



Published in final edited form as:

J Subst Abuse Treat. 2011 September ; 41(2): 186–192. doi:10.1016/j.jsat.2011.02.012.

Baseline Functioning among Individuals with PTSD and Alcohol Dependence

Michelle L. Drapkin, Ph.D.^{2,3}, David Yusko, Psy.D.¹, Carly Yasinski, B.A.¹, David Oslin, M.D.^{2,3}, Elizabeth A. Hembree, Ph.D.¹, and Edna B. Foa, Ph.D.¹

¹Center for the Treatment and Study of Anxiety University of Pennsylvania School of Medicine, 3440 Market Street, Suite 370, Philadelphia, PA 19104

²Centers for Studies of Addiction University of Pennsylvania School of Medicine, 3440 Market Street, Suite 370, Philadelphia, PA 19104

³Philadelphia VAMC University of Pennsylvania School of Medicine, 3440 Market Street, Suite 370, Philadelphia, PA 19104

Abstract

Comorbid PTSD and alcohol dependence (AD) may lead to a complicated and potentially severe treatment profile. Our study examined 167 individuals with both PTSD and AD compared to 105 individuals with PTSD without an AUD and 240 individuals with AD without PTSD on baseline psychosocial functioning. We hypothesized that PTSD/AD individuals would be more socially and functionally impaired than individuals with one disorder. Results indicated that PTSD/AD participants were more likely to be unemployed, have less education, report less income, and less likely to live with a partner than the single disorder participants. However, they did not differ on symptom severity within these disorders (drinking frequency/quantity, PTSD and anxiety symptoms) with the exception of depression and alcohol craving. This contradicts clinical lore that comorbid patients are more impaired at treatment initiation and adds support for concurrent treatment as not only feasible, but possibly ideal for these patients.

There is substantial evidence supporting the association between post-traumatic stress disorder (PTSD) and alcohol use disorders. Between 75 and 80% of Americans experience one or more traumatic events in their lifetime and up to 7% of Americans will at some point develop PTSD. Estimates of lifetime prevalence rates for alcohol dependence (AD) in the U.S. range from 5.4 to 12.5%. PTSD and AUD frequently co-occur with between 30-50% of individuals with an AUD also diagnosed with PTSD. Furthermore, an average of 40% of clinical populations who seek treatment for substance use disorders (SUDs) also meet criteria for PTSD.

Despite the high co-occurrence between PTSD and AUDs, our understanding of how the comorbidity affects individuals is limited. Treatment studies are one potential source of such information about patients with comorbid PTSD and AUDs; however, many randomized

Corresponding author: Dr. Michelle Drapkin, 3440 Market Street, Suite 370, Philadelphia, PA 19104; office phone: 215.746.2098; fax: 215.746.7733; drapkin_m@mail.trc.upenn.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Parts of this paper were presented at the Annual Meeting of the Research Society on Alcoholism in Washington, DC in June 2008 and reported in Riggs, Rukstalis, Volpicelli, Kalmanson, & Foa (2003).

control trials (RCTs) for PTSD have used concurrent AUDs as an exclusion criteria. Similarly, large-scale treatment studies of alcohol dependence such as the COMBINE study or Project MATCH have not specifically explored those participants with comorbid PTSD and AD.

Given that, there is a substantial gap in the research literature on the characteristics of treatment seekers with comorbidity of PTSD and AD. The limited available data suggest that the combination of these two disorders results in a worse overall psychosocial profile than either disorder alone. Studies on patients with PTSD and SUDs more generally have found these participants to be more severe in their psychopathology and substance use at baseline than SUDs-only participants. For example, researchers have found that comorbid PTSD/SUDs individuals have higher amounts of depression than SUDs-only individuals. In addition, others have found that individuals with comorbid PTSD/SUDs reported significantly higher levels of anxiety and anxiety sensitivity than individuals with PTSD but without a comorbid SUD. Read, Brown, and Kahler found that patients who received inpatient substance abuse treatment, who also had PTSD, reported more years of problem substance use at baseline, were more likely to meet DSM-IV criteria for a separate mood or anxiety disorder, and reported more re-experiencing symptoms than those without the comorbidity. Lastly, in regards to social adjustment, individuals with comorbid PTSD/AD have been found to have more interpersonal problems than those with only PTSD or AD alone.

In summary, the limited available data indicate that comorbid PTSD/SUDs may lead to a more complicated and potentially more severe treatment profile for a person presenting with just one disorder alone. Since most research in this area has focused on PTSD in combination with the broader category of SUDs, more data are needed to examine individuals with comorbid PTSD and AD specifically. Such information will help us determine whether these patients can be treated in the same manner as PTSD or AD only patients, or if an integrated treatment approach is warranted.

The Current Study

The current study sought to examine the psychosocial functioning among patients with comorbid PTSD/AD and those who have each disorder alone. We examined data from three RCTs with similar recruitment strategies which all included medication combined with a psychosocial intervention. We selected variables that would capture the psychosocial and clinical functioning of these individuals. We hypothesized that at baseline:

1. Comorbid patients would have less indicators of positive social adjustment, as measured by employment status, education level, income, and living arrangement.
2. Comorbid patients would have higher levels of PTSD, depression, and anxiety than PTSD only patients.
3. Comorbid patients would have a higher percentage of drinking days, heavy drinking days, a higher number of drinks per drinking day, more negative consequences of drinking, and higher levels of craving than AD only patients.

Method

Participants

Participants were 167 individuals seeking treatment for comorbid PTSD/AD ; 105 individuals seeking treatment for PTSD ; and 240 individuals seeking treatment for AD alone. Participants were recruited from the community by referrals and advertisements placed in local newspapers and ranged in age from 19 to 81. Demographics for each

subsample are listed in Table 1. Both the PTSD/AD and the AD only treatment studies were conducted at the University of Pennsylvania in Philadelphia, Pennsylvania. The PTSD only study was a multisite study and had recruitment sites at the University of Pennsylvania, Duke University in Durham, North Carolina, and Emory University in Atlanta, Georgia. All studies were approved by the Institutional Review Board at the University of Pennsylvania. In addition, the PTSD only study was approved at the Institutional Review Boards at Emory University and Duke University.

Inclusion criteria—All participants had to be at least 18 years of age. For the PTSD/AD and PTSD only study, participants had to meet criteria for chronic PTSD (i.e., DSM-IV criteria for PTSD for three months or longer). For the PTSD/AD and AD-only study, participants also had to meet DSM-IV criteria for AD.

Exclusion criteria—Patients from all studies were excluded if they had a history of a bipolar or psychotic disorder. Patients in the AD only study were excluded if they had PTSD. Patients in the PTSD only sample were excluded if they had an active alcohol or substance use disorder. As each of the sub-samples were recruited for a study that was investigating the combination of a medication and psychotherapy, each study had exclusions related to contraindications for the respective medications – the PTSD-only study excluded participants who had formerly failed a trial of sertraline or had any contraindications for sertraline treatment; the PTSD/AD and AD-only studies excluded participants who had any other current substance use disorder diagnosis or who were medically contraindicated to take naltrexone (i.e., had hepatitis or elevated bilirubin or were pregnant or nursing).

Measures

Structured Clinical Interview for DSM-IV (SCID)—The SCID is a semi-structured interview designed to assess DSM-IV Axis I disorders. In the most rigorous evaluation to date of the test-retest reliability of the SCID, kappas of .61 for current diagnoses and .68 for lifetime diagnoses were obtained. The SCID was used to assess lifetime alcohol and drug use disorders.

Timeline Follow-Back Interview—The TLFB is a widely used and accepted interview that employs a calendar method and other memory aids to assess both when an individual drinks/uses drugs and how much he/she consumes. The TLFB has been found to have high test-retest reliability as well as high correlations with both collateral reports and biological markers of use. The TLFB was used to assess daily intake of alcohol at baseline for the PTSD/AD and AD only participants. These data were not available for the PTSD-only patients. From the TLFB, we calculated three variables: percent days drank in the past 90 days (PDD), percent heavy days drank in the past 90 days (PHD; i.e., number of days participants drank more than 5 drinks), and drinks per drinking day (DDD).

Drinkers Inventory of Consequences—The DrInC is a 50-item self-assessment that assesses interpersonal, physical, social, impulsive, and intrapersonal consequences of alcohol abuse. For this study, we calculated a total score, which is an indication of overall adverse consequences.

Penn Alcohol Cravings Scale—The PACS is a brief self-report measure that includes five items assessing frequency, intensity, and duration of craving, the ability to resist drinking, and overall rating of craving for alcohol during the prior seven days. Each item ranges from 0 to 6. Flannery and colleagues (1999) found that the PACS had high internal consistency ($\alpha = .91$). They also showed that cravings reported early in treatment (weeks 1-2) predicted relapse to drinking during later weeks (weeks 3-12).

PTSD Symptom Scale, Interview Version (PSS-I)—The PSS-I is a 20-minute, 17-item clinical interview that evaluates DSM-IV PTSD symptoms on a frequency/severity scale. The interview yields a full scale score and subscales for each of the three PTSD symptom clusters. Its items are scored between 0 and 3. Psychometric studies revealed Chronbach's α of .91 for the full scale, and .78, .80, .82 for the re-experiencing, avoidance and arousal clusters. One-month test-retest reliability was .80. Inter-rater reliability was excellent ($\kappa = .91$ [diagnosis] and $r = .97$ [symptom severity]). The interview is highly correlated with depression and anxiety and is sensitive to treatment effects. The PSS-I was only administered in the PTSD/AD sample but was compared to the Structured Interview for PTSD utilized in the PTSD only sample (see below for further description). We used the full scale PSSI-I score in this study.

Structured Interview for PTSD—(SIP) is a 17-item interview that evaluates DSM-IV PTSD symptoms and yields a total score. Its items are nearly identical to the PSS-I but scored between 0 and 4. The SIP was administered in the PTSD only sample. However, because of its similarity to the PSS-I in both content and length, we were able to compare across the two scales by rescaling the SIP item scores to a 0 to 3 scale to reflect the difference in scoring. We used the total rescaled SIP score in this study.

Beck Depression Inventory II—(BDI-II) is a 21-item self-report measure of depressive symptoms. The coefficient alpha for adults has been reported as .92, indicating high reliability for this measure.

State-Trait Anxiety Inventory—(STAI) is a 10-minute, 40-item inventory that evaluates anxiety at the time the questionnaire is completed, as well as the enduring tendency to experience anxiety. Test-retest reliability for trait anxiety is .81. As expected, figures are lower for state anxiety (.40). Internal consistencies range from .83 to .92. This measure was administered in the PTSD only and PTSD/AD samples.

Data analytic plan

In cases where we were able to compare across all three samples and data were continuous (i.e., age and depression), we first examined omnibus ANOVAs to determine if there were any main effects and then performed follow-up Bonferroni tests to determine which groups were different. For some variables, we were comparing only two groups and therefore did not need follow-up tests (i.e., alcohol and anxiety variables). In all the other cases, data were categorical or dichotomous and we performed chi-square analyses to determine if observed values for each subgroup differed from the theoretically expected values. If the omnibus chi-square was significant, we then performed follow-up chi-square analyses comparing the PTSD/AD group to the single diagnosis groups separately.

Results

Baseline demographic and social adjustment

We examined four indicators of baseline social adjustment: employment status, education level, income, and living arrangement (see Table 1). These preliminary analyses demonstrated that well over half (62%) of the PTSD/AD sample was unemployed or disabled with only 35% employed full- or part-time. About half (49%) of the PTSD/AD sample had a high school education or less but only about 16% completed a college degree program. A significant portion of the PTSD/AD sample (19%) reported an income of less than \$10,000 a year and only 29% were living with a partner in a stable relationship. The omnibus chi-square analyses indicated that the three samples were significantly different on all four variables: post-hoc analyses revealed that, compared to the PTSD only sample,

fewer PTSD/AD participants were employed, $\chi^2(2) = 25.17, p < .001$, fewer had a college education, $\chi^2(2) = 29.16, p < .001$, more had less income, $\chi^2(2) = 29.795, p < .001$, and fewer were living with a partner, $\chi^2(6) = 29.71, p < .001$. The PTSD/AD sample differed from the AD only sample on three of the four variables: the PTSD/AD sample was less often employed, $\chi^2(2) = 111.52, p < .001$, had less education, $\chi^2(2) = 11.39, p < .001$, and fewer were living with a partner, $\chi^2(6) = 76.09, p < .001$. However, participants in the AD only sample were more likely to earn incomes less than \$10,000 a year, $\chi^2(2) = 29.95, p < .001$.

Mixed results emerged for examination of symptom severity among the three samples. See Table 2 for a summary of the findings. Race and gender were included as covariates in all analyses as the samples were significantly different on these variables. The PTSD/AD sample did not differ from the AD only sample on reported alcohol consumption – they were not statistically different on % drinking days, % heavy drinking days, or drinks per drinking days. Furthermore, the two samples reported similar amounts of negative consequences for drinking on the DrInc (29.89 (10.81) for the PTSD/AD sample compared to 28.39 (9.08) for the AD only sample). The PTSD/AD sample did have higher scores on the PACS measure of craving (18.12 (7.13) and 16.44 (8.23), respectively). The PTSD only and PTSD/AD samples did not differ on reported PTSD symptoms or levels of state anxiety. The one area where we did see a significant difference among the groups was related to depression. The PTSD/AD sample reported significantly higher levels of depression than both the other samples.

Discussion

In this study we examined the baseline psychosocial functioning of a group of individuals with co-occurring post-traumatic stress disorder (PTSD) and alcohol dependence (AD) compared to groups with only one of the disorders alone. Our findings showed that participants who presented with comorbid PTSD and AD appeared to suffer from a more complicated presentation of psychosocial symptoms as compared to those who had only one disorder. PTSD/AD participants were more likely to be unemployed, have less education, report less income, and be less likely to live with a partner. On the other hand, in contrast to what we hypothesized, the PTSD/AD patients did not differ from the single disorder groups on PTSD and AD symptom severity. They drank about the same quantity and with the same frequency as the AD only group and reported similar levels of consequences of drinking, as well as similar levels of PTSD and anxiety symptoms. The one finding that was consistent with the literature was that the PTSD/AD group had higher levels of self-reported depression symptoms than the two other samples. The PTSD/AD group also reported moderately higher levels of craving for alcohol at baseline.

These findings were surprising given that participants seeking treatment for a comorbid condition were not more symptomatic, with the exception of depression and craving, when compared to participants who are presenting for treatment with one disorder. Nonetheless, the significant psychosocial differences could have an impact on treatment outcomes and be part of the explanation for why PTSD/SUDs patients have worse treatment outcomes. More research is needed to better understand what factors could be influencing this prior finding of poorer treatment outcomes in the comorbid samples since it does not appear related to baseline symptoms severity. Of additional interest, data from prior research using a portion of the PTSD/AD sample used in this study suggested that participants who received treatment for both PTSD and AD simultaneously did not have a higher dropout rate than participants who were treated for the AD first. Furthermore, although we found that the PTSD/AD sample had higher levels of depression than the single disorder samples, prior research has shown that is not likely to interfere with PTSD treatment. Exposure-based interventions such as prolonged exposure therapy may be an especially good fit for

individuals, as those interventions involve behavioral activation and have been shown to be effective in reducing depression.

The higher levels of craving for alcohol reported by the PTSD/AD group as compared to the AD only group is an interesting finding given that the groups were not significantly different on reported levels of drinking frequency nor intensity. It is possible that PTSD symptoms and/or higher levels of depression present in the comorbid sample are responsible for the increased cravings. Others have found a similar relationship between PTSD and reported cravings.

Taken together, these findings contradict clinical lore that comorbid patients are more severely impaired when they present for treatment and could add additional support to a growing body of literature demonstrating that concurrent treatment for PTSD/SUDs is a viable treatment for these patients. There are several well-done RCTs that have already demonstrated that concurrent treatment for PTSD/SUDs performs at least as well as treatments that just focus on the SUD. This developing area of research should encourage treatment centers to treat both disorders simultaneously instead of the common practice of requiring substance abstinence before addressing trauma-related symptoms. While more research is needed before strong conclusions can be made, the available data are supportive of a comprehensive treatment plan for these comorbid individuals. An approach that fully addresses the biopsychosocial needs of patients at the beginning of treatment could be most effective.

We acknowledge limitations in this research such as we did not analyze all possible psychosocial variables. Additionally, examining three samples from varied recruiting sites further limits our results. Although we attempted to statistically control for them, the gender and racial differences among the samples could partially explain our findings. The PTSD only group consisted of almost two-thirds women while the other two groups were only one-third. Women would likely have a different set of traumas and coping behaviours than men, which could have influenced our findings. Furthermore, the PTSD/AD group had less than one-third white participants while the other two groups were over 70%. The demographic differences with the PTSD/AD sample are possibly related as the comorbid group had a significantly higher proportion of ethnic minorities. Although racial differences in PTSD have been unfounded, racial differences in the alcohol treatment research have indicated that there are different drinking patterns in black populations which could partially explain the differences we found in craving. Further research into these issues is warranted. An additional analytical limitation was the need to re-scale the SIP from the PTSD only sample in order to be able to compare them to the PSS-I scores in the PTSD/AD sample. Although unlikely, the null findings of PTSD severity when comparing these two groups could have been related to this adjustment. In sum, while individuals with co-morbid AD and PTSD may have a more complicated presentation, it remains possible to treat both disorders simultaneously and effectively.

Acknowledgments

The PTSD/AD and AD only studies were supported by grants from the National Institute on Alcohol Abuse and Alcoholism (RO1 AA012428 and R01 AA00751, respectively). The PTSD only study was funded by an unrestricted educational grant from Pfizer, Inc..

References

- Back SE, Jackson JL, Sonne SC, Brady KT. Alcohol dependence and posttraumatic stress disorder: Differences in clinical presentation and response to cognitive-behavioral therapy by order of onset. *Journal of Substance Abuse and Treatment*. 2005; 29:29–37.

- Beck, AT.; Steer, RA.; Brown, GK. Manual for Beck Depression Inventory II (BDI-II). Psychology Corporation; San Antonio, TX: 1996.
- Bonin MF, Norton GR, Asmundson GJ, Dicurzio S, Pidlubney S. Drinking away the hurt: The nature and prevalence of PTSD in substance abuse patients attending a community-based treatment program. *Journal of Behavior Therapy and Experimental Psychiatry*. 2003; 31:55–66. [PubMed: 10983747]
- Brady K, Dansky B, Back S, Foa E, Carroll K. Exposure therapy in the treatment of PTSD among cocaine-dependent individuals: Preliminary findings. *Journal of Substance Abuse Treatment*. 2001; 21(1):47–54. [PubMed: 11516926]
- Brown PJ, Recupero PR, Stout R. PTSD substance abuse comorbidity and treatment utilization. *Addictive Behaviors*. 1995; 20:251–254. [PubMed: 7484319]
- Caetano R, Clark CL, Tam T. Alcohol consumption among racial/ethnic minorities. *Alcohol Health and Research World*. 1998; 22(4):233–241. [PubMed: 15706749]
- COMBINE Study Research Group. Anton RF, O'Malley S, Ciraulo DA, Cisler RA, Couper DJ, et al. Combined pharmacotherapies and behavioral interventions for alcohol dependence: The COMBINE study: A randomized controlled trial. *JAMA*. 2006; 295:2003–2017. [PubMed: 16670409]
- Davidson JR, Malik MA, Travers J. The structured interview for PTSD (SIP): Psychometric validation for DSM-IV criteria. *Depression and Anxiety*. 1997; 5:127–129. [PubMed: 9323452]
- Fals-Stewart W, O'Farrell TJ, Freitas TT, McFarlin SK, Rutigliano P. The Timeline Followback reports of psychoactive substance use by drug-abusing patients: Psychometric properties. *Journal of Consulting and Clinical Psychology*. 2000; 68(1):134–144. [PubMed: 10710848]
- First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition. (SCID-I/P). Biometrics Research, New York State Psychiatric Institute; New York: 2002.
- Flannery B, Volpicelli JR, Pettinati H. Psychometric properties of the Penn Alcohol Craving Scale. *Alcoholism: Clinical & Experimental Research*. 1999; 23(8):1289–1295.
- Foa EB, Hembree EA, Cahill SP, Rauch SA, Riggs DS, Feeny NC, et al. Randomized trial of prolonged exposure for posttraumatic stress disorder with and without cognitive restructuring: outcome at academic and community clinics. *J Consult Clin Psychol*. 2005; 73(5):953–964. [PubMed: 16287395]
- Foa EB, Riggs DS, Dancu CV, Rothbaum B. Reliability and validity of a brief instrument for assessing post-traumatic stress disorder. *Journal of Traumatic Stress*. 1993; 6:459–473.
- Foa EB, Tolin DF. Comparison of the PTSD Symptom Scale–Interview Version and the Clinician-Administered PTSD Scale. *Journal of Traumatic Stress*. 2000; 13:181–191. [PubMed: 10838669]
- Foa EB, Williams MT. Methodology of a randomized double-blind clinical trial for comorbid posttraumatic stress disorder and alcohol dependence. *Mental Health and Substance Use: dual diagnosis*. 2010; 3(2):131–147.
- Hagenaars M, van Minnen A, Hoogduin K. The impact of dissociation and depression on the efficacy of prolonged exposure treatment for PTSD. *Behaviour Research and Therapy*. 2010; 48(1):19–27. [PubMed: 19766987]
- Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*. 2005; 62:593–602. [PubMed: 15939837]
- Miller, W.; Tonigan, J.; Longabaugh, R. The Drinker Inventory of Consequences (DrInC): An instrument for assessing adverse consequences of alcohol abuse. Vol. 4. U.S. Government Printing Office; Washington, D.C: 1995.
- Mills K, Teeson M, Ross J, Peters L. Trauma, PTSD, and substance use disorders: Findings from the Australian National Survey of Mental Health and Well-being. *American Journal of Psychiatry*. 2006; 163:651–658.
- Najavits LM, Gasfriend DR, Barber J, Reif S, Muenz LR, Blaine J, et al. Cocaine dependence with and without posttraumatic stress disorder in the NIDA Cocaine Collaborative Study. *American Journal of Psychiatry*. 1998; 155:214–219. [PubMed: 9464200]

- Oslin DW, Lynch K, Pettinati H, Kampman K, Gariti P, Gelfand L, et al. A placebo controlled randomized clinical trial of naltrexone in the context of different levels of psychosocial intervention. *Alcoholism: Clinical and Experimental Research*. 2008; 32(7):1299–1308.
- Ouimette PC, Goodwin E, Brown PJ. Health and well being of substance use disorder patients with and without posttraumatic stress disorder. *Addictive Behaviors*. 2006; 31:1415–1423A. [PubMed: 16380217]
- Ouimette PC, Read JP, Brown PJ. Consistency of retrospective reports of DSM-IV Criterion A traumatic stressors among substance use disorder patients. *Journal of Traumatic Stress*. 2005; 18:43–51. [PubMed: 16281195]
- Powers MB, Halpern JM, Ferenschak MP, Gillihan SJ, Foa EB. A meta-analytic review of prolonged exposure for posttraumatic stress disorder. *Clinical Psychology Review*. 2010; 30(6):635–641. [PubMed: 20546985]
- Project Match Research Group. Matching alcoholism treatments to client heterogeneity: Project MATCH Posttreatment drinking outcomes. *Journal of Studies on Alcohol*. 1997; 58:7–29. [PubMed: 8979210]
- Rash CJ, Coffey SF, Baschnagel JS, Drobles DJ, Saladin ME. Psychometric properties of the IES-R in traumatized substance dependent individuals with and without PTSD. *Addictive Behaviors*. 2008; 33:1039–1047. [PubMed: 18501524]
- Read JP, Brown P, Kahler CW. Substance abuse and posttraumatic stress disorders: Symptom interplay and effects on outcome. *Addictive Behaviors*. 2004; 29:2665–2672.
- Resick PA, Galovski TE, Uhlmansiek MO, Scher CD, Clum GA, Young-Xu Y. A randomized clinical trial to dismantle components of cognitive processing therapy for posttraumatic stress disorder in female victims of interpersonal violence. *Journal of Consulting & Clinical Psychology*. 2008; 76:243–258. [PubMed: 18377121]
- Reynolds M, Mezey G, Chapman M, Wheeler M, Drummond C, Baldacchino A. Co-morbid posttraumatic stress disorder in a substance misusing clinical population. *Drug and Alcohol Dependence*. 2005; 77(3):251–260. [PubMed: 15734225]
- Rosenheck R, Fontana A. Race and outcome of treatment for veterans suffering from PTSD. *Journal of Traumatic Stress*. 1996; 9(2):343–351. [PubMed: 8731552]
- Rothbaum BO, Cahill SP, Foa EB, Davidson JR, Compton J, Connor KM, et al. Augmentation of sertraline with prolonged exposure in the treatment of posttraumatic stress disorder. *Journal of Traumatic Stress*. 2006; 19(5):625–638. [PubMed: 17075912]
- Saladin M, Drobles D, Coffey S, Dansky B, Brady K, Kilpatrick D. PTSD symptom severity as a predictor of cue-elicited drug craving in victims of violent crime. *Addictive Behaviors*. 2003; 28(9):1611–1629. [PubMed: 14656549]
- Schneier FR, Foose TE, Hasin D, Heimberg RG, Lui SM, Grant BF, et al. Social anxiety disorder and alcohol use disorder co-morbidity in the National Epidemiologic Survey on alcohol and related conditions. *Psychological Medicine*. 2010; 40:977–988. [PubMed: 20441690]
- Sledjeski EM, Speisman B, Dierker LC. Does number of lifetime traumas explain the relationship between PTSD and chronic medical conditions? Answers from the National Comorbidity Survey-Replication (NCS-R). *Journal of Behavioral Medicine*. 2008; 31:347–334.
- Sobell LC, Brown J, Leo GI, Sobell MB. The reliability of the Alcohol Timeline Followback when administered by telephone and by computer. *Drug and Alcohol Dependence*. 1996; 42(1):49–54. [PubMed: 8889403]
- Sobell LC, Sobell MB, Litten Raye Z, Allen John P. Measuring alcohol consumption: Psychosocial and biochemical methods. Timeline follow-back: A technique for assessing self-reported alcohol consumption. 1992:1992
- Spielberger, CD.; Gorsuch, RL.; Lushene, RE. Manual for the State-Trait Anxiety Inventory (Self-Evaluation Questionnaire). Consulting Psychologists Press; Palo Alto, CA: 1970.
- Williams JB, Gibbon M, First MB, Spitzer RL, Davies M, Borus J, et al. The Structured Clinical Interview for DSM-III-R (SCIO): II. Multisite test-retest reliability. *Archives of General Psychiatry*. 1992; 49:630–636. [PubMed: 1637253]

Yusko, D.; Marinchak, J.; Foa, EB.; Riggs, DS.; Volpicelli, J. Predicting dropout from treatment targeting co-morbid PTSD and alcohol dependence; Paper presented at the Research Society on Alcoholism; 2007.

Table 1

Demographic and social adjustment characteristics of the samples

	PTSD/AD	AD only	PTSD only	Full sample
Age [Mean (SD)]	42.60 (9.79) ¹	43.69 (10.79)	39.64 (10.46)	42.55 (10.49)
Gender (% female)	34.7	27.1	63.9	F (2, 504) = 5.27, p = .005 36.7 ²
Race (% white)	29.9	72.9	70.5	χ^2 (2) = 40.71, p = .000 58.4 ² χ^2 (2) = 82.80, p = .000
Employment (%):				
Full- or part-time	34.9	84.9	53.3	61.5
Student	3.0	2.2	11.4	4.4
Unemployed	51.2	7.6	28.6	26.6
Disabled/Retired	10.8	5.3	6.7	7.5
				χ^2 (6) = 127.60, p = .000
Education (%):				
High school or less	49.1	41.9	21.9	40.5
Some college	35.3	28.0	35.4	31.9
Bachelors or greater	15.6	30.1	42.7	27.7
				χ^2 (4) = 30.73, p = .000
Income (%):				
< \$10,000/year	19.4	44.8	6.3	29.2
\$10,000 - \$30,000/year	51.6	32.6	30.5	38.2
> \$30,000/year	29.0	22.6	63.2	32.5
				χ^2 (4) = 87.90, p = .000
Living arrangements (%):				
Alone	29.7	17.8	23.7	23.0
With partner and/or children	28.5	60.4	58.8	49.3
With relatives or friends	41.8	21.8	17.5	27.7
				χ^2 (4) = 46.18, p = .000

¹ Follow-up Bonferroni show that PTSD only participants were significantly younger than the AD only participants, who did not differ in age from the PTSD/AD participants.

Table 2Baseline symptom severity¹

	PTSD/AD	AD only	PTSD only	
Alcohol use:			N/A	
% drinking days	74.67 (25.23)	71.65 (27.45)		F (1, 403) = 1.88, p = .171
% heavy drinking days	67.38 (30.18)	64.31 (29.84)		F (1, 403) = 1.98, p = .160
Drinks per drinking day	13.37 (8.78)	12.36 (7.68)		F (1, 403) = 0.45, p = .833
Consequences of drinking (DrInc)	29.89 (10.81)	28.39 (9.08)	N/A	F (1, 285) = 3.15, p = .077
Cravings to drink (PACS)	18.12 (7.12)	16.44 (8.23)	N/A	F (1, 365) = 7.00, p = .005
PTSD symptoms (PSS-I for PTSD/AD sample; SIP for PTSD only sample)	28.38 (8.26)	N/A	26.70 (7.05)	F (1, 251) = 0.23, p = .881
Depression (BDI)	26.48 (11.41)	20.23 (10.31)	21.82 (9.47)	F (2, 475) = 13.27, p = .000 ²
State Anxiety (STAI-S)	51.43 (12.93)	N/A	55.62 (11.76)	F (1, 232) = 0.29, p = .593

¹Controlling for race and gender

²Follow-up Bonferroni show that PTSD/AD only participants were significantly more depressed than the AD only and PTSD only participants, who did not differ in depression from one another.