Published in final edited form as:

Addict Behav. 2011 December ; 36(12): 1205–1212. doi:10.1016/j.addbeh.2011.07.025.

Childhood Abuse and Harmful Substance Use among Criminal Offenders

Marc T. Swogger^a, Kenneth R. Conner^{a,b}, Zach Walsh^c, and Stephen A. Maisto^d

^aUniversity of Rochester Medical Center

^bCanandaigua VA Center of Excellence

^cUniversity of British Columbia-Okanagan

^dSyracuse University

Abstract

Childhood abuse is a serious problem that has been linked to harmful alcohol and drug use in non-offender samples. In a sample of 219 criminal offenders, we examined the associations between childhood physical and sexual abuse and three indices of harmful substance use. Results indicate that physical abuse was associated with symptoms of alcohol use disorder and sexual abuse was associated with symptoms of drug use disorder among offenders. Both forms of childhood abuse were associated with substance use consequences, even after taking into account substance type and frequency of use. No gender by childhood abuse interactions were found. Symptoms of depression and generalized anxiety partially mediated relationships between childhood abuse and substance use consequences. Findings underscore the importance of assessing childhood abuse and treating anxiety and depression among offenders who exhibit harmful substance use.

Keywords

Child Abuse; Substance Abuse; Criminal Offenders; Alcohol Use; Drug Use

Childhood abuse is a serious public health problem that is associated with numerous negative mental health outcomes. It is related to internalizing disorders, such as depression and generalized anxiety disorder (GAD), trauma-related conditions, including posttraumatic stress disorder (PTSD; Binder et al., 2008; Malinosky-Rummell & Hansen, 1993), as well as externalizing problems, such as poor impulse control and aggression (Lansford et al., 2007; Liebshutz et al., 2002). Childhood abuse is also associated with harmful substance use, which may exacerbate other emotional, behavioral, and interpersonal problems. Indeed, a substantial literature has identified links between childhood physical and sexual abuse and later substance use problems (Dube et al., 2003; Langeland, Draijer, & van den Brink, 2004; Schneider, Cronkite, & Timko, 2008; Nelson et al., 2002). The prevalence of both childhood abuse and the harmful use of alcohol and other drugs is particularly high among criminal

© 2010 Elsevier Ltd. All rights reserved.

Corresponding author, Marc T. Swogger, University of Rochester Medical Center, 300 Crittenden Blvd., Rochester, NY 14642.
marc_swogger@urmc.rochester.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

offenders, and both factors have been proposed to increase risk for criminality (Langan & Pelissier, 2001; U.S. Department of Justice, Bureau of Justice Statistics, 2006).

Given the potential influence of alcohol and other drug use on criminal behavior, the determination of the extent to which findings based on studies of non-forensic samples generalize to forensic samples has important implications for forensic assessment and treatment. However, although a general link between childhood abuse and problematic substance use has been established in both clinical and nonclinical populations, this relationship has not been comprehensively examined among criminal offenders. This study's goal was to address this gap in the literature by examining the relationship between childhood abuse and harmful alcohol and other drug use in a sample of criminal offenders. The elucidation of these interrelationships in an offender sample is particularly important given that patterns of relationships established in settings with relatively lower rates of both childhood abuse and harmful substance use might not generalize to samples (e.g., offenders) in which childhood abuse and harmful substance use are more common and in which childhood abuse is potentially less strongly linked to substance use problems. The importance of establishing the parameters of generalizability is accentuated by the prominence of both substance use problems and consequences of childhood abuse among targets for interventions among criminal offenders.

Among individuals in the criminal justice system, even relatively low rates of substance use may have serious implications (Inciardi & Pottieger, 1994). For supervised offenders, any substance use may lead to re-incarceration, and a high number of offenders report being under the influence of alcohol or other substances when committing crimes (U.S. Department of Justice, Bureau of Justice Statistics, 2004). Thus, the degree to which individuals in the criminal justice system experience consequences of substance use, including exacerbations of impulse-control problems, interpersonal difficulties, negative emotional responses, failure to manage legal responsibilities, and physical problems, may be an important indication of harmful substance use. Although substance use consequences may be relatively independent of frequency of use (Liebschutz et al., 2002), studies of offenders have largely relied on measures of substance use severity, primarily based on consumption or symptoms of substance use disorder (e.g., Swogger, Walsh, Houston, Cashman-Brown, & Conner, 2010; Walsh, Allen, & Kosson, 2007). Therefore, in this study we supplemented symptom-based indications of harmful substance use with a measure of substance use consequences.

The frequency and type of substances used might account for any observed relationships between childhood abuse and substance use consequences. That is, childhood abuse may be differentially associated with type and level of substance use. However, the wide range of problems associated with childhood abuse suggests an alternative explanation; childhood abuse may lead to an array of interpersonal, psychological, and other problems that decrease coping abilities and social support, thus increasing the likelihood that substance use will result in severe consequences, independent of substance use type and frequency. Thus, another aim of this study was to test whether frequency and type of substances used helps to explain relationships between childhood abuse and substance use consequences.

Additionally, we were interested in obtaining preliminary information about potential mechanisms that may underlie relationships between childhood abuse and harmful substance use. Prior work with non-offender samples (Douglas et al., 2010; Simpson & Miller, 2002) found that the relationship between adverse childhood events and substance dependence was partially mediated by internalizing (i.e., depression and anxiety) disorders. Additionally, childhood abuse has been linked to posttraumatic stress disorder (PTSD; National Institute of Justice, 2003; Teicher, 2010). Thus, another aim of this study was to examine whether

relationships between childhood abuse and harmful substance use in offenders are mediated by symptoms of depression, GAD, and PTSD.

Rates of childhood abuse and substance use disorders are particularly high among female offenders (Messina, Burdon, Hagopian, & Prendergrast 2006; Messina, Burdon, & Prendergrast, 2003). In a study of female prisoners, Messina and Grella (2006) found that nearly 31% of participants reported having been physically abused prior to age 16, and 45% reported sexual abuse. These high rates of abuse among female prisoners are consistent with rates found in other studies and generally exceed rates of childhood abuse that incarcerated males report (Langan & Pelissier, 2001; Messina & Grella, 2006). However, rates of reported childhood abuse—especially physical abuse—are also substantial among male offenders (Cuomo, Sarchiapone, Di Giannantonio, Mancini, & Roy, 2008; McClellan, Farabee, & Crouch, 1997) and may also lead to emotional problems among men that contribute to substance use (Brems, Johnson, Neal, & Freemon, 2004). Relatively few studies have examined the relationship of childhood abuse to harmful substance use among male offenders. In a study that directly examined gender differences in male and female prisoners, McClellan et al. (1997) identified a positive relationship between childhood abuse and substance dependence. Though the authors concluded that this relationship was stronger for females (Cohen's $d = .40$), it was also substantial among males (Cohen's $d = .31$). Additional study of the relationship between childhood abuse and harmful substance use among male offenders will help to clarify treatment targets for substance using male offenders with histories of abuse. Thus, a final aim of our study was to determine whether our data could support McClellan et al.'s (1997) conclusion that, whereas childhood abuse is linked to substance use problems in both male and female offenders, the relationship is stronger among female offenders.

Research Hypotheses

This study was designed to examine the relationship between childhood abuse and harmful substance use and consequences among male and female adult offenders in a pretrial jail diversion program. We tested the following hypotheses: 1) Experiencing childhood physical and sexual abuse are directly related to symptoms of substance use disorders, 2) Experiencing childhood physical and sexual abuse are directly related to substance use consequences, after accounting for substance use characteristics, 3) Gender moderates these relationships such that the association between experiencing childhood abuse and substance use problems is stronger among females. We also conducted a series of exploratory analyses to determine the extent to which relationships between childhood abuse and harmful substance use are statistically mediated by symptoms of 1) depression, 2) GAD, and 3) PTSD.

Method

Participants and Procedures

Participants were 162 males and 57 females ($n = 219$), ages 18–58, participating in a pretrial supervision program as a consequence of being charged with a crime. Sample characteristics and mean scores on study measures are presented in Table 1. All participants had to meet the following inclusion criteria: 1) Had been at the pretrial program for a maximum of two weeks, 2) could read and speak English, as assessed by having them read aloud part of the consent form. Participants who were obviously psychotic or of diminished mental capacity were excluded ($n = 1$).

Following a brief announcement about the study, individuals who came forward to learn more met one-on-one with a research assistant to for a detailed description of study

procedures and to give informed consent for participation. Among those who heard the announcement, 73.8% participated. Participants then completed a number of group-administered self-report measures and were compensated with a \$20 gift card. The study was approved by the participating University's Internal Review Board and a Federal Certificate of Confidentiality from the National Institutes of Health was obtained.

Measures

Childhood Abuse—Two questions from the Adverse Childhood Experiences questionnaire (Dube et al., 2003) were used to assess the experience of childhood physical abuse; participants were asked to report on a 1-to-5 scale from “never” to “very often,” how often, prior to the age of 18, a parent, stepparent, or adult living in the home 1) “pushed, grabbed, slapped, or threw something at you”, or 2) “hit you hard enough to leave marks or cause injury.” Scores on the two continuous items ($\alpha = .88$) were summed to produce a childhood physical abuse score. Sixty-percent of the sample reported at least one instance of childhood physical abuse (Mean score = 4.04, SD = 2.40). Two questions were used to assess the experience of childhood sexual abuse; on the same scale, participants were asked to report the frequency with which, prior to the age of 18, a parent, step-parent, or adult living in the home, 1) “tried to touch you in a sexual way, or make you touch them”, and 2) “molested you.” Scores on these items ($\alpha = .82$) were also summed to produce a continuous score. Twenty-four percent of the sample reported at least one instance of childhood sexual abuse (Mean score = 2.74, SD = 1.67).

Alcohol and Drug Use Disorders and Axis I Psychopathology—Symptoms of alcohol and drug use disorders during the six months prior to assessment were measured using the alcohol use disorder and drug use disorder subscales of the Psychiatric Diagnostic Screening Questionnaire (PDSQ; Zimmerman & Mattia, 2001a). The PDSQ consists of yes/no questions designed to assess current and recent symptoms of DSM-IV Axis I disorders and has been extensively validated in large-scale studies using structured clinical interviews (Zimmerman & Chelminski, 2006; Zimmerman & Mattia, 2001b; Zimmerman & Sheeran, 2003; Sheeran & Zimmerman, 2004). We used three additional PDSQ subscales to measure symptoms of Major Depressive Disorder (MDD), GAD, and PTSD, each of which occurs in high rates among offenders (Corrado et al., 2000; Swogger et al., 2010) for inclusion in mediation analyses. For MDD and PTSD, the PDSQ items assess symptoms occurring within the past two weeks. For GAD, the time frame is the six months prior to assessment. There is evidence that common behavioral disorders represent extremes of continuous dimensions (Plomin, Owen, & McGuffin, 1994). For this reason we created a continuous variable for each disorder by summing the total items endorsed, following Lesser et al.'s (2005) approach. Internal consistency for the five subscales used in the current study was adequate or better ($\alpha = .79 - .93$).

Substance Use Consequences—The Short Inventory of Problems-Alcohol and Drug Version (SIP-AD) is a 15-item measure designed to assess the frequency of negative consequences of alcohol and drug use during the past 90 days. The SIP-AD is a shortened version of the Inventory of Drug Use Consequences (INDUC-2R, Tonigan & Miller, 2002) and measures consequences of substance use across health, social, financial, safety, and psychological domains. The measure has demonstrated adequate psychometric properties (Blanchard, Morgenstern, Morgan, Labouvie, & Bux, 2003).

Substance Use Frequency for Specific Substances—Using a list of drugs, participants reported their frequency of use of each drug on a 6-point scale from “never” to “(nearly) every day” (Conner, Swogger, & Houston, 2009).

Data Analysis

Primary Analyses—In order to test the hypothesis that childhood physical and sexual abuse would be broadly related to substance use problems, we conducted separate hierarchical multiple regressions using 1) symptoms of alcohol use disorder, 2) symptoms of drug use disorder, and 3) scores for substance use consequences, respectively, as the criterion variables. In analyses with substance use consequences as the criterion, we included frequency of use of alcohol, cannabis, cocaine, and opiates as covariates in order to determine whether childhood abuse contributed to substance use consequences after accounting for variance associated with frequency of use of four classes of substances. To test the hypothesis that childhood physical and sexual abuse would be more highly associated with harmful substance use among females, we tested mean centered gender X childhood physical abuse and gender X childhood sexual abuse interaction terms in each regression model after accounting for all other predictor variables.

Exploratory Analyses—To examine possible mediators of relationships between childhood abuse and harmful substance use, we conducted exploratory analyses of significant findings in which, based on the procedure suggested by Baron and Kenny (1986), we tested whether MDD, GAD, and PTSD, respectively, mediated the significant relationships between abuse and substance use indices. Steps in each test of mediation were the following: 1) Determining (above, in primary analyses) whether the predictor (i.e., abuse) is significantly related to the outcome (i.e., substance use criterion), 2) a linear regression analysis to determine whether there is a relationship between the predictor and the potential mediator, 3) a linear regression analysis to determine whether there is a relationship between the mediator and the outcome, and 4) a linear regression analysis to examine whether the strength of the relationship between the predictor and outcome would be reduced if the mediator was included in the model. If so, following the recommendations in MacKinnon, Lockwood, Hoffman, West, and Sheets (2002), we conducted a test developed by Freedman and Schatzkin (1992) to determine whether the reduction in the relationship was significant, indicating statistical mediation. All analyses were conducted after adjusting for gender, age, and ethnicity. Analyses involving substance use consequences as a criterion were conducted after also adjusting for frequency of use of four types of substances.

Results

Data Screening and Preliminary Analyses

Five outliers (> 3 SDs from the mean) were detected on the childhood sexual abuse measure. These values were changed to one unit above the highest non-outlier value to reduce their influence on the analyses (Tibachnick and Fidell, 2001). Measures of childhood physical abuse, childhood sexual abuse, and alcohol use disorders all exhibited non-normal distributions, which were improved using either inverse or square-root transformations as appropriate. Pronounced multicollinearity was not observed, with all predictors and covariates correlating $\leq r = .38$.

As shown in Table 1, males and females exhibited no differences in age or racial and ethnic makeup. Ninety-five (58.6%) males and 37 (64.9%) females reported having experienced at least one instance of CPA, and the difference between males and females on the continuous measure of childhood physical abuse was not significant. Twenty-five (15.4%) males and 28 (49.1%) females reported at least one instance of childhood sexual abuse, and females scored higher on the continuous childhood sexual abuse measure. Males reported a greater frequency of alcohol consumption, and females scored higher on symptoms of drug use disorder and on substance use consequences, as well as symptoms of MDD, GAD, and PTSD.

Bivariate correlations among primary study variables are shown in Table 2. In these analyses, childhood physical abuse was associated with frequency of cocaine use, symptoms of alcohol use disorder and drug use disorder, and substance use consequences. Childhood sexual abuse was associated with drug use disorder and substance use consequences. Frequency of use of alcohol, cocaine, and opiates was associated with substance use consequences, while frequency of use of cannabis was not.

Primary Analyses

The results of testing multiple regression models of the relationships between childhood physical abuse and symptoms of alcohol use disorder, symptoms of drug use disorder, and substance use consequences are summarized in Tables 3 and 4. With gender, age, and ethnicity as covariates, childhood physical abuse was associated with alcohol use disorder, but not drug use disorder. Childhood physical abuse was also related to substance use consequences with gender, age, ethnicity, and frequency of use of four classes of substances included as covariates. The interactions between gender and childhood physical abuse were not significant for any criteria (centered interaction term R^2 s < .01, ps > .73).

We conducted a parallel series of analyses with childhood sexual abuse replacing physical abuse as a predictor (Tables 5 and 6). With gender, age, and ethnicity as covariates, childhood sexual abuse was associated with drug use disorder, but not alcohol use disorder. With gender, age, ethnicity, and frequency of use of four classes of substances included as covariates, childhood sexual abuse was related to substance use consequences. Adding the gender X childhood sexual abuse interaction term as a predictor revealed no interactions for any criterion variables (centered interaction term R^2 s < .01, ps > .70).

Exploratory Mediation Analyses

In order to examine whether symptoms of MDD, GAD, or PTSD, partially mediated the observed relationships between childhood abuse and harmful substance use, we separately examined symptoms of these disorders as statistical mediators. As shown in Figure 1, depression partially mediated the relationship between childhood physical abuse and symptoms of alcohol use disorder ($t = 3.67$, $p < .01$) with gender, age, and ethnicity as covariates. Depression also partially mediated the relationship between childhood physical abuse and substance use consequences ($t = 3.31$, $p < .01$) with gender, age, ethnicity, and frequency of use of four types of drugs as covariates. Finally, with the same covariates in the model, depression mediated the childhood sexual abuse-substance use consequences relationship ($t = 2.17$, $p < .05$). These mediation models are depicted in Figure 2. Running the same analyses with GAD, rather than depression, as a mediator, resulted in the same pattern of significant findings. That is, mediation models for GAD (not shown) were nearly identical to those for depression depicted in Figures 1 and 2. No other relationships between childhood physical or sexual abuse and harmful substance use were significantly altered after potential mediators were added as covariates (as determined using the methodology described earlier; MacKinnon et al., 2002). Symptoms of PTSD were not found to mediate any of the observed relationships.

Discussion

This study examined the association between childhood physical and sexual abuse and later harmful substance use among criminal offenders. Rates of childhood abuse in our sample are broadly consistent with prior studies of offenders (e.g., Messina & Grella, 2006; Weeks & Widom, 1998), with 58.6% of men and 64.9% of women reporting childhood physical abuse and 15.4% of men and 49.1% of women reporting childhood sexual abuse. As expected, these rates are higher than those found in community samples. For example,

MacMillan et al. (1997) found that 31% of males and 21% of females in a large community sample reported childhood physical abuse, while 13% of females and 4% of males in this sample reported sexual abuse. In the present study, results corroborated our hypothesis that childhood abuse would be related to harmful substance use among offenders. Specifically, we found that childhood physical abuse was positively associated with symptoms of alcohol use disorder and childhood sexual abuse is positively associated with symptoms of drug use disorder after controlling for gender, age and ethnicity. Our second hypothesis, that both forms of childhood abuse would be associated with later substance use consequences, even after controlling for gender, age, ethnicity, and frequency of use of several classes of substances, was also corroborated. These data indicate that factors beyond the frequency and type of substance used contribute to the apparent negative impact of substance use among individuals with histories of child abuse. Exploratory analyses indicated that the childhood physical abuse-alcohol use disorder relationship was partially mediated by symptoms of MDD and GAD. Moreover, symptoms of MDD and GAD partially mediated the relationships between both forms of childhood abuse and substance use consequences. These findings replicate, in a sample of offenders, Douglas et al.'s (2010) findings in a community sample, and indicate the importance of treating mood and anxiety disorders in criminal offenders with histories of abuse.

Our findings suggest that rates of use do not account for the relationships between childhood abuse and substance use consequences. The identification of factors, beyond depression and anxiety, that underlie this relationship represents an important area for further research, and prior research suggests a number of promising candidates. Consistent with findings regarding childhood abuse and subsequent violent and criminal behavior (Lansford et al., 2007; Widom & Maxfield, 2001), poor impulse control is one potential mediator of the childhood abuse-substance use consequences relationship (Liebschutz et al., 2002). There is evidence that impulsivity is a consequence of childhood trauma, potentially due to an acquired inability to inhibit actions (Kendall-Tackett, 2002). It has also been suggested that trait impulsivity may increase the risk for experiencing negative emotional consequences of traumatic experiences (Braquehais, Oquendo, Baca-Garcia, & Sher, 2010). Emotional dysregulation is another potential candidate for explaining the link between childhood abuse and harmful substance use. Specifically, childhood abuse may interfere with the development of emotional self-regulation (Masten and Coatsworth, 1998), and emotional dysregulation in adulthood may lead to difficulties managing responsibilities and maintaining healthy relationships. Such difficulties may exacerbate the consequences of substance use, and there is evidence that childhood abuse contributes to disturbances in intimate relationships in adulthood (Colman & Widom, 2004). Notably, impulsivity, emotional dysregulation, and problems in close relationships are often seen in individuals with PTSD. Whereas we did not find that PTSD mediated any of the observed relationships, these problems are also seen in several Axis II disorders (e.g., borderline personality disorder; Linehan, 1993) that we did not assess in this study. Personality disorders are common in offender populations (Cooke, 2010), and the inclusion of measures of Axis II pathology in future studies of childhood abuse and substance use consequences among offenders may enhance our understanding of the mechanisms by which childhood abuse leads to substance use consequences.

Whereas both forms of abuse were associated with substance use consequences, we found that childhood physical abuse was associated with symptoms of alcohol use disorder and childhood sexual abuse was associated with symptoms of drug use disorder. The reasons for this are unclear, given that we rigorously controlled for gender, age, and ethnicity; factors that might help to account for the pattern of relationships. There is some evidence, from non-offender samples, that childhood sexual abuse represents a nonspecific risk factor for negative outcomes that are more severe than those associated with childhood physical abuse

(Fergusson, Boden, & Horwood, 2008; Schneider, Cronkite, & Timko, 2008). Thus, while victims of childhood physical abuse may overuse alcohol, victims of childhood sexual abuse may be more likely to be involved with severe, high-risk behaviors (e.g., prostitution) that are associated with illicit drug use. This post-hoc explanation is offered tentatively, however, and requires further study.

Contrary to our hypothesis that childhood abuse and harmful substance use are more highly related among females than males, we found no evidence of a childhood abuse by gender interaction for CPA or CSA across any measure of harmful substance use, and the effect sizes for the abuse by gender interaction terms were very small across all analyses. Our findings warrant further study and suggest that childhood trauma is linked to problematic substance use among males and females. The current findings highlight the importance of carefully assessing history of child abuse among all offenders.

Several limitations of our study are worthy of note. First, the retrospective assessment of childhood abuse is not optimal given the potential for underreporting due to memory or social desirability biases (Fang & Corso, 2008). Although there is evidence that childhood abuse can be assessed retrospectively by self-report with reasonable accuracy (Widom & Shepard, 1996), longitudinal studies would enable greater confidence with regard to the assessment of abuse. Second, our use of a relatively small number of questions to assess childhood abuse may have contributed to low sensitivity that reduced statistical power (Cohen, Brown, & Smailes, 2001). Nonetheless, the use of a small number of questions rather than a large protocol to define child maltreatment is widespread and has been recommended to maximize specificity in childhood abuse research (Fang & Corso, 2008). Finally, we urge caution when generalizing many of our findings to non-offender groups.

In summary, among criminal offenders we found a relationship between both childhood physical and sexual abuse and harmful substance use, including substance use consequences. The relationship between childhood abuse and substance use consequences was not accounted for by substance use type and frequency. Symptoms of MDD and GAD, however, were found to partially mediate several of the relationships between childhood abuse and harmful substance use. There was no evidence that relationships between childhood abuse and any of the substance use outcomes differed for males and females. Current findings highlight the importance of careful assessment and treatment of substance use problems and mood and anxiety problems among offenders with histories of childhood abuse.

Highlights

- Among criminal offenders, childhood physical abuse was related to symptoms of alcohol use disorder, childhood sexual abuse was related to symptoms of drug use disorder, and both forms of childhood abuse were related to adult substance use consequences.
- There was no evidence that gender moderates any of the observed relationships, suggesting the importance of assessing childhood abuse among both male and female offenders with substance use problems.
- Consistent with prior work in non-offenders, symptoms of depression and generalized anxiety were found to partially mediate several childhood abuse-harmful substance use relationships, underscoring the importance of treating mood and anxiety disorders among offenders with substance use problems.

Acknowledgments

This work was supported by the National Institute on Drug Abuse (Grant K23 DA027720-01A1 to Marc T. Swogger).

We would like to thank Sarah Cashman-Brown and Melissa Parkhurst for assistance with data collection. Thanks to Barbara Darby and Craig McNair for their ongoing support during the conduct of this research.

References

- Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*. 1986; 51:1173–1182. [PubMed: 3806354]
- Bureau of Justice Statistics. Profile of Jail Inmates, 2002. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics; 2004. Retrieved December 19, 2010, from the World Wide Web: <http://www.ojp.usdoj.gov/bjs/pub/ascii/pji02.txt>
- Binder EB, Bradley RG, Liu W, Epstein MP, Deveau TC, Mercer KB, Tang Y, Gillespie CF, Heim CM, Nemeroff CB, Schwartz AC, Cubells JF, Ressler KJ. *JAMA*. 2008; 299:1291–1305. [PubMed: 18349090]
- Braquehais MD, Oquendo MA, Baca-Garcia E, Sher L. Is impulsivity a link between childhood abuse and suicide? *Comprehensive Psychiatry*. 2010; 51:121–129. [PubMed: 20152291]
- Brems C, Johnson ME, Neal D, Freeman M. Childhood abuse history and substance use among men and women receiving detoxification services. *American Journal of Drug and Alcohol Abuse*. 2004; 30:799–821. [PubMed: 15624550]
- Bureau of Justice Statistics. Mental Health Problems of Prison and Jail Inmates. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics; 2006. Retrieved December 19, 2010, from the World Wide Web: <http://www.ojp.usdoj.gov/bjs/pub/ascii/mhppji.txt>
- Cohen P, Brown J, Smailes E. Child abuse and neglect in the development of mental disorders in the general population. *Development and Psychopathology*. 2001; 13:981–999. [PubMed: 11771917]
- Coleman R, Widom CS. Childhood abuse and neglect and adult intimate relationships: A prospective study. *Child Abuse & Neglect*. 2004; 28:1133–1151. [PubMed: 15567020]
- Conner KR, Swogger MT, Houston RJ. A test of the reactive aggression-suicidal behavior hypothesis: Is there a case for proactive aggression? *Journal of Abnormal Psychology*. 2009; 118:235–240. [PubMed: 19222330]
- Coohey C. Gender differences in internalizing problems among sexually abused early adolescents. *Child Abuse & Neglect*. 2010; 11:856–862. [PubMed: 20950857]
- Cooke DJ. Personality disorder and violence: Understanding violence risk: An introduction to the special section personality disorder and violence. *Journal of Personality Disorders*. 2010; 24:539–550. [PubMed: 20958168]
- Corrado RR, Cohen I, Hart S, Roesch R. Comparative examination of the prevalence of mental disorders among jailed inmates in Canada and in the United States. *International Journal of Law and Psychiatry*. 2000; 23:633–647. [PubMed: 11143959]
- Cuomo C, Sarchiapone M, Giannantonio MD, Mancini M, Roy A. Aggression, impulsivity, personality traits, and childhood trauma of prisoners with substance abuse and addiction. *American Journal of Drug and Alcohol Abuse*. 2008; 34:339–345. [PubMed: 18428076]
- Currie J, Widom CS. Long-term consequences of child abuse and neglect on economic well-being. *Child Maltreatment*. 2010; 15:111–120. [PubMed: 20425881]
- Douglas KR, Grace C, Gelernter J, Arias AJ, Anton RF, Weiss RD, Brady K, Poling J, Farrer L, Kranzler HR. Adverse childhood events as risk factors for substance dependence: Partial mediation by mood and anxiety disorders. *Addictive Behaviors*. 2010; 35:7–13. [PubMed: 19720467]
- Dube SR, Felitti VJ, Dong M, Chapman DP, Giles WH, Anda RF. Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The adverse childhood experiences study. *Pediatrics*. 2003; 111:564–572. [PubMed: 12612237]

- Fang X, Corso PS. Gender differences in the connections between the violence experienced as a child and perpetration of intimate partner violence in young adulthood. *Journal of Family Violence*. 2008; 23:303–313.
- Fergusson DM, Boden JM, Horwood LJ. The developmental antecedents of illicit drug use: Evidence from a 25-year longitudinal study. *Drug and Alcohol Dependence*. 2008; 96:165–177. [PubMed: 18423900]
- Freedman LS, Schatzkin A. Sample size for studying intermediate endpoints within intervention trials of observational studies. *American Journal of Epidemiology*. 1992; 136:1148–1159. [PubMed: 1462974]
- Inciardi JA, Pottier AE. Crack-cocaine use and street crime. *Journal of Drug Issues*. 1994; 24:273–292.
- Kendall-Tackett K. The health effects of childhood abuse: four pathways by which abuse can influence health. *Child Abuse & Neglect*. 2002; 26:715–729. [PubMed: 12201164]
- Langan NP, Pelissier BM. Gender differences among prisoners in drug treatment. *Journal of Substance Abuse*. 2001; 13:291–301. [PubMed: 11693453]
- Langeland W, Draijer N, van den Brink W. Psychiatric comorbidity in treatment-seeking alcoholics: The role of childhood trauma and perceived parental dysfunction. *Alcoholism: Clinical and Experimental Research*. 2004; 28:441–447.
- Lansford JE, Miller-Johnson S, Berlin LJ, Dodge KA, Bates JE, Pettit GS. Early physical abuse and later violent delinquency: A prospective longitudinal study. *Child Maltreatment*. 2007; 12:233–245. [PubMed: 17631623]
- Lesser IM, Leuchter AF, Trivedi MH, Davis LL, Wisniewski SR, Balasubramani GK, Peterson T, Stegman D, Rush AJ. Characteristics of insured and non-insured patients with depression in Star*D. *Psychiatric Services*. 2005; 56:995–1004. [PubMed: 16088018]
- Liebschutz J, Savetsky JB, Saitz R, Horton NJ, Lloyd-Travaglini CL, Samet JH. The relationship between sexual and physical abuse and substance use consequences. *Journal of Substance Abuse Treatment*. 2002; 22:121–128. [PubMed: 12039614]
- Linehan, M. *The cognitive-behavioral treatment of borderline personality disorder*. London: Guilford; 1993.
- MacKinnon DP, Lockwood CM, Hoffman JM, West SG, Sheets V. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*. 2002; 7:83–104. [PubMed: 11928892]
- MacMillan HL, Fleming JE, Trocme N, Boyle MH, Wong M, Racine YA, Beardslee WR, Offord DR. Prevalence of child physical and sexual abuse in the community: Results from the Ontario Health Supplement. *JAMA*. 1997; 278:131–135. [PubMed: 9214528]
- Malinosky-Rummell R, Hansen DJ. Long-term consequences of childhood physical abuse. *Psychological Bulletin*. 1993; 114:68–79. [PubMed: 8346329]
- Masten AS, Coatsworth JD. The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist*. 1998; 53:205–220. [PubMed: 9491748]
- McClellan DS, Farabee D, Crouch BM. Early victimization, drug use, and criminality. *Criminal Justice and Behavior*. 1997; 24:455–476.
- Messina N, Burdon W, Prendergrast M. Assessing the needs of women in institutional therapeutic communities. *Journal of Offender Rehabilitation*. 2003; 37:89–106.
- Messina N, Burdon W, Hagopian G, Prendergrast M. Predictors of prison TC treatment outcomes: A comparison of men and women participants. *American Journal of Drug and Alcohol Abuse*. 2006; 32:7–28. [PubMed: 16450640]
- Messina N, Grella C. Childhood trauma and women's health outcomes in a California prison population. *American Journal of Public Health*. 2006; 96:1842–1848. [PubMed: 17008581]
- Messina N, Grella CE, Cartier J, Torres S. A randomized experimental study of gender-responsive substance abuse treatment for women in prison. *Journal of Substance Abuse Treatment*. 2010; 38:97–107. [PubMed: 20015605]
- National Institute of Justice. *Youth Victimization: Prevalence and Implications*. Washington, D.C: U.S. Department of Justice; 2003.

- Nelson EC, Heath AC, Madden PA, Cooper ML, Dinwiddie SH, Bucholz KK, Glowinski A, McLaughlin T, Dunne MP, Statham DJ, Martin NG. Association between self-reported childhood sexual abuse and adverse psychosocial outcomes: Results from a twin study. *Archives of General Psychiatry*. 2002; 59:139–145. [PubMed: 11825135]
- Plomin R, Owen MJ, McGuffin P. The genetic basis of complex human behaviors. *Science*. 1994; 264:1733–1739. [PubMed: 8209254]
- Schneider R, Cronkite R, Timko C. Lifetime physical and sexual abuse and substance use treatment outcomes in men. *Journal of Substance Abuse Treatment*. 2008; 35:353–361. [PubMed: 18342478]
- Simpson TL, Miller WR. Concomitance between childhood sexual and physical abuse and substance use problems: A review. *Clinical Psychology Review*. 2002; 22:27–77. [PubMed: 11793578]
- Sheeran T, Zimmerman M. Factor structure of the Psychiatric Diagnostic Screening Questionnaire (PDSQ), a screening questionnaire for DSM-IV axis I disorders. *Journal of Behavior Therapy and Experimental Psychiatry*. 2004; 35:49–55. [PubMed: 15157817]
- Schneider R, Cronkite R, Timko C. Lifetime physical and sexual abuse and substance use treatment outcomes in men. *Journal of Substance Abuse Treatment*. 2008; 35:351–361. [PubMed: 18640808]
- Swogger MT, Walsh Z, Houston RJ, Cashman-Brown S, Conner KR. Psychopathy and Axis I psychiatric disorders among criminal offenders: Relationships to impulsive and proactive aggression. *Aggressive Behavior*. 2010; 36:45–53. [PubMed: 19904752]
- Teicher MH. Childhood abuse: New insights into its association with posttraumatic stress, suicidal ideation, and aggression. *Journal of Pediatric Psychology*. 2010; 35:578–580. [PubMed: 20350964]
- Tibachnick, BG.; Fidell, LS. *Using Multivariate Statistics*. Boston: Pearson; 2001.
- Tonigan JS, Miller WR. The Inventory of Drug Use Consequences (InDUC): Test-retest stability and sensitivity to detect change. *Psychology of Addictive Behaviors*. 2002; 16:165–168. [PubMed: 12079257]
- Walsh Z, Allen LC, Kosson DS. Beyond social deviance: Substance use disorders and the dimensions of psychopathy. *Journal of Personality Disorders*. 2007; 21:273–288. [PubMed: 17536940]
- Weeks R, Widom CS. Self reports of early childhood victimization among incarcerated adult male felons. *Journal of Interpersonal Violence*. 1998; 13:346–361.
- Widom, CS.; Maxfield, MG. An update on the "cycle of violence.". Washington (DC): National Institute of Justice; 2001. Available from URL: www.ncjrs.gov/pdffiles1/nij/184894.pdf
- Widom CS, Shepard RL. Accuracy of adult recollections of childhood victimization: Part 1. Childhood physical abuse. *Psychological Assessment*. 1996; 8:412–421.
- Zimmerman M, Chelminski I. Screening for anxiety disorders in depressed patients. *Journal of Psychiatric Research*. 2006; 40:267–272. [PubMed: 15893327]
- Zimmerman M, Mattia JI. A self-report scale to help make psychiatric diagnoses: The Psychiatric Diagnostic Screening Questionnaire. *Archives of General Psychiatry*. 2001a; 58:787–794. [PubMed: 11483146]
- Zimmerman M, Mattia JI. The Psychiatric Diagnostic Screening Questionnaire: Development, reliability, & validity. *Comprehensive Psychiatry*. 2001b; 42:175–189. [PubMed: 11349235]
- Zimmerman M, Sheeran T. Screening for principal versus comorbid conditions in psychiatric outpatients with the Psychiatric Diagnostic Screening Questionnaire. *Psychological Assessment*. 2003; 15:110–114. [PubMed: 12674730]

Figure 1.
Direct and mediated associations between CPA and symptoms of alcohol use disorder.
Note. * $p < .05$ ** $p < .01$

Figure 2.
Direct and mediated associations between CPA and substance use consequences and CSA and substance use consequences.

Table 1*Sample characteristics.*

Variable	Males	Females
<i>N</i>	162	57
Mean age (years)	33.15 (10.88)	35.12 (10.74)
% Black	54.94	47.37
% White	27.16	31.58
% Other ethnicity	17.90	21.05
Childhood physical abuse score	3.81 (2.18)	4.68 (2.88)
Childhood sexual abuse score	2.35 (0.98)**	3.67 (2.14)**
Frequency of alcohol use	3.15 (1.70)*	2.58 (1.60)*
Frequency of marijuana use	2.69 (2.00)	2.49 (1.95)
Frequency of cocaine use	2.33 (1.77)	2.82 (1.90)
Frequency of opiate use	1.57 (1.47)	1.84 (1.73)
Alcohol Use Disorder symptoms	1.35 (2.04)	1.40 (2.24)
Drug Use Disorder symptoms	2.59 (2.44)**	3.91 (2.43)**
Substance Use Consequences	15.07 (14.99)*	20.09 (15.15)*
Depression symptoms	5.86 (4.55)**	7.67 (4.84)**
Generalized Anxiety Disorder symptoms	3.85 (3.59)**	5.14 (3.64)**
Posttraumatic Stress Disorder symptoms	4.36 (4.54)**	6.00 (5.12)**

Note. Standard deviations are presented in parentheses with means, where appropriate. Frequency of childhood physical and sexual abuse were measured on a 5-point scale from "never" to "very often." Frequency of substance use was measured on a 6-point scale from "never" to "(nearly) every day." Alcohol and Drug Use Disorder symptoms were measured on 7-point scales. Substance Use Consequences ranged = 0–45. Depression, generalized anxiety, and posttraumatic stress disorder symptom scores ranged from 0–21, 0–10, and 0–15, respectively.

*
 $p < .05$

**
 $p < .01$.

Table 2

Intercorrelations among study variables.

Variable	1	2	3	4	5	6	7	8	9	10	11
1. age	-	.08	-.01	.02	.15*	-.34**	.27**	-.12	.18**	.17*	.20**
2. female gender	-	-	.11	.38**	-.15*	-.04	.12	.08	-.01	.23**	.15*
3. physical abuse	-	-	-	.32**	.05	.02	.18*	.03	.13*	.13*	.27**
4. sexual abuse	-	-	-	-	-.06	.02	.10	.07	-.10	.23**	.19**
5. alcohol frequency	-	-	-	-	-	.16*	.21**	-.11	.58**	.11	.27**
6. cannabis frequency	-	-	-	-	-	-	-.04	-.11	-.04	.11	-.01
7. cocaine frequency	-	-	-	-	-	-	-	.29**	.18**	.60**	.68**
8. opiate frequency	-	-	-	-	-	-	-	-	-.13	.28**	.32**
9. alcohol disorder	-	-	-	-	-	-	-	-	-	-.19*	.22*
10. drug disorder	-	-	-	-	-	-	-	-	-	-	.16
11. consequences	-	-	-	-	-	-	-	-	-	-	-

*Note.**
p < .05**
p < .01

Table 3

Multiple regressions examining relationships of CPA to Alcohol Use Disorder and Drug Use Disorder, adjusting for relevant covariates.

Criterion: Alcohol Use Disorder symptoms				
	Variable	β	t	R ²
Step One				
	age	.18 *	2.56*	.03 *
	White	−.02	−.27	<.01
	Other ethnicity	−.03	−.26	<.01
	gender	−.02	−.32	<.01
Step Two				
	age	.18 *	2.57*	.03 *
	White	−.04	− .61	<.01
	Other ethnicity	−.05	−.62	<.01
	gender	−.04	−.53	<.01
	CPA	.15 *	2.15 *	.02 *
Model R ² = .05				
Criterion: Drug Use Disorder symptoms				
	Variable	β	t	R ²
Step One				
	age	.17 *	2.57*	.03 *
	White	.23 **	3.42 **	.05 **
	Other ethnicity	.06	.88	<.01
	Female gender	.21 **	3.24 **	.04 **
Step Two				
	age	.15 *	2.31 *	.03 *
	White	.22 **	3.19 **	.04 **
	Other ethnicity	.04	.52	<.01
	Female gender	.21 **	3.11 **	.04 **
	CPA	.08	1.24	.01
Model R ² = .13 **				

Note: Ethnicity reference group = Black. CPA = childhood physical abuse.

* $p < .05$

** $p < .01$.

Table 4

Multiple Regression examining the relationship of CPA to substance use consequences, adjusting for relevant covariates.

Criterion: Substance Use Consequences				
	Variable	β	t	R²
Step One				
	age	.21 **	3.14 **	.04 **
	White	.27 **	3.92 **	.07 **
	Other ethnicity	.13	1.89	.02
	Female gender	.11	1.73	.01
Step Two				
	age	.05	.84	<.01
	White	.11	1.94	.02
	Other ethnicity	.05	1.00	<.01
	Female gender	.09	1.50	.01
	alcohol frequency	.17 **	3.28 **	.05 **
	cannabis frequency	.03	.54	<.01
	cocaine frequency	.55 **	9.89 **	.31 **
	opiate frequency	.15 **	2.69 **	.03 **
Step Three				
	age	.06	1.09	<.01
	White	.08	1.54	.02
	Other ethnicity	.03	.62	<.01
	Female gender	.07	1.50	.01
	alcohol frequency	.17 **	3.27 **	.04 **
	cannabis frequency	.03	.54	<.01
	cocaine frequency	.53 **	9.56 **	.30 **
	opiate frequency	.16 **	2.94 **	.04 **
	CPA	.14 **	2.93 **	.04 **
Model R ² = .54 **				

Note: Ethnicity reference group = Black. CPA = childhood physical abuse.

*
 $p < .05$

**
 $p < .01$.

Table 5

Multiple regressions examining relationships of CSA to Alcohol Use Disorder and Drug Use Disorder, adjusting for relevant covariates.

Criterion: Alcohol Use Disorder symptoms				
	Variable	β	t	R ²
Step One				
	age	.18*	2.56*	.03*
	White	−.02	−.27	<.01
	Other ethnicity	−.03	−.35	<.01
	Female gender	−.02	−.32	<.01
Step Two				
	age	.18*	2.61*	.03*
	White	−.01	−.20	<.01
	Other ethnicity	−.02	−.29	<.01
	Female gender	−.07	−.96	<.01
	CSA	.13	1.74	.01
Model R ² = .05**				
Criterion: Drug Use Disorder symptoms				
	Variable	β	t	R ²
Step One				
	age	.17*	2.57*	.03*
	White	.23**	3.42**	.05**
	Other ethnicity	.05	.68	<.01
	Female gender	.21**	3.24**	.05**
Step Two				
	age	.15*	2.40*	.03*
	White	.24**	3.56**	.05**
	Other ethnicity	.05	.78	<.01
	Female gender	.14*	2.05*	.02*
	CSA	.17*	2.54*	.03*
Model R ² = .15**				

Note: Ethnicity reference group = Black. CPA = childhood physical abuse.

* $p < .05$

** $p < .01$.

Table 6

Multiple Regression examining the relationship of CSA to substance use consequences, adjusting for relevant covariates.

Criterion: Substance Use Consequences				
	Variable	β	t	R ²
Step One				
	age	.21**	3.14**	.04**
	White	.27**	3.92**	.07**
	Other ethnicity	.13	1.89	.02
	Female gender	.11	1.73	.01
Step Two				
	age	.05	.84	<.01
	White	.11	1.94	.02
	Other ethnicity	.05	1.00	<.01
	Female gender	.09	1.75	.01
	alcohol frequency	.18**	3.35**	.05**
	cannabis frequency	.03	.54	<.01
	cocaine frequency	.56**	9.89**	.31**
	opiate frequency	.15*	2.68*	.03*
Step Three				
	age	.05	.89	<.01
	White	.11*	2.11*	.02*
	Other ethnicity	.06	1.13	<.01
	Female gender	.04	.72	<.01
	alcohol frequency	.18**	3.45**	.05**
	cannabis frequency	.03	.47	<.01
	cocaine frequency	.55**	9.86**	.31**
	opiate frequency	.14*	2.63*	.03*
	CSA	.13*	2.49*	.03*
Model R ² = .53**				

Note: Ethnicity reference group = Black. CSA = childhood sexual abuse.

*
 $p < .05$

**
 $p < .01$.