



Intimate partner violence outcomes in women with PTSD and substance use: A secondary analysis of NIDA Clinical Trials Network “Women and Trauma” Multi-site Study



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HIGHLIGHTS

- We examine intimate partner violence outcomes in women with PTSD and substance abuse.
- Women were randomly assigned to either cognitive-behavioral or a control treatment.
- Significant interaction between baseline abstinence and treatment condition found.
- Abstinent participants in CBT condition were less likely to report IPV at follow-up.
- Better IPV outcomes for subset of individuals in CBT may have clinical implications.

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ABSTRACT

Studies have shown strong associations between intimate partner violence (IPV) and both posttraumatic stress disorder (PTSD) and substance use disorders (SUD). Despite these linkages, research on the dual diagnosis of PTSD–SUD and its relationship to IPV is in an early stage, and little is known about how PTSD–SUD treatment might influence IPV outcomes. The current study is a secondary analysis of a larger NIDA Clinical Trials Network study exploring the effectiveness of two behavioral interventions for women with comorbid PTSD–SUD. Participants ($n = 288$) were randomly assigned to *Seeking Safety* (SS), a cognitive-behavioral treatment that focuses on trauma and substance abuse symptoms, or to *Women's Health Education*, a psychoeducational group. Logistic regressions were used to examine how treatment condition, identified risk factors and their interactions were related to IPV. Results showed that participants who were abstinent at baseline were significantly less likely to experience IPV over the 12-month follow-up period, whereas participants living with someone with an alcohol problem were significantly more likely to experience IPV over follow-up. Findings also showed that at a trend level participants with recent interpersonal trauma at baseline and higher total of lifetime trauma exposures were more likely to report IPV during follow-up. Although there was no main effect for treatment condition, a significant interaction between treatment condition and baseline abstinence was found. Participants who were abstinent at baseline and in the SS condition were significantly less likely to report IPV over follow-up. These findings indicate that an integrated treatment for PTSD and SUD was associated with significantly better IPV outcomes for a subset of individuals. The possibility that women with PTSD–SUD may differentially benefit from SS has important clinical implications. Further research examining the intersection of PTSD, SUD and IPV, and the impact of treatment on a range of outcomes is needed.

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1. Introduction

Epidemiological and clinical studies have firmly established that the majority of women in substance abuse treatment have been exposed to interpersonal trauma in their lifetimes (Dansky, Sladin,

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Brady, Kilpatrick, & Resnick, 1995; Lincoln, Liebschultz, Chernoff, Nguyen, & Amaro, 2006; Mills, Lynskey, Teesson, Ross, & Dark, 2005), and commonly have co-occurring post-traumatic stress disorder (PTSD) (Brady, Dansky, Back, Foa, & Carroll, 2001; Donovan, Padin-Rivera, & Kowaliw, 2001; Najavits, Weiss, & Shaw, 1997; Triffleman, 2003). Prevalence estimates indicate that as many as 80% of women seeking treatment for substance use disorders (SUD) report lifetime histories of sexual and/or physical assault (Brady, Killeen, Saladin, Dansken, & Becker, 1994; Cohen & Hien, 2006; Dansky et al., 1995; Hien, Cohen, Litt, Miele, & Capstick, 2004; Hien et al., 2009; Miller, Downs, & Testa, 1993), most often beginning in childhood (Brown & Wolfe, 1994; Min, Farkas, Minnes, & Singer, 2007; Polusny & Follete, 1995). Women with childhood trauma histories are vulnerable to repeated traumas in adulthood (Classen, Palesh, & Aggarwal, 2005; Fullilove et al., 1993; Nishith, Mechanic, & Resick, 2000), which often takes the form of intimate partner violence (IPV) (Desai, Arias, Thompson, & Basile, 2002; West, Williams, & Siegel, 2000). Women with childhood abuse histories are two to three times more likely to be subsequently exposed to IPV as compared to women without abuse histories (Coid et al., 2001; Whitfield, Anda, Dube, & Felitti, 2003).

Strong associations have been found between IPV and PTSD (see Dutton, 2009 for review), with PTSD being identified as one the most prevalent mental health sequelae of IPV (Campbell, 2002; Golding, 1999). Across studies, significantly higher rates of PTSD have been found among female survivors of IPV ranging from 31 to 84% (Anderson, 2002; Coker, Weston, Creson, Justice, & Blakeney, 2005; Coker et al., 2002; Golding, 1999), as compared to women in the general population in which lifetime prevalence rates are estimated at around 10% (Kessler et al., 2005).

Similarly, extensive empirical evidence supports an association between IPV and SUD for women in the community and in drug treatment (Centers for Disease Control and Prevention, 2008; Cunradi, Caetano, & Schafer, 2002; Dansky, Byrne, & Brady, 1999; El-Bassel et al., 2004; McKinney, Caetano, Rodriguez, & Okoro, 2010; Schneider, Burnette, Hgen, & Timko, 2009). The Department of Justice (Collins & Spencer, 2002) found that 36% of victims in domestic violence programs also had substance abuse problems. Studies have shown that women who abuse substances are significantly more likely to experience IPV, and that experiencing IPV is associated with increased drug and alcohol use (El-Bassel, Gilbert, Wu, Go, & Hill, 2005; Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997; Martino, Collins, & Ellickson, 2005; Testa, Livingston, & Hoffman, 2007; Testa, Livingston, & Leonard, 2003), making substance abuse both a risk factor for and a consequence of IPV.

Despite demonstrated linkages between IPV and PTSD and IPV and SUD, empirical examination that specifically focuses on the dual diagnosis of PTSD–SUD and its relationship to IPV is in an early stage (Stewart & Israeli, 2002). Historically, these domains have been treated and studied separately, with little research examining the overlap of these three problem areas. One exception is a study with an outpatient sample of dually diagnosed women with PTSD–SUD ($n = 58$) showing that 50% had been physically assaulted by a partner and 45% had experienced sexual coercion by a partner in the past year (Najavits, Sonn, Walsh, & Weiss, 2004).

Two recent studies that focus on the relationship between substance use and trauma/PTSD symptoms in community samples of women recently exposed to interpersonal violence are also of relevance. Kaysen et al. (2007) examined alcohol use in women ($n = 326$) recruited from shelters and victim assistance programs. Findings showed that heavy drinkers reported more severe trauma symptoms with mediational analyses suggesting that the relationship between drinking and trauma symptoms was mediated by coping motives. Specifically, women who believed that drinking would be a useful way to cope were at the greatest risk for heavy alcohol use. Peters, Khondkaryan, & Sullivan (2012) explored the associations between alcohol and drug

use, PTSD and partner violence severity in urban women currently experiencing IPV ($n = 212$). Findings indicated that stronger positive alcohol and drug expectancies, particularly in the area of tension reduction, correlated with more frequent and severe alcohol use, more severe PTSD symptoms and greater severity of IPV. Both studies provide some support for the “self-medication” hypothesis (Khantzian, 1997), which posits that some individuals with trauma histories and related PTSD use substances in an effort to manage or avoid distressing symptoms. These studies represent an initial step in understanding the complex relationships among PTSD, substance use and IPV with potential implications for future intervention efforts.

Still, very little is known about how to effectively address IPV in the context of PTSD–SUD, how best to intervene so as to interrupt the PTSD/SUD/IPV cycle, and how treatments designed to treat PTSD and SUD symptoms may also influence IPV outcomes. However, significant advances in the treatment of comorbid PTSD–SUD create a promising backdrop in which to consider the interaction with IPV. Historically, treatment for substance abusing women has not addressed trauma-related symptoms. As the extent of PTSD–SUD comorbidity, and its implications for treatment retention and outcomes has been uncovered over the past two decades, a number of manualized cognitive behaviorally oriented therapies have been developed and tested (e.g., Brady et al., 2001; Covington, Burke, Keaton, & Norcott, 2008; Donovan et al., 2001; Najavits, 2002; Triffleman, Carroll, & Kellogg, 1999). Empirical support for these treatments has demonstrated a promise in reducing PTSD and SUD symptoms (e.g., Donovan et al., 2001; Gatz et al., 2007; Hien et al., 2004; Hien et al., 2009; Najavits, Weiss, Shaw, & Muenz, 1998). Currently, *Seeking Safety* is the only integrated PTSD–SUD treatment model that meets the criteria necessary to be considered an effective or evidence based treatment (Najavits, 2009).

The “Women and Trauma Study,” conducted within the National Drug Abuse Treatment Clinical Trials Network (CTN), is the largest multisite randomized clinical trial to date conducted within outpatient substance abuse treatment programs with women with co-occurring PTSD. The study tested the effect of *Seeking Safety* (Najavits, 2002), compared to an attention control health education group (*Women’s Health Education*). Overall findings did not provide support for the superiority of *Seeking Safety* over *Women’s Health Education* (Hien et al., 2009). Among these women, statistically and clinically significant reductions in PTSD symptoms were found over the one-year study follow-up period, but there were no significant differences between treatments. Substance abuse outcomes did not change significantly in either treatment.

Numerous secondary analyses, however, have revealed evidence for superiority of *Seeking Safety* over *Women’s Health Education* in reducing substance use among those who had significant changes in PTSD symptoms and among those who had more severe substance use at baseline (Hien et al., 2010). *Seeking Safety* was also significantly more effective in reducing risky sexual behavior among those at highest risk (Hien et al., 2010). Thus, in addition to PTSD and SUD symptoms, *Seeking Safety* appears to impact other risk behavior outcomes that were not the main focus of the intervention. These findings emphasize the importance of expanding upon primary outcome analyses to examine an array of relevant variables, as well as potential interactions between treatment condition and patient characteristics to understand for which participants and under which conditions trauma-related treatment may work best.

One important area that has yet to be examined is how PTSD–SUD treatments may influence women’s experiences of physical and sexual violence with partners. The current study aims to minimize this gap by focusing on the effect of *Seeking Safety* and *Women’s Health Education* on IPV. Given that *Seeking Safety* is a trauma-integrated treatment that emphasizes the importance of safety and focuses on providing specific skills for participants to assess, manage and avoid high-risk situations, we hypothesize that women receiving this intervention

will report less IPV compared to women receiving the control treatment over the 12-month post-treatment follow-up period. A range of identified risk factors including PTSD symptoms, substance use, lifetime and recent trauma exposure, and living with a substance using person, was also expected to be associated with IPV outcomes and to interact with treatment condition.

2. Method

2.1. Participants

Data for this analysis was derived from the CTN sponsored “Women and Trauma Study” (for additional details see Hien et al., 2009). This multisite trial consisted of seven community-based outpatient treatment programs in diverse locations across the United States. A total of 353 women were recruited via brochures, flyers, and advertisements, as well as through referrals by treatment program staff, and randomized over 21 months in 2004 and 2005. Eligible participants had at least one lifetime traumatic event and met DSM-IV criteria for either full or sub-threshold PTSD in the past 30 days. Sub-threshold PTSD differs from full PTSD in that participants could meet either criterion C (avoidance of trauma reminders and emotional numbing) or criterion D (hyper-arousal), but not both as in the full diagnostic requirement. Participants also had to be between the ages of 18 and 65, have used alcohol or an illicit substance within the prior 6-months, and meet current drug or alcohol abuse/dependence criteria, and be enrolled in the participating treatment program. Women were excluded if they had impaired mental cognition (evaluated using the Mini-Mental Status Exam (Folstein, Folstein, & McHugh, 1975)), significant risk of suicidal/homicidal behavior, history of schizophrenia-spectrum diagnosis, or active psychosis.

2.2. Procedures

Participants completed a brief eligibility screen ($n = 1963$) and initial interview to confirm eligibility ($n = 571$). This was followed by a baseline assessment ($n = 370$) and randomization ($n = 353$) (see Hien et al., 2009 for additional information). Each participant was randomized into one of two 12-session group interventions using one blocked randomization list known only to the study statistician (each site received 60 sealed envelopes with randomization number and treatment assignment). Randomization was stratified by prescription psychotropic medication use and substance use disorder type (alcohol use disorder only versus drug use disorder/drug and alcohol use disorders). Treatment consisted of two 90-minute sessions per week for 6 weeks. Participants completed brief, weekly assessments during treatment to collect substance use and PTSD symptom data and were reassessed at 1-week, 3-, 6-, and 12-month post-treatment.

2.3. Interventions

Seeking Safety Treatment (Najavits, 2002) is a short-term manualized therapy, using cognitive-behavioral strategies to reduce substance use and the negative impact of trauma exposure. Each session is similarly structured beginning with a check on safety and coping, an introduction using a quotation as a point of inspiration, a presentation of the session topic and materials, and a check-out used to reinforce progress and provide feedback. *Seeking Safety* includes basic education on substance use disorders and PTSD, action skills to prevent drug use and control PTSD symptoms, cognitive restructuring with particular attention to maladaptive thoughts associated with substance use and trauma symptoms, relationship issues and developing effective communication skills to build a healthy support network.

Women's Health Education (Miller, Pagan, & Tross, 1998) is a psychoeducational intervention that focuses on general health topics pertinent to women (e.g., female anatomy, human sexual behavior, pregnancy and childbirth, nutrition, and diabetes). The *Women's Health Education* provides equivalent facilitator attention, expectancy of benefit, and issue oriented focus, but does not provide theory driven techniques, such as cognitive behavioral therapy, or psychoeducation specific to substance abuse and PTSD. All sessions have the same structure and include an introduction of the topic, topic presentation using both didactic and interactive styles, participant exercises to facilitate group discussion and goal-setting.

2.4. Training and fidelity

Counselors and supervisors from each site were selected based on 1) willingness to be randomized, and 2) demonstrated ability to deliver a manualized, cognitive behavioral style of therapy based on an audiotaped relapse prevention session. Two counselors and two supervisors per site were randomized to deliver one of the two study interventions. Counselors and supervisors attended a comparable, centralized three-day workshop on their respective interventions; supervisors received an additional half-day of training focused on how to carry out study supervision. Following training, counselors and supervisors were certified in the interventions after successfully completing a training group of at least four sessions. An expert from the lead training team rated the videotaped sessions for adherence to the manual and competency in intervention delivery.

During study implementation, all intervention sessions were videotaped and a proportion of tapes were rated by the supervisors. Counselors also met weekly with supervisors. In order to ensure competency on an ongoing basis, supervisors had weekly conference calls with lead team experts. The lead team experts co-rated a randomly selected quarter of the counselor session tapes reviewed by the supervisor to monitor ratings reliability on adherence measures. Internal consistency and interrater reliability for both interventions were good to excellent (see Hien et al., 2009 for a description of the adherence measures and findings).

2.5. Treatment-as-usual

All study participants were enrolled in one of the participating community-based substance abuse treatment programs and received intensive outpatient treatment-as-usual at the program during the 6-week treatment phase of the study. The treatment orientation of the programs varied, but none of the programs provided trauma-focused treatment to participants during the study. Participants who dropped from their community based treatment program prior to completing the research treatment were removed from the treatment portion of the study but continued with follow-up assessments.

2.6. Measures

2.6.1. Sociodemographics

Basic demographic data, including age and race/ethnicity were collected at the screening assessment. Education (categorized as less than high school, high school equivalent, and greater than high school), employment, marital status, dependence on someone for the majority of economic support, and information about participant living situations were collected at baseline using the *Addiction Severity Index-Lite* (ASI-Lite; McLellan, Alterman, Cacciola, Metzger, & O'Brien, 1992).

2.6.2. Intimate partner violence

IPV was defined as physical violence or sexual assault perpetrated by an intimate partner at any point during the 12-month follow-up period. Participants were asked: “Since our last interview, has anyone

used physical violence (such as being slapped, pushed, hit or punched) or the threat of physical violence against you?" and "Since our last interview, has anyone used sexual violence (forcing you to do anything sexual) or the threat of sexual violence against you?" If the items were endorsed, participants were asked to specify if the perpetrator was a spouse/partner/significant other, other relative, stranger, or other person.

2.6.3. Trauma and PTSD

The *ASI-Lite* was used to assess exposure to physical and sexual assault, as it includes questions about both lifetime abuse and abuse within the thirty days prior to baseline. The *ASI* has repeatedly demonstrated good reliability and internal validity across diverse samples of patients (e.g., McLellan et al., 1985). The *Life Events Checklist (LEC)*, a measure developed at the National Center for Posttraumatic Stress Disorder concurrently with the *Clinician Administered PTSD Scale (CAPS)*, inquires about a range of lifetime traumatic exposures. In this study the *LEC* was used to assess total number of lifetime exposures to traumas other than physical and sexual assault (e.g., natural disasters, transportation accident, combat/exposure to war-zone, life-threatening illness, or injury).

PTSD symptoms were assessed using the *CAPS* (Blake et al., 1995), a structured interview which measures the frequency and intensity of symptoms of PTSD. The scale includes symptoms related to three PTSD domains: re-experiencing, avoidance/numbing, and hyperarousal. The total *CAPS* score is calculated by summing each of the three domain subscale scores. The *CAPS* has excellent psychometric properties including test/re-test reliability and internal consistency (Blake et al., 1995). PTSD symptoms were also measured as a continuous variable via self-report based on the 17-item Post Traumatic Stress Disorder Symptom Scale-Self Report (PSS-SR), an inventory that assesses the frequency and intensity of PTSD symptoms (Foa, Riggs, Dancu, Constance, & Rothbaum, 1993). The PSS-SR has excellent internal consistency and good test/re-test reliability (Foa et al., 1993).

2.6.4. Substance use

The *Substance Use Inventory (SUI)* (Weiss, Hufford, Najavits, & Shaw, 1995) was used to measure the number of days of substance use. It consists of a series of self-report questions about frequency of alcohol, cocaine, heroin, marijuana, sedatives, and stimulants during the prior seven days and is adapted from the *Time Line Follow-Back* measure (Sobell & Sobell, 1992). Biologically confirmed abstinence for drugs of abuse was obtained by use of the SureStep urine drug screen card, a rapid visual immunoassay for the qualitative detection of 10 drug and drug metabolites in human urine. Recent alcohol use was tested using the ALCO-Screen Saliva Alcohol Test, distributed by Jant Pharmacal Corporation that uses a reactive pad to test for blood alcohol content greater than 0.02%. Participants who reported abstinence but were positive on biological measures were considered non-abstinent.

2.7. Statistical methods

Participants reporting IPV during the 12-month follow-up period were compared to participants who did not report IPV during this same period on relevant baseline sociodemographic characteristics, trauma exposure, PTSD symptoms, and substance use. T-tests were used for continuous variables and χ^2 tests for categorical variables.

There were several hypotheses tested. First, it was put forward that those who participated in *Seeking Safety* would be less likely than those who participated in *Women's Health Education* to experience IPV during the 12-month follow-up. Second, relevant risk factors were hypothesized to be associated with more IPV during the 12-month follow-up: a greater number of lifetime traumatic events; either recent or lifetime physical and/or sexual assault; higher PTSD severity; alcohol and/or drug use; and living with a person with

alcohol problems or drug use. Finally, it was hypothesized that there would be significant interactions between risk factors and treatment condition. Thus, the main effects of risk factors and potential interaction between treatment assignment on IPV were tested.

First, the bivariate association of risk factors and outcome was determined using logistic regression and controlling for sociodemographic variables (i.e., age, race/ethnicity, education, employment, marital status, and dependence on someone for economic support). When variables hypothesized to interact with the treatment were significantly associated with the outcome in bivariate analysis and the logistic regression determining main effects, a second logistic regression was conducted to determine whether or not there was a significant interaction between the risk factor and treatment. Next, a second series of logistic regression models were used to examine potential interactions between significant risk factors at the bivariate level and the treatment condition. The final model included all significant interactions and risk factors, controlling for sociodemographic variables. The odds ratio and 95% confidence interval is reported for all analyses using logistic regression. SPSS 16.0 was used to carry out all statistical analysis procedures.

3. Results

3.1. Description of the sample

A description of the total sample recruited for participation in the parent study has been described elsewhere (Hien et al., 2009). The current analysis is limited to the 288 participants (81.6% of total participants randomized) who completed at least one of the four possible follow-up assessments (1-week, 3-, 6-, or 12-month post-treatment). There were no significant differences between those who completed follow-up and those who did not ($n = 65$) in terms of age, race/ethnicity, marital status, education, employment status, receipt of economic support, abstinence from drugs and alcohol, living with someone who uses drugs or alcohol, lifetime or recent exposure to traumatic events, or severity of PTSD. Table 1 presents descriptive baseline data for the sample and differences between subgroups with and without IPV at follow-up. The average age of the sample was 39.3 years, 44% were Caucasian and 37% were African American. Approximately 17% were married and 12% and 14% were either living with someone with an alcohol problem or someone using drugs respectively. More than half were unemployed (55%) and almost half had less than a high school education (41%). Half of the participants received the majority of their economic support from someone else. A summary of lifetime traumatic events revealed an average number of eight to nine events ($M = 8.5$, $SD = 2.8$). Almost all participants reported prior exposure to physical or sexual assault (96%) and one in ten reported physical or sexual assault in the prior 30 days. The average PSS-SR total score was 45.4 ($SD = 15.4$) and *CAPS* total score was 62.2 ($SD = 19.7$), consistent with a severe level of PTSD symptoms (Weathers, Keane, & Davidson, 2001).

3.2. Comparisons between participants reporting IPV and participants not reporting IPV

No significant differences were found between participants who reported IPV and those who did not report IPV during follow-up on demographic characteristics including age, race/ethnicity, marital status, education, employment or economic dependence. Significant differences were observed for participants living with someone with an alcohol problem in that they were more likely to report IPV at follow-up ($\chi^2 = 6.6$, $df = 1$, $p = .01$). Significant differences were also observed on total lifetime exposure to traumatic events, and physical or sexual assault in the last thirty days. Specifically, those who reported a larger number of traumatic events during their lifetime ($M = 9.2$, $SD = 2.9$ vs. $M = 8.3$, $SD = 2.8$) were more likely to report IPV at follow-up ($t = -2.0$, $df = 285$, $p = .04$), as were

Table 1

Baseline characteristics of participants reporting intimate partner violence (IPV) at 12 month follow-up compared to participants reporting no IPV at 12 month follow-up.

Baseline variables	Follow-up sample Total N = 288	IPV	No IPV	t-test (df)/ χ^2
		n = 59	n = 229	
		M (SD)/%		
Age	39.3 (9.3)	39.5 (7.4)	38.6 (9.7)	0.65 (286)
Race/ethnicity				5.6
African American	36.5	49.2	33.2	
Caucasian	44.1	37.3	45.9	
Latina	6.6	3.4	7.4	
Multi-Racial/Other	12.8	10.2	13.5	
Marital status				0.53
Married	17.4	16.9	38.4	
Single	37.5	33.9	44.1	
Divorced/Separated	45.1	49.2	41.9	
Education				0.84
<High school	40.6	35.6	41.9	
High school	32.2	33.9	31.9	
>High school	27.1	30.5	26.2	
Employment status				0.54
Unemployed	54.5	55.9	54.1	
Employed	40.3	37.3	41.0	
Student/retired/disabled	5.2	6.8	4.8	
Receives economic support	50.0	52.5	49.3	0.19
Lives w/person w/alcohol problems	13.5	23.7	10.9	6.6
Lives w/person using drugs	12.2	16.9	10.9	1.6
CAPS total score	62.2 (19.7)	63.4 (19.8)	61.9 (19.7)	0.53 (286)
PSS-SR total score	45.4 (15.4)	46.7 (16.5)	45.0 (15.2)	−0.88 (285)
Traumatic life events	8.5 (2.8)	9.2 (2.8)	8.3 (2.8)	−2.0 (285)
Physical or sexual abuse (lifetime)	95.8	98.3	95.2	1.1
Physical or sexual abuse (prior 30 days)	10.1	16.9	8.3	3.9*
Abstinent from drugs/alcohol	47.6	32.2	51.5	7.0**

CAPS = Clinician Administered Post Traumatic Stress Disorder. PSS-SR = Self Reported Symptoms of Post Traumatic Stress Disorder.

* p < .05.

** p < .01.

those who reported recent (prior 30 days) exposure to physical or sexual assault ($\chi^2 = 3.8$, $df = 1$, $p = .049$). Participants who were abstinent at baseline were less likely to report IPV during the follow-up period ($\chi^2 = 7.0$, $df = 1$, $p = .008$).

3.3. Associations between risk factors and IPV at follow-up

The association between each risk factor and IPV over follow-up was examined (see first column in Table 2). Those who were living with someone with an alcohol problem were more than three times more likely (O.R. = 3.2, 95% C.I. = 1.2–8.4) to report IPV during the 12-month follow-up. Participants who were abstinent from drugs and alcohol at baseline were significantly less likely to report IPV (O.R. = .33, 95% C.I. = .16–.68). Traumatic life events and self-reported physical or sexual assault 30 days prior to baseline approached significance ($p = .05$ and $p = .06$). Treatment condition, living with someone using drugs, and severity of PTSD symptoms (using both the CAPS and PSS-SR) were not associated with IPV over follow-up.

Interactions between living with a person with alcohol problems, abstinence, lifetime traumatic events, and lifetime physical/sexual abuse were then separately tested as interactions with the intervention. One significant interaction was detected between participant abstinence at baseline and treatment condition (see column 2 in Table 2). Those who were abstinent from drugs and alcohol at baseline and were assigned to *Seeking Safety* were less likely to report IPV over the 12 months following treatment (O.R. = .24, 95% C.I. = .06–.96) compared to those assigned to *Seeking Safety* that were actively using at baseline and those who were abstinent and were assigned to *Women's Health Education*.

Table 2 (column 2) also presents the associations of other risk factors adjusted for the interaction between treatment condition and abstinence, risk factors, and sociodemographic variables. Other main effects were consistent with the unadjusted logistic regression

analysis, except recent physical/sexual violence that reached significance in the adjusted model. Participants who reported recent violence were at greater risk of IPV at follow-up (O.R. = 2.7, 95% C.I. = 1.0–7.0) In addition, the main effect of total traumatic life events approached significance in the adjusted model ($p = .06$; O.R. = 1.1, 95% C.I. = 1.0–1.3).

4. Discussion

There is a paucity of research that examines the association and treatment of PTSD–SUD dual diagnosis and IPV. The broad aim of the current study was to integrate these separate lines of research to further understanding of the complex relationship among these variables. Specifically, this study examines if a short-term trauma-focused treatment is superior to a general psychoeducation group in reducing the risk of IPV exposure at follow-up. To inform how PTSD, SUD, and IPV are linked, the study also reports on associations between PTSD–SUD symptoms and IPV over a 12-month follow-up timeframe.

We hypothesized, that given the emphasis on establishing and promoting safety, *Seeking Safety* would be superior to *Women's Health Education* in reducing the risk of IPV over the 1-year study follow-up period. Findings did not support this hypothesis in that no main effect for treatment condition was detected. However, a significant and clinically meaningful interaction was found. Results show that women who were abstinent at baseline were significantly less likely to report IPV during follow-up if they had been assigned to the *Seeking Safety* treatment.

Findings of no main effect suggest that *Seeking Safety's* focus on establishing safety may not be generalizable to all types of unsafe situations or to women with varying levels of substance use. Women who are currently experiencing IPV may also need interventions specifically targeting substance use disorders in a sustained way. This is in line with recommendations made by best practice guidelines

Table 2

Logistic regression model predicting intimate partner violence at 12 month follow-up for participants with at least one follow up assessment (N = 288).

	Main effects	Model adjusted for interactions
	O.R. (95% C.I.)	O.R. (95% C.I.)
Age	.95 (.91–.99)*	.94 (.90–.99)*
Race/ethnicity		
Caucasian (ref)	–	–
African American	2.3 (1.1–4.9)*	2.3 (1.1–5.0)*
Latina	0.39 (.07–2.1)*	0.38 (.07–2.1)
Other	0.85 (.29–2.5)	0.76 (.25–2.3)
Education		
<High school	1.2 (.52–2.6)	1.2 (.51–2.6)
High school	1.1 (.47–2.5)	1.0 (.44–2.4)
>High school (ref)	–	–
Marital Status		
Married (ref)	–	–
Divorced/separated	1.5 (.57–4.0)	1.5 (.56–3.9)
Single	0.82 (.30–2.3)	0.71 (.25–2.0)
Employment Status		
Unemployed (ref)	–	–
Employed	0.92 (.46–1.8)	0.86 (.42–1.7)
Student/retired/disabled	1.2 (.30–4.8)	1.1 (.28–4.6)
Receives economic support		
Yes	1.0 (.52–2.1)	1.1 (.55–2.2)
Lives w/person w/alcohol problems		
Yes	3.2 (1.2–8.4)*	3.1 (1.1–8.4)*
Lives w/person using drugs		
Yes	0.79 (.27–2.3)	0.77 (.26–2.3)
CAPS total score	0.99 (.97–1.0)	0.99 (.97–1.0)
PSS-SR total score	1.0 (.97–1.03)	1.0 (.98–1.0)
Traumatic life events	1.1 (1.0–1.3) ⁺	1.1 (1.0–1.3) ⁺
Physical or sexual abuse (lifetime)		
Yes	3.6 (.37–35.6) ⁺⁺	3.5 (.36–34.3)
Physical or sexual abuse (prior 30 days)		
Yes	2.5 (.95–6.5)	2.7 (1.0–7.0)*
Abstinent from drugs/alcohol		
Yes	0.33 (.16–.68)*	0.16 (.06–.46)*
Treatment condition		
Seeking safety	0.73 (.39–1.4)	0.43 (.19–.98)*
Treatment condition × abstinent from drugs/alcohol	–	0.24 (.06–.96)*

Note. O.R. = Odds Ratio. C.I. = Confidence Interval. CAPS = Clinician Administered Post Traumatic Stress Disorder Scale. PSS-SR = Post Traumatic Stress Disorder Symptom Scale-Self Report.

* p < .05.

⁺ p = .05.

⁺⁺ p = .06.

for the treatment of substance abuse (SAMHSA/CSAT Treatment Improvement Protocols, 1993) stating that substance abuse and domestic violence treatment programs should be attuned to both problems and their interconnection. Competing philosophies and terminologies have challenged the implementation of this recommendation; however both problems need to be prioritized to adequately respond to individuals' specific needs.

The interaction between abstinence and *Seeking Safety* suggests that women who have achieved sobriety may be better able to utilize the strategies contained within the curriculum (e.g., cognitive behavioral coping skills or altering maladaptive thought processes) and apply them to current IPV situations. Thus, women who are not using drugs and alcohol may be better able to recognize and take advantage of options and alternatives. Further, this may suggest that in order for a woman to apply skills from the trauma-focused model that will generalize to IPV exposures, she may need to be at a later stage of recovery or treatment. Viewed in the context of the self-medication model, women who are abstinent at pre-treatment are no longer utilizing substances as a means of coping with distressing PTSD symptoms, which in turn may make them more motivated to learn and practice the coping skills that SS has to offer. This finding of an SS-abstinence interaction has implications for sequencing of treatment for some women dually diagnosed with PTSD-SUD and currently living with abusive partners.

As predicted, several identified baseline risk factors did have an association with IPV outcomes. Participants who reported using

drugs or alcohol and participants living with someone with an alcohol problem at baseline were significantly more likely to report IPV during the 1-year follow-up period. These results are consistent with a large body of literature documenting a strong correlation between IPV and alcohol use by a co-habiting partner or spouse (Leonard & Quigley, 1999; Testa et al., 2003), and studies showing that perpetrator alcohol use appears to be more related to IPV than other substances (Kyriacou et al., 1999).

Participants who reported exposure to physical or sexual assault in the 30 days prior to treatment were more likely to report IPV during the 1-year follow-up period at a trend level. This finding underscores the importance of assessing recent physical/sexual violence in substance abusing women, especially those with trauma histories. Significant associations with IPV outcomes, however, were not detected for lifetime number of traumatic events, lifetime physical/sexual abuse, PTSD symptom severity or living with someone who is using drugs. The number of lifetime traumatic events may not have predicted the IPV outcomes, in part, because the types of events evaluated on the *Life Events Checklist* in this study were primarily non-interpersonal traumas (e.g., transportation accidents, natural disasters). However, lifetime physical/sexual assault also was not associated with current IPV suggesting that recent violence is a better indicator of risk of subsequent IPV in this population.

Surprisingly, there was neither a main effect nor interaction with treatment condition for PTSD symptom severity. In line with prior findings (Najavits et al., 2004), 20% of this sample of multiply

traumatized women dually diagnosed with PTSD and SUD reported IPV over a 1-year period. This compares to annual rates of approximately 3% in general samples of women (Tjaden & Thoennes, 2000). The presence of PTSD and SUD may be the central link to IPV regardless of PTSD severity level.

4.1. Study implications

These study results have important and clinically meaningful implications for tailoring treatments and matching treatments to specific patient characteristics and risk factors. Though *Seeking Safety* did not produce a main effect on IPV, results indicate that this treatment was associated with significantly better IPV outcomes for a subset of patients. Outcomes suggest that individuals with comorbid PTSD–SUD may differentially benefit from integrated interventions that address trauma related symptoms, as well as substance use, in terms of IPV. *Seeking Safety* is likely to be most effective for reducing risk of future IPV for participants who have achieved a period of abstinence. Again, applying skills learned within *Seeking Safety* to situations involving violent partners may require higher functioning and less impaired cognition and decision-making that likely result from drug and alcohol abstinence. IPV is also less likely among women who do not live with a person with alcohol problems and have not experienced recent abuse. Both substance abuse treatment and domestic violence services should adequately assess the multiple issues at play among women experiencing IPV, including partner and living situations, substance use, motivation to seek drug or alcohol treatment, and recent IPV exposure.

4.2. Study strengths and limitations

There are many strengths of the current investigation. Most importantly this is the first study to examine IPV as a treatment outcome in the context of a large-scale randomized intervention trial for women dually diagnosed with PTSD and SUD. This study included a range of well-validated measures across a number of domains relevant to IPV. It also utilized both self-report and interviewer administered assessments and a range of time periods (lifetime, past 30 days). In addition, biological measures were used to verify self-reported substance use.

Various limitations, however, suggest the need to interpret results cautiously. First causality cannot be assumed. Specifically, we cannot speak of the impact that treatment had on IPV outcomes per se, but rather focus on the correlational nature of findings. Also, a baseline measure of IPV was lacking. Though we were able to evaluate both recent and lifetime exposure to interpersonal violence, measures used at pretreatment did not specify perpetrator type. Additionally, since the substance use variable in this analysis was dichotomized as abstinent or not abstinent, it is unclear whether recent reductions in substance use for those still using may have also led to greater benefits from *Seeking Safety* in terms of subsequent IPV exposure. This has implications for harm reduction versus abstinence-based models of treatment. Future research should include continuous measures of alcohol and drug use. Finally, results may not be generalizable to populations of women not currently in treatment for substance use disorders or to populations not willing to participate in treatment research. Despite these limitations, this study provides an important contribution and also indicates potential areas for future research.

4.3. Conclusions

The current study underscores the need for further research to evaluate both PTSD–SUD and IPV domains, as it is likely that more integrated treatment of SUD, PTSD, and IPV is necessary to successfully interrupt the cycle of victimization in this comorbid population. This study also further illustrates the importance of assessing how cognitive-behavioral treatment may impact a range of outcomes

associated with PTSD–SUD and of conducting analyses that move beyond only a primary outcome focus to examine potentially meaningful interactions. Future research is needed to examine IPV in dually diagnosed populations, as well as how treatments can be most effective across a range of outcomes, including alternative PTSD–SUD treatments. Further exploration of various pathways among substance use, PTSD symptoms and IPV, including potential mediating factors (e.g., motivation for and expectancies of using substances) could provide useful information in terms of targeting and sequencing interventions.

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Contributors

All authors contributed to the design of the study and discussion of results. Cohen managed the literature review, introduction and method sections. Field undertook the statistical analysis and presentation of the results. All authors contributed to and have approved the final manuscript.

Conflict of interest

All authors declare that they have no conflicts of interest.

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