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Does Typography of Substance Abuse and Dependence Differ as a Function of Exposure to Child Maltreatment?

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Abstract

We investigated the link between child maltreatment, including child sexual assault (CSA) and child physical assault (CPA), and addiction-related symptomatology in a subsample of adolescents from the National Survey of Adolescents, all of whom met DSM-IV criteria for substance abuse or dependence (n=281). Over 60% of the sample reported a history of CSA and/or CPA. Results indicated significant differences in typography of substance abuse and dependence symptoms and rates of comorbid lifetime PTSD based on assault history, specific assault incident characteristics, and sex. Clinical implications for substance abusing youth with maltreatment histories are discussed.

Keywords

substance abuse; sexual assault; physical assault; child maltreatment; adolescents

Drug and alcohol use constitute significant public health concerns (Healthy People 2010), and substance use is fairly prevalent among adolescents. In the recent Monitoring the Future report (Johnston, O'Malley, Bachman, & Schulenberg, 2006), 57.5% of 12th grade students reported that they had been drunk at least once in their life, and 50.4% of 12th graders reported lifetime use of an illicit drug. Youth who use drugs and alcohol at an early age are at greater risk for developing substance use disorders (SUDs) than individuals who begin use later (Dewit, Adlaf, Offord, & Ogborne, 2002). Adolescents with SUDs are more likely to have a wide range of negative outcomes related to substance use, including impairment in relationships, education, and employment, comorbid psychological conditions, and future substance and mental health problems as adults (e.g., Boyle et al., 1992; Clark & Bukstein, 1998; Thomas, Deas, & Grindlinger, 2003). Better understanding of the populations at risk for adolescent SUDs and factors potentially impacting severity of such addiction-related disorders in youth (e.g., effects of traumatic event exposure) is necessary to guide assessment and treatment efforts in this area and to help reduce negative sequelae.

Youth who have experienced maltreatment, including child sexual assault (CSA) and child physical assault (CPA), have increased vulnerability to adolescent SUDs (e.g., Clark, Lesnick & Hegedus, 1997; Giaconia et al., 2000). For example, in the National Survey of Adolescents (NSA), a large, national probability sample of adolescents in the United States, Kilpatrick and colleagues (2000) found that exposure to potentially traumatic events, such as CPA, CSA, or

witnessing violence, increased risk of having a SUD. Specifically, experiencing CSA was related to an increased risk of alcohol, marijuana, and hard drug abuse or dependence (ORs = 4.6, 3.8, 8.59, respectively). A history of CPA also increased the risk of alcohol, marijuana, and hard drug abuse or dependence (ORs = 3.9, 4.84, 12.35, respectively). These findings are consistent with a review by Simpson and Miller (2002), who found that individuals with a history of maltreatment were at increased risk for SUDs.

The empirical link between child maltreatment and SUDs is furthered strengthened by clinical studies suggesting that histories of experiencing CSA and CPA are highly prevalent among those in treatment for a SUD. For women and girls in SUD treatment, prevalence of childhood maltreatment is nearly double that of the general population; for boys, but not men, CPA is more likely among those in SUD treatment compared to the general population (Finkelhor, Hotaling, Lewis & Smith, 1990). In addition to exposure to child maltreatment being associated with SUDs among adolescents, the psychological aftermath of such events, such as posttraumatic stress disorder (PTSD), also is associated with increased risk of SUDs (e.g., Epstein, Saunders, Kilpatrick & Resnick, 1998; Kilpatrick et al., 2000). Epidemiological studies (Kilpatrick et al., 2003) and community surveys (Giaconia et al., 2000; Perkonig, Kessler, Storz & Wittchen, 2000) of adolescents and young adults report substantial lifetime rates of SUD-PTSD comorbidity, a finding that is consistent with samples of adults as well (e.g., Breslau, Davis, Andreski, & Peterson, 1991; Kessler et al., 1995).

Despite the consistent empirical link between child maltreatment and substance abuse, relatively little is known regarding how history of assault affects the clinical presentation of addiction-related symptoms, including severity levels. Broadly thinking about the association between childhood maltreatment and subsequent maladjustment/psychopathology, a “dose response” relationship is supported through numerous literature reviews and meta-analyses of CSA and CPA (Jumper, 1995; Simpson & Miller, 2002). That is, risk for negative sequelae appears to increase from cumulative exposure (e.g., having experienced multiple types of maltreatment). Thus, youth who experience multiple types of maltreatment or are exposed to several incidents of assault (vs. a single assault incident) may be more likely to have more severe levels of substance abuse problems. Interestingly, the cumulative effects of maltreatment have not been studied in terms of specific SUD symptoms. In addition to the quantity of maltreatment experienced, specific assault incident characteristics may play an important role in the development of SUDs. For example, receiving a negative response after disclosing a sexual assault experience has been linked to an increased risk of developing SUDs (Bulik, Prescott, & Kendler, 2001). Although very little research has been done in this area, there is reason to hypothesize that other types of incident characteristics would be related to specific SUD symptoms. For example, the degree to which substance abuse affects a youth's family life may be related to whether or not the youth's perpetrator was a relative. Such information would likely inform assessment and treatment services for these affected youth.

In considering the potential impact of child maltreatment on typography of addiction-related symptoms among adolescents, it is also important to consider the role of the youth's sex. First, prevalence of CSA and CPA differ among male and female youth. CSA is more prevalent among girls, and CPA is more common among boys (Finkelhor et al., 1990; Kilpatrick, Saunders, & Smith, 2003). Second, extensive sex differences in the development of SUDs have been reported. Whereas male adolescents may begin use of substances at an earlier age compared to female adolescents (e.g., Whitmore et al., 1997), female adolescents have been found to report greater misuse and physical symptoms of dependence than males (Opland, Winters & Stinchfield, 1995; Brown et al., 1998). Furthermore, female adolescents exhibit faster progression to dependence and development of physical problems stemming from use, particularly for alcohol use (Thomas et al., 2003; Mezzich et al., 1994; Whitmore et al., 1997). Additionally, in an inpatient sample of adolescents with a SUD, girls were more likely

to report experiencing dependence symptoms, and at a younger age, than boys (Thomas et al., 2003). Very little data has examined sex differences in the relation between CSA, CPA and SUDs.

There is clear clinical significance in better understanding the typography of addiction related symptomatology in relation to exposure to child maltreatment. As such, we investigated this relationship in a sample of substance abusing adolescents from the NSA (Kilpatrick, Saunders, & Smith, 2003). Based on the aforementioned literature, we made four sets of hypotheses. First, given data on the effects of cumulative exposure, we hypothesized a dose-response relationship, in that youth who had experienced CSA and CPA would endorse a greater number and severity of SUD symptoms, followed by youth who experienced one type of maltreatment, followed by youth without a history of abuse. No differences were predicted between the CSA and CPA groups in the overall sample, as these types of maltreatment have been found to serve as similar risk factors for SUDs (Kilpatrick et al., 2000). Similarly, experiencing a series of assaults, as opposed to a single incident, was predicted to result in greater symptom endorsement. Second, we hypothesized that certain assault incident characteristics would be associated with the differential endorsement of specific DSM-IV substance abuse and substance dependence symptoms. If the perpetrator was a relative or if the location of assault was in the youth's home, greater endorsement of family-related addiction symptoms was expected (e.g., failure to meet role obligation, more problems with family), as the home or family members may serve as cues that may trigger trauma-related anxiety and hence substance cravings (e.g., Coffey et al., 2002). Third, we hypothesized that female adolescents would report more substance abuse and dependence symptoms than male adolescents, regardless of assault history. We also examined if assault history was related to different patterns of symptom endorsement compared to no assault history separately for female and male participants. Fourth, given the clinical implications involved in treating comorbid substance abuse and PTSD, we tested the hypothesis that exposure to child maltreatment (CSA only, CPA only, or both CSA/CPA) is associated with an increased risk of lifetime PTSD in this sample. Although hypotheses specific to substance abuse are broad (i.e., are not substance specific), hypotheses specific to dependence symptoms were tested separately for alcohol and drugs to examine the potential differential association between assault history and alcohol or other drug use symptoms.

Methods

Participants

Participants were 281 adolescents selected from the 4,023 youth interviewed as part of the NSA. More details about the sampling methodology, reliability of measures, and the sample in the NSA project from which this subsample was drawn are provided elsewhere (Kilpatrick et al., 2000; Kilpatrick et al., 2003). Briefly described, the NSA was a national probability household sample of U.S. adolescents between the ages of 12 and 17 years who were located and interviewed via telephone. All participants in the current study met DSM-IV criteria for past year abuse or dependence of alcohol, marijuana, and/or other hard drugs. Specifically, 251 (89.3%) met criteria for substance abuse (alcohol and/or drug), 24 (8.6%) met criteria for alcohol dependence and 6 (2.1%) met criteria for drug dependence. Figure 1 reports percentage of participants who reported ever using alcohol, marijuana, cocaine, angel dust, LSD, heroin, tranquilizers, sedatives, stimulants, pain killers, or steroids. Participants ranged in age from 12 to 17 years old ($M = 15.9$, $SD = 1.1$) and 163 (58.2%) were male. Two hundred sixteen (77%) were Caucasian; 25 (9%) were African-American; 24 (8.6%) were Hispanic; 14 (4.8%) were Native American; and 2 (0.5%) were Asian.

Measures

The interview used in the current study was designed specifically for the NSA and is a highly structured measure that assesses several domains, including demographic information, familial variables, trauma history, and psychiatric difficulties (Major Depressive Disorder, PTSD, substance abuse, and delinquency). The current study focused on selected modules of the interview, including sexual assault, physical assault and severe physical punishment, PTSD, and alcohol and drug abuse and dependence.

CSA and CPA were measured using close-ended questions that focused on specific behavioral acts, increasing the accuracy of the data (see Kilpatrick et al., 2000 for more detailed methodology). CSA was defined as: (a) vaginal or anal penetration by an object, finger, or penis; (b) oral sex; (c) touching of the respondent's breasts or genitalia; or (d) respondents' touching of another person's genitalia. CPA, including severe physical punishment, was defined as having been: (a) attacked or threatened with a gun, knife, or some other weapon; (b) attacked by another person with perceived intent to kill or seriously injure; (c) beaten and injured by another person; (d) spanked so forcefully that the respondent sustained welts or bruises, or required medical care; or (e) cut, burned, or tied up by a caregiver as a punitive consequence. For each report of CSA or CPA, further information was gathered regarding the details of the event, such as location of the trauma (e.g. within the household or outside of the house), relationship to the perpetrator (e.g. family member vs. non family member) and number of assaults (e.g. single incident or series of incidents).

Substance abuse and dependence were measured using interview questions that reflected specific DSM-IV criteria for these disorders. Symptoms of abuse included failure to fulfill role obligations, substance use in dangerous situations, legal problems related to substance use, and continued use despite negative social consequences for use. Symptoms of abuse were assessed broadly across substances, which included both alcohol and/or drug use. Symptoms of dependence included tolerance, withdrawal, using for longer than intended or in greater amounts than intended, unsuccessful attempts to decrease use, spending substantial time in acquiring, using, and recovering from substance use, impairment in daily functioning due to substance use, and continued use despite significant consequences for use. Symptoms of dependence were assessed separately for alcohol and hard drug use. In order to improve validity of responses by reducing retrospective bias, diagnostic information focused on past-year abuse or dependence. All participants were also assessed for lifetime rates of PTSD via a modified version of the National Women's Study PTSD Module (Kilpatrick, Resnick, Saunders, & Best, 1989), a widely used measure in population-based epidemiological research originally modified from the Diagnostic Interview Schedule. Research on the NWS-PTSD has provided support for concurrent validity and several forms of reliability (e.g., temporal stability, internal consistency, diagnostic reliability) (Kilpatrick et al, 2003; Resnick et al, 1993; Ruggiero et al, 2006). The NWS-PTSD was also validated against the SCID (Spitzer, Williams, Gibbon & First, 1995), a well-established diagnostic interview, in the DSM IV PTSD Field Trial (Kilpatrick, Resnick, Freedy & Pelcovitz, 1988). We defined PTSD based on DSM-IV symptom requirements (i.e., three avoidance, one intrusion, and two arousal symptoms), including functional impairment.

Procedures

Interviews for the NSA were conducted by Schulman, Ronca, and Bucuvalas, Inc. In order to obtain a representative sample of adolescents as defined by the 1995 U.S. Census Bureau estimates, a stratified random digit dialing procedure was used to contact telephone households across the United States. An oversampling of urban households was conducted in order to ensure appropriate representation of ethnic minority group respondents. Eligible households included those where at least one adolescent was living in the house. In 75% of eligible

households, parental permission was obtained to interview a randomly selected adolescent in the household, and the adolescent consented and completed the interview. Interviews were conducted in English or Spanish. An appendix listing of certain items from the interview, have been reported elsewhere (Kilpatrick et al., 2000; Kilpatrick et al., 2003).

Results

Child Sexual and Physical Assault

Several a priori hypotheses were made to guide the analyses conducted, as described in the introduction. Given the relatively large number of analyses conducted, experimentwise error was controlled for by setting a $p < .01$ significance value for all analyses.

First, we examined the frequencies of youth who reported having experienced a prior incident or incidents of maltreatment. Among the 281 participants, 21 youth (7.5%) reported having experienced CSA; 96 (34.2%) reported having experienced CPA, 52 (18.5%) reported having experienced both CSA and CPA, and 112 (39.8%) reported no history of CSA or CPA. We also investigated differences in sex break-down across groups via Chi-square analyses and found significant differences in the sex breakdown across groups, with 15.4% of girls falling in the CSA group vs. 1.8% of boys, 18.8% of girls in the CPA only group vs. 45.1% of boys, 29.9% of girls in the CSA/CPA group vs. 10.4% of boys, and 35.9% in the no CSA/CPA group vs. 42.7% of boys, $X^2(1) = 45.52$, $p < .001$.

Substance Abuse

An estimate of severity of substance abuse (alcohol or drug) was constructed by adding up the number of each of these types of symptoms endorsed in the interview. The mean number of substance abuse symptoms was 1.57 ($SD = .92$). Not surprisingly, abuse history was broadly correlated with substance abuse symptom severity (see Table 1). An ANOVA was conducted to determine whether there were significant differences in level of severity of substance abuse symptoms based on having experienced CSA, CPA, both, or neither forms of maltreatment. Results revealed a significant effect for severity of substance abuse based on history of assault, $F(3, 276) = 8.37$, $p < .001$. As predicted, Tukey's HSD post hoc analyses indicated that adolescents who had experienced *both* CSA and CPA ($M = 1.88$, $SD = .94$) and those who had experienced CPA only ($M = 1.78$, $SD = 1.03$) endorsed significantly more symptoms of substance abuse than those with no CSA/CPA history ($M = 1.28$; $SD = .72$). There was not a significant difference in severity of substance abuse symptoms between the group who experienced both types of assault and those who had experienced CSA only ($M = 1.4$; $SD = .86$). No effects for sex were found, $t(279) = .601$, $p = .549$.

Figure 2 reports on the endorsement of specific substance abuse symptoms among the groups with differing assault histories. Chi-square analyses revealed significant differences in endorsement of substance abuse symptom 1 (use of alcohol or drugs has caused problems with role obligations, including family role), $X^2(1) = 35.80$, $p < .001$, and a trend towards significance was found for symptom 4 (continued to use despite causing problems), $X^2(1) = 10.42$, $p < .02$. No significant differences were found between the groups with regard to endorsement of symptom 2 (have been high or drunk where could have been hurt), $X^2(1) = 5.85$, $p = .119$, and symptom 3 (ever been arrested due to use of alcohol or drugs), $X^2(1) = .246$, $p = .970$.

Alcohol Dependence

As another indicator of substance abuse severity, the sum of the number of alcohol dependence symptoms endorsed, was examined and compared between the four assault history groups via an ANOVA. Figure 3 reports on the differential endorsement of the seven specific alcohol dependence symptoms across the four groups, and Table 1 displays correlations among

variables. A significant difference in the number of alcohol dependence symptoms endorsed among the four groups was revealed, $F(3, 276) = 5.78, p = .001$. However, an effect for sex was not found, $t(279) = 1.404, p = .161$.

Similar to the substance abuse severity findings, Tukey's HSD post-hoc analyses revealed that adolescents who had experienced *both* CSA and CPA ($M=2.28, SD=.1.83$) and those who had experienced CPA only ($M=1.87, SD=1.87$) endorsed significantly more symptoms of alcohol dependence than those with no CSA/CPA history ($M=1.23; SD=1.34$). There were not significant differences in number of alcohol dependence symptoms among these groups and the CSA only group ($M=1.79; SD=1.86$).

Drug Dependence

In investigating potential differences in drug dependence severity, as indicated by number of drug dependence symptoms endorsed, an ANOVA revealed a significant difference in severity of drug dependence (i.e., number of drug dependence symptoms) among the groups with differing assault history, $F(3, 276)=6.81, p<.001$. In employing Tukey's HSD post-hoc analyses to investigate the specific mean differences between groups, adolescents in the combined CSA/CPA group ($M=2.54, SD=2.30$) reported significantly more symptoms than adolescents in the CPA only group ($M=1.6; SD=1.89$), CSA only group ($M=1.05; SD=1.78$), and no CSA/CPA ($M=1.05; SD=1.80$). The differential endorsement of the seven specific drug dependence symptoms across the four groups is reported in Figure 4.

T-test results also revealed a significant effect for sex in the analysis for drug dependence, $t(279) = 2.245, p < .01$, with female adolescents ($M=1.83; SD=2.16$) reporting a greater number of drug dependence symptoms than male adolescents ($M=1.29; SD=1.85$). As such, Chi square analyses were conducted to examine the differences between male and female adolescents in the mean number of drug dependence symptoms and in the endorsement of specific drug dependence symptoms. Figure 5 reports on the endorsement of specific drug dependence symptoms among female adolescents by assault history group, and Figure 6 reports on the endorsement of specific drug dependence symptoms among male adolescents.

Single versus Repeated Exposure to Assault

Single vs. repeated exposure to CSA, CPA, and CSA/CPA was also examined in the 169 adolescents reporting experiencing assault. Forty-five cases (26.8%) involved a series of assaults (vs. single incident). As shown in Table 1, a series of assaults was related to lifetime SUD symptoms. With regard to specific substance abuse symptoms, adolescents were more likely to report that their substance use led to problems in meeting role obligations, including their family role, if they had experienced a series of assaults as compared to a single incident [65.2% vs. 41.9%; $X^2(1)=7.28, p<.01$]. There were no other differences in the other substance abuse symptom measures or in any of the alcohol dependence measures. Regarding drug dependence, adolescents who experienced a series of assaults, in comparison to those who experienced single incidents of assault, were more likely to report symptoms of tolerance [60.9% vs. 35.5%; $X^2(1)=8.86, p<.01$], withdrawal [56.5% vs. 29%; $X^2(1)=9.28, p<.01$], and using more drugs than intending to [48.9% vs. 18.7%; $X^2(1)=15.31, p<.001$].

Sexual and Physical Assault Incident Characteristics

In the next step of the analyses, two specific assault incident characteristics were examined among adolescents that had experienced CSA, CPA, or both types of assault ($n=169$): whether the assault was perpetrated by a relative and whether the assault occurred in the adolescent's home. In 38 cases (22.2%), the perpetrator of the assault(s) was a relative, and in 57 cases (33.7%), the assault occurred in the adolescent's home. These incident characteristics were not mutually exclusive (i.e., some cases may be represented in more than one group.) As shown

in Table 1, both of these incident characteristics were correlated with SUD symptom severity. Regarding specific substance abuse symptoms, adolescents were more likely to report that their substance use led to problems in meeting role obligations, including their family role, if they were assaulted by a relative as compared to a non-relative [78.4% vs. 39.7%; $X^2(1)=17.29$ $p<.001$], or were assaulted in the home [70.2% vs. 36.6%; $X^2(1)=17.06$ $p<.001$]. In addition, adolescents who were assaulted by a relative were approximately twice as likely to report that they continued to use substances in spite of social consequences when compared to those assaulted by a non-relative [63.2% vs. 31.3%; $X^2(1)=12.63$, $p<.001$]. No other significant differences in endorsement of the substance abuse symptoms by incident characteristic were found.

For specific alcohol dependence symptoms, adolescents who were assaulted in their home were more likely to report that they continued to drink even though it caused problems [41.1% vs. 18.3%; $X^2(1)=9.19$, $p<.01$]. No other significant differences in endorsement of the alcohol dependence symptoms by incident characteristic were found.

Several significant differences were found in endorsement in specific drug dependence symptoms. Adolescents who were assaulted by a relative also were more likely to report symptoms of withdrawal [66.7% vs. 20%, $X^2(1)=13.17$, $p<.001$] and using more drugs than intending to [44.7% vs. 22%, $X^2(1)=7.75$, $p<.01$], as well as continuing drug use despite it causing problems [43.2% vs. 20.6%; $X^2(1)=7.76$, $p<.01$]. Finally, adolescents assaulted in the home, in comparison to adolescents assaulted outside of the home, were over twice as likely to report using more drugs than intending to [43.9% vs. 17.9%; $X^2(1)=13.07$ $p<.001$] and having an unsuccessful desire to decrease drug use [36.8% vs. 16.1%; $X^2(1)=9.18$, $p<.01$].

PTSD

Sixty-five participants (23.3%) met DSM-IV lifetime criteria for PTSD. There was a significant difference in the breakdown of PTSD across groups, $X^2(1)=58.72$, $p<.001$, with the largest percentage of adolescents with lifetime PTSD represented in the CSA and CPA group (48.5%), followed by CPA only (33%), no CSA or CPA (12.1%) and CSA only (6.1%). Further, the percentage of male adolescents meeting lifetime criteria for PTSD significantly differed depending on assault history (CSA only: 0%; CPA only: 16.4%; both CSA and CPA: 70.6%; no CSA or CPA: 2.9%); $X^2(1)=47.39$, $p<.001$. Differences also were found among female adolescents by assault group (CSA only: 22.2%; CPA only: 40.9%; both CSA and CPA: 57.1%; no CSA or CPA: 14.3%), $X^2(1)=17.35$, $p=.001$. A logistic regression was used to identify odds ratios (ORs) and to test the hypothesis that exposure to child maltreatment (CSA only, CPA only, or both CSA/CPA) is associated with an increased risk of lifetime PTSD in this sample of substance abusing youth. Sex was also entered into the regression equation as a potential predictor. The final, overall model was significant ($X(4)=60.64$, $p<.001$), with the independent predictors of lifetime PTSD being CPA (OR=4.56) and CSA/CPA (OR=18.22), again implicating the cumulative (i.e., “dose-response”) effects of maltreatment. CSA only and sex were not found to be significant predictors in the final model.

Discussion

This study represents one of the first investigations to examine the association between CSA and CPA history and specific addiction-related symptomatology in substance abusing adolescents. Our findings support a dose-response relationship between exposure to maltreatment and SUD symptoms, suggesting that typology of SUD symptoms indeed appear to be related to cumulative exposure to maltreatment. As predicted, substance abuse symptoms and alcohol and drug dependence symptoms were most severe among adolescents who experienced *both* CSA and CPA. In particular, these adolescents were more likely to report symptoms related to interpersonal relationships and social obligations, such as failing to fulfill

role obligations with family and using substances in spite of social consequences. Although not predicted, it is noteworthy that assault history was generally more associated with symptoms of drug dependence as opposed to alcohol dependence, suggesting that adolescents who experience multiple forms of maltreatment are at greater risk for misuse of hard drugs, which may have more detrimental long-term consequences compared to alcohol.

Two other results from the current study further support a dose-response relationship and highlight the vulnerability of youth who have experienced multiple incidents or types of maltreatment. First, youth who experienced a series of assaults, as opposed to a single event, reported greater failure to fulfill role obligations, substance tolerance, substance withdrawal, and loss of control due to substance use. Second, youth who experienced both CSA and CPA were at least three times more likely to report lifetime PTSD over youth in any other group. These results underscore the cumulative effect of maltreatment and are consistent with previous studies suggesting that experiencing multiple victimizations in youth is associated with more distress and impairment as compared to experiencing single incident events of maltreatment (for a review see Simpson & Miller, 2000).

Interestingly, adolescents who endured CPA only reported a greater number of substance abuse and alcohol dependence symptoms compared to those who experienced CSA only or no maltreatment. Perhaps youth who experience physical assault are more likely to be surrounded by environments that offer greater access to substances (e.g., if CPA was committed by a relative in the home who also abused substances), which would increase opportunities for the youth to engage in substance-using behaviors. Alternatively, it is also possible that youth who abuse drugs are more likely to be assaulted. Given that the present sample was restricted to only substance abusing youth, thereby imposing a restricted range, it is noteworthy that we found significant differences between groups with differing assault histories for a number of symptoms despite this restricted range.

Consistent with previous studies involving adolescents with substance abuse problems (e.g., Clark et al., 1997; Giaconia et al., 2000), assault-affected youth were highly represented in the present sample, with less than 40% reporting no history of CSA or CPA. The implication extending from this finding is that many adolescents who present for treatment of substance abuse problems are likely to have experienced interpersonal violence, which further increases the relevance of investigating differences in addiction-specific symptomatology in this population. Examination of incident characteristics among youth who reported CSA and/or CPA also yielded a few notable findings that were somewhat consistent with initial hypotheses. Specifically, if the adolescent was perpetrated upon by a relative or if the maltreatment occurred in the home, the youth reported greater failure to fulfill role obligations and loss of control due to substance use. This failure to fulfill role obligations may very well be related to avoidance of home or family related activities due to their association with previous assault experiences. Furthermore, assault by a relative was significantly associated with greater use in spite of social consequences, substance withdrawal, and unsuccessful desires to decrease substance use. Similarly, if the maltreatment occurred in the home, greater alcohol use in spite of consequences was reported. In general, these findings highlight the importance of addressing family related problems in substance abuse treatment in youth with maltreatment history. This may include ensuring that adequate safety plans are in place in the home if a perpetrator of previous violence is still present. This also could involve exposure to trauma cues in the home which may be increasing substance abuse cravings and contributing to the “loss of control due to substance use” and “unsuccessful desires to decrease substance use” that some of these youth report. Thus, assessing for specific incident characteristics, in addition to whether or not a youth has experienced maltreatment, can be a necessary first step in a comprehensive approach to substance abuse treatment with this population.

Another noteworthy finding is the relatively high prevalence of lifetime PTSD among the adolescents in the current sample, particularly among those who had experienced CSA and CPA, again highlighting the dose-effect of maltreatment and subsequent symptoms. Since a stronger severity of substance abuse and dependence symptoms also were found among the combined maltreatment group, the self-medication hypothesis regarding the relation between substance use and traumatic event history should be considered (e.g., Brown & Wolfe, 1994). This self-medication hypothesis, which puts forth that increased substance use following victimization may represent an attempt to cope with symptoms of anxiety and depression that typically follow the event, has received previous empirical support. The conceptualization of post-victimization substance use as a negatively reinforced coping response (Stewart, 1997) is supported by findings of Miranda et al. (2002), Stewart et al. (2000) and Sharkansky et al. (1999). In these studies, participants reported increased drinking and drug use behavior when placed in anxiety-provoking situations. Another form of empirical support of this hypothesis is that PTSD has been found to be a significant predictor of substance abuse. For example, in a large, longitudinal study with young adults, PTSD signaled an increased risk of drug abuse or dependence (hazards ratio 4.5), whereas exposure to traumatic events *in the absence of PTSD* did not increase addiction risk (Chilcoat & Breslau, 1998). These data imply that some aspect of an individual's response to trauma may increase risk of substance abuse. Thus, it is not surprising that in the current study, lifetime prevalence of PTSD was highest among those who experienced CSA and CPA and that this pattern held true for both male and female participants. In other words, substance abusing youth who had experienced multiple types of victimization (i.e., those who reported the greatest number of SUD symptoms in the current study) were most likely to have experienced significant trauma related distress at some point in their lifetime. It is noteworthy that lifetime PTSD also was prevalent in the group with no CSA or CPA history, indicating that youth in this group have experienced other types of traumatic events in their lifetime not included in the present study (e.g., disasters, motor vehicle crashes, other accidents). Nonetheless, the experience of CSA and/or CPA appears to be significantly associated with SUD severity and symptom endorsement regardless of the presence of other potential traumatic event histories.

Consistent with the literature and as predicted, female adolescents were more likely to report a history of CSA and male adolescents were more likely to report a history of CPA (Finkelhor et al., 1990; Kilpatrick, Saunders, & Smith, 2003). Interestingly, girls reported a greater number of drug dependence symptoms than did boys, which also appears to be consistent with previous work revealing that female adolescents are more likely than male adolescents to report substance dependence problems (Thomas et al., 2003). When examining specific addiction related symptomatology within each sex, girls in the combined CSA/CPA group and those in the CPA only group reported loss of control of drug use or using more drugs than wanting to, whereas boys in the combined CSA/CPA group reported compulsion and impairment. This may speak to differences between sexes in coping with more severe assault history and may imply the need for development and evaluation of sex-specific coping strategies to be targeted in SUD treatment.

Some limitations of the current study should be noted. Assessment was based on self-report data only and collected via telephone interviews, meaning participants were limited to those residing in homes with telephones. However it is important to note that random-digit dialing procedures were used to gather as representative a sample as possible and that approximately 94% of U.S. households with adolescents have telephones (Kilpatrick et al., 2000). Further, as mentioned above, for the purpose of the current study, we focused solely on two types of traumatic events, CSA and CPA. Clearly, other types of trauma history were likely represented in our sample, which also may have an impact on addition-related symptomatology. Therefore, it would be interesting to assess for the effects of other types of maltreatment (e.g. neglect) in future studies investigating the association between traumatic events and SUD symptoms in

adolescents. Similarly, in an attempt to limit the number of analyses conducted and maintain a targeted focus for the current study, several trauma-related factors were not included in analyses that also may have a significant association with substance abuse severity and symptoms (e.g., experience of peritraumatic fear, use of weapon or force). Again, this could be an important focus for additional studies in this area. Lastly, many study variables were correlated suggesting the constructs assessed were not independent.

In sum, several clinical implications for substance abusing adolescent populations extend from the current findings. First, given the high prevalence of CSA and CPA in our sample, substance abusing youth should be assessed for maltreatment history and resulting psychopathology as a part of standard care when presenting for SUD treatment. Second, if maltreatment is reported, it is likely that substance abuse and dependence symptoms may be more severe and warrant more intensive treatment that targets both substance use problems as well as trauma-related difficulties, such as PTSD. In fact, recent data (Cocozza et al., 2005; Morrissey et al., 2005) and discussion (Danielson et al., 2006) encourage and support the use of such integrated treatment approaches with this population. Thus, instead of treating trauma and SUDs as independent conditions, functional analyses of alcohol and drug use would identify if usage is being employed to alleviate trauma-related symptoms. If this is the case, psychoeducation regarding self-medication and resulting difficulties could be provided, in conjunction with fostering more positive coping techniques. Third, assault-affected female adolescents may be at particular risk for drug dependence and therefore may need special treatment attention to positively alter their posttrauma trajectory. In fact, results from the current study can help inform sex-specific substance abuse interventions for those who experienced maltreatment. For example, brief motivational interviewing with maltreated female adolescents may focus on feelings of loss of control of drug use, while such interviewing with maltreated male adolescents may focus on specific areas of impairment. Ultimately, addiction is a serious and costly condition across all youth; CSA and CPA-affected youth may warrant particular attention among clinicians and researchers to help increase the chances for positive outcomes among this vulnerable population.

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Figure 1.

Percent of the full sample (N=281) endorsing lifetime use of alcohol and each type of drug.

Note: **denotes $p < .001$, *denotes $p < .01$.

Figure 2.

Percent of youth, depicted by assault history group, who endorsed each alcohol or drug abuse symptom.

Note: **denotes $p < .001$, *denotes $p < .01$.

Figure 3.
Percent of youth, depicted by assault history group, who endorsed each alcohol dependence symptom.

Note: **denotes $p < .001$, *denotes $p < .01$.

Figure 4.

Percent of youth, depicted by assault history group, who endorsed each drug dependence symptom.

Note: **denotes $p < .001$, *denotes $p < .01$.

Figure 5.

Percent of female participants, depicted by assault history group, who endorsed each drug dependence symptom.

Note: **denotes $p < .001$, *denotes $p < .01$.

Figure 6.

Percent of male participants, depicted by assault history group, who endorsed each drug dependence symptom.

Note: **denotes $p < .001$, *denotes $p < .01$.

Correlations in the Full Sample (n=281)

Table 1

	Abuse History	Abuse at home	Perpetrator a relative	Series vs single incident	Gender	Lifetime PTSD	Alcohol dependence symptoms	Drug dependence symptoms
Abuse at home	--							
Perpetrator a relative	--	.62**						
Series vs single incident	--	.42**	.47**					
Gender	.04	.22**	.17*	.20*				
Lifetime PTSD	.14	.31**	.20*	.21**	.21*			
Alcohol dependence symptoms	.15	.27**	.14	.15	.08	.15		
Drug dependence symptoms	.07	.26**	.22**	.24**	.13	.26**	.23**	
Substance abuse symptoms	.17*	.24**	.33**	.17*	.04	.20*	.23**	.39**

* $p < .01$.
** $p < .001$.

Note: Alcohol dependence, drug dependence, and substance abuse symptoms refer to symptom counts.