoxin Rank Sum tests were used to test for gender differences with respect to characteristics of the sample (see Table 1). Simple regression was used to examine relationships between the severity of the different types of childhood maltreatment and the age of first substance use, the age of onset of regular substance use, and the lifetime severity of substance use separately in men and women.

RESULTS

Associations between Childhood Maltreatment Severity and the Onset/ Escalation of Substance Use

Findings indicated that emotional abuse severity was negatively associated with the age of first alcohol use in men [$F(1, 53) = 4.032, R^2 = .071, p = .05$]. Severity of emotional abuse [$F(1, 30) = 5.189, R^2 = .147, p = .03$], sexual abuse [$F(1, 30) = 10.101, R^2 = .252, p = .003$], and overall maltreatment [$F(1, 30) = 6.69, R^2 = .1823, p = .015$] were negatively associated with the age of first alcohol use in women.

A follow-up analysis was conducted to investigate whether age of first alcohol use predicted the age of first cocaine use and age of onset of regular cocaine use. Findings indicated that, in women, age of first alcohol use predicted the age at which cocaine was first used [$F(1, 30) = 21.732, R^2 = .42, p = .000$] and also the age at which cocaine began to be used regularly [$F(1, 30) = 8.308, R^2 = .217, p = .007$]. In men, age of first alcohol use predicted the age at which cocaine was first used [$F(1, 53) = 4.654, R^2 = .081, p = .036$].

Associations between Childhood Maltreatment Severity and Lifetime Substance Use Severity

In men, there was a positive relationship between emotional abuse severity and lifetime substance use severity [$F(1, 52) = 7.25, R^2 = .12, p = .01$]. In women, severity of emotional abuse [$F(1, 30) = 12.04, R^2 = .29, p = .002$], emotional neglect [$F(1, 30) = 9.45, R^2 = .24, p = .005$], and overall maltreatment [$F(1, 30) = 7.03, R^2 = .19, p = .01$] were positively associated with lifetime substance use severity.

DISCUSSION

Childhood maltreatment was associated with a younger age of first alcohol use which, in turn, was associated with a younger age of first cocaine use. Childhood maltreatment was also associated with a greater lifetime severity of substance use. There were gender differences with respect to the types of childhood maltreatment that were related to these outcomes and the strength of the associations. In men, there was a small but significant association between

emotional abuse severity and age of first alcohol use. In women, severity of sexual abuse, emotional abuse, and overall childhood maltreatment were all more strongly related to the age at which cocaine dependent women had their first alcoholic beverage, suggesting a stronger association between childhood maltreatment and the age of first alcohol use in women.

Contrary to hypotheses, childhood maltreatment was not directly related to the age of onset of regular alcohol use nor was it directly related to the age of first use or age of onset of regular use of nicotine or cocaine in either men or women. However, follow-up analyses indicated that there may be indirect relationships between childhood maltreatment and progression toward cocaine use that is mediated by the age of first alcohol use. Thus, while childhood maltreatment may directly contribute to the age of initial alcohol use, it may be that the impact of early alcohol use on other aspects of adolescents' lives (e.g., increased affiliation with substance using peers) contributes to a faster progression toward cocaine use.

Of particular interest for males was the finding that emotional abuse, the only form of maltreatment that was related to the age of first alcohol use, was also the only type of maltreatment that was related to lifetime substance use severity. This finding suggests that emotional abuse may influence the course and severity of substance use in men, which may prove to be a promising avenue for future study. Of particular interest in women was that sexual abuse was not directly related to lifetime substance abuse severity, yet it had the strongest relationship with the age of first alcohol use. Thus, while sexual abuse may be related to an earlier age of first alcohol use, other forms of maltreatment may have a more direct impact on substance abuse severity over a woman's lifetime. Overall, the findings indicate that early intervention for child victims, especially females, may help delay or prevent the early onset of alcohol consumption and reduce the risk for a more severe course of addiction.

These findings, while informative, must be interpreted in light of the following limitations. First, because we relied on a clinical sample of cocaine dependent men and women, it is unknown whether our findings will generalize to non-clinical samples. Second, retrospective self-report data were used, and it is unclear whether self-reports represent true histories. Another limitation of the study is that our design precludes speculation about causality. Many other factors in addition to child maltreatment, such as genetics, family, and social factors may have contributed to our findings. Finally, the relatively low psychometrics of the physical neglect subscale suggests that findings based on this scale may not be as reliable as findings derived from the other CTQ-SF scales.

Nevertheless, the study findings may have direct implications for gender-specific prevention and treatment development. Of course, given the limited focus on childhood maltreatment, it is unclear how genetics or other social and psychological factors may have additionally influenced the substance use of our sample. The addiction field will undoubtedly benefit from additional research that examines how childhood maltreatment, alone and in combination with other environmental and genetic factors, can influence the development of substance use disorders in men and women.

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Table 1

Demographics and sample characteristics by gender (Total N = 87)

	Women (N = 32)	Men (N = 55)	Significance
Age (<i>M, SD</i>)	37.19 (6.26)	36.09 (6.49)	$p = .387^d$
Years of Education (<i>M, SD</i>)	12.28 (1.49)	12.45 (1.74)	$p = .866^d$
Ethnicity (n %)			$p = .693^b$
American	19 (59.38%)	30 (54.55%)	
Caucasian	9 (28.13%)	19 (34.55%)	
Other	4 (12.51%)	6 (10.9%)	
Employment Status (n %)			$p = .017^b$
Full Time Employment	0 (0%)	13 (23.64%)	
Part Time Employment	5 (15.63%)	10 (18.18%)	
Unemployed	27 (84.38%)	32 (58.18%)	
CTQ-SF Severity Scores (<i>M, SD</i>)			
Sexual abuse	10.8 (7.2)	7.7 (5.2)	$p = .015^d$
Physical abuse	8.8 (5.0)	9.2 (4.7)	$p = .267^d$
Emotional abuse	11.1 (6.0)	10.3 (5.3)	$p = .585^d$
Physical neglect	7.4 (2.6)	7.9 (3.1)	$p = .498^d$
Emotional neglect	11.2 (4.7)	11.1 (5.4)	$p = .723^d$
Overall maltreatment	49.2 (21.7)	46.2 (17.5)	$p = .846^d$
Drug Use History Variables (<i>M, SD</i>)			
Age First Smoked Cigarettes	13.03 (2.18)	14.53 (4.03)	$p = .125^d$
Age First Smoked Cigarettes Regularly	16.62 (4.24)	17.46 (5.57)	$p = .777^d$
Age First Used Alcohol	14.31 (3.10)	14.16 (3.24)	$p = .834^c$
Age First Used Alcohol Regularly	20.5 (5.3)	17.12 (4.12)	$p = .008^d$
Age First Used Cocaine	21.56 (7.14)	20.09 (5.62)	$p = .535^d$
Age First Used Cocaine Regularly	24.63 (6.71)	22.59 (5.55)	$p = .133^c$
Substance use severity (<i>M, SD</i>);# of lifetime cocaine and alcohol abuse/dependence symptoms)	9.9 (2.7)	10.7 (2.8)	$p = .233^d$
Amount Spent on Cocaine Per Week (<i>M, SD</i>)	\$243.83 (314)	\$253.99 (306.88)	$p = .323^d$
Cocaine Route of Administration = Smoking (n %)	28 (87.5%)	52 (94.55%)	$p = .245^b$
Lifetime Prevalence of Alcohol Use Disorders (n %)			$p = .026^b$
No Lifetime Alcohol Use Disorder	10 (31.25%)	6 (10.91%)	
Lifetime Alcohol Abuse	7 (21.88%)	13 (23.64%)	
Lifetime Alcohol Dependence	15 (46.88%)	36 (65.45%)	
Lifetime Posttraumatic Stress Disorder (PTSD) (n %)	12 (37.50%)	17 (31.48%)	$p = .571^b$

Note: For variables reporting means and standard deviations, differences between men and women were tested using Wilcoxin rank sum tests for non-normally distributed data and independent samples t-tests for normally distributed data. Chi-squared analyses were conducted for frequency = prevalence rates. Results indicated gender differences on rates of employment [$\chi^2 = 10.21, p = .017$], severity of childhood sexual abuse [$z = 2.422, p = .015$], the age at which alcohol was first used regularly [$z = 2.6447, p = .008$], and lifetime prevalence of alcohol use disorders [$\chi^2 = 4.98, p = .026$].

^aWilcoxin rank sum test.

^bChi-Squared test.

^cTwo sample t-test.