



## PTSD symptom presentation among people with alcohol and drug use disorders: Comparisons by substance of abuse



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### HIGHLIGHTS

- Treatment-seeking patients with substance use disorders and likely PTSD are sampled.
- Associations between PTSD symptoms and substance use disorders are tested.
- Different symptom patterns are identified across types of substance use disorder.

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### ABSTRACT

Posttraumatic stress disorder (PTSD) and substance use disorders (SUDs) commonly co-occur, and there is some evidence to suggest that PTSD symptom clusters are differentially related to various substances of abuse. However, few studies to date have compared PTSD symptom patterns across people with different types of SUDs, and fewer still have accounted for the presence of comorbidity across types of SUDs in understanding symptom patterns. Thus, in the current study, we use a treatment-seeking sample of people with elevated symptoms of PTSD and problem alcohol use to explore differential associations between past-year SUDs with active use and PTSD symptoms, while accounting for the presence of multiple SUDs. When comparing alcohol and drug use disorders, avoidance symptoms were elevated in those with alcohol use disorder, and hyperarousal symptoms were elevated in those who had a drug use disorder. In the subsample with alcohol use disorder, hyperarousal symptoms were elevated in people with co-occurring cocaine use disorders and numbing symptoms were elevated in people with co-occurring sedative/hypnotic/anxiolytic use disorder. These findings provide evidence for different symptom cluster patterns between PTSD and various types of SUDs and highlight the importance of examining the functional relationship between specific substances of abuse when understanding the interplay between PTSD and SUDs.

### 1. Introduction

Posttraumatic stress disorder (PTSD) is common among people seeking treatment for substance use disorders (SUDs) (Jacobsen, Southwick, & Kosten, 2001), and research has increasingly attempted to understand the mechanisms accounting for this comorbidity. However, potential differential associations between PTSD symptoms based on different substances of abuse have been underexplored. Clarifying associations between PTSD symptoms and different substances of abuse could inform theory and intervention development for co-occurring PTSD and SUD. Thus, this study used a sample of 208 men and women in residential treatment for SUD to understand how substances of abuse were associated with PTSD symptom presentations.

Several theories of the co-occurrence of SUD and PTSD have been proposed, including the shared vulnerability hypothesis, which suggests that the co-occurrence of these disorders is due to shared risk factors (Chilcoat & Breslau, 1998); the susceptibility hypothesis, which posits that substance use peripheral to trauma impedes natural recovery from PTSD symptoms; the high-risk hypothesis, that asserts that risky behaviors commonly associated with substance use increase risk for trauma exposure and, therefore, PTSD (Chilcoat & Breslau, 1998); the self-medication hypothesis, that argues that individuals with PTSD use substances to alleviate emotional distress and cope with PTSD symptoms (Khantzian, 1985; Stewart, 1996); and mutual maintenance theory, which proposes that PTSD promotes SUD which, in turn, maintains PTSD symptoms (Kaysen et al., 2011). Support has been

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documented for each of these theories (Begle et al., 2011; Coffey, Schumacher, Brady, & Cotton, 2007; Kaysen et al., 2011; Read, Wardell, & Colder, 2013), although research appears to support a self-medication pathway between SUD and PTSD across longitudinal (Possemato et al., 2015; Simpson, Stappenbeck, Luterek, Lehavot, & Kaysen, 2014), laboratory (Coffey et al., 2002; Murphy et al., 2013), and clinical (Back, Brady, Sonne, & Verduin, 2006; Hien et al., 2010) investigations.

Using or abusing specific substances may be associated with differential symptomatology across PTSD symptom clusters. In studies of associations between lifetime use or abuse of a single substance and current PTSD symptoms, increased intrusion symptoms have been identified for cocaine, alcohol, cannabis, and sedatives (Avant, Davis, & Cranston, 2011; Khoury, Tang, Bradley, Cubells, & Ressler, 2010); increased symptoms of numbing/avoidance have been found for cocaine, alcohol, cannabis, amphetamines, opioids, and sedatives (Avant et al., 2011; Jakupcak et al., 2010; Khoury et al., 2010; Smith, Blumenthal, Badour, & Feldner, 2010; Smith, Smith, Cercone, McKee, & Homish, 2016); and increased hyperarousal symptoms have been found for cocaine, alcohol, opioids, cannabis, and amphetamines (Jakupcak et al., 2010; Khoury et al., 2010; McFall, Mackay, & Donovan, 1992; Najavits et al., 2003; Smith et al., 2010; Smith et al., 2016). Comparisons of people who currently abuse substances have also yielded evidence that abuse of certain substances is associated with higher severity on some PTSD symptom clusters than abuse of other substances (see Table 1 for a summary of findings), although these findings are mixed. In a treatment-seeking sample of 36 people with current or lifetime PTSD and either cocaine use disorder or AUD, people with an AUD evidenced more hyperarousal, but not avoidance or re-experiencing, than those with a cocaine use disorder (Saladin, Brady, Dansky & Kilpatrick, 1995). Read, Brown, and Kahler (2004) assessed 133 people receiving inpatient psychiatric treatment for SUDs, and results suggested that AUD was associated with increased re-experiencing symptoms relative to other SUDs, but no other cluster differences were identified for alcohol, opioid, cannabis, cocaine, or sedative use disorders. Similarly, Tull, Gratz, Aclin, and Lejuez (2010) used PTSD symptom cluster scores to predict heroin, crack/cocaine, and alcohol dependence in 48 people completing a 30-day treatment for a SUD. Unlike the previous two studies, this work statistically accounted for the abuse of multiple substances. Results indicated that hyperarousal was positively associated with heroin dependence and avoidance was negatively associated with heroin dependence. Finally, Stewart, Conrod, Pihl, and Dongier (1999) sampled 295 community women and found that, relative to other SUDs, AUD was associated with arousal symptoms, anxiolytic dependence was associated with arousal and numbing symptoms, and analgesic dependence was associated with arousal, intrusion, and numbing symptoms.

In sum, although research suggests that substances have different associations with PTSD symptom clusters, these results are equivocal,

and several limitations to this work warrant additional research on this topic. First, few studies have compared people with different SUDs to each other in terms of their PTSD symptoms. This limits conclusions regarding the extent to which specific substances contribute differentially to symptom patterns beyond the general effect of substance use. Second, most studies have included participants regardless of trauma history or PTSD status, so findings of differential effects could be driven by differences in trauma exposure across substances. Third, multiple comorbidities between SUDs, although common (Stinson et al., 2005), have received little attention. Only one study in this body of literature statistically accounted for the abuse of multiple substances (Tull et al., 2010), and no studies to our knowledge have examined differences in PTSD symptom patterns as a function of multiple SUD comorbidities. Finally, only one study assessed symptom-level differences in PTSD (Saladin et al., 1995), and this study had a relatively small sample. Thus, the current study uses a treatment-seeking sample of people with SUDs who screened positive for PTSD to examine cluster-level and symptom-level differences in PTSD symptom presentation.

## 2. Method

### 2.1. Participants

Participants were 208 people seeking treatment at a residential SUD treatment facility who were part of a larger IRB-approved study investigating PTSD treatment effectiveness (Coffey et al., 2016). Of the original sample of 225, participants who reported no lifetime criterion A events ( $n = 4$ ) or reported criterion A events but did not complete the clinical interview assessing PTSD ( $n = 2$ ) were excluded, along with participants who were missing data on their baseline SUD diagnosis ( $n = 4$ ) and/or recent substance use ( $n = 6$ ) and one participant who had no current SUD diagnosis with recent use. In the final sample, participants were 48.08% women and had a mean age of 33.82 ( $SD = 10.35$ ), with a mean annual household income of \$33,418 ( $SD = \$35,822$ ). Most (77.88%) of the sample was White/Caucasian, with a significant minority reporting that their race was Black/African American (20.67%).

### 2.2. Procedures

Participants were screened for the following inclusion criteria: 18–64 years of age, English literacy, score > 8 on the Alcohol Use Disorders Identification Test (AUDIT; Babor, Fuente, Saunders & Grant, 1992), and to identify individuals with likely PTSD, score > 44 on the PTSD Checklist-Civilian version (PCL-C; Weathers, Litz, Herman, Huska & Keane, 1993). Individuals were excluded if they were at imminent risk for suicide, psychotic or manic, in an ongoing abuse relationship related to their criterion A trauma, or judged to have a medical condition that might have compromised participation (e.g.,

**Table 1**  
Literature review of comparisons between substances of abuse and symptom cluster scores.

Substance	Intrusion/re-experiencing	Numbing/avoidance	Hyperarousal
Cocaine	= Alcohol (Saladin et al., 1995) = Other SUDs (Read et al., 2004) = Other SUDs (Tull et al., 2010)	= Alcohol (Saladin et al., 1995) = Other SUDs (Read et al., 2004) = Other SUDs (Tull et al., 2010)	< Alcohol (Saladin et al., 1995) = Other SUDs (Read et al., 2004) = Other SUDs (Tull et al., 2010)
Alcohol	> Other SUDs (Read et al., 2004) = Cocaine (Saladin et al., 1995) = Other SUDs (Tull et al., 2010) = Other SUDs (Stewart et al., 1999)	= Other SUDs (Read et al., 2004) = Cocaine (Saladin et al., 1995) = Other SUDs (Tull et al., 2010) = Other SUDs (Stewart et al., 1999)	= Other SUDs (Read et al., 2004) > Cocaine (Saladin et al., 1995) = Other SUDs (Tull et al., 2010) > Other SUDs (Stewart et al., 1999)
Opioids	= Other SUDs (Read et al., 2004) = Other SUDs (Tull et al., 2010) > Other SUDs (Stewart et al., 1999)	= Other SUDs (Read et al., 2004) < Other SUDs (Tull et al., 2010) > Other SUDs (Stewart et al., 1999)	= Other SUDs (Read et al., 2004) > Other SUDs (Tull et al., 2010) > Other SUDs (Stewart et al., 1999)
Cannabis	= Other SUDs (Read et al., 2004)	= Other SUDs (Read et al., 2004)	= Other SUDs (Read et al., 2004)
Sedatives	= Other SUDs (Read et al., 2004) = Other SUDs (Stewart et al., 1999)	= Other SUDs (Read et al., 2004) > Other SUDs (Stewart et al., 1999)	= Other SUDs (Read et al., 2004) > Other SUDs (Stewart et al., 1999)

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