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Psychiatry Research

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## Assessing traumatic experiences in screening for PTSD in substance use disorder patients: What is the gain in addition to PTSD symptoms?



Tim Kok<sup>a,b,\*</sup>, Hein de Haan<sup>a,b</sup>, Margreet van der Meer<sup>c</sup>, Lisa Najavits<sup>d</sup>, Cor de Jong<sup>b</sup>

<sup>a</sup> Tactus Addiction Treatment, P.O. box 154, 7400 AD Deventer, The Netherlands

<sup>b</sup> Nijmegen Institute for Scientist Practitioners in Addiction, P.O. box 6909, 6503 GK Nijmegen, The Netherlands

<sup>c</sup> Verslavingszorg Noord Nederland, P.O. box 1024, 9701 BA Groningen, The Netherlands

<sup>d</sup> Veterans Affairs Boston Healthcare System and Boston University School of Medicine, 150 South Huntington Avenue, Boston, MA 02130, USA

### ARTICLE INFO

#### Article history:

Received 15 May 2014

Received in revised form

16 January 2015

Accepted 18 January 2015

Available online 28 January 2015

#### Key words:

Substance use disorder

Childhood trauma

Child abuse

Assessment

Posttraumatic stress disorder

### ABSTRACT

Traumatic experiences have been linked with substance use disorders (SUD) and may be an important factor in the perpetuation of SUD, even in the absence of posttraumatic stress disorder (PTSD) symptoms. The purpose of the current study was to examine the relationship between childhood trauma and substance use severity in 192 SUD inpatients. Childhood trauma was assessed using the Traumatic Experiences Checklist (TEC). With variables derived from this measure in addition to PTSD symptoms, two regression models were created with alcohol use or drug use severity as dependent variables. Alcohol severity was explained by PTSD symptoms as well as the age of trauma. Drug severity was explained solely by PTSD symptoms. The clinical value of assessing childhood trauma in determining the addiction severity appears to be limited in comparison with PTSD symptoms.

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### 1. Introduction

Substance use disorders (SUD) are responsible for a large burden on society (Office of National Drug Control Policy, 2004). This burden is often expressed in financial costs, such as those related to hospitalizations, law enforcement, and criminal activities, but SUD can also lead to a large psychological burden on substance users and their environment (Gossop et al., 1998). Effective treatments for SUD are therefore important. The presence of posttraumatic stress disorder (PTSD) is a complicating factor in the treatment of SUD, and high rates of comorbidity of the two disorders are well-documented (Ouimette and Read, 2013). In SUD inpatients, the current prevalence of PTSD ranges from 25% to 51% (Ouimette et al., 2005; Reynolds et al., 2005; Kimerling et al., 2006; Driessen et al., 2008; Kok et al., 2012). In outpatient SUD settings, prevalence rates of current PTSD between 8% and 27% have been found (Graybill et al., 1985; Clark et al., 2001; De Bellis, 2002; Mills et al., 2006; Najavits et al., 2007; Schneider et al., 2007; Driessen et al., 2008). In comparison, epidemiological studies in the general population found a lifetime prevalence of PTSD ranging from 1.3% to 12.3% (Davidson et al., 1991; Resnick

et al., 1993; Perkonig et al., 2000; Kessler et al., 2005). A large proportion of SUD patients experience trauma, but do not develop PTSD. It has been estimated that approximately 90% of SUD patients experienced at least one lifetime trauma (Triffleman et al., 1995; Najavits et al., 1997; Farley et al., 2004). A descriptive study compared alcohol dependent patients with non-SUD patients and found that trauma was much more prevalent in the alcohol dependent patients (Mirsal et al., 2004). Moreover, SUD patients experience more severe trauma and are traumatized more often than people in the general population (Khoury et al., 2010). The impact of trauma on SUD, in the absence of PTSD, is inconsistent. Some studies show that exposure to trauma increases the risk of SUD (Kilpatrick et al., 2003; Sartor et al., 2007). Also, SUD patients with more severe histories of trauma seem more prone to substance use relapse (Westermeyer et al., 2001; Hyman et al., 2008) and show worse treatment outcomes compared to patients with less severe trauma (Brown and Wolfe, 1994; Hien et al., 2000). However, a longitudinal study by Chilcoat and Breslau (1998) showed that exposure to trauma in the absence of PTSD did not increase the risk of SUD.

Given the potential importance of trauma and PTSD on SUD treatment, it is important to have reliable screenings instruments. Integrated treatments, for example, that focus on SUD, trauma-related symptoms and preventing re-traumatization have been shown to produce positive outcomes in both PTSD and SUD symptoms (Zlotnick et al., 2003; Hien et al., 2004; Cocozza et al.,

\* Corresponding author at: Tactus Addiction Treatment, P.O. box 154, 7400 AD Deventer, The Netherlands. Tel.: +31 570500100; fax: +31 570500115.

E-mail addresses: [t.kok@tactus.nl](mailto:t.kok@tactus.nl) (T. Kok), [h.dehaan@tactus.nl](mailto:h.dehaan@tactus.nl) (H. de Haan).

2005; Najavits et al., 2005; Gil-rivas et al., 2009; Najavits and Hien, 2013). An issue of clinical importance is “how” and “when” to assess the trauma characteristics. Some suggest that information about trauma is necessary for treatment planning with few adverse events when asking about trauma (McHugo et al., 2005; Larsen and Berenbaum, 2014). However, others mention ethical considerations and adverse reactions that may play a role when asking about trauma too early (Newman and Kaloupek, 2009). Patients may be unwilling to disclose traumatic experiences at the beginning of treatment, because they do not trust the interviewer, feel ashamed, or are afraid of experiencing intense emotions associated with their memories (Lisak, 1994). Screening for PTSD can still be done using a brief self-report inventory for PTSD symptoms in which trauma is not assessed (Kok et al., 2012). Alternatively, a trauma inventory may be used or added to assess trauma characteristics in addition to PTSD symptoms.

Thus, the aim of the current study was to determine the value of a childhood trauma inventory in addition to a self-report inventory of PTSD symptoms in relation to substance use severity. We hypothesize that both PTSD symptom severity and trauma play a role in substance use severity in SUD patients.

## 2. Methods

### 2.1. Participants

The study was conducted from 2008 to 2010 and was approved by the local medical ethical committee (METC\11270.haa). Participants were 192 SUD inpatients in the Netherlands selected for the following inclusion criteria: 1) admitted to inpatient SUD treatment; and 2) capable of speaking Dutch. Exclusion criteria were: 1) severe cognitive impairment; 2) severe self-destructive behavior, defined as patients that are known to self-mutilate or have suicidal tendencies as assessed during intake; and 3) his or her practitioner did not approve the patient's participation. Of the 263 eligible patients, 8 did not meet the inclusion criteria, 53 refused to participate and 10 did not complete all assessments and were therefore excluded from the analyses. All participants were Caucasian.

### 2.2. Measures

#### 2.2.1. Traumatic Experiences Checklist (TEC)

The Traumatic Experiences Checklist (TEC) is a self-report questionnaire, developed in the Netherlands to collect information on 29 potentially traumatic experiences, asked as: “Did this happen to you?”. For “yes” responses, additional questions are the age(s) the event happened and the degree of psychological stress it caused (scale 1–5, where 1=not at all, 2=only slightly, 3=moderately, 4=severely and 5=extremely traumatized). The total number of traumas (“yes” answers) ranges from 0 to 29, and separate counts can be obtained for emotional, physical and sexual traumas (Dom et al., 2007). Age of first trauma is identified by the earliest trauma with a score of at least 3 on the 1–5 scale. The TEC has been validated in a sample of 153 psychiatric outpatients, including satisfactory internal consistency, test–retest reliability and criterion validity (Nijenhuis et al., 2002).

#### 2.2.2. Clinician-Administered PTSD Scale (CAPS)

Hovens et al., 2005 translated the CAPS (Blake et al., 1995) into Dutch. It is the most widely used and rigorous structured interview for the diagnosis and severity of PTSD. Both the original and the Dutch CAPS have strong psychometric properties, with interrater reliability between 0.92 and 1.00 and internal consistency of 0.89 (Hovens et al., 1994; Weathers et al., 2001). The interview identifies a trauma and ratings of the 17 symptoms of PTSD in relation to it (using DSM-IV-TR criteria). Each symptom is rated on a 5-point scale for frequency of the symptom's occurrence and intensity (e.g., distress or functional impairment).

#### 2.2.3. European Addiction Severity Index (EuropASI)

The EuropASI is the European adaptation of the fifth edition of the Addiction Severity Index (McLellan et al., 1992). It covers seven problem areas (medical, employment, alcohol, drug, legal, psychiatric, family and social) that are commonly affected by SUD. For the current study, only the drug and alcohol domains were used. A composite score (range from 0 ‘not severe, no intervention necessary’ to 1 ‘very severe, intervention necessary’) is obtained for each domain to indicate the level of severity. This score is based on the number of days of each substance used in the past month, number of days the person experienced problems in the past month related to substance use, and the importance of treatment for substance use.

Composite scores for the EuropASI are computed with a strategy similar to the one used in the ASI.

#### 2.2.4. Self-Report Inventory for PTSD (SRIP)

The SRIP (Hovens et al., 2002) is a Dutch self-report questionnaire of PTSD symptoms. Twenty-two items are rated on a 4-point frequency scale, with three subscales per the DSM-IV symptom clusters re-experiencing (B), avoidance (C) and hyperarousal (D). The internal consistency has been found to be 0.92 (Hovens et al., 2002). Convergent validity has also been tested, comparing the SRIP to the results of the Mississippi PTSD Scale (Keane et al., 1988) and the Impact of Events Scale (IES) (Horowitz et al., 1979). Intercorrelation with the Mississippi PTSD Scale was high (0.82) and moderate with the IES (0.69). For criterion validity the Dutch version of the CAPS was used, which resulted in a recommended cut-off score of 52, and sensitivity and specificity of 0.86 and 0.71, respectively, in a psychiatric population (Hovens et al., 2002), and a cut-off score of 48 in a SUD inpatient population (Kok et al., 2012).

### 2.3. Procedure

All research assistants had a bachelor's or master's degree in psychology. The SRIP was administered to all patients in the participating facilities during the research period. The SRIP of non-participating patients was used to compare them with the study participants to evaluate possible selection bias. 4 weeks of abstinence were required for the participating patients before the other measures were administered in order to avoid potential influence of withdrawal symptoms.

### 2.4. Analyses

We calculated descriptive statistics on all variables. Patients without trauma were excluded from the remaining analyses. Two-tailed Pearson's correlations were used to evaluate the association between substance use severity and trauma-related variables: number of traumas, age of traumas, type of traumas (TEC), presence of PTSD (CAPS), and severity of PTSD symptoms (SRIP) (Dragan and Lis-Turlejska, 2007). We used regression analyses to predict substance use severity, with PTSD symptoms as a predictor variable. After that, other trauma variables that showed a univariate correlation at  $p < 0.15$  with either alcohol or drug-severity were entered one by one into the multivariate model. When the increase in explained variance was less than 10% for any variable, that variable was not included in the model. Two models were created: one for alcohol severity and one for drug severity. In each model, only patients that experienced at least some alcohol or drug severity were used in the analyses. This means that patients with a composite score of ‘0’ were excluded. Gender has also been described as a risk factor in the development of SUD in response to a trauma. Results, however, are contradictory and some researchers find a higher risk for men (Danielson et al., 2009) and some a higher risk for women (Becker and Grilo, 2006). Therefore, gender will also be included in the regression models when there is a correlation with substance use severity of  $p < 0.15$ .

## 3. Results

### 3.1. Sample characteristics

Characteristics of the sample are presented in Table 1. 37% of the sample had an alcohol use disorder, 30% had a drug use disorder and 33% was considered to have both. For patients with at least some alcohol-related problems (not necessarily a SUD) ( $n=151$ ), the mean alcohol severity on the EuropASI was 0.24 (S.D.=0.14). For patients with at least some drug-related problems ( $n=123$ ), the mean drug severity was 0.14 (S.D.=0.07).

Overall, 95.8% of patients reported at least one trauma. See Table 2 (patients without trauma were excluded from the analyses) for TEC results. In the sample, 88 of the 192 patients (45.8%) met lifetime criteria for PTSD, and 25% met criteria for current PTSD. Index traumas for current PTSD were life-threatening disease, human suffering and sudden death of family member or close friend (34%), sexual violence (26%), severe accident (18%), physical violence (16%) and other (6%).

### 3.2. Correlational analyses

See Table 3 for correlations between trauma-related variables and substance use severity (among patients with at least one

**Table 1**  
Sample characteristics of the total sample. Data are presented as Mean (S.D.) or percentages.

	Total sample (n=192)
Age	38.6 (12.6)
Gender (% men)	75
Education (%)	
No education/primary school	6.9
Secondary school (lower level)	30.9
Secondary school (higher level)	47.9
Postsecondary	14.4
Relationship status (%)	
Single	63
Married/cohabiting	19
Divorced/widowed	18
Country of birth (%)	
Netherlands	96.4
Other	3.6
Primary substance of abuse (%)	
Alcohol	46.4
Cocaine	18.2
Cannabis	10.4
Amphetamines	4.2
Heroin	3.1
Multiple substances	13
Other	4.7
Age at onset of substance use	23.6 (10.9)

**Table 2**  
Trauma variables derived from the TEC. Data are presented as Mean (S.D.) or (percentage).

	Total sample (n=184)
Age earliest traumatic event, yrs	11.3 (8.6)
Total number of traumatic events	6.5 (4.2)
Category of traumatic event	
Emotional abuse	84 (43.8%)
Physical abuse	110 (57.3%)
Sexual abuse	52 (27.1%)

**Table 3**  
Pearson's R correlations for the EuropASI severity scores for alcohol and drugs, and trauma-related variables from the TEC, the CAPS and the SRIP. *p*-values are provided between brackets.

	ASI alcohol (n=144)	ASI drugs (n=120)
Current PTSD (CAPS: dichotomous)	0.232* (0.005)	0.198* (0.031)
PTSD-symptoms (SRIP)	0.327** (< 0.001)	0.362** (< 0.001)
Age earliest trauma	0.163 (0.056)	0.035 (0.707)
Emotional abuse	0.031 (0.717)	0.014 (0.88)
Physical abuse	-0.141 (0.103)	0.074 (0.440)
Sexual harassment	0.036 (0.684)	0.097 (0.313)
Sexual abuse	-0.039 (0.657)	0.084 (0.384)
Total number traumatic events	0.060 (0.462)	0.164 (0.069)
Gender	-0.016 (0.82)	0.015 (0.83)

\* *p* < 0.05.

\*\* *p* < 0.001.

trauma), PTSD diagnosis and PTSD symptoms correlated with both alcohol and drug severity. Correlations with *p* < 0.15 were found between earliest age of trauma and alcohol severity, physical abuse and alcohol severity, and total number of traumas and drug severity.

### 3.3. Multivariate model for alcohol use severity

In our model to predict alcohol severity, PTSD symptoms explained 10.7% of the variance ( $R^2=0.107$ ,  $p < 0.001$ ). When the age-of-trauma variable was added, the explained variance

increased to 14.2% ( $R^2=0.142$ ,  $p < 0.001$ ). However, the addition of the physical abuse variable did not improve the model more than 10% and did not contribute significantly to the model ( $p=0.10$ ) and thus was not included in the final model (Table 4).

### 3.4. Multivariate model for drug use severity

PTSD symptoms explained a significant proportion of variance in drug use severity,  $R^2=0.131$ ,  $F(1,116)=17.395$ ,  $p < 0.001$ . The number of traumas-variable contributed less than 10% and did not contribute significantly to the model. Thus the best model for drug use severity consisted of just one variable: current PTSD symptoms (Table 5).

## 4. Discussion

This study focused on the added value of assessing trauma in addition to the assessment of PTSD symptoms when the goal is to evaluate the impact on alcohol and drug severity in SUD patients. The results show that PTSD symptoms measured with the SRIP explained the highest proportion of variance in substance use severity and trauma related variables do not provide much additional information. For alcohol severity, age of trauma was significant, such that patients traumatized at a younger age experience more severe alcohol use problems. Previous research has found mixed results, but there are indications that when traumatization occurs early during childhood, the chance of developing psychiatric disorders is larger than when they occur later in life (Lubit et al., 2003).

Previous research has found that the number of lifetime SUDs was predicted by lifetime traumas and current PTSD symptoms, with an explained variance of 39% (Triffleman et al., 1995). The trauma variable in that study (total score on Trauma Antecedents Questionnaire) accounted for 12% of the variance, independent of PTSD. Although the dependent variable in the current study differs, we were unable to find comparable results with substance use severity as dependent variable. Interestingly, in the same study (Triffleman et al., 1995), the authors found null results for trauma variables as predictors of drug severity, as we also found. This is of clinical importance, because it means that there seems to be no need to obtain an inventory of childhood trauma per se during intake and that the assessment of current PTSD symptoms is sufficient to determine the relation between trauma-related variables and the severity of SUD, which may indicate a need for an integrated treatment for such patients. Assessment of current PTSD symptoms does require identification of a trauma that serves

**Table 4**  
Multiple regression analysis predicting alcohol severity.

Factor	$\beta$	<i>p</i>	$R^2$	F change	<i>p</i>
Alcohol severity (n=151)			0.142	10.91	< 0.001
Current PTSD-symptoms	0.328	< 0.001			
Age earliest trauma	0.214	0.09			

**Table 5**  
Multiple regression analysis predicting drug severity.

Factor	$\beta$	<i>p</i>	$R^2$	F change	<i>p</i>
Drug severity (n=123)			0.131	17.39	< 0.001
Current PTSD-symptoms	0.362	< 0.001			

as the basis for such symptoms, but does not require the identification of all lifetime traumas. The disadvantages of lengthy lifetime trauma inventories should thus be taken into account, such as the extra time investment and possible increased stress for the patient.

Strengths of the study include the large sample size and the use of valid instruments. However, this is a cross-sectional study and no conclusions can be drawn regarding causality. There are other limitations that should be noted. First, the retrospective nature of the data that were collected. Linking memories of events to symptoms in the present inevitably leads to bias (Bernard et al., 1984). Second, although the use of self-report measures is generally considered a reliable source of information concerning sensitive topics such as abuse and other traumas, there are several disadvantages, e.g. over-reporting (Eaton et al., 2000; Wilson and Keane, 2004). Using both self-report measures and clinician administered interviews, we tried to minimize these effects. A third limitation is that we used only one substance-related measure (substance use severity), which is not necessarily related to other clinically relevant variables such as dropout or relapse. Fourth, due to the fact that the study population consisted only of SUD patients, it was impossible to draw conclusions about the influence of childhood trauma on the development of a SUD per se. Also, we cannot rule out the possible influence of multicollinearity and lack of power, although we did not find any evidence in that direction. Finally, it should also be noted that the data were collected from a population of inpatients. Typically, these patients present with high psychiatric comorbidity and secondary problems. Thus, the results cannot be generalized to other SUD populations.

In conclusion, trauma is highly prevalent in this SUD inpatient population. In SUD patients the earliest age of trauma appears to be related to the current severity of alcohol use but not drug severity. We conclude that traumas play a marginal role in predicting current substance use severity. Current PTSD symptoms, measured with the SRIP, were predictive of both alcohol and drug severity in our models. Thus, such a brief questionnaire is both more efficient and more likely to yield clinically important information for treatment planning compared to an (added) inventory for trauma.

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