

## **Dissociation, PTSD, and Substance Abuse: An Empirical Study**

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*Few studies have examined the relationship between posttraumatic stress disorder (PTSD), substance use disorder, and dissociation. We studied 77 women with current PTSD and substance dependence, classified into high- versus low-dissociation groups per the Dissociative Experiences Scale. They were compared on trauma- and substance-related symptoms, cognitions, coping skills, social adjustment, trauma history, psychiatric symptoms, and self-harm/suicidal behaviors. We found the high-dissociation group consistently more impaired than the low-dissociation group. Also, the sample overall evidenced relatively high levels of dissociation, indicating that even in the presence of recent substance use, dissociation remains a major psychological phenomenon. Indeed, the high-dissociation group reported stronger expectation that substances could manage their psychiatric symptoms. The high-dissociation group also had more trauma-related symptoms and childhood histories of emotional abuse and physical neglect. The discussion addresses methodology, the “chemical dissociation” hypothesis, and the need for a more nuanced understanding of how substances are experienced in relation to dissociative phenomena.*

**KEYWORDS** *dissociation, substance abuse, posttraumatic stress disorder, women’s health*

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An emerging literature has begun to explore the association between posttraumatic stress disorder (PTSD), substance use disorder (SUD), and dissociation. Dissociation is widely understood as a psychological defense that occurs during and after trauma in both humans and animals (van der Kolk, 1987). Sometimes described as “spacing out,” “losing time,” or “going blank,” it refers to detachment from the current reality that protects against overwhelming trauma-related feeling or memories. The connection between dissociation and trauma/PTSD has long been observed (Lynn & Rhue 1994), as has the connection between trauma/PTSD and SUD (each disorder is a risk factor for the other; Najavits, Weiss, & Shaw, 1997). However, the connection between dissociation, PTSD, and SUD is only more recently being studied.

Thus far, the literature shows few studies that include an assessment of all three domains (PTSD, SUD, dissociation). Most studies are cross-sectional (e.g., Schafer et al., 2009; Van Den Bosch, Verheul, Langelund, & Van Den Brink, 2003), are retrospective (e.g., Tamar-Gurol, Sar, Karadag, Evren, & Karagoz, 2008), typically use self-report rather than interview-based measures (e.g., Wenzel et al., 1996), and have relatively small samples (e.g., Evren, Sar, Karadag, Tamar Gurol, & Karagoz, 2007). Some focus on trauma but have no assessment of PTSD (e.g., Klanecky, Harrington, & McChargue, 2008; Roesler & Dafler, 1993); some focus on an actual diagnosis of dissociative identity disorder, whereas others focus on dissociative symptoms; some evaluate patients who are in early withdrawal from substances (or may still be actively using), whereas others sample patients who have had a period of abstinence (cf. Dunn, Paolo, Ryan, & Van Fleet, 1993; Evren, Sar, Evren, & Dalbudak, 2008; Evren et al., 2007; Karadag et al., 2005; Langeland, Draijer, & van den Brink, 2002; Schafer et al., 2007, 2009; Tamar-Gurol et al., 2008; Van Den Bosch et al., 2003). In general, findings from this literature indicate that in SUD samples higher levels of dissociation are related to drug use disorder compared to alcohol use disorder, females compared to males, and childhood-based trauma and emotional abuse compared to later trauma. Various functional relationships between PTSD/SUD and dissociation have also been suggested. For example, substance use may be a form of “chemical dissociation” to ward off PTSD symptoms (Roesler & Dafler, 1993). In this scenario, SUD patients would be likely to have lower rates of dissociation than non-SUD patients, as the substance use functions as a form of dissociation. This is consistent with the common view of substance use as a means of avoiding trauma-related emotions and memories, and some evidence for this hypothesis has been found (e.g., Somer, Altus, & Ginzburg, 2010). However, it is also known that substances are sometimes used to access trauma-related emotions or memories (Najavits, 2002), and SUD samples sometimes show high rates of dissociation (see Schafer et al., 2009); thus, there is likely not one function but various ones that occur in

different people and at different times. Also of note is that both substance use and withdrawal may be confused with dissociation (Langeland et al., 2002), and substance-related cognitive impairment may be associated with difficulty reporting dissociative and other psychiatric symptoms. In sum, there is likely a complex constellation of associations between dissociation, SUD, and PTSD. We thus sought to explore the relationship between these domains in a data set that included a wide range of assessments in a rigorously diagnosed current PTSD/substance dependence sample.

## METHODS

The sample consisted of 77 women who completed the Dissociative Experiences Scale (DES; E. M. Bernstein & Putnam, 1986) as part of a larger assessment battery on entry into a study on outpatient women with PTSD and substance dependence (Najavits, Gotthardt, Weiss, & Epstein, 2004; Najavits, Sonn, Walsh, & Weiss, 2004). All participants met current *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [*DSM-IV*]; American Psychiatric Association, 1994) criteria for both PTSD and substance dependence using the Structured Clinical Interview for *DSM-IV* (SCID; Spitzer, Williams, & Gibbon, 1997) and had to have used a substance in the month prior to intake, as we were recruiting an actively using sample. We advertised through newspapers, flyers, and word of mouth. Participants were excluded if they had a history of any psychotic disorder or a history of mania (on the SCID), had organic mental disorder, were formally mandated to treatment, or had characteristics that would interfere with the completion of assessments (mental retardation, chronic homelessness, impending incarceration, or a life-threatening and/or unstable medical illness).

Measures for the research reported here were, in addition to the DES, the Trauma Symptom Inventory (Briere, 1995), Coping Strategies Inventory (Tobin, Holroyd, Reynolds, & Weigal, 1989), Addiction Severity Index (McLellan et al., 1992), Beliefs About Substance Use (Wright, 1992), Brief Symptom Inventory (Derogatis, 1983), Social Adjustment Scale (Weissman & Bothwell, 1976), Trauma History Questionnaire (Green, 1996), World Assumptions Scale (Janoff-Bulman, 1989), Cocaine Expectancy Questionnaire (Jaffe & Kilbey, 1994, but using only 3 of the original 12 subscales), Alcohol Effects Questionnaire (Brown, Goldman, Inn, & Anderson, 1980), Childhood Trauma Questionnaire (D. P. Bernstein et al., 1994), and several items from the Suicidal Behaviors Questionnaire (Linehan & Addis, 1990). We calculated total and subscale scores per the scoring instructions for each measure (except the Suicidal Behaviors Questionnaire, which had item-level scoring only). Sociodemographic and descriptive characteristics were obtained from the Addiction Severity Index, the Trauma History Questionnaire, and the SCID.

Consistent with DES scoring guidelines (Carlson et al., 1993), we categorized women with a DES score less than 30 as the low-dissociation group (hereafter, low-DES group) and those with scores of 30 and above as the high-dissociation group (hereafter, high-DES group). The scale ranges from 0 to 100, with higher scores more severe. The two groups were compared on all other measures using independent samples *t* tests. To address the issue of Type I error, we compare the number of significant findings with the rate that would be expected based on the .05 chance level.

## RESULTS

See Table 1 for sample characteristics. All other results are reported here.

### Level of Dissociation

On the DES, our sample had a mean score of 19.44 ( $SD = 19.26$ ). When we scored the women in terms of high (30 or more) versus low (less than 30), we found 16 (20.8%) in the high-DES group and 61 (79.2%) in the low-DES group.

### Comparison by Dissociation Level

Overall, the pattern of results was consistent: The high-DES group was more impaired than the low-DES group on all variables that were significant. Also, we verified that the number of significant results exceeded the 5% rate that would be expected by chance. Specifically, of the 82 comparisons conducted, 26 were significant, a rate of 31.7%. Variables that achieved a significance level of .01 or lower are indicated here with an asterisk.

### Trauma Symptom Inventory

The high-DES group was more severe than the low-DES group on the following subscales (with items scaled 0 = *never* to 3 = *often* and then summed): \*atypical response ( $x = 9.25$ ,  $SD = 6.70$  vs.  $x = 2.64$ ,  $SD = 2.56$ ,  $t = -5.34$ ,  $df = 56$ ,  $p < .001$ ), \*intrusive experience ( $x = 17.50$ ,  $SD = 5.21$  vs.  $x = 11.47$ ,  $SD = 5.52$ ,  $t = -3.17$ ,  $df = 56$ ,  $p = .002$ ), \*dissociation ( $x = 17.40$ ,  $SD = 6.02$  vs.  $x = 9.29$ ,  $SD = 5.13$ ,  $t = -4.42$ ,  $df = 56$ ,  $p < .001$ ), \*defensive avoidance ( $x = 19.00$ ,  $SD = 3.71$  vs.  $x = 14.02$ ,  $SD = 4.44$ ,  $t = -3.31$ ,  $df = 56$ ,  $p = .002$ ), and impaired self-reflection ( $x = 15.90$ ,  $SD = 5.63$  vs.  $x = 11.78$ ,  $SD = 5.57$ ,  $t = -2.12$ ,  $df = 56$ ,  $p = .038$ ). Nonsignificant subscales were anxious arousal, response level, inconsistent response, depression, anger/irritability, sexual concerns, dysfunctional sexual behavior, and tension reduction.

**TABLE 1** Sample Characteristics

Characteristic	<i>n</i>	%
Race/ethnicity		
Caucasian	55	73.3
African American	12	16.0
Hispanic	1	1.3
Native American	1	1.3
Multi-ethnic	1	1.3
Marital status		
Never married	36	47.4
Divorced	21	27.6
Married	14	18.4
Separated	3	3.9
Widowed	2	2.6
Employment		
Employed full time	31	40.8
Employed part time	20	26.4
Unemployed	16	21.0
Student	5	6.6
Retired or on disability	4	5.3
Current substance dependence <sup>a</sup>		
Alcohol	53	69.7
Cocaine	35	46.1
Cannabis	17	22.4
Opioid	14	18.4
Sedative-hypnotic-anxiolytic	10	13.2
Amphetamine	8	10.5
Polysubstance	3	3.9
Hallucinogen	2	2.6
Other substance	2	2.6
	<i>M</i>	<i>SD</i>
Current age	37.58	8.85
Trauma history		
Physical/sexual traumas	8.75	6.33
General disaster traumas <sup>b</sup>	4.90	3.59
Crime traumas	3.96	3.73
Age at first trauma	8.35	6.29
Number of all traumas	6.22	3.89

<sup>a</sup>Per the Structured Clinical Interview for *DSM-IV*, with multiple diagnoses possible.

<sup>b</sup>Per the Trauma History Questionnaire, with multiple trauma types possible.

### Coping Strategies Inventory

The high-DES group was more severe than the low-DES group on the following subscales (scaled 1 = *not at all* to 5 = *very much*): self-blame ( $x = 3.87$ ,  $SD = 0.86$  vs.  $x = 3.31$ ,  $SD = 0.89$ ,  $t = 2.21$ ,  $df = 74$ ,  $p = .03$ ), \*problem-solving ( $x = 2.67$ ,  $SD = 0.48$  vs.  $x = 2.85$ ,  $SD = 0.78$ ,  $t = 3.65$ ,  $df = 34.42$ ,  $p = .001$ ), and problem-focused engagement ( $x = 4.65$ ,  $SD = 0.98$  vs.  $x = 5.54$ ,  $SD = 1.39$ ,  $t = 2.32$ ,  $df = 74$ ,  $p = .02$ ). Nonsignificant subscales were: Express Feelings, Seek

Support, Distraction, Passivity/Fantasy, Isolation, Cognitive Restructuring, Emotion Engagement, Problem Disengagement, Emotion Disengagement, Engagement, and Disengagement.

### Brief Symptom Inventory

The high-DES group was more severe than the low-DES group on the following subscales (scaled 0 = *not at all* to 4 = *extremely*): psychoticism ( $x = 1.84$ ,  $SD = 1.02$  vs.  $x = 1.17$ ,  $SD = 0.80$ ,  $t = -2.30$ ,  $df = 61$ ,  $p = .02$ ) and phobic anxiety ( $x = 1.52$ ,  $SD = 1.00$  vs.  $x = 0.88$ ,  $SD = 0.84$ ,  $t = -2.12$ ,  $df = 61$ ,  $p = .04$ ). Nonsignificant subscales were somatization, obsessive compulsive, interpersonal sensitivity, depression, paranoid ideation, anxiety, and hostility.

### Childhood Trauma Questionnaire

The high-DES group was more severe than the low-DES group on the following (scaled 1 = *never true* to 5 = *very often true*): emotional abuse subscale ( $x = 2.85$ ,  $SD = 0.97$  vs.  $x = 2.37$ ,  $SD = 0.66$ ,  $t = -2.27$ ,  $df = 70$ ,  $p = .03$ ), physical neglect subscale ( $x = 2.86$ ,  $SD = 0.86$  vs.  $x = 2.41$ ,  $SD = 0.73$ ,  $t = -2.04$ ,  $df = 70$ ,  $p = .04$ ), and the weighted total score ( $x = 14.84$ ,  $SD = 2.00$  vs.  $x = 13.36$ ,  $SD = 2.24$ ,  $t = -2.11$ ,  $df = 70$ ,  $p = .04$ ). Nonsignificant were the subscales minimization/denial, physical abuse, emotional neglect, and sexual abuse.

### Social Adjustment Scale

The high-DES group was more severe than the low-DES group on the following subscales (scaled 1 = *most adjusted* to 5 = *least adjusted*, with wording of anchors varying by item): \*social and leisure roles ( $x = 3.33$ ,  $SD = 0.83$  vs.  $x = 2.69$ ,  $SD = 0.52$ ,  $t = -3.74$ ,  $df = 73$ ,  $p < .00$ ), \*extended family roles ( $x = 2.68$ ,  $SD = 0.83$  vs.  $x = 2.18$ ,  $SD = 0.50$ ,  $t = -3.03$ ,  $df = 72$ ,  $p = .003$ ), \*economic roles ( $x = 3.60$ ,  $SD = 1.40$  vs.  $x = 2.51$ ,  $SD = 1.44$ ,  $t = -2.63$ ,  $df = 72$ ,  $p = .010$ ), and \*overall adjustment scores ( $x = 2.80$ ,  $SD = 0.47$  vs.  $x = 2.33$ ,  $SD = 0.44$ ,  $t = -2.20$ ,  $df = 51$ ,  $p = .005$ ). Nonsignificant were subscales on work habits, marital role, parental role, and family unit.

### World Assumptions Scale

The high-DES group was more severe than the low-DES group on the subscale (scaled 1 = *strongly disagree* to 6 = *strongly agree*) \*benevolence of the world ( $x = 27.07$ ,  $SD = 8.60$  vs.  $x = 32.96$ ,  $SD = 7.08$ ,  $t = 2.69$ ,  $df = 72$ ,  $p < .01$ ). Nonsignificant were the subscales self-worth and meaningfulness of the world.

### Alcohol Effects Questionnaire

The high-DES group was more severe than the low-DES group on the following subscales (scored as true/false, with lower scores indicating a greater belief that substances could help in that domain): global positive ( $x = 1.43$ ,  $SD = 0.27$  vs.  $x = 1.64$ ,  $SD = 0.29$ ,  $t = 2.46$ ,  $df = 68$ ,  $p < .02$ ), power and aggression ( $x = 1.37$ ,  $SD = 0.25$  vs.  $x = 1.58$ ,  $SD = 0.32$ ,  $t = 2.27$ ,  $df = 68$ ,  $p = .026$ ), and \*social expression ( $x = 1.13$ ,  $SD = 0.22$  vs.  $x = 1.37$ ,  $SD = 0.38$ ,  $t = 3.11$ ,  $df = 35.74$ ,  $p = .004$ ). Nonsignificant subscales were social and physical pleasure, sexual enhancement, careless unconcern, relaxation and tension reduction, and cognitive and physical impairment.

### Cocaine Expectancy Questionnaire

The high-DES group was more severe than the low-DES group on all three subscales that were assessed (scored as true/false, with lower scores indicating a greater belief that substances could help in that domain): paranoia ( $x = 1.43$ ,  $SD = 0.51$  vs.  $x = 1.73$ ,  $SD = 0.45$ ,  $t = 2.21$ ,  $df = 68$ ,  $p = .03$ ), \*grandiosity/euphoria ( $x = 1.40$ ,  $SD = 0.30$  vs.  $x = 1.65$ ,  $SD = 0.32$ ,  $t = 2.55$ ,  $df = 68$ ,  $p = .013$ ), and \*desire for drugs ( $x = 1.18$ ,  $SD = 0.25$  vs.  $x = 1.47$ ,  $SD = 0.32$ ,  $t = 3.19$ ,  $df = 68$ ,  $p = .002$ ).

### Suicidal Behaviors Questionnaire

As this measure does not have subscales per se, we analyzed six individual items. The high-DES group was more severe than the low-DES group on two items (with higher scores indicating greater severity): “In the past 3 months, how often have you thought about hurting, but not killing yourself?” ( $x = 2.70$ ,  $SD = 1.34$  vs.  $x = 1.74$ ,  $SD = 1.10$ ,  $t = -2.45$ ,  $df = 62$ ,  $p < .02$ ) and “What do you think are the chances that you will attempt to harm yourself at any point in your future?” ( $x = 3.22$ ,  $SD = 1.56$  vs.  $x = 2.15$ ,  $SD = 1.37$ ,  $t = -2.15$ ,  $df = 62$ ,  $p < .04$ ). Nonsignificant items were “In the past 3 months . . .” “. . . how often have you thought about killing yourself?” “. . . have you intentionally harmed yourself in a way which at the time you are someone else considered a suicide attempt?” “. . . have you intentionally harmed yourself in a way which at the time was not considered by you or anyone else a suicide attempt?” and “What do you think are the chances that you will attempt to kill yourself at any point in your future?”

### Nonsignificant Results

Several measures showed no differences between the two groups: the Trauma History Questionnaire (total number of traumas; and crime, physical/sexual, general trauma subscales); Beliefs About Substance Use

(total score); and the Addiction Severity Index composite scores (medical, employment, alcohol, drug, legal, family/social, and psychological) and item-level analysis for the number of days in the prior 30 for each substance (alcohol, cocaine, cannabis, hallucinogens, multi-substance, and use without a prescription for methadone, opiates, barbiturates, sedatives, amphetamines, cannabis), as well the number of years for each of those items, the current desire for total abstinence, and the lifetime number of drug overdoses.

## DISCUSSION

We sought to explore the association between PTSD, SUD, and dissociation in a sample of 77 women with current *DSM-IV* PTSD and substance dependence. We categorized the women into high- versus low-dissociation groups based on their total DES score and then compared them on a wide range of measures. Our results showed a consistent pattern: The women high in dissociation were more severely impaired than those low in dissociation on all variables that were significant. This fits with prior studies indicating that people with high levels of dissociation generally have had worse and earlier trauma histories and typically have more severe clinical profiles across a wide range of variables (Lynn & Rhue, 1994; Schafer et al., 2009). Also notable is that we found relatively high levels of dissociation (a mean of 19.44 on the DES, and 21% of the sample classified as high dissociators). These results are convergent with some prior studies that have reported mean DES scores in SUD samples of 19.2 (Van Den Bosch et al., 2003), 22.9 (Evren et al., 2007), 24.5 (Karadag et al., 2005), and 29.0 (Tamar-Gurol et al., 2008). However, other studies have found lower rates of 11.4 (Langeland, Draijer, & Van den Brink, 2002) and 12.3 (Schafer et al., 2009). Thus, the chemical dissociation hypothesis appears not to hold for some people; that hypothesis would suggest that people with SUD will show low levels of dissociation, as they are presumably using substances to dissociate instead. The inconsistent findings across studies may be explained, at least in part, by methodological differences. For example, our study evaluated participants with current PTSD and substance dependence, whereas prior studies sometimes assessed lifetime diagnoses or just trauma history rather than PTSD per se (e.g., Klanecky et al., 2008; Somer et al., 2010); also, we only studied women. The chemical dissociation hypothesis also needs further clarification and elaboration. It is posited as a narrow concept: "Traumatized individuals with limited capacities to psychologically dissociate may attempt to produce similar soothing or numbing effects by using psychoactive substances . . . These substances are used to enter and maintain dissociative-like states" (Langeland et al., 2002, p. 197). Yet experts know that substances may be used for many different reasons, including the goal of accessing

negative feelings rather than dissociating from them (Najavits, 2002). Thus, a more nuanced and multi-determined understanding of how substances relate to dissociation is clearly warranted (not simply that substances serve to enhance or replace dissociation).

We also found differences between the high- and low-DES groups on various trauma-related measures: the Trauma Symptom Inventory, Childhood Trauma Questionnaire, and World Assumptions Scale on cognitions related to PTSD. This extends previous work on the relationship between trauma and dissociation by expanding to cognitions about trauma (World Assumptions Scale) and specific types of trauma-related symptoms (on the Trauma Symptom Inventory). In relation to substance use, our main finding was that on two different expectancy questionnaires (one for alcohol, the other for cocaine), the high-DES group was more likely to believe that substances could help them manage psychological symptoms and problems (e.g., paranoia, grandiosity, aggression, and social expression). This raises the question of whether substance use among the high-DES group is a conscious choice to manage emotional problems versus a more defensive, unaware process in line with dissociation per se (which is generally understood to be a psychological defense that is not “chosen” but instead arises on its own, unexpectedly in relation to overwhelming stimuli). Certainly more definition and understanding of the onset, choice, and experience of substance use in the context of dissociation would be important, including patients’ own subjective understanding of how they experience these in relation to each other (which no study appears yet to have examined). However, on two major substance use measures—the Addiction Severity Index and Beliefs About Substance Use—we found no differences between high- and low-DES groups, even though we included an analysis of composite scores (alcohol/drug) and specific substances (and the latter for the prior 30 days as well as lifetime years). Such nonsignificant findings may simply reflect low statistical power or measurement issues. Yet it would be interesting, if verified by future research, if level of substance use severity and cognitions are found to be unrelated to dissociation, suggesting perhaps that some other key processes may be at work. For example, severity of PTSD symptoms may be more important than severity of substance use symptoms in relation to dissociation. Finally, we found that the high- versus low-DES groups differed on levels of self-harm, social adjustment, and coping skills; these not only indicate greater overall psychopathology among the high-DES group but also offer areas of direct clinical intervention to address.

Our study goes beyond any previous studies in terms of the number and range of assessments evaluated. Other strengths include the use of rigorous diagnoses, the use of validated instruments, and the fact that all measures were in the current timeframe (and thus less subject to recall bias than lifetime studies). Study weaknesses include the cross-sectional design (which did not allow us to explore how symptoms change over time in relation to

each other), the post hoc nature of the analyses, and the fact that participants had an unclear length of substance abstinence at the time of assessment (all had used in the month prior, but the actual dates were not known). It has been speculated that substance use and early withdrawal may be confused with dissociative symptoms (Langeland et al., 2002), although we do not know if this occurred in our sample.

Future research would benefit from the inclusion of both SUD and non-SUD samples and PTSD and non-PTSD samples so as to fully gauge how dissociation fits into the framework of PTSD/SUD comorbidity. For example, Van Den Bosch et al. (2003) included SUD and non-SUD samples and found no difference in their levels of dissociation. Future research could also be enhanced by addressing levels of dissociation as well as actual dissociative identity disorder diagnoses, including both males and females, engaging in a prospective study of the dynamic interplay of substance use and dissociation over time (e.g., real-time patient reporting of use of substances before, during, or after dissociative events; urinalysis/breathalyzer testing of actual use levels), and aiming for a greater understanding of specific substances in relation to dissociation. For example, alcohol may have a more numbing, dissociative effect, whereas cocaine may have a more activating, less dissociative effect. A larger sample size would allow for a more fine-grained analysis by substance type than we were able to achieve in this study. In sum, there are rich areas to explore in both the scientific and clinical domains to better understand substance use in relation to dissociation and PTSD.

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