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## PTSD Symptom Clusters Are Differentially Related to Substance Use Among Community Women Exposed to Intimate Partner Violence

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### Abstract

Women who experience intimate partner violence (IPV) have higher rates of posttraumatic stress disorder (PTSD) and substance abuse compared to women who do not experience IPV. However, the extent to which IPV-related PTSD symptoms are related to women's substance use involvement largely has been unexplored. The current study investigated PTSD symptomatology and substance use in a community sample of 212 IPV-exposed women. Drug-using women reported higher PTSD severity scores compared to women who reported no substance use or alcohol use only. Moreover, the reexperiencing, avoidance and numbing, and arousal clusters demonstrated unique associations with substance use involvement. Findings not only elucidate the associations among IPV-related PTSD symptoms and substance use, but they also can inform community-based preventive interventions.

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Although our understanding of trauma, posttraumatic stress disorder (PTSD), and its negative sequelae has become considerably advanced over the last 25 years, research has often fallen prey to the “fiction of homogeneity,” or the assumption that different traumatic events pose equal risk for the development of PTSD symptoms and other psychological problems (Ozer, Best, Lipsey, & Weiss, 2003, p. 68). In fact, Ozer and colleagues' meta-analysis documented that the type of referent traumatic event had predictive utility, in that interpersonal traumatic events demonstrated the strongest relationships to the development of PTSD. One source of interpersonal trauma that has received limited attention in the literature on PTSD is intimate partner violence (IPV). This is of concern, as IPV-exposed women are 2.9–5.9 times more likely to develop PTSD and 5.6 times more likely to abuse or be dependent on alcohol or drugs compared to women who have not experienced IPV (Golding, 1999). Given the considerable overlap between IPV exposure, PTSD, and substance use disorders, in the current study we sought to further elucidate the associations between PTSD and substance use by first documenting the prevalence of IPV-related PTSD symptoms in a community sample of IPV-exposed women, and second, examining associations among women's level of substance use involvement and the extent to which they endorsed symptoms in each of the three PTSD symptom clusters (i.e., reexperiencing, avoidance and numbing, and arousal).

Although few studies have examined IPV-related PTSD, there is a well-developed body of literature linking IPV-exposure and PTSD with substance use and abuse. Numerous studies have shown that there are strong associations between IPV exposure and substance use

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disorders (Burke, Thiemann, Gielen, O'Campo, & McDonnell, 2005; Coker et al., 2002; El-Bassel, Gilbert, Wu, Go, & Hill, 2005; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997). Regarding the relationship between PTSD and substance use disorders, the National Comorbidity Study showed that women with PTSD were 2.48 times more likely to have a diagnosis of alcohol abuse or dependence and 4.46 times more likely to have a diagnosis of drug abuse or dependence compared to women without a PTSD diagnosis (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). In addition, studies of PTSD and substance use disorders have shown elevated rates of IPV-exposure among their participants. For example, 66% of treatment-seeking women with PTSD and substance dependence reported experiencing lifetime physical abuse (Najavits, Sonn, Walsh, & Weiss, 2004). In a sample of cocaine-dependent women and men, approximately half had been physically abused by their intimate partner (Dansky, Byrne, & Brady, 1999). Notably, women were twice as likely as men to have experienced physical abuse from their partner, and individuals experiencing IPV were four times more likely to have a current PTSD diagnosis and two times more likely to have a lifetime PTSD diagnosis than those not reporting IPV, which suggested that IPV may exacerbate or uniquely contribute to current PTSD symptoms among substance users.

Recently, researchers have begun to explore the relationships between PTSD and substance use disorders in more detail by examining the unique associations between PTSD symptom clusters and substance use. Saladin, Brady, Dansky, and Kilpatrick (1995) showed that women with PTSD and a comorbid substance use disorder were more likely to have experienced physical assault, rape, and attempted sexual assault and notably, exhibited more intrusion and avoidance symptoms compared to those with PTSD alone. Stewart, Conrod, Phil, and Dongier (1999) examined correlations between each of the symptom clusters and alcohol, anxiolytic, and analgesic dependence in a large sample of women and found that alcohol dependence was significantly correlated with the arousal symptom cluster, whereas analgesic dependence was correlated with the intrusions, numbing, and arousal clusters. Finally, Back, Sonne, Killeen, Dansky, and Brady (2003) examined the trauma histories, psychiatric disorders, and PTSD symptoms of treatment-seeking women with comorbid PTSD/alcohol dependence and PTSD/cocaine dependence. Compared to women with PTSD/cocaine dependence, women with PTSD/alcohol dependence evidenced significantly greater avoidance and arousal symptoms according to clinician ratings. The authors speculated that alcohol may serve to exacerbate PTSD symptoms, whereas cocaine may impair functioning more generally. In light of these findings, the authors noted that more substance-specific research is needed to best inform substance use prevention and intervention efforts focused on the co-occurrence of PTSD and substance use (p. 170).

Taken together, the above research has established strong links between PTSD symptoms from multiple types of trauma and problematic substance use. These findings notwithstanding, the current study sought to improve on the limitations of past research. First, the majority of the studies on PTSD described above encompassed multiple referent traumatic events. Given that IPV is qualitatively different from other referent events, further investigation in this area is needed. Second, much of the past research has focused on women with a PTSD diagnosis. Given that many IPV-exposed women do not meet full criteria for a diagnosis of PTSD, but still experience marked impairment related to their PTSD symptoms (Basile, Arias, Desai, & Thompson, 2004; Zlotnick, Franklin, & Zimmerman, 2002), the current study examined a continuous measure of PTSD symptoms and examined each symptom cluster separately. Finally, past research largely has focused on small samples of homogeneous groups of women seeking substance abuse treatment. Consequently, it is questionable as to whether these findings can be generalized to women who do not yet have a diagnosable substance use disorder (Golding, 1999; Stewart & Israeli, 2002) and the extent to which these findings can inform community-based prevention efforts.

The current study aimed to describe IPV-related PTSD and substance use in a large community sample of women. This investigation was informed by the tension reduction theory (Conger, 1956) and the more contemporary self-medication hypothesis (Khantzian, 1985, 1997), which suggest that problematic substance use is a learned behavior that is reinforced by the resulting reduction in the strength of drives such as anxiety or fear—drives that are exhibited by victims of IPV (Foa, Cascardi, Zoellner, & Feeny, 2000; Swan & Snow, 2003). These learned needs to reduce negative affect contribute to the acquisition of substance use patterns. Women who used alcohol only were examined separately from those who used drugs (and possibly alcohol) and nonusers to better understand what differentiates women who self-medicate with a legal substance (i.e., alcohol) versus an illegal one (i.e., street drugs). Based on the research outlined above, it was hypothesized that women, who use alcohol, drugs, or both, would evidence higher levels of PTSD symptomatology than nonusers. Because the research exploring the links between specific PTSD symptom clusters and substance use has been limited to women with substance use disorders (Back et al., 2003; Stewart et al., 1999), relationships between specific PTSD clusters and substance use involvement were examined in an exploratory manner.

## METHOD

### Participants

The initial sample consisted of 240 women who were recruited from an urban community in New England. Recruitment flyers were posted in grocery stores, nail salons, government agencies, and two primary care clinics. To be eligible, a woman had to have experienced at least one act of physical victimization in the past 6 months by her male intimate partner; this was determined via a phone screen with selected items from the Conflict Tactics Scale-2 (CTS-2; Straus, Hamby, & Warren, 2003). Other eligibility criteria included a current relationship of at least 6 months duration with contact at least twice per week, at least 18 years of age, and an annual household income no greater than \$50,000 (determined a priori to methodologically control for differential resources associated with greater income). The final sample was composed of 212 women, as 28 participants failed to meet the eligibility criteria at the time of the interview.

The average age of women was 36.6 years ( $SD=10.5$ ). One hundred forty-two women were African American, 43 women were White, 17 women were Latina, and 10 women identified as biracial or multiracial. Most women were unemployed ( $n=138$ , 65%), had the equivalent of a high school education, and a mean annual income of \$13,305 ( $SD=\$10,390$ ). The majority of women (79%) had children. The average number of years in the relationship was 6.5 ( $SD=6.4$ ) with more than half of the sample married or cohabitating ( $n=126$ , 60%).

### Procedure

The study was approved by the institution's Human Investigation Committee and a Certificate of Confidentiality was obtained given the sensitive nature of the interview questions. The recruitment flyers, which advertised the "Women's Relationship Study," had tear-off sheets with the study phone number. Women's eligibility was determined when they called to inquire about the study. Eligible women were invited to participate in a 2-hour semistructured interview. Women who participated reported learning about the study from the following sources: 38% community site (e.g., grocery store, adult education, library, labor department), 37% from a friend, 13% from a community health center, 10% at a local hospital (i.e., primary care clinic, adult or pediatric emergency department, women's clinic), and 2% could not recall. All interviews were administered face-to-face by trained female masters or doctoral-level research associates using computer-assisted interviewing (NOVA Research Company, 2003). Participants were debriefed and remunerated for their time.

## Measures

**Substance use**—Substance use history and severity of substance-related problems were measured with the Addiction Severity Index (ASI; McLellan et al., 1992). This investigation utilized the ASI to examine four of the seven potential problem areas for people who use substances: medical status, drug use, alcohol use, and family history of substance use problems/social status. Quantity and frequency of substance use were combined to yield the substance use involvement variable. The ASI is a well-established measure whose psychometric properties have been documented (for detailed information, see McLellan et al., 1985).

Participants were classified by their level of substance use involvement with alcohol and/or drugs over the past 6 months according to the following categories; 1=*no alcohol or drug use* ( $n=62$ ; 29%); 2=*alcohol use only* ( $n=48$ ; 23%); and 3=*drug use with or without alcohol* ( $n=102$ ; 48%). This grouping variable served as the independent variable. One way ANOVAs and chi-square tests showed that there were no differences among the groups with respect to age, highest grade completed, relationship length, total number of children, relationship status (e.g., married/ cohabitating vs. not cohabitating), employment status, and monthly income.

**Posttraumatic stress**—Posttraumatic stress symptomatology resulting from IPV in the current relationship was assessed using the Posttraumatic Stress Diagnostic Scale (PDS; Foa, 1995). To examine PTSD resulting from IPV (IPV-PTSD), diagnostic criteria for PTSD were assessed using any abuse by the current intimate partner over the course of the relationship as the referent traumatic event(s). In addition to assessing all of the criteria for PTSD according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV*; American Psychiatric Association, 1994), this instrument provides a continuous measure of posttraumatic stress symptoms and their severity. Reexperiencing, avoidance and numbing, and arousal symptoms, (Criteria B, C, and D, respectively) were assessed over the previous 6 months. The total and cluster symptom severity scores were created by summing the respective symptom severity responses; 0 (*not at all, or only one time*), 1 (*once a week or less, or once in a while*), 2 (*2 to 4 times a week, or half the time*), 3 (*5 or more times a week, or almost always*). Reliability for the overall scale and the subscales was good (total score  $\alpha=.92$ , reexperiencing  $\alpha=.87$ , avoidance and numbing  $\alpha=.82$ , arousal  $\alpha=.80$ ).

**Current intimate partner violence**—Women's physical, psychological, and sexual abuse victimization and perpetration, as well as negotiation and injury, were measured by the 78-item CTS-2 (Straus et al., 2003). To gain specific information about certain components of IPV, psychological abuse victimization also was measured by the Psychological Maltreatment of Women Inventory (PMWI; Tolman, 1989) and sexual abuse victimization and perpetration were measured by the Sexual Experiences Survey (SES; Koss, Gidycz, & Wisniewski, 1987; Koss & Oros, 1982). The latter two instruments were used in this study to measure psychological and sexual abuse victimization, respectively.

A referent period of 6 months was used to assess the partner's commission of a physically aggressive behavior toward the woman. The response scale ranged from *never, once, twice, 3–5 times, 6–10 times, 10–20 times, to more than 20 times in the past six months*. The three response categories presented as a range were recoded so that the midpoint of each range was the variable's value (i.e., 3–5=4; 6–10=8; 10–20=15); more than 20 times was conservatively recoded to a value of 25 (Straus et al., 2003). The physical victimization scale score was then created by summing the 12 CTS-2 items ( $\alpha=.89$ ). Ninety-nine percent of participants in the current study reported that they had been the victim of minor assault by their partner (e.g., slapping, grabbing, pushing/shoving) over the last 6 months and 70% endorsed that they had been the victim of severe assault (e.g., choking, using a knife or gun). Fifty-nine percent

endorsed receiving a minor injury from their partner (e.g., sprain/bruise/cut) and 24% reported receiving a severe injury (e.g., broken bone).

Psychological abuse was measured by summing the 48 items from the Psychological Maltreatment of Women Inventory (Tolman, 1989). Response options ranged from 1 (*never*) to 5 (*very frequently*). The internal consistency of the total scale and subscales in the current study was excellent (total scale  $\alpha = .96$ , dominance and isolation  $\alpha = .92$ , emotional/verbal  $\alpha = .94$ ). Sexual abuse victimization was assessed with the Sexual Experiences Scale (Koss et al., 1987; Koss & Oros, 1982) using the same response options, recoding, and variable creation scheme as the CTS-2 with a resulting  $\alpha = .89$ . Given that the SES has been used largely with college populations and requires a fairly high reading level, the measure was revised to facilitate comprehension among study participants. For example, rather than asking, “Have you had a man attempt sexual intercourse (get on top of you, attempt to insert his penis) when you didn’t want to by threatening or using some degree of force (twisting your arm, holding you down, etc.) but intercourse *did not* occur?,” a brief introduction to the section of the measure that queries attempted forced sexual intercourse was included. This explained “The next set of questions asks about when your partner *tried* to insert his penis but the sex *did not* happen,” and was followed by “Has your partner tried to make you have sex by using force like twisting your arm or hold you down, or by threatening to use force?”

**Childhood trauma**—The Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998) is a 28-item, self-report inventory designed to assess emotional, physical, and sexual abuse and emotional and physical neglect. Items are rated on a 5-point scale ranging from *never true* (1) to *very often true* (5). Scores for each of the five domains were created by summing the five items for each of the five scales: emotional abuse,  $\alpha = .93$ ; physical abuse,  $\alpha = .86$ ; sexual abuse,  $\alpha = .97$ ; emotional neglect,  $\alpha = .88$ ; physical neglect,  $\alpha = .78$ , and total childhood trauma,  $\alpha = .93$ .

## Data Analysis

Because the reexperiencing, avoidance, and overall scale scores of the PDS were positively skewed, these variables were square root transformed (Tabachnick & Fidell, 2007). Untransformed values are displayed in the figures to aid interpretation. One-way analysis of variance (ANOVA) and chi-square tests of independence were used to compare the three substance use involvement groups on all measures of victimization and posttraumatic stress symptomatology. If a one-way ANOVA was significant at the .05 level, Tukey post hoc tests (or in cases where the homogeneity of variances assumption was not met, the Games-Howell test) were used to determine the nature of the significant relationships. Due to the exploratory nature of the study, an alpha level of .05 was used and adjustments for type I error were not made.

## RESULTS

### Prevalence of IPV-Related PTSD and Substance Use in the Overall Sample

One-hundred seventeen (55%) participants reported having experienced an IPV incident that met *DSM-IV* Criterion A; that is, over half of the participants experienced at least one incident of IPV with their current partner as “traumatic.” With respect to the PDS subscales, 88% reported reexperiencing symptoms consistent with Criterion B (endorsed at least one symptom), 71% reported avoidance and numbing symptoms that met Criterion C (endorsed at least three symptoms), and 88% experienced arousal symptoms consistent with Criterion D (endorsed at least two symptoms) in the past 6 months. Thirty-four percent met full diagnostic criteria for PTSD (i.e., Criteria A through F).

Women who endorsed using any alcohol in the last 6 months reported drinking, on average, 4 days a month ( $M=4.06$ ,  $SD=5.07$ ), with 2.38 drinks per occasion ( $SD=2.02$ ) and drinking to intoxication on approximately 2 of the 4 drinking days ( $M=2.35$ ,  $SD=5.29$ ). Among women who reported drug use ( $n=102$ ), 24% reported using marijuana (2% were daily users), 22% cocaine (1% daily users), 9% sedatives/hypnotics/tranquilizers (3% daily users), 7% opiates (not including heroin; 4% daily users), and 5% heroin (1% daily users). Over the last 6 months, 57% of women reported using one drug, 25% used a total of two drugs, 15% three drugs, 3% four drugs, and 1% used five drugs. Fifty-eight percent ( $n=123$ ) of the sample reported smoking cigarettes daily over the last 6 months.

### Analyses by Substance Use Involvement Group

As shown in Table 1, ANOVA and chi-square comparisons of the three substance use groups revealed that the groups did not differ on self-reported measures of childhood trauma, sexual victimization, psychological maltreatment, physical abuse by their romantic partner, or number of abusive relationships.

Table 2 displays the findings from the one-way ANOVAs used to investigate the relationships between substance use involvement and PTSD symptom clusters. Although the  $p$ -value associated with the  $F$  test for the reexperiencing cluster was less than .05, the Games-Howell test indicated that the groups did not differ from each other significantly. With respect to avoidance and numbing symptoms, women who used drugs reported significantly higher scores than alcohol users, although drug users did not differ from nonusers. Finally, women who used drugs reported significantly more arousal symptoms compared to nonusers. Alcohol users did not differ significantly from either group. Figure 1 depicts the post hoc Tukey HSD and Games-Howell comparisons.

Consistent with our hypothesis, women who used drugs reported significantly higher composite PTSD scores when compared with alcohol users and nonusers (depicted in Table 2, but not in Figure 1). Further, a chi-square test revealed that women who used drugs were more likely to meet full diagnostic criteria for PTSD than those who were nonusers or alcohol users only,  $\chi^2(2, N=212)=8.31$ ,  $p < .05$ ; Figure 2; there was no difference between nonusers and alcohol users.

## DISCUSSION

The purpose of the current study was to examine the extent to which IPV-related PTSD symptoms were associated with women's substance use involvement. This study is a unique contribution to the literature on PTSD and substance use for several reasons. First, it focused on IPV, an understudied source of interpersonal trauma as the referent event for PTSD. Second, instead of sampling treatment-seeking women, women from the community comprised the sample. Finally, we used a continuous measure of PTSD symptoms, which permitted an examination of the relationships between individual symptom clusters and substance use involvement. As hypothesized, women who used drugs, compared to alcohol users and nonusers, exhibited significantly greater PTSD symptomatology as indicated by higher scores on a continuous measure of PTSD and a higher frequency of PTSD diagnoses. Moreover, the individual symptom clusters exhibited unique relationships to women's substance use involvement; no two groups had the same profile of symptom cluster scores.

Partial support for tension reduction theory (Conger, 1956) and the self-medication hypothesis (Khantzian, 1997) was obtained. Women who used drugs had significantly higher mean scores for total PTSD symptom severity and were more likely to meet the criteria for a diagnosis of PTSD compared to nonusers. These findings suggest that women's substance use might be motivated by the need to manage a greater number of overall symptoms.

Similar to the pattern of findings obtained for the overall PTSD score, women who used drugs had significantly higher scores for the arousal symptom cluster. These findings suggest that perhaps (a) women with high levels of arousal symptoms use drugs to treat their symptoms, (b) nonusers experience low levels of arousal symptoms and thus do not use drugs to self-medicate, and/or (c) drug use exacerbates arousal symptoms. Results from the analysis of the avoidance and numbing symptom cluster were more challenging to interpret. Drug users did not differ from nonusers with respect to symptom severity, but each of these groups differed from alcohol users. The lower level of reported avoidance and numbing symptoms in the alcohol-using group might indicate that alcohol effectively “treats” these symptoms. Or, conversely, drugs were not effective at ameliorating avoidance and numbing symptoms and therefore, women in the drug-using group experienced the same level of symptoms as nonusers.

The lack of difference between nonusers and alcohol users for all three symptom clusters in addition to overall symptom severity may be accounted for in several ways. First, the limited frequency with which alcohol users drank and their relatively low level of consumption indicates that even though they drank occasionally, the majority likely were not alcohol dependent. Therefore, perhaps what distinguishes nonusers from alcohol users in relation to PTSD symptomatology is not simply whether or not they use alcohol, but the quantity and frequency with which they use. This, coupled with the fact that alcohol is legal and socially acceptable might explain why alcohol users’ symptom profiles were more similar to nonusers than drug users. Second, it has been noted that alcohol withdrawal may intensify PTSD symptoms (Stewart, 1996). To observe differences in PTSD symptoms between alcohol users and nonusers then, it likely would have been necessary to sample treatment-seeking women. It should be noted that when compared to alcohol users, drug users endorsed comparable levels of alcohol use. This lack of difference between the groups in their alcohol consumption suggests that the differential endorsement of PTSD symptoms by drug-using women is not simply due to higher levels of alcohol use.

Despite reporting similar levels of IPV, drug-using women experienced more PTSD symptoms than nonusers. Past research has demonstrated that PTSD plays a mediating role in the relationship between trauma and subsequent negative life events (Epstein, Saunders, Kilpatrick, & Resnick, 1998; Orcutt, Erickson, & Wolfe, 2002) and such a relationship may exist in this sample. Moreover, because there were no differences among the groups on measures of past and current victimization, substance use was not simply a proxy for more victimization. Therefore, it could be that women with greater levels of PTSD are using drugs to cope with the symptoms, or their PTSD symptoms are exacerbated by drug use.

### Limitations and Future Directions

This study had limitations worthy of note. First, we relied on self-report measures, which have been criticized because they are subject to recall bias and under- or overreporting. However, research has shown that reports of both the incidence and severity of trauma symptoms are stable over time (Goodman et al., 1999) and that data from self-report instruments, similar to the one used in this study, correctly captured nearly three fourths of individuals who would qualify for a diagnosis of PTSD based on a clinician interview (Coffey, Dansky, Falsetti, Saladin, & Brady, 1998). Second, our study was cross-sectional. Thus, it is plausible that greater symptom severity contributed to a greater level of substance use involvement and/or women’s use of substances altered their experience of PTSD symptomatology, either artificially lowering (Stewart, 1996) or exacerbating symptoms (Saladin et al., 1995; Stewart, 1996). Either way, these findings are in line with the proposed theoretical framework. However, prospective designs are needed to establish the event-level relationships of PTSD symptomatology to substance use. To address the limitations regarding self-report and cross-sectional data, future studies could employ methods that utilize collateral information and

biochemical screening for substance use. In addition, the effects of substance use on PTSD symptoms could be investigated experimentally and/or include neuropsychological assessments. Third, because this research was conducted with a low-income, female, primarily African American sample, these findings might not generalize to different demographic groups. Finally, given that recruitment and participation was voluntary, it is likely that the most severely controlled and abused women are not represented in this sample.

The current study demonstrated that IPV-exposed women experienced different constellations of PTSD symptoms based on their substance use involvement. Price's (1983) prevention science framework suggests that the next step is to develop preventive interventions informed by these and related findings. Prevention programs for selected and indicated populations of IPV-exposed women in the community could provide psychoeducation about the prevalence of PTSD symptomatology and symptom profiles among women who use drugs and/or alcohol compared to nonusers. Even more importantly, these programs could teach women more adaptive ways of coping with their PTSD symptoms. It is not possible to eradicate substance use in women with IPV-related PTSD symptoms; however, it may be possible to forestall women's progression to substance abuse or dependence.

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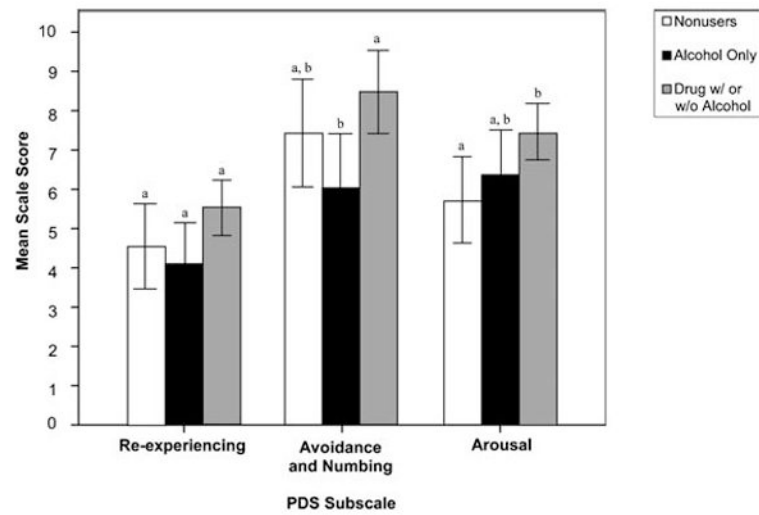
## References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4. Washington, DC: Author; 1994.
- Back SE, Sonne SC, Killeen T, Dansky BS, Brady KT. Comparative profiles of women with PTSD and comorbid cocaine or alcohol dependence. *American Journal of Drug & Alcohol Abuse* 2003;29:169–189. [PubMed: 12731687]
- Basile KC, Arias I, Desai S, Thompson MP. The differential association of intimate partner physical, sexual, psychological, and stalking violence and posttraumatic stress symptoms in a nationally representative sample of women. *Journal of Traumatic Stress* 2004;17:413–421. [PubMed: 15633920]
- Bernstein, DP.; Fink, L. A retrospective self-report questionnaire and manual. San Antonio, TX: The Psychological Corporation; 1998. Childhood trauma questionnaire.
- Burke JG, Thieman LK, Gielen AC, O'Campo P, McDonnell KA. Intimate partner violence, substance use, and HIV among low-income women: Taking a closer look. *Violence Against Women* 2005;11:1140–1161. [PubMed: 16049104]
- Coffey SF, Dansky BS, Falsetti SA, Saladin ME, Brady KT. Screening for PTSD in a substance abuse sample: Psychometric properties of a modified version of the PTSD Symptom Scale Self-Report. *Journal of Traumatic Stress* 1998;11:393–399. [PubMed: 9565924]
- Coker AL, Davis KE, Arias I, Desai S, Sanderson M, Brandt HM, et al. Physical and mental health effects of intimate partner violence for men and women. *American Journal of Preventive Medicine* 2002;23:260–268. [PubMed: 12406480]
- Conger JJ. Alcoholism: Theory, problem and challenge. *Quarterly Journal of Studies on Alcohol* 1956;13:296–305. [PubMed: 13336262]
- Dansky BS, Byrne CA, Brady KT. Intimate violence and posttraumatic stress disorder among individuals with cocaine dependence. *American Journal of Drug & Alcohol Abuse* 1999;25:257–268. [PubMed: 10395159]
- El-Bassel N, Gilbert L, Wu E, Go H, Hill J. Relationship between drug abuse and intimate partner violence: A longitudinal study among women receiving methadone. *American Journal of Public Health* 2005;95:465–470. [PubMed: 15727978]
- Epstein JN, Saunders BE, Kilpatrick DG, Resnick HS. PTSD as a mediator between childhood rape and alcohol use in adult women. *Child Abuse & Neglect* 1998;22:223–234. [PubMed: 9589176]



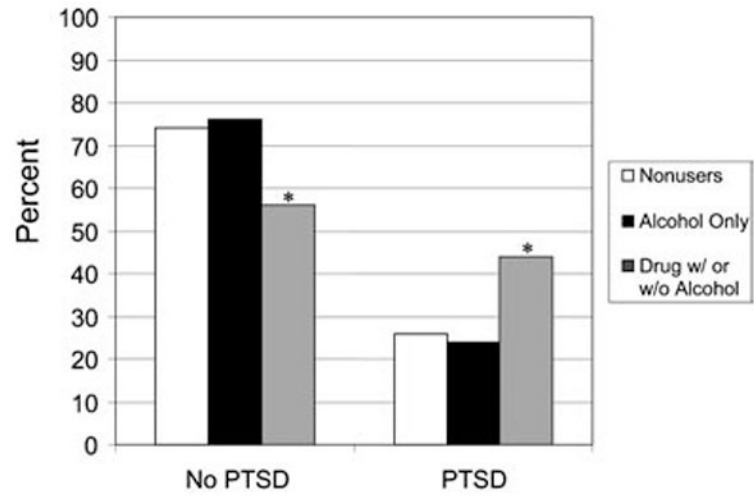
- Foa, EB. Posttraumatic Stress Diagnostic Scale manual. Minneapolis, MN: National Computer Systems, Inc.; 1995.
- Foa EB, Cascardi M, Zoellner LA, Feeny NC. Psychological and environmental factors associated with partner violence. *Trauma Violence & Abuse* 2000;1:67–91.
- Golding JM. Intimate partner violence as a risk factor for mental disorders: A meta-analysis. *Journal of Family Violence* 1999;14:99–132.
- Goodman LA, Thompson KM, Weinfurt K, Corl S, Acker P, Mueser KT, et al. Reliability of reports of violent victimization and posttraumatic stress disorder among men and women with serious mental illness. *Journal of Traumatic Stress* 1999;12:587–599. [PubMed: 10646178]
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Post-traumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry* 1995;52:1048–1060. [PubMed: 7492257]
- Khantzian EJ. The self-medication hypothesis of addictive disorders: Focus on heroin and cocaine dependence. *American Journal of Psychiatry* 1985;142:1259–1264. [PubMed: 3904487]
- Khantzian EJ. The self-medication hypothesis of substance use disorders: A reconsideration and recent applications. *Harvard Review of Psychiatry* 1997;4:231–244. [PubMed: 9385000]
- Kilpatrick DG, Acierno R, Resnick HS, Saunders BE, Best CL. A 2-year longitudinal analysis of the relationships between violent assault and substance use in women. *Journal of Consulting & Clinical Psychology* 1997;65:834–847. [PubMed: 9337502]
- Koss MP, Gidycz CA, Wisniewski N. The scope of rape—Incidence and prevalence of sexual aggression and victimization in a national sample of higher-education students. *Journal of Consulting and Clinical Psychology* 1987;55:162–170. [PubMed: 3494755]
- Koss MP, Oros CJ. Sexual Experiences Survey: A research instrument investigating sexual aggression and victimization. *Journal of Consulting and Clinical Psychology* 1982;50:455–457. [PubMed: 7096751]
- McLellan AT, Alterman AI, Cacciola J, Metzger D, Smith I, Grissom G, et al. A new measure of substance abuse treatment: Initial studies of the Treatment Services Review. *Journal of Nervous & Mental Disease* 1992;180:101–110. [PubMed: 1737971]
- McLellan AT, Luborsky L, Cacciola J, Griffith J, Evans F, Barr HL, et al. New data from the Addiction Severity Index: Reliability and validity in three centers. *Journal of Nervous and Mental Disease* 1985;173:412–423. [PubMed: 4009158]
- Najavits LM, Sonn J, Walsh M, Weiss RD. Domestic violence in women with PTSD and substance abuse. *Addictive Behaviors* 2004;29:707–715. [PubMed: 15135552]
- NOVA Research Company. Questionnaire Development System™ user's manual. Bethesda, MD: Author; 2003.
- Orcutt HK, Erickson DJ, Wolfe J. A prospective analysis of trauma exposure: The mediating role of PTSD symptomatology. *Journal of Traumatic Stress* 2002;15:259–266. [PubMed: 12092919]
- Ozer EJ, Best SR, Lipsey TL, Weiss DS. Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analysis. *Psychological Bulletin* 2003;129:52–73. [PubMed: 12555794]
- Price, RH. The education of a prevention psychologist. In: Felner, RD.; Jason, LA.; Moritsugu, JN.; Farber, SS., editors. *Preventive psychology: Theory, research and practice*. Vol. 12. Elmsford, NY: Pergamon Press; 1983. p. 290-296.
- Saladin ME, Brady KT, Dansky BS, Kilpatrick DG. Understanding comorbidity between PTSD and substance use disorders: Two preliminary investigations. *Addictive Behaviors* 1995;20:643–655. [PubMed: 8712061]
- Stewart SH. Alcohol abuse in individuals exposed to trauma: A critical review. *Psychological Bulletin* 1996;120:83–112. [PubMed: 8711018]
- Stewart SH, Conrod PJ, Pihl RO, Dongier M. Relations between posttraumatic stress symptom dimensions and substance dependence in a community-recruited sample of substance-abusing women. *Psychology of Addictive Behaviors* 1999;13:78–88.
- Stewart, SH.; Israeli, AL. Substance abuse and co-occurring psychiatric disorders in victims of intimate violence. In: Wekerle, C.; Wall, A-M., editors. *The violence and addiction equation: Theoretical and clinical issues in substance abuse and relationship violence*. New York: Routledge; 2002. p. 5
- Straus, MA.; Hamby, SL.; Warren, WL. *The Conflict Tactics Scales handbook*. Los Angeles: Western Psychological Services; 2003.

- Swan SC, Snow DL. Behavioral and psychological differences among abused women who use violence in intimate relationships. *Violence Against Women* 2003;9:75–109.
- Tabachnick, BG.; Fidell, LS. *Using multivariate statistics*. 5. Boston, MA; Allyn & Bacon/Pearson Education: 2007.
- Tolman RM. The development of a measure of psychological maltreatment of women by their male partners. *Violence and Victims* 1989;4:159–177. [PubMed: 2487132]
- Zlotnick C, Franklin CL, Zimmerman M. Does “subthreshold” post-traumatic stress disorder have any clinical relevance? *Comprehensive Psychiatry* 2002;43:413–419. [PubMed: 12439826]



**Figure 1.**

Comparison of posttraumatic stress symptom cluster severity by substance use group. Reexperiencing and avoidance clusters were square root transformed in the ANOVA; however, the means reported above are untransformed scores. Reexperiencing and arousal scales were comprised of five items (score range=0–15); the avoidance scale was comprised of seven items (score range=0–21). Bars indicate 95% confidence intervals. Error bars with different letter superscripts within clusters are significantly different from one another.



**Figure 2.**  
Percentage of posttraumatic stress disorder diagnoses by substance use group.  
\*  $p < .05$ .

**Table 1**  
Means and Standard Deviations of Scores on Current and Past Victimization Measures by Substance Use Group

| Variable                          | Substance use group   |           |                             |           |                           |           |
|-----------------------------------|-----------------------|-----------|-----------------------------|-----------|---------------------------|-----------|
|                                   | Nonuser <i>n</i> = 62 |           | Alcohol users <i>N</i> = 48 |           | Drug users <i>n</i> = 102 |           |
|                                   | <i>M</i>              | <i>SD</i> | <i>M</i>                    | <i>SD</i> | <i>M</i>                  | <i>SD</i> |
| Childhood trauma                  | 48.88                 | 19.58     | 44.94                       | 17.95     | 49.50                     | 19.43     |
| Emotional abuse                   | 11.23                 | 5.58      | 10.33                       | 5.14      | 11.29                     | 5.45      |
| Physical abuse                    | 8.94                  | 4.98      | 8.75                        | 4.46      | 9.57                      | 4.88      |
| Sexual abuse                      | 10.97                 | 8.13      | 8.13                        | 6.39      | 10.05                     | 6.70      |
| Emotional neglect                 | 10.99                 | 5.40      | 10.90                       | 4.90      | 11.62                     | 5.49      |
| Physical neglect                  | 7.56                  | 3.43      | 6.83                        | 2.93      | 7.39                      | 3.28      |
| Sexual victimization <sup>a</sup> |                       | 47%       |                             | 58%       |                           | 61%       |
| Psychological maltreatment        | 125.37                | 33.72     | 129.00                      | 30.41     | 127.67                    | 37.60     |
| Emotional abuse                   | 66.65                 | 17.85     | 68.38                       | 14.22     | 67.54                     | 19.92     |
| Dominance/isolation               | 58.73                 | 18.38     | 60.63                       | 18.30     | 60.13                     | 19.58     |
| Physical abuse                    | 33.41                 | 47.60     | 29.50                       | 37.55     | 38.96                     | 50.69     |
| Injury                            | 3.26                  | 8.54      | 3.98                        | 7.66      | 4.98                      | 9.67      |
| Negotiation                       | 36.87                 | 30.05     | 41.25                       | 36.74     | 44.02                     | 34.66     |
| Number of abusive relationships   | 1.95                  | 1.86      | 1.75                        | 1.18      | 2.35                      | 2.15      |

*Note.* ANOVAs for childhood trauma and physical abuse were conducted using square root and logarithmic transformed scores. Means and standard deviations reported above are for untransformed scores.

<sup>a</sup>This variable showed substantial positive skewness; consequently, the percentage of women endorsing sexual victimization more than once over the past 6 months was reported and analyzed using the chi-square difference test.

**Table 2**

One-Way ANOVA of Posttraumatic Stress Diagnostic Scale (PDS) Scores by Substance Use Group (Nonusers, Alcohol Users, Drug Users)

| Variable and source            | <i>F</i> (2, 208)  |
|--------------------------------|--------------------|
| Reexperiencing scale           | 3.82 <sup>*a</sup> |
| Avoidance scale <sup>b</sup>   | 3.57 <sup>*</sup>  |
| Arousal scale <sup>c</sup>     | 3.87               |
| Overall PDS scale <sup>d</sup> | 4.57 <sup>*</sup>  |

*Note.* The overall PDS, reexperiencing, and avoidance scores were square root transformed for the current analyses. Nonusers,  $n = 62$ ; alcohol users,  $n = 47$ ; drug users,  $n = 102$ .

<sup>a</sup> Post hoc findings are not reported for the reexperiencing cluster because according to the Games-Howell test, the groups did not differ from one another significantly.

<sup>b</sup> Nonusers = alcohol users; alcohol users < drug users; drug users = nonusers.

<sup>c</sup> Nonusers = alcohol users; alcohol users = drug users; drug users > nonusers.

<sup>d</sup> Nonusers = alcohol users; alcohol users < drug users; drug users > nonusers.

\*  $p < .05$ .