# PTSD and Substance Use

**Differential diagnosis and psychopharmacology of dual disorders.**
Decker, Kathleen P. and Ries, Richard K.
Psychiatric Clinics of North America, Vol 16(4), Dec, 1993. pp. 703-718.
**Abstract:**

Discusses the interactions of substance use disorders (SUDs) with other psychiatric disorders and of different substances of abuse with common therapeutic psychiatric medications. SUDs in people with unipolar depression are common, with alcohol most often the substance of abuse, as in the cases of a 25-yr-old man admitted following a suicide attempt via an overdose of medications and alcohol and of a 34-yr-old woman admitted for active suicidal ideation and a past history of cocaine, alcohol, and marijuana use. The existence of psychosis and SUD is shown in the cases of a 35-yr-old schizophrenic man with an alcohol problem and a 22-yr-old woman with a history of polysubstance abuse and a current problem of cocaine-induced psychosis. A 53-yr-old woman had bipolar disorder complicated by the use of caffeine and ephedrine. Discussion includes anxiety disorders in alcoholics, dissociative disorders and posttraumatic stress disorder (PTSD), and substance effects of psychotropic medication use.

**Drug use and validity of substance use self-reports in veterans seeking help for posttraumatic stress disorder.**
Calhoun, Patrick S., et al.
Journal of Consulting and Clinical Psychology, Vol 68(5), Oct, 2000. pp. 923-927.
**Abstract:**

The present study assessed drug use and the validity of self–reports of substance use among help–seeking veterans referred to a specialty clinic for the assessment of posttraumatic stress disorder (PTSD). Patients (n = 341) were asked to provide a urine sample for use in drug screening as part of an evaluation of PTSD. Self–reports of substance use were compared with same–day supervised urine samples for 317 patients who volunteered to participate in a drug screening. Results suggested that self–reports were generally quite valid. Only 8% of the cases involved patients not reporting substance use detected by urine screens. A total of 42% of the participants were identified as using drugs of abuse (excluding alcohol) through self–report and urine drug screens. Among participants using drugs, PTSD diagnosis was significantly associated with greater marijuana and depressant use as compared with stimulant (cocaine and amphetamines) use. (PsycINFO Database Record (c) 2017 APA, all rights reserved)

**Reward deficiency syndrome: A biogenetic model for the diagnosis and treatment of impulsive, addictive, and compulsive behaviors.**
Blum, Kenneth. et al.
Journal of Psychoactive Drugs, Vol 32Suppl), Nov, 2000. pp. 1-68.
**Abstract:**

'The reward cascade' is the release of serotonin, which in turn at the hypothalamus stimulates enkephalin, which in turn inhibits gamma-aminobutyric acid (GABA) at the substantia nigra, which in turn fine tunes the amount of dopamine (DA) released at the nucleus accumbens or 'reward site.' When DA is released into the synapse, it stimulates a number of DA receptors which results in increased feelings of well-being and stress reduction. It is suggested that when there is a dysfunction in the brain reward cascade, especially in the DA system causing a hypodopaminergic trait, the brain of that person

requires a DA fix to feel good. This trait leads to multiple drug-seeking behavior. This is so because alcohol, cocaine, heroin, marijuana, nicotine, and glucose all cause activation and neuronal release of brain DA, which could heal the abnormal cravings. The lack of $D_2$ receptors causes individuals to have a high risk of multiple addictive, impulsive and compulsive behavioral propensities, such as severe alcoholism, cocaine, heroin, marijuana and nicotine use, glucose bingeing, pathological gambling, sex addiction, attention deficit hyperactivity disorder (ADHD), Tourette's syndrome, autism, chronic violence, posttraumatic stress disorder (PTSD), schizoid/avoidant cluster, conduct disorder, and antisocial behavior.

**The association of substance use disorders with trauma exposure and PTSD among African American drug users.**
Johnson, Sharon D. et al.
Addictive Behaviors, Vol 31(11), Nov, 2006. pp. 2063-2073.
**Abstract:**

This study examines the association of traumatic exposure, PTSD and substance use among 1098 out-of-treatment African American drug users. Over 40% of the respondents experienced a DSM-III-R qualifying traumatic event with 44% of those developing PTSD. Early onsets of marijuana and heroin use, alcohol dependence and opiate dependence were each associated with exposure to a traumatic event for males and early onset alcohol use and alcohol dependence were associated with females' exposure to a traumatic event. Alcohol dependence and depression disorder were comorbid with PTSD in men, while the early onset of alcohol and alcohol dependence were associated with PTSD in women. In the 16% of the sample who reported trauma exposure and poly-substance use, the trauma occurred after the onset of all substance use, with the exception of crack cocaine use. Implications for multifaceted treatment which addresses multiple psychopathologies, PTSD, and risk for exposure are discussed.

**Posttraumatic stress symptom severity predicts marijuana use coping motives among traumatic event-exposed marijuana users.**
Bonn-Miller, Marcel O. et al.
Journal of Traumatic Stress, Vol 20(4), Aug, 2007. pp. 577-586.
**Abstract:**

The present study examines the relation between posttraumatic stress symptom severity and motives for marijuana use among 103 (55 women) young adult marijuana users (current) who reported experiencing at least one traumatic event in their lifetime. As expected, after covarying for the theoretically relevant variables of frequency of past 30-day marijuana use, number of cigarettes smoked per day, and volume of alcohol consumed, posttraumatic stress symptom severity was significantly related to marijuana use coping motives, but no other motives for marijuana use. Results are discussed in relation to better understanding the role of coping-motivated marijuana use among young adults experiencing posttraumatic stress.

**The association of drug use and post-traumatic stress reactions due to Hurricane Ike among fifth ward Houstonian youth.**
Peters, Ronald J. Jr. et al.
Journal of Ethnicity in Substance Abuse, Vol 9(2), Apr, 2010. pp. 143-151.
**Abstract:**

This study shows the important link between higher drug use and self-medication among youth with higher reported posttraumatic stress reactions after natural disasters. The study

offers secondary analysis of cross-sectional data collected on 170 predominately African American males through the Fifth Ward Enrichment program (FWEP) in Houston, Texas, between November and December 2009. Men who stated that in the last week they tried to keep from thinking or talking about the hurricane or things that remind them of what happen were significantly more likely to use alcohol ($p < .05$), marijuana ($p < .01$), codeine cough syrup ($p < .00$), anti-energy drinks ($p < .00$), crystal methamphetamines ($p < .00$), and Viagra ($p < .00$). Unadjusted logistic regression showed that they also experienced over twice the odds of reporting past 30 day use of alcohol (OR = 2.57, 95% CI = .98, 6.8), marijuana (OR = 4.31, 95% CI = 1.2, 15.3), codeine cough syrup (OR = 5.22, 95% CI = 1.4, 19.5), and anti-energy drinks (OR = 3.27, 95% CI = 1.0, 1.4). Adjusted logistic regression revealed that male youth post-traumatic stress reaction is a significant predictor of marijuana use (OR = 4.1, 95% CI = 1.0, 16.5). This study shows the important link of higher drug use and self-medication among youth with higher reported posttraumatic stress reactions after natural disasters.

**Posttraumatic stress symptom severity and marijuana use coping motives: A test of the mediating role of non-judgmental acceptance within a trauma-exposed community sample.**
Bonn-Miller, Marcel O. et al.
Mindfulness, Vol 1(2), Jun, 2010. pp. 98-106.
**Abstract:**

We examined the role of non-judgmental acceptance in the relation between posttraumatic stress symptom severity and marijuana use coping motives. These relations were examined among 97 (46 women) adults (M age=21.57 years, SD=6.32) who met DSM-IV-defined PTSD Criterion A for at least one traumatic event exposure and reported using marijuana in the past 30 days. Consistent with expectation, greater levels of posttraumatic stress symptom severity were associated with greater levels of coping-oriented marijuana use motives, as well as lower levels of non-judgmental acceptance. Furthermore, non-judgmental acceptance was inversely associated with coping-oriented marijuana use motives. Finally, non-judgmental acceptance was found to partially mediate the association between posttraumatic stress symptom severity and marijuana use coping motives. Results are discussed in terms of better understanding the role of non-judgmental acceptance in coping-oriented marijuana use among trauma-exposed populations.

**Pain-related anxiety and marijuana use motives: A pilot test among active marijuana-using young adults.**
Hogan, Julianna. et al.
Cognitive Behaviour Therapy, Vol 39(4), Dec, 2010. pp. 283-292.
Abstract:

The present investigation examined pain-related anxiety in regard to marijuana use motives among a sample of young adult marijuana users (N = 180; 45% women; Mage = 21.11 years, SD = 6.41). Hierarchical multiple regression analyses were used to determine the relations between pain-related anxiety and marijuana use motives. After controlling for current marijuana use frequency (past 30 days), daily cigarette smoking rate, current rate of alcohol consumption, level of bodily pain (current), and other marijuana use motives, pain-related anxiety was significantly and uniquely associated with coping and conformity motives for marijuana use. Pain-related anxiety was not significantly related to other marijuana use motives. These results offer novel empirical insight pertaining to a relation between pain-related anxiety and coping as well as conformity motives for marijuana use among active users. (PsycINFO Database Record

**Substance use, childhood traumatic experience, and posttraumatic stress disorder in an urban civilian population.**

Khoury, Lamya. et al.

Depression and Anxiety, Vol 27(12), Dec, 2010. pp. 1077-1086.

**Abstract:**

Objective: Exposure to traumatic experiences, especially those occurring in childhood, has been linked to substance use disorders (SUDs), including abuse and dependence. SUDs are also highly comorbid with Posttraumatic Stress Disorder (PTSD) and other mood-related psychopathology. Most studies examining the relationship between PTSD and SUDs have examined veteran populations or patients in substance treatment programs. The present study further examines this relationship between childhood trauma, substance use, and PTSD in a sample of urban primary care patients. Method: There were 587 participants included in this study, all recruited from medical and OB/GYN clinic waiting rooms at Grady Memorial Hospital in Atlanta, GA. Data were collected through both screening interviews as well as follow-up interviews. Results: In this highly traumatized population, high rates of lifetime dependence on various substances were found (39% alcohol, 34.1% cocaine, 6.2% heroin/opiates, and 44.8% marijuana). The level of substance use, particularly cocaine, strongly correlated with levels of childhood physical, sexual, and emotional abuse as well as current PTSD symptoms. In particular, there was a significant additive effect of number of types of childhood trauma experienced with history of cocaine dependence in predicting current PTSD symptoms, and this effect was independent of exposure to adult trauma. Conclusions: These data show strong links between childhood traumatization and SUDs, and their joint associations with PTSD outcome. They suggest that enhanced awareness of PTSD and substance abuse comorbidity in high-risk, impoverished populations is critical to understanding the mechanisms of substance addiction as well as in improving prevention and treatment.

Interpersonal victimization, posttraumatic stress disorder, and change in adolescent substance use prevalence over a ten-year period.

McCart, Michael R. et al.

Journal of Clinical Child and Adolescent Psychology, Vol 40(1), Jan, 2011. pp. 136-143.

**Abstract:**

Epidemiological studies have identified recent declines in specific types of adolescent substance use. The current study examined whether these declines varied among youth with and without a history of interpersonal victimization or posttraumatic stress disorder (PTSD). Data for this study come from two distinct samples of youth (12-17 years of age) participating in the 1995 National Survey of Adolescents (N = 3,906) and the 2005 National Survey of Adolescents-Replication (N = 3,423). Results revealed significant declines in adolescents' use of cigarettes and alcohol between 1995 and 2005; use of marijuana and hard drugs remained stable. Of importance, declines in nonexperimental cigarette use were significantly greater among youth without versus with a history of victimization and declines in alcohol use were significantly greater among youth without versus with a history of PTSD.

**Posttraumatic stress, difficulties in emotion regulation, and coping-oriented marijuana use.**

Bonn-Miller, Marcel O. et al.

Cognitive Behaviour Therapy, Vol 40(1), Mar, 2011. pp. 34-44.

**Abstract:**

In an effort to better understand factors that may explain prior findings of a positive relation between posttraumatic stress symptom severity and coping-oriented marijuana use

motivation, the present study tested whether the association between posttraumatic stress symptom severity and marijuana use coping motives is mediated by difficulties in emotion regulation. Participants were 79 (39 women; Mage = 22.29 years, SD = 6.99) community-recruited adults who reported (1) lifetime exposure to at least one posttraumatic stress disorder Criterion A traumatic event and (2) marijuana use in the past 30 days. Results indicated that difficulties in emotion regulation, as indexed by the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004), fully mediated the association between posttraumatic stress symptom severity and marijuana use coping motives. Implications for the treatment of co-occurring posttraumatic stress and marijuana use are discussed.

**Anxiety sensitivity as a mediator of the relationship between moderate-intensity exercise and coping-oriented marijuana use motives.**

Smits, Jasper A. J. et al.

The American Journal on Addictions, Vol 20(2), Mar-Apr, 2011. pp. 113-119.

**Abstract:**

The present study examined the working hypothesis that moderate-intensity exercise is associated with coping-oriented marijuana use motives through its association with the fear of somatic arousal (ie, anxiety sensitivity). Using data from 146 young adult current marijuana users, we found evidence consistent with this hypothesis. Specifically, moderate-intensity exercise was associated with coping-oriented use motives, even after controlling for frequency of current marijuana use and other co-occurring marijuana use motives. This relationship became nonsignificant after entering anxiety sensitivity as an additional predictor variable, denoting a putative mediational role for this cognitive factor. These findings extend previous work and offer support for the potential utility of moderate-intensity aerobic exercise for the treatment of marijuana use problems.

**Hippocampal volume differences in Gulf War veterans with current versus lifetime posttraumatic stress disorder symptoms.**

Apfel, Brigitte A. et al.

Biological Psychiatry, Vol 69(6), Mar 15, 2011. pp. 541-548.

**Abstract:**

Background: Decreased hippocampal volume is described in posttraumatic stress disorder (PTSD) and depression. However, it is not known whether it is a risk factor for the development of PTSD or a consequence of PTSD. We sought to determine the effects of PTSD and depressive symptoms on hippocampal volume. Methods: Clinical and magnetic resonance imaging data were collected in a cross sectional study of 244 Gulf War veterans. Measures included lifetime and current Clinician Administered PTSD Scale, Hamilton Depression Scale, Life Stressor Checklist, and Lifetime Drinking History. Magnetic resonance imaging data were acquired with a 1.5-T scanner and analyzed with automated and semiautomated image processing techniques. Results: Eighty-two veterans had lifetime PTSD, 44 had current PTSD, and 38 had current depression. In the linear regression analysis, current PTSD symptoms (standardized coefficient $\beta = -.25$, $p = .03$) but neither lifetime PTSD symptoms nor current depression were associated with smaller hippocampal volume. Gender, age, history of early life trauma, education, lifetime and current alcohol use, current marijuana use, and treatment with antidepressants did not have independent effects. Participants with chronic PTSD had, on average, a smaller hippocampus compared with those with remitted PTSD. Conclusions: The finding that current but not lifetime PTSD symptom severity explains hippocampal size raises two possibilities: either a small hippocampus is a risk factor for lack of recovery from PTSD

(trait) or PTSD effects on hippocampal volume are reversible once PTSD symptoms remit and the patient recovers (state).

**Posttraumatic stress and marijuana use coping motives: The mediating role of distress tolerance.**

Potter, Carrie M. et al.

Journal of Anxiety Disorders, Vol 25(3), Apr, 2011. pp. 437-443.

**Abstract:**

The present investigation examined the explanatory (i.e,. mediating) role of distress tolerance (DT) in the relation between posttraumatic stress (PTS) symptom severity and marijuana use coping motives. The sample consisted of 142 adults (46.5% women; Mage = 22.18, SD = 7.22, range = 18–55), who endorsed exposure to at least one Criterion A traumatic life event (DSM-IV-TR, 2000) and reported marijuana use within the past 30 days. As predicted, results demonstrated that DT partially mediated the relation between PTS symptom severity and coping-oriented marijuana use. These preliminary results suggest that DT may be an important cognitive-affective mechanism underlying the PTS-marijuana use coping motives association. Theoretically, trauma-exposed marijuana users with greater PTS symptom severity may use marijuana to cope with negative mood states, at least partially because of a lower perceived capacity to withstand emotional distress.

**The relationship between substance use and posttraumatic stress disorder in a methadone maintenance treatment program.**

Villagonzalo, Kristi-Ann. et al.

Comprehensive Psychiatry, Vol 52(5), Sep-Oct, 2011. pp. 562-566.

**Abstract:**

Introduction and Aims: Posttraumatic stress disorder (PTSD) is frequently linked with substance abuse. The self-medication hypothesis suggests that some people may use illicit substances in an attempt to self-treat psychiatric symptoms. This study explores the relationship between substance abuse and PTSD symptom clusters in a methadone maintenance population. Design and Methods: Clients of a methadone maintenance program at a public Drug and Alcohol Service were invited to complete the PTSD Checklist–Civilian Version, a screening tool for PTSD. Information about their history of substance use was also collected. Results: Eighty clients (43 female, 37 male), aged 35 ± 8.0 years (mean ± SD), participated in the study, of which 52.7% screened positive for PTSD. Severity of marijuana use was significantly associated with a number of reexperiencing and hyperarousal symptoms and with overall severity of PTSD symptoms. Opiate, amphetamine, and benzodiazepine use did not appear to be related to PTSD symptoms. Discussion and Conclusions: In this sample, marijuana may be used to self-treat certain PTSD symptoms, supporting the self-medication hypothesis. Further research is required to confirm the association between a diagnosis of PTSD and substance use. Given the high prevalence of PTSD in the substance-using population, routine PTSD screening in the substance abuse treatment setting may be justified.

**Marijuana use among traumatic event-exposed adolescents: Posttraumatic stress symptom frequency predicts coping motivations for use.**

Bujarski, Sarah J. et al.

Addictive Behaviors, Vol 37(1), Jan, 2012. pp. 53-59.

**Abstract:**

Contemporary comorbidity theory postulates that people suffering from posttraumatic stress symptoms may use substances to cope with negative affect generally and

posttraumatic stress symptoms specifically. The present study involves the examination of the unique relation between past two-week posttraumatic stress symptom frequency and motives for marijuana use after accounting for general levels of negative affectivity as well as variability associated with gender. Participants were 61 marijuana-using adolescents (Mage = 15.81) who reported experiencing lifetime exposure to at least one traumatic event. Consistent with predictions, past two-week posttraumatic stress symptoms significantly predicted coping motives for marijuana use and were not associated with social, enhancement, or conformity motives for use. These findings are consistent with theoretical work suggesting people suffering from posttraumatic stress use substances to regulate symptoms.

**Self-reported cannabis use characteristics, patterns and helpfulness among medical cannabis users.**

Bonn-Miller, Marcel O. et al.

The American Journal of Drug and Alcohol Abuse, Vol 40(1), Jan, 2014. pp. 23-30.

**Abstract:**

Objectives: Little research has investigated the demographic and symptom profile of medical cannabis users in states in the USA that have legalized cannabis use. Methods: In the present cross-sectional study, we investigated the demographic profile of 217 adults currently receiving medical cannabis, as well as differences in problematic use and perceived helpfulness in terms of (i) symptoms of psychological disorders and pain, and (ii) motives for use. Results: Findings indicated that medical cannabis users (i) use and perceive cannabis to be beneficial for multiple conditions, some for which cannabis is not specifically prescribed or allowed at the state level; and (ii) report similar rates of disordered use as compared with population estimates among regular users. Furthermore, problematic cannabis use was predicted by several symptoms of psychological disorders (e.g. depression) and a variety of use motives (e.g. coping), while cannabis was reported as particularly helpful among those with several psychological symptoms (e.g. traumatic intrusions), as well as those reporting use for social anxiety reasons. Conclusions: Results are discussed in terms of future directions for research given the current debates regarding legalization of cannabis for medical purposes and, more generally, the lack of empirical data to inform such debates.

**Patterns of drug and alcohol use associated with lifetime sexual revictimization and current posttraumatic stress disorder among three national samples of adolescent, college, and household-residing women.**

Walsh, Kate et al.

Addictive Behaviors, Vol 39(3), Mar, 2014. pp. 684-689.

**Abstract:**

Sexual revictimization (experiencing 2 or more rapes) is prevalent and associated with increased risk for posttraumatic stress disorder (PTSD) and substance use. However, no national epidemiologic studies have established the prevalence or relative odds of a range of types of substance use as a function of sexual victimization history and PTSD status. Using three national female samples, the current study examined associations between sexual revictimization, PTSD, and past-year substance use. Participants were 1763 adolescent girls, 2000 college women, and 3001 household-residing women. Rape history, PTSD, and use of alcohol, marijuana, other illicit drugs, and non-medical prescription drugs were assessed via structured telephone interviews of U.S. households and colleges in 2005–2006. Chi-square and logistic regression were used to estimate the prevalence and odds of past-year substance use. Relative to single and non-victims: Revictimized

adolescents and household-residing women reported more other illicit and non-medical prescription drug use; revictimized college women reported more other illicit drug use. Past 6-month PTSD was associated with increased odds of drug use for adolescents, non-medical prescription drug use for college women, and all substance use for household-residing women. Revictimization and PTSD were associated with more deviant substance use patterns across samples, which may reflect self-medication with substances. Findings also could be a function of high-risk environment or common underlying mechanisms. Screening and early intervention in pediatric, primary care, and college clinics may prevent subsequent rape, PTSD, and more severe substance use.

**Negative cognitions as a moderator in the relationship between PTSD and substance use in a psychiatrically hospitalized adolescent sample.**
Allwood, Maureen A. et al.
Journal of Traumatic Stress, Vol 27(2), Apr, 2014. pp. 208-216.
**Abstract:**

Adolescents exposed to trauma are more likely to engage in alcohol and marijuana use compared to their nontrauma-exposed counterparts; however, little is known about factors that may moderate these associations. This study examined the potential moderating effect of cognitions relevant to exposure to trauma (i.e., negative view of self, world, and future) in the association between posttraumatic stress disorder (PTSD) diagnosis and substance use among a psychiatric inpatient sample of 188 adolescents. Findings were that PTSD diagnosis was not significantly associated with substance-use diagnoses, but was associated with substance-use symptoms, accounting for 2.9% and 9.6% of the variance in alcohol and marijuana symptoms, respectively. The association between PTSD diagnosis and substance use symptoms, however, was moderated by negative cognitions, with PTSD and high negative cognitions (but not low negative cognitions) being significantly positively associated with substance use symptoms. The relevant cognitions differed for alcohol symptoms and marijuana symptoms. Children and adolescents who experience trauma and PTSD may benefit from early interventions that focus on cognitive processes as one potential moderator in the development of posttrauma substance use.

**Marijuana, expectancies, and post-traumatic stress symptoms: A preliminary investigation.**
Earleywine, Mitch et al.
Journal of Psychoactive Drugs, Vol 46(3), May, 2014. pp. 171-177.
**Abstract:**

Previous work suggests that people might turn to marijuana to alleviate the symptoms of post-traumatic stress disorder (PTSD) and associated distress. Expectancy theories emphasize that the use of drugs correlates with their anticipated effects. The current study examined multivariate links among marijuana use, PTSD symptoms, and expectancies for marijuana-induced changes in those symptoms. Over 650 combat-exposed, male veterans who used marijuana at least once per week completed measures of PTSD symptoms, marijuana expectancies, and marijuana use in an Internet survey. Participants generally expected marijuana to relieve PTSD symptoms, especially those related to intrusions and arousal. Symptoms, expectancies for relief of symptoms, and marijuana consumption correlated significantly. Regressions revealed significant indirect effects of symptoms on use via expectancies, but no significant interactions of expectancies and symptoms. Combat-exposed veterans who use marijuana appear to use more as the magnitude of PTSD symptoms and their expectations of marijuana-induced relief of those symptoms increase. These results emphasize the importance of PTSD treatments in an effort to keep potential

negative effects of marijuana to a minimum. They also underscore the import of expectancies in predicting marijuana use.

**Associations among trauma, posttraumatic stress disorder, cannabis use, and cannabis use disorder in a nationally representative epidemiologic sample.**

Kevorkian, Salpi. et al.

Psychology of Addictive Behaviors, Vol 29(3), Sep, 2015. Marijuana Legalization: Emerging

**Abstract:**

Research in community and clinical samples has documented elevated rates of cannabis use and cannabis use disorders (CUDs) among individuals with trauma exposure and posttraumatic stress disorder (PTSD). However, there is a lack of research investigating relations between, and correlates of, trauma and cannabis phenotypes in epidemiologic samples. The current study examined associations between trauma (i.e., lifetime trauma exposure and PTSD) and cannabis phenotypes (i.e., lifetime cannabis use and CUD) in a nationally representative sample. Participants were individuals who participated in Waves 1 and 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (n = 34,396; 52.4% women; age, M = 48.0 years, SD = 16.9). Lifetime DSM–IV Criterion A trauma exposure was significantly associated with lifetime cannabis use (OR = 1.215) but was only marginally associated with CUD (OR = 0.997). Within the trauma-exposed sample, lifetime PTSD showed a significant association with CUD (OR = 1.217) but was only marginally associated with lifetime cannabis use (OR = 0.992). Partially consistent with hypotheses, lifetime trauma was associated with greater odds of lifetime cannabis use, whereas PTSD was associated with greater odds of CUD. Longitudinal research investigating patterns of onset of these events/disorders is needed.

**Treatment outcomes for veterans with PTSD and substance use: Impact of specific substances and achievement of abstinence.**

Manhapra, Ajay, et al.

Drug and Alcohol Dependence, Vol 156, Nov 1, 2015. pp. 70-77.

**Abstract:**

Background: Scant longitudinal data exists about the interplay between specific substances of abuse, the achievement of abstinence, and clinical outcomes in the treatment of dually diagnosed Veterans with post-traumatic stress disorder (PTSD). Methods: As part of a national program evaluation, Veterans admitted from the community to specialized intensive PTSD programs were assessed at intake and 4 months after discharge. Seven mutually exclusive groups were identified from admission self-report data (N = 22,948): no substance use, exclusive use of alcohol, opiates, sedatives, cocaine, marijuana, and use of three or more substances. Analysis of covariance, adjusting for potentially confounding baseline variables was used to compare change among these seven groups in non-substance use outcomes (PTSD symptoms, violent behavior, suicidality, medical problems, and employment). The effect of abstinence on specific groups was evaluated as the interaction of group membership by abstinence. Results: All outcome measures except for employment showed significant improvement, with few differences between the groups. Although rate of abstinence differed markedly between the groups, abstinence achievement was associated with greater improvement on all the outcomes except employment in every group. No significant differences in the effect of abstinence across the substance abuse groups were observed. Conclusion: The specific type of substance used prior to entry into treatment among dually diagnosed PTSD patients seems to have limited effect on treatment outcomes. However, attainment of abstinence at 4 months after treatment, irrespective of

the substances abused, was strongly associated with improvement in PTSD symptoms, violence, suicidality and medical problems.

**Pharmacologic management of comorbid post-traumatic stress disorder and addictions.**
Shorter, Daryl. et al.
The American Journal on Addictions, Vol 24(8), Dec, 2015. pp. 705-712.
**Abstract:**

Background and Objectives: Post-traumatic Stress Disorder (PTSD) and substance use disorders (SUD) frequently co-occur, and their combination can increase poor health outcomes as well as mortality. Methods: Using PUBMED and the list of references from key publications, this review article covered the epidemiology, neurobiology and pharmacotherapy of PTSD with comorbid alcohol, opiate, and cannabis use disorders. These SUD represent two with and one without FDA approved pharmacotherapies. Results: SUDis two to three times more likely among individuals with lifetime PTSD, and suicide, which is made more likely by both of these disorders, appears to be additively increased by having this comorbidity of SUD and PTSD. The shared neurobiological features of these two illnesses include amygdalar hyperactivity with hippocampal, medial prefrontal and anterior cingulate cortex dysfunction. Medications for comorbid PTSD and SUD include the PTSD treatment sertraline, often used in combination with anticonvulsants, antipsychotics, and adrenergic blockers. When PTSD is comorbid with alcohol use disorder (AUD), naltrexone, acamprosate or disulfiram may be combined with PTSD treatments. Disulfiram alone may treat both PTSD andAUD. For PTSD combined with opiate use disorder methadone or buprenorphine are most commonly used with sertraline. Marijuana use has been considered by some to be a treatment for PTSD, but no FDA treatment for this addiction is approved. Pregabalin and D-cycloserine are two innovations in pharmacotherapy for PTSD and SUD. Conclusions and Scientific Significance: Comorbid PTSD and SUD amplifies their lethality and treatment complexity. Although they share important neurobiology, these patients uncommonly respond to a single pharmacotherapy such as sertraline or disulfiram and more typically require medication combinations and consideration of the specific type of SUD.

**Marijuana dependence moderates the effect of posttraumatic stress disorder on trauma cue reactivity in substance dependent patients.**
Tull, Matthew T., et al.
Drug and Alcohol Dependence, Vol 159, Feb 1, 2016. pp. 219-226.
**Abstract:**

Background: Individuals with posttraumatic stress disorder (PTSD) are at heightened risk for marijuana use. Although extant studies speak to the importance of examining the co-occurrence of PTSD and marijuana use as it relates to a variety of clinically-relevant outcomes, no studies have explored the way in which marijuana use may affect in-the-moment emotional responding among individuals with PTSD. Thus, the purpose of this study was to explore the role of marijuana dependence in the relation between PTSD and subjective and biological emotional reactivity in response to a trauma cue. Methods: Participants were 202 patients with and without current PTSD consecutively admitted to a residential SUD treatment facility. Patients were administered diagnostic interviews, and subjective (negative affect) and biological (cortisol) reactivity to a personalized trauma cue were assessed. Results: Whereas current PTSD was associated with greater subjective emotional reactivity among participants without marijuana dependence, there were no significant differences in subjective emotional reactivity as a function of PTSD status among participants with marijuana dependence. Moreover, marijuana dependent

participants (with and without PTSD) reported less subjective emotional reactivity than participants with PTSD and without marijuana dependence. No significant findings were obtained for cortisol reactivity. Conclusions: Findings suggest that patients with co-occurring PTSD and marijuana dependence may experience alterations in their emotional processing in response to a trauma cue (i.e., dampening of arousal). Additional research is required to clarify the specific mechanisms through which marijuana use influences emotional reactivity and fear-related emotional processing, as well as how such effects may influence PTSD treatment.

**Associations of posttraumatic stress disorder symptoms with marijuana and synthetic cannabis use among young adult U.S. veterans: A pilot investigation.**

Grant, Sean, et al.

Journal of Studies on Alcohol and Drugs, Vol 77(3), May, 2016. pp. 509-514.

**Abstract:**

Objective: This study involves a pilot investigation of associations between marijuana and synthetic cannabis use with PTSD symptoms among a young adult sample of U.S. veterans. Method: In a cross-sectional survey of a community sample of 790 young adult U.S. veterans, we assessed demographics, combat severity, marijuana and synthetic cannabis use, expectancies of marijuana use, and PTSD symptoms. Results: Overall, 61.8% and 20.4% of our sample reported lifetime and past-month marijuana use, whereas 17.0% and 3.4% reported lifetime and past-month synthetic cannabis use. Veterans screening positive for PTSD were more likely to use marijuana and synthetic cannabis in their lifetime and in the past month. Positive PTSD screens, as well as greater expectancies that marijuana leads to relaxation and tension reduction, were associated with past-month marijuana use in logistic regression analyses. Expectancies moderated the relationship between PTSD and marijuana use, such that those with positive PTSD screens reporting higher levels of relaxation and tension-reduction expectancies were most likely to report past-month marijuana use. Conclusions: Our findings suggest an association of PTSD symptoms with marijuana and synthetic cannabis use among young adult U.S. veterans. Future research should further investigate the link between PTSD and marijuana use, as well as the rates and consequences of synthetic cannabis use among veterans.

**Factors associated with having a medical marijuana card among Veterans with recent substance use in VA outpatient treatment.**

Davis, Alan K. et al.

Addictive Behaviors, Vol 63, Dec, 2016. pp. 132-136.

**Abstract:**

Psychiatric symptoms, somatic problems, and co-occurring substance use have been associated with medical marijuana consumption among civilian patients with substance use disorders. It is possible that these factors may impact Veterans' ability to engage in or adhere to mental health and substance use disorder treatment. Therefore, we examined whether psychiatric functioning, substance use, and somatic problems were associated with medical marijuana use among Veterans receiving substance use disorder and/or mental health treatment. Participants (n = 841) completed screening measures for a randomized controlled trial and 67 (8%) reported that they had a current medical marijuana card. Most of these participants (78%) reported using marijuana to treat severe/chronic pain. Significant bivariate differences revealed that, compared to participants without a medical marijuana card, those with a card were more likely to be in a middle income bracket, unemployed, and they had a significantly higher number of recent days of marijuana use, synthetic marijuana use, and using sedatives prescribed to them. Additionally, a

significantly higher proportion of participants with a medical marijuana card scored above the clinical cutoff for posttraumatic stress disorder (PTSD) symptoms, had significantly higher severity of sleep-related problems, and reported a higher level of pain. These findings highlight the co-occurrence of substance use, PTSD symptoms, sleep-related problems, and chronic pain among Veterans who use medical marijuana. Future research should investigate the inter-relationships among medical marijuana use and other clinical issues (e.g., PTSD symptoms, sleep, pain) over time, and potential implications of medical marijuana use on treatment engagement and response.

**Marijuana and other cannabinoids as a treatment for posttraumatic stress disorder: A literature review.**

Steenkamp, Maria M. et al.

Depression and Anxiety, Vol 34(3), Mar, 2017. pp. 207-216.

**Abstract:**

Posttraumatic stress disorder (PTSD) is common in the general population, yet there are limitations to the effectiveness, tolerability, and acceptability of available first-line interventions. We review the extant knowledge on the effects of marijuana and other cannabinoids on PTSD. Potential therapeutic effects of these agents may largely derive from actions on the endocannabinoid system and we review major animal and human findings in this area. Preclinical and clinical studies generally support the biological plausibility for cannabinoids' potential therapeutic effects, but underscore heterogeneity in outcomes depending on dose, chemotype, and individual variation. Treatment outcome studies of whole plant marijuana and related cannabinoids on PTSD are limited and not methodologically rigorous, precluding conclusions about their potential therapeutic effects. Reported benefits for nightmares and sleep (particularly with synthetic cannabinoid nabilone) substantiate larger controlled trials to determine effectiveness and tolerability. Of concern, marijuana use has been linked to adverse psychiatric outcomes, including conditions commonly comorbid with PTSD such as depression, anxiety, psychosis, and substance misuse. Available evidence is stronger for marijuana's harmful effects on the development of psychosis and substance misuse than for the development of depression and anxiety. Marijuana use is also associated with worse treatment outcomes in naturalistic studies, and with maladaptive coping styles that may maintain PTSD symptoms. Known risks of marijuana thus currently outweigh unknown benefits for PTSD. Although controlled research on marijuana and other cannabinoids' effects on PTSD remains limited, rapid shifts in the legal landscape may now enable such studies, potentially opening new avenues in PTSD treatment research.

**Mining social media data on marijuana use for Post-Traumatic Stress Disorder.**

Dai, Hongying, et al.

Computers in Human Behavior, Vol 70, May, 2017. pp. 282-290.

**Abstract:**

Background: We seek to evaluate factors that could potentially impact the public's attitudes to PTSD related marijuana use on Twitter. Methods: We collected tweets that contained the 'PTSD' and 'Post Trauma Stress Disorder' from August 1, 2015 to April 15, 2016 (n = 1,253,872 tweets). A Naïve Bayes model was constructed to classify tweets into two opinion polarities (support vs. neutral/against marijuana use for PTSD). Results: The marijuana related tweets were predominated by the supporting opinions (89.6%). The public opinions about marijuana use for PTSD on Twitter were significantly associated with state-level legislation. States that legalized medical and recreational marijuana use had the highest prevalence of support tweets (1.3 ± 0.6), followed by the states that

legalized medical but not recreational use (0.5 ± 0.3) and the states that had no laws legalizing marijuana (0.2 ± 0.1, $p < 0.0001$). A higher prevalence of support tweets was associated with states with a lower proportion of youth ($r = -0.35$, $p = 0.01$) and a higher education rate ($r = 0.38$, $p = 0.006$). Conclusion: Twitter data suggest a proliferation of supporting marijuana use for PTSD treatments, especially in the states that legalized medical and/or recreational use of marijuana.

**Single and dual diagnoses of major depressive disorder and posttraumatic stress disorder predicted by triple comorbid trajectories of tobacco, alcohol, and marijuana use among urban adults.**

Lee, Jung Yeon. et al.

Substance Abuse, Vol 40(2), 2019. pp. 221-228.

**Abstract:**

Background: The adverse consequences of major depressive disorder (MDD) and posttraumatic stress disorder (PTSD) affect a significant portion of the US population every year (i.e., 15 million for MDD; 8 million for PTSD) and are of public health concern. The current study examines tobacco, alcohol, and marijuana use as possible longitudinal predictors of MDD and/or PTSD. Methods: A community sample of 674 participants (53% African Americans and 47% Puerto Ricans; 405 females and 269 males) were recruited from the Harlem Longitudinal Development Study. We used Mplus software to obtain the triple trajectories of tobacco, alcohol, and marijuana use from mean age 14 to 36. Logistic regression analyses were then conducted to examine the associations between those triple trajectory groups and a single diagnosis of MDD or PTSD as well as a dual diagnosis of MDD with PTSD at age 36. Results: The observed percentages of MDD, PTSD, and the comorbidity of MDD and PTSD were 17%, 8%, and 5%, respectively. The heavy use of all 3 substances group was associated with an increased likelihood of having MDD (adjusted odds ratio [AOR] = 3.14, $P < .01$), PTSD (AOR = 3.91, $P < .05$), and MDD with PTSD (AOR = 6.64, $P < .01$), as compared with the tobacco and alcohol use group. Conclusions: Treatment programs to quit or reduce the use of tobacco, alcohol, and marijuana may help decrease the prevalence of MDD and PTSD. This could lead to improvements in individualized treatments for patients who use tobacco, alcohol, and marijuana and who have both MDD and PTSD.

**Interactive effects of PTSD and substance use on suicidal ideation and behavior in military personnel: Increased risk from marijuana use.**

Allan, Nicholas P., et al.

Depression and Anxiety, Vol 36(11), Nov, 2019. pp. 1072-1079.

**Abstract:**

Background: The current study examines the unique and interactive effects of posttraumatic stress disorder (PTSD) symptoms and days using alcohol, opioids, and marijuana on PTSD symptoms, suicidal ideation, and suicidal behavior up to 1 year, later in a high-risk sample of military personnel not active in mental health treatment. Methods: Current and former military personnel at risk for suicide (N = 545; M age = 31.91 years, standard deviation = 7.27; 88.2% male) completed self-report measures of PTSD symptoms, past 30 days heavy alcohol use, opioid use, marijuana use, and current suicidal ideation via telephone at baseline and 1, 3, 6, and 12 months later. PTSD symptoms and the substance use variables (and relevant covariates) were entered as predictors of changes in PTSD symptoms, the likelihood of suicidal ideation, suicidal ideation severity, and the likelihood of suicidal behavior during the 11-month follow-up period. Results: PTSD symptoms predicted PTSD symptoms 1 month later. PTSD symptoms and marijuana use

predicted the likelihood of suicidal ideation 1 month later and suicidal behavior during the 11-month follow-up period. The interaction between PTSD symptoms and marijuana use significantly predicted increased PTSD symptoms over time and suicidal behavior. At high, but not low levels of PTSD symptoms, more days using marijuana predicted increased PTSD symptoms over time and the likelihood of suicidal behavior. Conclusions: Results suggest marijuana, especially for military personnel experiencing elevated PTSD symptoms may negatively impact suicidal thoughts and behavior. These results are relevant to suggestions that medical marijuana could be used in treating or augmenting treatment for PTSD.

**Post-traumatic stress and marijuana outcomes: The mediating role of marijuana protective behavioral strategies.**

Jordan, Hallie R. et al.

Substance Abuse, Vol 41(3), 2020. pp. 375-381.

**Abstract:**

Background: The present study investigated the mediating role of protective behavioral strategies for marijuana (PBSM) on the relationship between posttraumatic stress disorder (PTSD) and marijuana outcomes (i.e. marijuana use frequency, marijuana use quantity, cannabis use disorder (CUD) symptoms, and marijuana-related problems). Methods: Participants were 1,107 traditional age college students (Mage = 20.26, SD = 3.32; 66.5% White, non-Hispanic; 68.8% female), who reported consuming marijuana at least once in the last 30 days and completed measures of PTSD symptoms, PBSM, and marijuana-related outcomes. Results: PBSM significantly mediated the positive relationships between PTSD symptoms and both CUD symptoms and marijuana-related problems. More specifically, PTSD symptoms were negatively associated with PBSM, which in turn was negatively associated with marijuana use frequency and marijuana use quantity, which were in turn positively associated with CUD symptoms and marijuana-related problems. Conclusion: Taken together, the associations between higher PTSD symptoms and greater experience of CUD symptoms and marijuana-related problems may occur because students use fewer PBSM and thus engage in larger quantity and frequency of marijuana use. These findings lend support to the utility of targeting PBSM as a harm reduction effort for students with PTSD symptoms who use marijuana.

**White matter integrity differences associated with post-traumatic stress disorder are not normalized by concurrent marijuana use.**

Yeh, Chien-Lin, et al.

Psychiatry Research: Neuroimaging, Vol 295, Jan 30, 2020. ArtID: 111017

**Abstract:**

Marijuana (MJ) use and post-traumatic stress disorder (PTSD) have both been associated with abnormalities in brain white matter tracts, including the cingulum and the anterior thalamic radiations (ATR), which project from subcortical regions to frontal cortex. Studies have not assessed the integrity of these tracts in patients with comorbid PTSD and MJ use. To examine effects of PTSD and MJ use on brain structure, we performed diffusion tensor imaging scans on seventy-two trauma-exposed participants, categorized into four groups: those with PTSD who used MJ at least weekly (PTSD + MJ; n = 20), those with PTSD with no regular MJ use (PTSD; n = 19), trauma-exposed controls without PTSD who used MJ (TEC + MJ; n = 14) and trauma-exposed controls with no PTSD or MJ use (TEC; n = 19). White matter integrity was evaluated by calculating fractional anisotropy (FA). Results showed that while FA values in the right ATR and the cingulum differed across groups, there were no significant interactions between PTSD and MJ in any white matter tracts,

indicating that MJ exposure neither normalizes nor worsens white matter abnormalities in those with PTSD. Further study is needed to evaluate the impact of MJ use on other neurobiological markers of PTSD.

**Causal modeling of substance use and mental health among male military veterans.**
Cancio, Roberto
Journal of Substance Use, Vol 25(3), Jun, 2020. pp. 271-276.
**Abstract:**

Objective: In order to understand the intersecting effects of race/ethnicity and military service on substance use and mental health, this study maps the unique differences between military and nonmilitary men in order to provide nuanced information for mental health professionals and behavioral interventionists in order to address mental health and other substance use disorders among military populations. Methods: Using structural equation modeling to examine mental health and substance use among male military veterans, this study sample contains information about 449 male veterans from the National Longitudinal Study of Adolescent to Adult Health (1994–2008): Waves I and IV in-home interviews. Results: Models for substance use and mental health patterns were not similar between veterans and non-veterans and or racial/ethnic groups. Overall, Pre-9/11 veterans, depression and anxiety significantly predicted higher cocaine use and higher prescription drug use. Among Post- 9/11 veterans, depression and PTSD predicted greater use of marijuana, methamphetamine and prescription medications. Conclusions: Study findings highlight opportunities for potential interventions and have implications for the design of substance use programs. The evidence from this study supports the need to develop integrated prevention interventions that build emotional resilience and coping mechanisms of participants with military service.

**Mediating medical marijuana: Exploring how veterans discuss their stigmatized substance use on reddit.**
Rhidenour, Kayla B., et al.
Health Communication, Feb 20, 2021.
**Abstract:**

This paper uses SIDE theory and an information seeking lens to examine the types of information and support messages (N = 126,977 posts) veterans seek on the social networking site Reddit regarding medical marijuana use. A combination of automated text analysis strategies paired with thematic analysis produced eight themes: Doctor Patient Conversations, Drug Test, Legality, Legal Policy, Prescription Drug Use/Other Substance Use, Point of View, Reasons for Use, and V.A. Findings reveal that a large portion of veterans discuss how medical marijuana can be used to self-medicate for a number of issues, including PTSD, anxiety, and sleep deprivation. Results also highlighted missing topics within veterans' conversations about medical marijuana use. For instance, veterans rarely discuss the strategies they use to talk to their doctor about their medical marijuana use. Practical implications and directions for future research are offered.