



## The impact of childhood abuse on inpatient substance users: Specific links with risky sex, aggression, and emotion dysregulation<sup>☆</sup>



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### ABSTRACT

Adults with substance use disorders (SUDs) report a high prevalence of childhood abuse. Research in the general population suggests specific types of abuse lead to particular negative outcomes; it is not known whether this pattern holds for adults with SUDs. We hypothesized that specific types of abuse would be associated with particular behavioral and emotional outcomes among substance users. That is, childhood sexual abuse would be associated with risky sex behaviors, childhood physical abuse with aggression, and childhood emotional abuse with emotion dysregulation. 280 inpatients ( $M$  age = 43.3; 69.7% male; 88.4% African American) in substance use treatment completed the Childhood Trauma Questionnaire (CTQ), HIV Risk-Taking Behavior Scale, Addiction Severity Index, Difficulties with Emotion Regulation Scale (DERS), Distress Tolerance Scale (DTS), and Affect Intensity and Dimensions of Affiliation Motivation (AIM). Consistent with our hypotheses, the CTQ sexual abuse subscale uniquely predicted exchanging sex for cocaine and heroin, number of arrests for prostitution, engaging in unprotected sex with a casual partner during the prior year, and experiencing low sexual arousal when sober. The physical abuse subscale uniquely predicted number of arrests for assault and weapons offenses. The emotional abuse subscale uniquely predicted the DERS total score, AIM score, and DTS score. Among substance users, different types of abuse are uniquely associated with specific negative effects. Assessment of specific abuse types among substance users may be informative in treatment planning and relapse prevention.

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In the United States, one-eighth of children are sexually, physically, or emotionally abused prior to the age of 18 (Finkelhor, Ormrod, Turner, & Hamby, 2005), which results in a number of negative outcomes throughout the lifespan (Arnou, Blasey, Hunkeler, Lee, & Hayward, 2011; Edwards, Holden, Felitti, & Anda, 2003; Kilpatrick et al., 2003). Meta-analyses and reviews focused on the short and long-term effects of childhood sexual abuse (CSA) demonstrate relationships between CSA and depression, posttraumatic stress disorder, suicide, sexual dysfunction, substance use, and academic difficulties (Beitchman,

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Zucker, Hood, DaCosta, & Akman, 1991; Beitchman et al., 1992; Paolucci, Genuis, & Violato, 2001; Putnam, 2003), whereas reviews focused on the long-term effects of childhood physical abuse (CPA) link this abuse with aggressive/criminal behaviors, substance use, self-injurious/suicidal behaviors, emotional problems, interpersonal difficulties, and academic and vocational difficulties (Malinosky-Rummell & Hansen, 1993). Although there have not been reviews examining outcomes associated with childhood emotional abuse (CEA), studies demonstrate this abuse is linked with depression, hopelessness, low self-esteem, emotion dysregulation, and negative affect (Briere & Runtz, 1988; Burns, Jackson, & Harding, 2010; Chirichella-Besemer & Motta, 2008; Courtney, Kushwaha, & Johnson, 2008). Broadly, there are a number of negative outcomes associated with childhood abuse, with considerable overlap in the types of negative outcomes associated with different types of abuse.

There are two models that have been utilized to explain these negative outcomes: the *general effects model* and the *differential effects model* (Senn & Carey, 2010). The general effects model posits that CSA, CPA, and CEA are all likely to lead to general problems in emotional and behavioral functioning (e.g. Bensley, Van Eenwyk, Spieker, & Schoder, 1999; Clemmons, Walsh, DiLillo, & Messman-Moore, 2007; Green, Russo, Navratil, & Loeber, 1999; Higgins, 2004; Higgins & McCabe, 2001), whereas the differential effects model suggests that particular types of childhood abuse are associated with specific related outcomes in adulthood (e.g. Briere & Runtz, 1990; Cavaiola & Schiff, 1988; Loos & Alexander, 1997; Senn & Carey, 2010). Although there is substantial support for the general effects model, the differential effects model provides greater specificity for hypothesized relationships between particular types of abuse and specific outcomes.

Despite the fact that research utilizing the differential effects model increases the specificity of the relationships examined, there are two limitations frequently seen in this work, including a lack of breadth in outcomes examined and a focus on outcomes associated with a single abuse subtype (e.g. physical abuse). The majority of studies focused on the differential effects model have explored whether CSA uniquely leads to risky and dysfunctional sexual behaviors, with fewer studies examining outcomes uniquely associated with CPA and CEA. There have been a handful of studies that have demonstrated that CSA is more strongly associated with risky sex behaviors than are CPA and CEA (Briere & Runtz, 1990; Littleton, Radecki Breitkopf, & Berenson, 2007; Luster & Small, 1997; Senn & Carey, 2010; Simons & Whitbeck, 1991). However, beyond studies focused on the relationship between CSA and risky sex behaviors, there have been few studies simultaneously examining the effects of CSA, CPA, and CEA on a variety of theoretically relevant outcomes. One notable exception is work by Briere and Runtz (1990) among a sample of female undergraduates, which demonstrated that CSA was uniquely associated with maladaptive sexual behavior, CPA with aggression, and CEA with low self esteem. Relatedly, although fewer outcomes were examined, a study of male and female undergraduates, demonstrated that CPA and verbal abuse were uniquely associated with anger, and childhood emotional neglect with loneliness and social isolation (Loos & Alexander, 1997). Similarly, among undergraduate females, CEA was uniquely associated with emotion dysregulation (Burns et al., 2010). Although these findings are promising, more research is needed to understand the specific relationships between particular types of childhood abuse and related outcomes during adulthood.

An additional problem with research utilizing the differential effects model is that has focused on undergraduates, which limits generalizability to other populations of interest. This is particularly relevant when considering impaired samples, who generally endorse the highest levels of childhood abuse and maladaptive outcomes. For example, 40–90% of substance users report a history of childhood abuse (Heffernan et al., 2000; Kendler et al., 2000; Rohsenow et al., 1988) and persons who have experienced childhood abuse are twice as likely to have substance use disorders as compared to persons in the general population (MacMillan et al., 2001; Molnar, Buka, & Kessler, 2001). As such, substance users represent a particularly relevant group to study because rates of abuse in this population are quite high and because there are numerous maladaptive outcomes associated with this abuse, including an increased likelihood of psychopathology, suicide attempts, risky sex behaviors, earlier age at first drug injection and alcohol initiation, and arrests related to substance use (Brems, Johnson, Neal, & Freemon, 2004; Gratz, Tull, Baruch, Bornovalova, & Lejuez, 2008; Ompad et al., 2005; Oviedo-Joekes et al., 2011; Plotzker, Metzger, & Holmes, 2007; Shand, Degenhardt, Slade, & Nelson, 2011). Moreover, substance users who have experienced child abuse, as compared to substance users who have not, may represent a distinct group (Teicher & Samson, 2013), as they initiate drugs use at an earlier age, are more likely to be incarcerated, are more likely to engage in risky sex behaviors, and endorse greater psychiatric comorbidities (Bernstein, Stein, & Handelsman, 1998; Medrano, Hatch, Zule, & Desmond, 2002; Oshri, Tubman, & Burnette, 2012; Walton et al., 2011). Although there seems to be a consensus that CPA, CSA, and CEA have deleterious consequences for substance users, the most relevant features in the determination of these consequences are unknown. As a large percentage of substance users relapse after receiving substance use treatment, or are arrested for criminal behaviors (Bright & Martire, 2013), it is critical to understand how different types of abuse during childhood might be related to maladaptive behaviors during adulthood that put substance users at risk for relapse or incarceration.

The current study aimed to disentangle the relationship between types of childhood abuse experienced and maladaptive behavioral and emotional outcomes among substance users in residential substance use treatment, with a focus on exploring the specificity in outcomes. We hypothesized CSA would be uniquely associated with risky sex behaviors (i.e. a greater number of occasions of unprotected sex with casual partners, exchanges of sex for cocaine/heroin, arrests/charges for prostitution, and lower sexual arousal when sober), CPA would be uniquely associated with aggression-related outcomes (higher number of arrests/charges for assault and arrests/charges for weapons offenses), and CEA would be associated with emotion dysregulation outcomes (elevated Difficulties with Emotion Regulation scores, lower Distress Tolerance Scale scores, and higher Affect Intensity and Dimensions of Affiliation Motivation scores). We hypothesized

that specific abuse subtypes would be associated with these outcomes, above and beyond the effects of other subtypes of abuse.

## Materials and methods

### Participants

As a part of a larger study, we recruited 280 participants ( $M$  age = 43.3;  $S.D.$  = 9.79; 69.7% male; 88.4% African American) within their first week of admittance to a residential substance use treatment center in inner city Washington, D.C. All participants were administered a standardized diagnostic assessment by trained staff as a part of the treatment center's intake process. Upon completing this assessment, participants were invited to participate in research and informed consent was obtained after study procedures were explained (<5% refused to participate). The University of Maryland Institutional Review Board approved the study protocol and the study was carried out in accordance with the Declaration of Helsinki. All paper-based assessments completed by participants were coded with a subject number so that the identities of participants were kept confidential.

### Assessments

**Childhood abuse.** Participants' experiences of childhood abuse were assessed using the Childhood Trauma Questionnaire-Short Form (CTQ-SF; Bernstein et al., 2003), which is a self-report retrospective questionnaire that has been validated for use among substance users (Thombs, Lewis, Bernstein, Medrano, & Hatch, 2007). When compared with trauma ratings from child welfare records and reports of family members and clinicians, the CTQ has good sensitivity and satisfactory specificity (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997). Additionally, it has convergent and discriminant validity with other measure of trauma (Bernstein et al., 1994). We administered 15 items comprising the emotional, physical, and sexual abuse subscales and used the established cut-offs for determining rates of different types of abuse endorsed (Bernstein & Fink, 1998). We also conducted subtype analyses examining the CTQ scores continuously. In the current study, the internal consistency of the CSA, CPA, and CEA subscales was good to excellent (.88, .86, .96, respectively).

**Risky sexual behavior.** There are a number of limitations associated with the reporting of risky sexual behaviors (RSBs), including a lack of context-specific information about when and with whom RSBs occur (e.g. Kiene, Barta, Tennen, & Armeli, 2009; Reynolds et al., 2010). Because of limitations associated with existing measures, situational elements of RSBs have been integrated into research (Gillmore et al., 2002; Tortu, McMahon, Hamid, & Neaigus, 2000), with a focus on describing behaviors during particular events (LaBrie, Earleywine, Schiffman, Pedersen, & Marriot, 2005; Reynolds et al., 2010). We utilized the risky sex behavior (RSB) subscale of the HIV Risk-Taking Behavior Scale (HRBS-RSB; Darke, Hall, Heather, Ward, & Wodak, 1991), with modifications to account for context-specific RSBs. The HRSB has adequate reliability and validity (Darke, Hall, & Carless, 1990), with higher scores indicating higher levels of RSBs. Items used included assessments of rates of past year occasions (PYOs) of unprotected sex with a casual partner, PYOs of exchanging sex for cocaine and heroin (other substances were not assessed with this measure), and a report of sexual arousal while sober. The Addiction Severity Index (ASI; McLellan, Luborsky, Woody, & O'Brien, 1980; McLellan et al., 1992) is a structured clinical interview used with substance users. The current study utilized the "legal status" portion of the ASI to assess participants' involvement with the law. In a 2004 meta-analysis, Mäkelä (2004) examined 37 studies that have used the ASI, and reported a moderate overall test-retest reliability ( $ICC = .78$ ), with Cronbach's alpha ranging from .48 to .81 for the legal status composite score. Participants reported on number of arrests/charges for prostitution.

**Aggression.** We utilized two questions from the "legal status" portion of the ASI, as described above (McLellan et al., 1980; McLellan et al., 1992) focusing on number of arrests/charges for assault and number of arrests/charges for weapons offenses as behavioral indicators of aggression.

**Emotion dysregulation.** The Difficulties with Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) assesses six dimensions of emotion regulation (e.g. nonacceptance of emotional responses, limited access to emotion regulation strategies perceived as effective, difficulty controlling impulses when experiencing negative emotions). The DERS has high internal consistency ( $\alpha = .93$ ), good test-retest reliability, and adequate construct and predictive validity. The Distress Tolerance Scale (DTS; Simons & Gaher, 2005) is a 15-item measure assessing individuals' ability to persist in the face of distress, with lower scores indicating lower distress tolerance. The scale has good construct and discriminant validity, and test-retest reliability (Simons & Gaher, 2005). The Affect Intensity Measure (AIM; Larsen, 1984; Larsen & Diener, 1987) is a 40-item questionnaire assessing the intensity with which individuals typically experience their emotions. The AIM has good coefficient alphas (.90–.94) and high construct validity (Larsen, 1984). Higher scores on the AIM indicate individuals experience their emotions intensely.

### Analytic strategy

Data included here were from participants randomly assigned to two separate research protocols that included some overlapping assessment measures; thus, some measures were only completed by a subsample of participants who were randomly assigned to one of the research protocols. Therefore, the number of participants for each analysis varies depending on the number of individuals who completed the given measures within the two studies ( $N = 80\text{--}287$ ). In order to determine whether completers and non-completers differed across demographic factors (i.e. race/ethnicity, gender, income, and education) previously shown to be associated with our outcomes of interest, we conducted ANOVAs. There were significant differences in these demographic factors across completers and non-completers of some of the assessments, thus these factors were controlled in all analyses, not only to take into account demographic differences in completers and non-completers, but also to control for demographic variables commonly shown to be associated with our outcomes of interest. Data were double entered into SPSS (versions 16–20 over the study) so potential inconsistencies or inaccuracies could be easily detected.

Multiple regression analyses were conducted to determine the specific effects of different types of childhood abuse on risky sex behaviors, measures of aggression, and measures of emotion dysregulation. All analyses included gender, race/ethnicity, income, and education as covariates in the first step of the regression models. When examining abuse subtypes, predictors were added into the regression model in an order that allowed us to determine whether particular abuse subtypes predicted outcomes above and beyond other predictors. For example, when CSA was the predictor we wished to test, CPA and CEA were added into the second step of the model, whereas CSA was added into the third step of the model to examine its unique predictive abilities. The same pattern was applied when examining CPA and CEA as predictors. All betas presented are standardized regression coefficients.

## Results

### Rates of childhood abuse

Within our sample, 43.6% of participants reported experiencing childhood abuse based on established CTQ cutoff scores (Bernstein & Fink, 1998). To determine the co-occurrence amongst the three types of abuse examined, a summary score was created that ranged from 0 to 3 to signify the total number of abuse types experienced based on whether participants met the cutoff scores for each subtype of abuse. Here, 18.9% of participants in the total sample reported experiencing one type of abuse, 14.6% reported experiencing two types of abuse, and 10.0% reported experiencing all three types of abuse. When examining the different types of abuse, 24.6% of participants reported experiencing CSA, 24.6% reported experiencing CEA, and 28.9% reported experiencing CPA.

### Hypothesis 1 CSA as a predictor of sexual behaviors and experiences

The model examining the relationship between the CTQ subscales (e.g. CSA, CPA, and CEA), covariates, and not wearing a condom during sex with casual partners during the prior year approached significance ( $R^2 = .048$ ,  $F(7, 249) = 1.81$ ,  $p = .080$ ), with higher scores on the CSA scale associated with more occasions of unprotected sex with a casual partner during the prior year (Table 1a). The CSA score was significantly associated with engaging in unprotected sex with casual partners during the prior year above and beyond CPA, CEA, and covariates ( $\Delta R^2 = .016$ ,  $\Delta F(1, 249) = 4.23$ ,  $p = .041$ ).

The model examining the relationship between the CTQ subscales, covariates, and exchanging sex for cocaine during the prior year was significant ( $R^2 = .116$ ,  $F(7, 199) = 3.73$ ,  $p = .001$ ), with higher scores on the CSA scale associated with more occasions of exchanging sex for cocaine during the prior year (Table 1b, Fig. 1a). The CSA score was significantly associated with exchanging sex for cocaine during the prior year above and beyond CPA, CEA, and covariates ( $\Delta R^2 = .034$ ,  $\Delta F(1, 199) = 7.73$ ,  $p = .006$ ).

The model examining the relationship between the CTQ subscales, covariates, and exchanging sex for heroin during the prior year was not significant ( $R^2 = .128$ ,  $F(7, 80) = 1.68$ ,  $p = .126$ ). However, the regression model predicted 12.8% of the variance in exchanging sex for heroin, with higher CSA scores associated with more occasions of exchanging sex for heroin during the prior year (Table 1c). The CSA score was significantly associated with exchanging sex for heroin during the prior year above and beyond CPA, CEA, and covariates ( $\Delta R^2 = .056$ ,  $\Delta F(1, 80) = 5.14$ ,  $p = .026$ ).

The model examining the relationship between the CTQ subscales, covariates, and being arrested and charged for prostitution was significant ( $R^2 = .102$ ,  $F(7, 254) = 4.11$ ,  $p < .001$ ), with higher CSA scores associated with being arrested and charged for prostitution on more occasions (Table 1d, Fig. 1b). The CSA score significantly predicted arrests and charges for prostitution above and beyond CPA, CEA, and covariates ( $\Delta R^2 = .029$ ,  $\Delta F(1, 254) = 8.23$ ,  $p = .004$ ).

The model examining the relationship between the CTQ subscales, covariates, and sexual desire while sober was significant ( $R^2 = .090$ ,  $F(7, 262) = 3.70$ ,  $p < .001$ ), with higher scores on the CSA subscale associated with lower desire for sex while sober (Table 1e). The CSA score was significantly negatively associated with sexual desire while sober, above and beyond CPA, CEA, and covariates ( $\Delta R^2 = .015$ ,  $\Delta F(1, 262) = 4.23$ ,  $p = .041$ ).

**Table 1a**

Past year occasions of sex without a condom with casual partners as a function of the CTQ subscales.

	$\beta$	<i>t</i>	<i>p</i>
<b>Step two<sup>a</sup></b>			
CEA	.111	1.20	.232
CPA	.081	.878	.381
<b>Step three</b>			
CEA	.045	.462	.644
CPA	.060	.652	.515
CSA	.156	2.06	.041

CSA, childhood sexual abuse; CPA, childhood physical abuse; CEA, childhood emotional abuse.

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.**Table 1b**

Past year exchange of sex for crack cocaine as a function of the CTQ subscales.

	$\beta$	<i>t</i>	<i>p</i>
<b>Step two<sup>a</sup></b>			
CEA	.029	.293	.770
CPA	.049	.492	.623
<b>Step three</b>			
CEA	-.064	-.621	.535
CPA	.017	.172	.864
CSA	.225	2.78	.006

CSA, childhood sexual abuse; CPA, childhood physical abuse; CEA, childhood emotional abuse.

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.**Table 1c**

Past year exchange of sex for heroin as a function of the CTQ subscales.

	$\beta$	<i>t</i>	<i>p</i>
<b>Step two<sup>a</sup></b>			
CEA	-.208	-1.23	.222
CPA	.205	1.23	.224
<b>Step three</b>			
CEA	-.391	-2.13	.036
CPA	.202	1.24	.219
CSA	.317	2.27	.026

CSA, childhood sexual abuse; CPA, childhood physical abuse; CEA, childhood emotional abuse.

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.**Table 1d**

Lifetime arrests and charges for prostitution as a function of the CTQ subscales.

	$\beta$	<i>t</i>	<i>p</i>
<b>Step two<sup>a</sup></b>			
CEA	.062	.697	.486
CPA	-.009	-.106	.916
<b>Step three</b>			
CEA	-.027	-.287	.775
CPA	-.044	-.505	.614
CSA	.212	2.87	.004

CSA, childhood sexual abuse; CPA, childhood physical abuse; CEA, childhood emotional abuse.

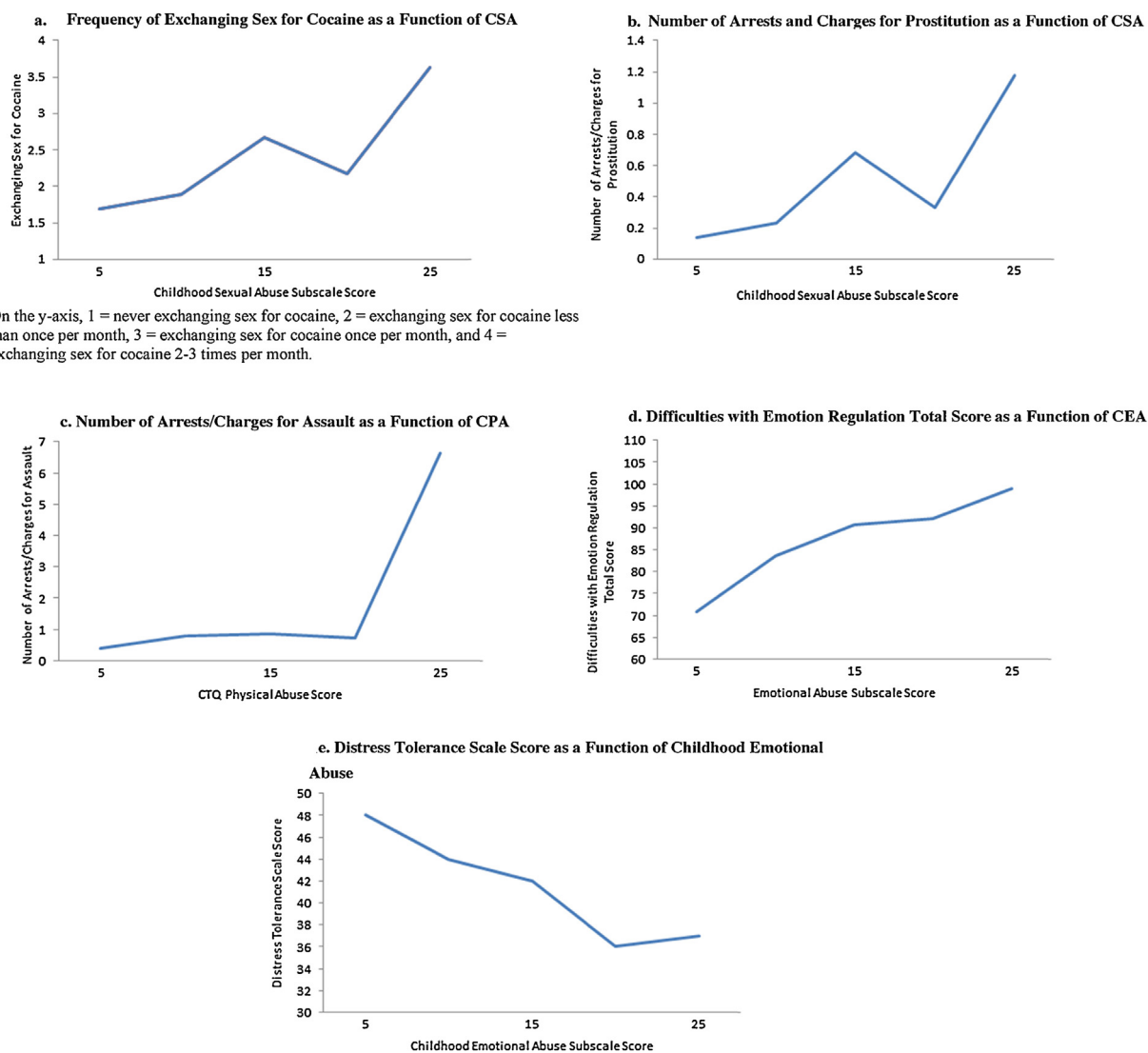
<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.**Table 1e**

Sexual arousal when sober as a function of the CTQ subscales.

	$\beta$	<i>t</i>	<i>p</i>
<b>Step two<sup>a</sup></b>			
CEA	-.031	-.348	.728
CPA	-.054	-.619	.537
<b>Step three</b>			
CEA	.034	.362	.718
CPA	-.030	-.341	.733
CSA	-.151	-2.06	.041

CSA, childhood sexual abuse; CPA, childhood physical abuse; CEA, childhood emotional abuse.

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.



**Fig. 1.** (a) Number of arrests and charges for prostitution as a function of CSA. (b) Frequency of exchanging sex for cocaine as a function of CSA. On the y-axis, 1 = never exchanging sex for cocaine, 2 = exchanging sex for cocaine less than once per month, 3 = exchanging sex for cocaine once per month, and 4 = exchanging sex for cocaine 2–3 times per month. (c) Number of arrests/charges for assault as a function of CPA. (d) Difficulties with emotion regulation total score as a function of CEA. (e) Distress Tolerance Scale score as a function of childhood emotional abuse.

### Hypothesis 2 CPA as a predictor of aggressive behaviors

The model examining the relationship between the CTQ subscales, covariates, and arrests and charges for assault was significant ( $R^2 = .063$ ,  $F(7, 252) = 2.43$ ,  $p = .020$ ), with higher CPA scores associated with more arrests and charges for assault (Table 2a, Fig. 1c). The CPA score was significantly associated with arrests and charges for assault above and beyond CSA, CEA, and covariates ( $\Delta R^2 = .048$ ,  $\Delta F(1, 252) = 12.86$ ,  $p < .001$ ).

The model examining the relationship between the CTQ subscales, covariates, and arrests and charges for weapons offenses was significant ( $R^2 = .076$ ,  $F(7, 253) = 2.98$ ,  $p = .005$ ), with higher CPA scores associated with more arrests and charges for weapons offenses (Table 2b). The CPA score was significantly associated with arrests and charges for weapons offenses above and beyond CSA, CEA, and covariates ( $\Delta R^2 = .034$ ,  $\Delta F(1, 253) = 9.37$ ,  $p = .002$ ).

### Hypothesis 3 CEA as a predictor of emotion dysregulation

The model examining the relationship between the CTQ subscales, covariates, and the DERS was significant ( $R^2 = .152$ ,  $F(7, 74) = 3.08$ ,  $p = .007$ ), with higher CEA scores associated with higher DERS scores (Table 3a, Fig. 1d). When added to the

**Table 2a**

Lifetime arrests and charges for assault as a function of CTQ subscales.

	$\beta$	$t$	$p$
<b>Step two<sup>a</sup></b>			
CEA	.088	1.17	.244
CSA	-.062	-.813	.417
<b>Step three</b>			
CEA	-.134	-1.39	.165
CSA	-.090	-1.20	.233
CPA	.324	3.59	<.001

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.**Table 2b**

Lifetime arrests and charges for weapons offenses as a function of CTQ subscales.

	$\beta$	$t$	$p$
<b>Step two<sup>a</sup></b>			
CEA	.142	1.90	.059
CSA	-.139	-1.83	.068
<b>Step three</b>			
CEA	-.045	-.475	.635
CSA	-.163	-2.17	.031
CPA	.274	3.06	.002

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.

model, the CEA score was significantly associated with the DERS total scores above and beyond CSA, CPA, and covariates ( $\Delta R^2 = .159$ ,  $\Delta F(1, 74) = 15.21$ ,  $p < .001$ ).

The model examining the relationship between the CTQ subscales, covariates, and the Distress Tolerance Scale (DTS) score was not significant ( $R^2 = .113$ ,  $F(7, 74) = 1.35$ ,  $p = .238$ ). However, higher CEA scores were significantly associated with lower DTS scores (Table 3b, Fig. 1e). When added to the model, CEA was significantly associated with lower DTS scores above and beyond CSA, CPA, and covariates ( $\Delta R^2 = .086$ ,  $\Delta F(1, 74) = 7.22$ ,  $p = .009$ ).

The model examining the relationship between the CTQ subscales, covariates, and the Affect Intensity and Dimensions of Affiliation Motivation (AIM) total score was significant ( $R^2 = .192$ ,  $F(7, 75) = 2.55$ ,  $p = .021$ ), with higher CEA scores approaching significance in their association with higher AIM total scores (Table 3c).

## Discussion

The results of the current study supported several of our hypotheses in line with the differential effects model; CSA predicted risky sexual behaviors above and beyond CPA and CEA, CPA predicted aggressive behaviors above and beyond CSA and CEA, and CEA predicted emotion dysregulation above and beyond CSA and CPA. Overall, these findings suggest there is a specific link between particular types of childhood traumas and later maladaptive behavioral and emotional patterns. Prior research among substance users (e.g. Gratz et al., 2008; Shand et al., 2011) has not systematically examined these specific relationships. Moreover, work that has examined the effects of particular abuse subtypes has focused on undergraduates (Loos & Alexander, 1997), adolescents (Arata, Langhinrichsen-Rohling, Bowers, & O'Farrill-Swails, 2005; Cavaiola & Schiff, 1988), and women attending an STD clinic (Senn & Carey, 2010). Our results are consistent with and extend these prior findings within a population experiencing particularly elevated rates of abuse and negative outcomes related to this abuse.

When attempting to understand why these specific relationships exist, there is a theoretical body of research that proposes particular mechanisms to explain these outcomes. For example, Finkelhor and Browne's (1985) traumagenic dynamics theory suggests that the experience of CSA negatively shapes children's perception of themselves, their own behaviors, and their interpersonal relationships. Most relevant to our findings, the mechanism of traumatic sexualization suggested by this theory hypothesizes that the experience of CSA leads youth to learn that sexual activities can be used to obtain affection and rewards, which then translates into later sexual risk taking and promiscuity. For CPA, deficits in social-information-processing, resulting from CPA, are thought to increase the likelihood that youth will behave aggressively (Dodge, Bates, & Pettit, 1990). Here, social learning theory suggests that youth who experience CPA learn that the use of violence is an acceptable and effective means for reacting to anger. Following this, social-information-processing suggests that children who experience CPA are unable to effectively interpret interpersonal cues and have a heightened awareness of hostile cues, which increases their likelihood of behaving aggressively. Finally, for CEA, Burns et al. (2010) suggest that the greater frequency and chronicity of CEA, as compared to CPA and CSA, places an overwhelming burden on children's ability to effectively regulate and manage negative emotions, resulting in deficits in the development of emotion regulation skills. Similarly, Reddy et al. (2006) Reddy et al. (2006) suggest that avoidance serves as a coping strategy for youth experiencing CEA because it allows youth to mentally escape from their negative experiences, thereby preventing the development of effective regulatory strategies. While the current study does not advance our understanding of the mechanisms underlying

**Table 3a**  
Difficulties with emotion regulation total score as a function of CTQ subscales.

	$\beta$	$t$	$p$
<b>Step two<sup>a</sup></b>			
CPA	.010	.073	.942
CSA	.102	.722	.472
<b>Step three</b>			
CPA	-.367	-2.30	.024
CSA	-.012	-.088	.930
CEA	.614	3.90	<.001

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.

**Table 3b**  
Distress tolerance as a function of CTQ subscales.

	$\beta$	$t$	$p$
<b>Step two<sup>a</sup></b>			
CPA	.026	.190	.850
CSA	-.133	-.944	.348
<b>Step three</b>			
CPA	.323	1.88	.064
CSA	-.054	-.388	.699
CEA	-.461	-2.69	.009

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.

**Table 3c**  
Affect Intensity and Dimensions of Affiliation Motivation as a function of CTQ subscales.

	$\beta$	$t$	$p$
<b>Step two<sup>a</sup></b>			
CPA	.102	.765	.447
CSA	.210	1.55	.126
<b>Step three</b>			
CPA	-.077	-.471	.639
CSA	.149	1.08	.283
CEA	.297	1.85	.068

<sup>a</sup> Race/ethnicity, gender, education, and income are controlled for in steps 1 and 2 of the analyses.

these relationships, it provides strong evidence that specific relationships do exist between abuse subtypes and related outcomes, and suggests the importance of further exploring potential mechanisms explaining these relationships.

The results of the current study advance our understanding of the types of abuse leading to particular outcomes and can inform treatment planning for substance users. Given existing implementation challenges for EBTs in substance use treatment centers (Brown, Stout, & Mueller, 1999), the implementation of EBTs for comorbid substance use and trauma poses a particularly difficult challenge. Unfortunately, the current lack of attention to this detrimental comorbidity leads to particularly poor outcomes (Brown et al., 1999). For example, substance users with a history of child abuse are more likely to use substances during treatment, to have poor treatment outcomes, and to continue to have substance use problems post-treatment, as compared to substance users without a history of abuse (Sacks, McKendrick, & Banks, 2008; Shane, Diamond, Mensinger, Shera, & Wintersteen, 2006; Williams, Smith, An, & Hall, 2008). Importantly, there are trauma-specific interventions that have been successfully used with this population. For example, Living in the Face of Trauma (LIFT) was developed for HIV positive substance users with a history of child sexual abuse. Research demonstrates that participants in LIFT experience reductions in substance use and traumatic stress symptoms, as well as increases in safe sex practices and HIV treatment adherence post-treatment (Meade et al., 2010). Although less specific work has been done focusing on targeting outcomes associated with physical or emotional abuse, Acceptance and Commitment Therapy has successfully been used to address past physical abuse and current substance use disorders (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). These targeted interventions may be particularly critical both to address the types of challenges that individuals experience, as well as to target changes in negative behavioral and emotional patterns. Further research is needed in this area to determine whether interventions implemented for specific types of trauma experiences would benefit substance users in residential treatment.

The results of this study should be considered within the context of three limitations. First, our sample was not randomly selected, nor is it representative of all drug treatment facilities in the United States. Thus, we cannot assume our findings generalize to all substance users in treatment. Second, data collection related to childhood trauma was limited to retrospective self-report. The primary concern for our study is reporting bias, which could inflate observed associations; however, individuals generally underreport abuse experiences (Widom & Morris, 1997; Widom & Shepard, 1996). Thus, it seems unlikely that reporting bias would produce the specific associations between abuse types and adverse



behavioral outcomes observed here. Third, the current study did not include measures of childhood experiences beyond abuse, such as additional environmental factors contributing to maladaptive behaviors in adulthood. As Arata et al. (2005) suggested, there might be additional factors in children's environments accounting for the relationship between abuse and negative outcomes. Future research should assess additional factors like school environment, neighborhood environment, and stability in the home to gain a more complete picture of factors associated with maladaptive outcomes in adulthood.

Despite these limitations, the current study offers a clear and broad examination of maladaptive emotional and behavioral outcomes specifically associated with particular abuse subtypes among substance users. Due to elevated rates of childhood trauma among substance users (Heffernan et al., 2000; Kendler et al., 2000), it is critical to incorporate interventions for trauma into existing evidence-based treatments for substance users to improve outcomes. Overall, when intervening on particular behaviors, like aggression, unprotected sex, or emotional distress among substance users, it likely would be of benefit to consider their particular abuse histories within case conceptualization and treatment planning. Indeed, in order to target some of the most problematic and refractory behaviors among substance users, it is likely necessary to understand and intervene at the level of these abuse experiences.

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