Published in final edited form as:

J Trauma Stress. 2014 October ; 27(5): 550–557. doi:10.1002/jts.21960.

Probable Posttraumatic Stress Disorder and Women's Use of Aggression in Intimate Relationships: The Moderating Role of Alcohol Dependence

Nicole H. Weiss, Aaron A. Duke, and Tami P. Sullivan

Department of Psychiatry, Yale University School of Medicine, New Haven, Connecticut, USA

Abstract

Posttraumatic stress disorder (PTSD) is highly prevalent among individuals who experience intimate partner violence (IPV) and associated with aggression in intimate relationships. The present study examined whether alcohol dependence (AD) attenuates the relation between PTSD and IPV-victimized women's use of physical, psychological, and sexual aggression. Participants were recruited from the community and included 147 women who engage in substance use and experience IPV [80.3% Black; *M* age = 38.2 years (*SD* = 10.6); *M* income = \$14,323 (*SD* = \$12,832)]. Women with (vs. without) AD reported using significantly more physical and psychological aggression ($\eta_p^2 = .12$ and $.03$, respectively). The probable PTSD $\times$ AD interaction emerged as a significant correlate of physical and sexual aggression (η_p^2 s = $.03$). Post-hoc analyses revealed higher levels of physical aggression among women with probable PTSD and AD and no-PTSD and AD compared to women with probable PTSD and no-AD (Cohen's *ds* = 1.09 and 0.63, respectively) and women with no-PTSD and no-AD (Cohen's *ds* = 0.92 and 0.60, respectively). Further, women with PTSD and AD reported higher levels of sexual aggression than women with no-PTSD and AD (Cohen's *d* = 0.80). Findings suggest the utility of identifying and treating PTSD-AD among IPV-victimized women.

Intimate partner violence (IPV) is an international public health concern associated with substantial physical, psychological, economic, and societal costs. Troubling numbers of both men and women act aggressively towards their intimate partners (Archer, 2000, 2002); however, a paucity of studies have explored factors associated with IPV-victimized women's use of intimate partner aggression. Given their exposure to violence, it is not surprising that some studies have found IPV-victimized women to exhibit high rates of intimate partner aggression. Magdol et al. (1997) reported that IPV-victimized (vs. -non-victimized) women are 10 times more likely to use intimate partner aggression. Likewise, meta-analytic reviews highlight the bidirectional nature of intimate partner aggression (Archer, 2000, 2002), such that victimization is highly correlated with aggressive behavior for both women and men. Although victimization is the strongest correlate of women's use of aggression against their intimate partners, it does not fully account for all of the variability in their use of aggression in intimate relationships. For example, Caldwell, Swan,

Allen, Sullivan, and Snow (2009) highlight four motives for women's use of aggression in intimate relationships in addition to self-defense (i.e., expression of negative emotions, control, jealousy, and "tough guise" [e.g., to intimidate or scare]). Indeed, all five motives identified by Caldwell et al. (2009) were significant correlates of women's physical aggression (i.e., expression of emotions, control, and tough guise related to women's psychological aggression, whereas tough-guise motives related to women's sexual aggression). As such, research is needed to examine additional risk factors for IPV-victimized women's use of aggression (while accounting for women's victimization). Such examinations may elucidate important targets for reducing aggression among IPV-victimized women.

Posttraumatic stress disorder (PTSD) may be one factor influencing IPV-victimized women's use of aggression. Heightened lifetime prevalence rates of 31%-84% have been detected among IPV-victimized women (Golding, 1999), and aggressive behavior is one criterion for PTSD in the Diagnostic and Statistical Manual of Mental Disorders – 5 (DSM-5; APA, 2013). Although a substantial body of research, however, provides support for the role of PTSD in men's use of aggression (see Taft, Watkins, Stafford, Street, & Monson, 2011 for a meta-analytic review), a relative dearth of research has explored the PTSD-aggression relation in women (Kirby et al., 2012; Swan, Gambone, Fields, Sullivan, & Snow, 2005; Taft, Monson, Hebenstreit, King, & King, 2009). Notably, these investigations have detected inconsistent findings. Kirby et al. (2012) found significantly higher levels of intimate partner aggression among women with (vs. without) PTSD, hypothesizing that anger and irritability (and difficulty modulating these symptoms) underlie the PTSD-aggression relation among women. Consistent with this assertion, results of Swan et al. (2005) provide support for the mediating role of anger in women's PTSD symptoms and their use of intimate partner aggression. Conversely, results of Taft et al. (2009) provide support for the role of PTSD in male, but not female, veteran's use of intimate partner aggression. These authors suggested that lower levels of warzone traumatic exposure, severe aggression, and psychopathology (and substance use disorders in particular) among women (vs. men) may have accounted for gender differences in the PTSD-aggression relation. These equivocal findings highlight the need for additional research to better understand the relation between PTSD and women's aggression.

One factor that may clarify the relation between PTSD and IPV-victimized women's use of aggression is alcohol dependence (AD). PTSD and AD frequently co-occur (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), and individuals with (vs. without) an AD diagnosis report higher rates of PTSD (Stewart, 1996). Further, IPV is associated with increased alcohol use (Testa, Livingston, & Leonard, 2003) and AD in particular (Golding, 1999). Consistent with the alcohol myopia model (Giancola, Josephs, Parrott, & Duke, 2010; Steele & Josephs, 1990), alcohol intoxication may impair behavioral inhibition (Fillmore, 2003), facilitating aggressive behavior (Bushman & Cooper, 1990). According to this model, impairments in cognitive processing during alcohol intoxication create a narrowing effect on attention, restricting the perception and processing of environmental cues to those that are most salient. As such, alcohol intoxication may facilitate aggression by narrowing attention to immediate versus long-term consequences within specific contexts, particularly hostile environments (Giancola, Duke, & Ritz, 2011).

Consistent with this theoretical literature, AD is significantly positively correlated with the occurrence, frequency, and severity of women's use of aggression (Schafer, Caetano, & Cunradi, 2004; Schumm, O'Farrell, Murphy, & Fals-Stewart, 2009; Stuart et al., 2006). Stuart et al. (2006) examined risk factors for aggression among women arrested for using IPV, finding that alcohol problems contributed directly to physical aggression and indirectly to psychological aggression. Moreover, these authors identified distal factors related to women's alcohol use problems and aggression; antisociality related to alcohol problems and trait anger, which in turn related to women's psychological aggression in their intimate relationships, and partner aggression and partner alcohol problems related to relationship discord and women's aggression. In a second study, Schafer et al. (2004) found that childhood abuse was related to women's use of aggression through alcohol problems and impulsivity, and alcohol problems had a significantly stronger effect on aggression among African American (vs. White and Latina) women. Lastly, one study found that a year after treatment for AD, women who successfully abstained from using alcohol reported significantly lower levels of intimate partner aggression than women who relapsed (Schumm et al., 2009). These initial results suggest that AD may influence the strength and direction of the relation between PTSD and women's aggression.

Given the aforementioned findings, the goal of the present study was to examine the moderating role of AD in the relation between probable PTSD and women's use of physical, psychological, and sexual aggression. First, we sought to replicate findings of an association between intimate partner aggression and both probable PTSD and AD within a sample of women recruited from the community who use substances and experience IPV. Consistent with past literature, we hypothesized that probable PTSD and AD would be associated with greater aggression. Next, we examined the moderating role of AD in the relation between probable PTSD and women's use of aggression. Given evidence of greater aggression among individuals with co-occurring mental health and substance use disorders (Boles & Johnson, 2001), we hypothesized that the main effects of probable PTSD and AD would be qualified by a significant interaction between probable PTSD and AD. Specifically, we expected the highest levels of aggression to be found among women with co-occurring probable PTSD and AD.

Of note, in examining the aforementioned relations, we utilized the Conflict Tactics Scale – 2 (Straus, Hamby, & Warren, 2003), the most widely used measure of intimate partner aggression and victimization (Archer, 2000, 2002). Importantly, debate exists regarding the utility of this measure in assessing women's use of aggression (see Morse, 1995 for a review). One of the primary concerns is that the Conflict Tactics Scale – 2 does not assess contextual factors relevant to women's use of aggression (e.g., initiation of aggression, motivation for aggression, history of past aggression). For instance, women often use aggression to defend themselves against their male partners (Caldwell et al., 2009; Saunders, 1986). Further, women who experience male-to-female IPV are more likely to suffer physical injuries and utilize of medical, mental health, and justice system services to address IPV-related concerns than men who experience female-to-male IPV (Archer, 2000). As such, in interpreting the findings of the current study, it is important to note these important gender discrepancies.

Method

Participants and Procedures

Data were collected as part of a larger study examining the efficacy and comparability of different methods of daily reporting among IPV-victimized women (Sullivan, McPartland, Armeli, Jaquier, & Tennen, 2012). All procedures were reviewed and approved by Yale University's Institutional Review Board. Participants were recruited from an urban community in the Northeastern United States. Flyers were posted in local businesses, selected state/public agencies, primary care clinics, and emergency departments, and stated, "Do you have a boyfriend or a husband? Earn up to \$270 by participating in a study about your relationship and how you cope." Eligibility was determined via a phone screen. The primary inclusion criteria required women to have experienced at least one act of physical victimization within the past 30 days by a current male partner and used alcohol or drugs at least once during that same period. Additional inclusion criteria were: (a) age 18 or older and (b) current intimate relationship of at least six months duration with current contact at least twice a week. Exclusion criteria were (a) inpatient psychiatric hospitalization within the last year, and (b) current residence in a shelter/group home (determined a priori because structured living environments affect women's use of alcohol and drugs).

In this study, 1,120 women were screened for inclusion, 198 of who qualified to participate. Fifty-one of the eligible women declined participation in the larger study at the time of the phone screen or did not attend their scheduled interview. The final sample was comprised of 147 women who ranged in age from 18 to 57 years ($M = 38.24$, $SD = 10.62$). In terms of racial/ethnic background, 80.3% of participants self-identified as Black, 9.5% as White, 6.1% as Latina, 2% as Native American, and 2.1% as another or multiple racial/ethnic backgrounds. Most women were unemployed for over a month prior to the study (58.5%), with a mean annual household income of \$14,322.95 ($SD = \$12,831.90$). The mean level of education was 11.95 years ($SD = 1.31$) and 77.6% completed a high school degree or higher. Fourteen (9.5%) women were married, though over half (59.2%) were living with their partner or saw him on a daily basis ($M = 6.37$ days a week, $SD = 1.25$). Mean years in the current relationship was 6.53 years (ranging from 6 months to 27 years; $SD = 6.03$ years).

Participants in the final sample completed a semi-structured, computer-assisted interview administered by trained master- or doctoral-level female research associates or postdoctoral fellows in private offices to protect participants' safety and confidentiality. After completion of the interview, participants were debriefed, remunerated \$45, and provided with a list of community resources.

Measures

The Traumatic Events Questionnaire (Vrana & Lauterbach, 1994) is an 11-item self-report measure that assesses exposure to potentially traumatic events. This measure was used in the present study to identify participant's index traumatic event (i.e., victimization stemming from experiences with a current or past male partner).

The Posttraumatic Diagnostic Scale (Foa, Cashman, Jaycox, & Perry, 1997) and PTSD Checklist (Weathers, Litz, Herman, Huska, & Keane, 1993) were administered to assess for

the presence of IPV-related PTSD. Participants were categorized as meeting diagnostic criteria for probable PTSD (1) or not meeting criteria (0). The Posttraumatic Diagnostic Scale was used to assess PTSD symptoms stemming from experiences involving a current partner. The PTSD Checklist assessed experiences involving a previous partner and was only administered to participants who endorsed victimization by a previous partner as most traumatic. A referent time period of 3 months was used to assess women's PTSD symptoms. These measures have high levels of agreement with structured diagnostic interviews (Blake et al., 1990; Foa et al., 1997). For the Posttraumatic Diagnostic Scale, a diagnosis of probable PTSD was based on the presence of a Criterion A traumatic event; endorsement of at least one reexperiencing symptom, three avoidance/numbing symptoms, and two hyperarousal symptoms; duration of at least 1 month; and impairment in at least two areas of functioning. For the PTSD Checklist, a score of 44 was considered reflective of a PTSD diagnosis (see Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). Internal consistency was excellent for the Posttraumatic Diagnostic Scale ($\alpha = .90$) and the PTSD Checklist ($\alpha = .94$).

The Structured Clinical Interview for DSM-IV Axis I Disorders (First, Spitzer, Gibbon, & Williams, 1996) was used to assess for current AD. Interviews were administered by master- or doctoral-level female research associates or postdoctoral fellows trained to reliability by the principal investigator. All interviews were reviewed by a PhD level clinician, with diagnoses confirmed in consensus meetings.

Psychological and physical victimization and aggression were measured with the 78-item Revised Conflict Tactics Scale (Straus et al., 2003). Sexual victimization and aggression were measured with the 10-item Sexual Experiences Survey (Koss & Oros, 1982). A referent time period of three months was used to assess women's aggression and victimization. Consistent with scoring procedures outlined in Straus et al. (2003), responses were recoded to the midpoint of the range of scores and included: 0 = *never*, 1 = *once in the past 3 months*, 2 = *twice in the past 3 months*, 3 = *3-4 times in the past 3 months*, 4 = *5-8 times in the past 3 months*, 5 = *9-15 times in the past 3 months*, 6 = *16-25 times in the past 3 months*, and 7 = *not in the past 3 months but it happened before*. Category 7 was recoded as 0 to limit the assessment to occurrences in the past 3 months. Severity scores were calculated by summing the respective responses; Cronbach's $\alpha = .91$ and $.87$ for the 12 physical victimization and aggression items, respectively; Cronbach's $\alpha = .62$ and $.51$ for the eight psychological victimization and aggression items, respectively; and Cronbach's $\alpha = .77$ and $.60$ for 10 sexual victimization and aggression, respectively.

Data Analysis

Study variables were assessed for assumptions of normality. As recommended by Tabachnick and Fidell (2007), variables were transformed to produce normal distributions. Physical victimization and aggression severity scores were log₁₀ transformed to correct excessive skew. Consistent with past research (e.g., Gidycz et al., 2007), sexual victimization and aggression were recoded into an ordinal variable (0 = *no victimization/perpetration*, 1 = *sexual contact or coercion*, and 2 = *attempted rape or rape*). Transformed scores were used in all statistical analyses. There were no missing data.

First, analyses were conducted to examine the impact of demographic factors (i.e., age, education, race, income) and IPV victimization on women's use of physical, psychological, and sexual aggression. Next, three 2 (probable PTSD vs. no-PTSD) $\times$ 2 (AD vs. no-AD) analyses of covariance were conducted to test the main and interactive effects of probable PTSD and AD on women's use of physical, psychological, and sexual aggression with women's victimization included in the model. Post-hoc pairwise comparisons were conducted when a significant interaction was found.

Results

One-fourth (25.2%) of women in our sample met criteria for probable PTSD ($n = 37$). Among women meeting criteria for probable PTSD, 73.0% ($n = 27$) endorsed victimization experiences with a current partner as most traumatic. A total of 55 women (37.4%) met criteria for current AD. Rates of AD were not found to differ as a function of PTSD (35.1% of women with probable PTSD vs. 38.2% of women with no-PTSD; $\chi^2 = 0.11, p = .740$). Means and standard deviations of all study variables, as well as between-group differences in physical, psychological, and sexual aggression, are presented in Table 1.

We examined whether IPV victimization and aggression were correlated. Significant associations were detected between corresponding experiences of physical ($r = .93, p < .001$), psychological ($r = .70, p < .001$), and sexual ($r = .50, p < .001$) victimization and aggression. Thus, subsequent models included women's intimate partner victimization. In the present study, all women used and were victimized by psychological IPV. The majority of women reported using ($n = 143, 97.3\%$) and being victimized ($n = 147, 100\%$) by physical IPV. Finally, 80 women (55.2%) reported using sexual aggression and 98 women (68.5%) reported being victimized by sexual IPV. Demographic variables were not significantly correlated with outcome variables and thus, were not included in these analyses.

To test the primary study aims, we first conducted a 2 (probable PTSD vs. no-PTSD) $\times$ 2 (AD vs. no-AD) analysis of covariance to explore the main and interactive effects of probable PTSD and AD on women's physical aggression with women's victimization included in the model (see Table 1). A significant main effect was detected for AD on women's physical aggression, such that women with (vs. without) AD used more physical aggression. Further, a significant probable PTSD $\times$ AD interaction was detected (see Figure 1). Post-hoc pairwise comparisons revealed that women with probable PTSD and AD used significantly more physical aggression than women with probable PTSD and no-AD, $t(35) = 3.22, p = .003$, Cohen's $d = 1.09$, and women with no-PTSD and no-AD, $t(79) = 4.11, p < .001$, Cohen's $d = 0.92$. Further, women with no-PTSD and AD used significantly more physical aggression than women with probable PTSD and no-AD, $t(64) = 2.50, p = .015$, Cohen's $d = 0.63$, and women with no-PTSD and no-AD, $t(108) = 3.10, p = .003$, Cohen's $d = 0.60$. All other post-hoc comparisons were nonsignificant.

Next, we tested the main and interactive effects of probable PTSD and AD on women's psychological aggression with women's victimization included in the model (see Table 1). A

significant main effect was detected for AD, such that women with (vs. without) AD used more psychological aggression. All other main and interaction effects were nonsignificant.

Following this, we examined the main and interactive effects of probable PTSD and AD on women's sexual aggression with women's victimization included in the model (see Table 1). Results revealed a significant probable PTSD $\times$ AD interaction effect on women's sexual aggression (see Figure 2). Post-hoc pairwise comparisons found that women with probable PTSD and AD used significantly more sexual aggression than women with no-PTSD and AD $t(49) = 2.79, p = .008$, Cohen's $d = 0.80$. All other post-hoc comparisons were nonsignificant.

Finally, given strong intercorrelations among women's experiences of aggression and victimization, and consistent with recommendations set forth by Miller and Chapman (2001), we reran all analyses excluding women's victimization to determine the whether the strength and the direction of aforementioned relations remained the same. In general, findings did not change, with two exceptions: probable PTSD was significantly associated with women's sexual aggression, $F(1, 141) = 4.05, p < .05, \eta_p^2 = .03$, and the interaction between probable PTSD and AD was nonsignificant for physical aggression, $F(1, 147) = 2.49, p > .05, \eta_p^2 = .02$.

Discussion

Extant literature highlights the role of PTSD in an array of risky behaviors (Cavanaugh, Hansen, & Sullivan, 2010; Sullivan, Ashare, Jaquier, & Tennen, 2012); however, research on the role of PTSD in women's use of aggression in intimate relationships has detected equivocal findings (Kirby et al., 2012; Swan et al., 2005; Taft et al., 2009). The current study sought to clarify the extant research on PTSD and women's use of aggression by examining the moderating role of AD in a sample of women recruited from the community who use substances and experience IPV. AD was associated with more physical and psychological aggression. Although physical, psychological, and sexual aggression were not found to vary as a function of probable PTSD, a significant probable PTSD $\times$ AD interaction was detected for physical and sexual aggression. Post-hoc comparisons revealed a trend suggesting that the highest levels of physical and sexual aggression were exhibited by women with probable PTSD and AD. These findings provide preliminary support for the moderating role of AD in the relation between probable PTSD and intimate partner aggression among IPV-victimized women.

Notably, probable PTSD alone did not demonstrate a significant association with women's use of physical, psychological, or sexual aggression. Although extant literature highlights the role of PTSD in intimate partner aggression, this research has been limited by its narrow focus on male aggression. Importantly, there is some evidence to suggest that the presence of PTSD among women may be less likely to manifest in physical aggression. For example, heterogeneity in the expression of posttraumatic reactions has been found across men and women, with women experiencing greater internalizing (i.e., high negative emotionality and low positive emotionality) relative to externalizing trauma-related psychopathology (i.e., low constraint and impulsivity; Miller & Resick, 2007). Our findings suggest that

externalizing behavior such as aggression in intimate relationships among women with PTSD may be driven by AD.

As such, AD may be an important factor in identifying and subsequently treating IPV-victimized women's use of aggression. Although a dearth of treatments exist that target AD among IPV-victimized women, findings from pilot studies are promising. For example, Relapse Prevention and Relationship Safety (RPRS; Gilbert et al., 2006) demonstrated trend-level effects for substance use (e.g., binge drinking), and IPV-victimized women were significantly less likely to experience physical and psychological victimization at 3-month follow-up (factors that are highly correlated with women's use of aggression; Archer, 2000). Likewise, findings of Schumm et al. (2009) indicate that women who have AD and use intimate partner aggression may benefit from Behavioral Couples Therapy (O'Farrell & Fals-Stewart, 2013). Indeed, women and men who successfully abstain from alcohol following Behavioral Couples Therapy report significant reductions in their use of intimate partner aggression (O'Farrell & Murphy, 1995; Schumm et al., 2009). Although preliminary, these findings support future investigation of treatments targeting a decrease in alcohol use, such as RPRS and Behavioral Couples Therapy, in reducing IPV-victimized women's use of aggression. Directly targeting women's aggression may also decrease their risk for victimization in certain situations (because women's aggression and victimization are highly correlated; Archer, 2000, 2002).

Notably, women's victimization demonstrated the strongest associations with their use of aggression. Thus, it is likely that women's use of aggression, at many times, was motivated by self-defense. Women are significantly more likely than men to use aggression to defend themselves (Barnett, Lee, & Thelen, 1997). For example, Saunders (1986) found that 31% of women who had used minor physical aggression were motivated by self-defense, compared with retaliation (23%) or first strike (11%) motivations. In fact, compared with men, women are more likely to report injuries and severe injuries, seek medical care for abuse-related injuries (Archer, 2000) and experience fear in the context of victimization (Jacobson et al., 1994). Given these findings, future investigations are needed to examine whether the effects of PTSD and AD vary as a function of motivations for aggression (e.g., self-defense vs. first strike).

Lastly, the present study extends extant research by simultaneously examining victimization by—and perpetration of—physical, psychological, and sexual violence. Despite evidence to suggest that women use sexual aggression in their intimate relationships (Teten, Sherman, & Han, 2009), relatively few studies have examined factors that contribute to women's use of sexual aggression. Notably, extant studies have detected differential patterns for women's use of sexual aggression compared with their use of physical and psychological aggression. For example, Teten, Sherman, et al. (2009) found higher levels of physical and psychological (but not sexual) aggression among men and women reporting mutual aggression. Likewise, whereas physical, psychological, and sexual aggression frequently co-occur among men (e.g., Sullivan et al., 2012), one study found that coercive sexual behavior was rarely used by physically aggressive women (Hogben & Waterman, 2000). Given evidence both within the present study and the extant literature for greater use of sexual aggression among individuals with co-occurring mental health problems (Teten,

Schumacher, Bailey, & Kent, 2009), it is possible that sexual aggression represents a more dysfunctional form of intimate partner aggression associated with considerable psychiatric comorbidity.

Although findings of the present study add to the growing body of research on probable PTSD, AD, and aggression among IPV-victimized women, limitations are noteworthy. First, the cross-sectional and correlational nature of the data precludes determination of the precise nature and direction of the relationships of interest. Future studies should address this concern through prospective, longitudinal investigations. Second, although the sample included participants who reported PTSD symptom severity within the clinical range, we did not assess for PTSD diagnoses using a standardized clinical interview. Nonetheless, it is important to note that the Posttraumatic Diagnostic Scale and PTSD Checklist demonstrate high levels of agreement with structured diagnostic interviews, and the mean Posttraumatic Diagnostic Scale (26.7) and PTSD Checklist (56.7) scores for the probable PTSD group were well above the civilian cutoff scores (15 and 44, respectively) for a diagnosis of PTSD (Blanchard et al., 1996; Sheeran & Zimmerman, 2002). Third, this study relied on women's self-report of victimization and aggression, which may have been influenced by their willingness and/or ability to report accurately (particularly given the potential stigma associated with IPV and the fact that this behavior may have occurred in the context of substance use). Fourth, results do not speak to the extent to which findings are unique to IPV-victimized women. Future studies are needed to examine the extent to which the interrelations of PTSD, AD, and aggression differ as a function of victimization. Likewise, although our focus on IPV-victimized women is a strength of this study, our findings cannot be assumed to generalize to non-IPV-victimized women and aggression in general and require replication across larger, more diverse samples.

Despite limitations, findings of this study improve our understanding of the role of probable PTSD and AD in IPV-victimized women's use of physical, sexual, and psychological aggression. Specifically, results provide support for the relevance of AD in psychological aggression, and co-occurring probable PTSD and AD in physical and sexual aggression. Given evidence of heightened rates of AD and PTSD among IPV-victimized women (Golding, 1999), assessment of IPV-victimized women for AD and PTSD may help identify victimized women who are most likely to use intimate partner aggression. Further, our study's results highlight the need to investigate the efficacy of treatments targeting both AD and PTSD in reducing women's victimization and aggression.

Acknowledgments

The research described here was supported, in part, by grants from the National Institutes of Health (K23 DA019561; T32 DA019426) and the University of Connecticut General Clinical Research Center (M01 RR06192).

References

- Archer J. Sex differences in aggression between heterosexual partners: A meta-analytic review. *Psychological Bulletin*. 2000; 126:651–680.10.1037/0033-2909.126.5.651 [PubMed: 10989615]
- Archer J. Sex differences in physically aggressive acts between heterosexual partners: A meta-analytic review. *Aggression and Violent Behavior*. 2002; 7:313–351.10.1016/S1359-1789(01)00061-1

- Barnett OW, Lee CY, Thelen RE. Gender differences in attributions of self-defense and control in interpartner aggression. *Violence Against Women*. 1997; 3:462–481.10.1177/1077801297003005002 [PubMed: 12322014]
- Blake, DD.; Weathers, FW.; Nagy, LM.; Kaloupek, D.; Klauminzer, G.; Charney, DS.; Keane, TM. *The Clinician Administered PTSD Scale*. Boston: National Center for PTSD - Behavioral Science Division; 1990.
- Blanchard EB, Jones-Alexander J, Buckley TC, Forneris CA. Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy*. 1996; 34:669–673.10.1016/0005-7967(96)00033-2 [PubMed: 8870294]
- Bushman BJ, Cooper HM. Effects of alcohol on human aggression: An integrative research review. *Psychological Bulletin*. 1990; 107:341–354.10.1037/0033-2909.107.3.341 [PubMed: 2140902]
- Caldwell JE, Swan SC, Allen CT, Sullivan TP, Snow DL. Why I Hit Him: Women's Reasons for Intimate Partner Violence. *J Aggress Maltreat Trauma*. 2009; 18(7):672–69.10.1080/10926770903231783 [PubMed: 21072136]
- Cavanaugh CE, Hansen NB, Sullivan TP. HIV sexual risk behavior among low-income women experiencing intimate partner violence: The role of posttraumatic stress disorder. *AIDS and Behavior*. 2010; 14:318–327.10.1007/s10461-009-9623-1 [PubMed: 19856093]
- Fillmore MT. Drug abuse as a problem of impaired control: Current approaches and findings. *Behavioral and Cognitive Neuroscience Reviews*. 2003; 2:179–197.10.1177/1534582303257007 [PubMed: 15006292]
- First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. *Structured clinical interview for DSM-IV Axis I disorders – patient edition*. New York State Psychiatric Institute; New York, NY: 1996.
- Foa EB, Cashman L, Jaycox L, Perry K. The validation of a self-report measure of posttraumatic stress disorder: The Posttraumatic Diagnostic Scale. *Psychological Assessment*. 1997; 9:445–451.10.1037/1040-3590.9.4.445
- Giancola PR, Duke AA, Ritz KZ. Alcohol, violence, and the alcohol myopia model: Preliminary findings and implications for prevention. *Addictive Behaviors*. 2011; 36:1019–1022.10.1016/j.addbeh.2011.05.006 [PubMed: 21665371]
- Giancola PR, Josephs RA, Parrott DJ, Duke AA. Alcohol myopia revisited clarifying aggression and other acts of disinhibition through a distorted lens. *Perspectives on Psychological Science*. 2010; 5:265–278.10.1177/1745691610369467
- Gidycz CA, Loh C, Lobo T, Rich C, Lynn SJ, Pashdag J. Reciprocal relationships among alcohol use, risk perception, and sexual victimization: A prospective analysis. *Journal of American College Health*. 2007; 56:5–14.10.3200/JACH.56.1.5-14 [PubMed: 17711820]
- Gilbert L, El-Bassel N, Manuel J, Wu E, Go H, Golder S, Sanders G, et al. An integrated relapse prevention and relationship safety intervention for women on methadone: Testing short-term effects on intimate partner violence and substance use. *Violence and Victims*. 2006; 21:657–672.10.1891/0886-6708.21.5.657 [PubMed: 17022356]
- Golding JM. Intimate partner violence as a risk factor for mental disorders: A meta-analysis. *Journal of Family Violence*. 1999; 14:99–132.10.1023/A:1022079418229
- Hogben M, Waterman CK. Patterns of conflict resolution within relationships and coercive sexual behavior of men and women. *Sex Roles*. 2000; 43:341–357.10.1023/A:1026647326238
- Jacobson NS, Gottman JM, Waltz J, Rushe R, Babcock J, Holtzworth-Munroe A. Affect, verbal content, and psychophysiology in the arguments of couples with a violent husband. *Journal of Consulting and Clinical Psychology*. 1994; 62:982–988.10.1037/0022-006X.62.5.982 [PubMed: 7806730]
- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry*. 1995; 52:1048–1060.10.1001/archpsyc.1995.03950240066012 [PubMed: 7492257]
- Kirby AC, Beckham JC, Roberts ST, Taft CT, Elbogen EB, Dennis MF, Calhoun PS. An examination of general aggression and intimate partner violence in women with posttraumatic stress disorder. *Violence and Victims*. 2012; 27:777–792.10.1891/0886-6708.27.5.777 [PubMed: 23155726]

- Koss MP, Oros CJ. Sexual Experiences Survey: A research instrument investigating sexual aggression and victimization. *Journal of Consulting and Clinical Psychology*. 1982; 50:455–457.10.1037/0022-006X.50.3.455 [PubMed: 7096751]
- Magdol L, Moffitt TE, Caspi A, Newman DL, Fagan J, Silva P. Gender differences in partner violence in a birth cohort of 21-year-olds: Bridging the gap between clinical and epidemiological approaches. *Journal of Consulting and Clinical Psychology*. 1997; 65:68–78.10.1037/0022-006X.65.1.68 [PubMed: 9103736]
- Miller GA, Chapman JP. Misunderstanding analysis of covariance. *Journal of Abnormal Psychology*. 2001; 110:40–48.10.1037/0021-843X.110.1.40 [PubMed: 11261398]
- Miller MW, Resick PA. Internalizing and externalizing subtypes in female sexual assault survivors: Implications for the understanding of complex PTSD. *Behavior Therapy*. 2007; 38:58–71.10.1016/j.beth.2006.04.003 [PubMed: 17292695]
- Morse BJ. Beyond the Conflict Tactics Scale: Assessing gender differences in partner violence. *Violence and Victims*. 1995; 10:251–272. [PubMed: 8703839]
- O'Farrell, TJ.; Fals-Stewart, W. Behavioral couples therapy for alcoholism and drug abuse. New York, NY: Guilford Press; 2013.
- Saunders DG. When battered women use violence: Husband-abuse or self-defense? *Violence and Victims*. 1986; 1:47–60. [PubMed: 3154140]
- Schafer J, Caetano R, Cunradi CB. A path model of risk factors for intimate partner violence among couples in the United States. *Journal of Interpersonal Violence*. 2004; 19:127–14.10.1177/0886260503260244 [PubMed: 15005998]
- Schumm JA, O'Farrell TJ, Murphy CM, Fals-Stewart W. Partner violence before and after couples-based alcoholism treatment for female alcoholic patients. *Journal of Consulting and Clinical Psychology*. 2009; 77:1136–1146.10.1037/a0017389 [PubMed: 19968389]
- Sheeran T, Zimmerman M. Screening for posttraumatic stress disorder in a general psychiatric outpatient setting. *Journal of Consulting and Clinical Psychology*. 2002; 70:961–966.10.1037/0022-006X.70.4.961 [PubMed: 12182279]
- Steele CM, Josephs RA. Alcohol myopia: Its prized and dangerous effects. *American Psychologist*. 1990; 45:921–933.10.1037/0003-066X.45.8.921 [PubMed: 2221564]
- Stewart SH. Alcohol abuse in individuals exposed to trauma: A critical review. *Psychological Bulletin*. 1996; 120:83–112.10.1037/0033-2909.120.1.83 [PubMed: 8711018]
- Straus, MA.; Hamby, SL.; Warren, WL. The conflict tactics scales handbook. Los Angeles, CA: Western Psychological Services; 2003.
- Streiner DL. Being inconsistent about consistency: When coefficient alpha does and doesn't matter. *Journal of Personality Assessment*. 2003; 80:217–222.10.1207/S15327752JPA8003_01 [PubMed: 12763696]
- Stuart GL, Meehan JC, Moore TM, Morean M, Hellmuth J, Follansbee K. Examining a conceptual framework of intimate partner violence in men and women arrested for domestic violence. *Journal of Studies on Alcohol and Drugs*. 2006; 67:102–112.
- Sullivan TP, Ashare RL, Jaquier V, Tennen H. Risk factors for alcohol-related problems among victims of partner violence. *Substance Use & Misuse*. 2012; 47:673–685. [PubMed: 22360665]
- Sullivan TP, McPartland TS, Armeli S, Jaquier V, Tennen H. Is it the exception or the rule? Daily co-occurrence of physical, sexual, and psychological partner violence in a 90-day study of substance-using, community women. *Psychology of Violence*. 2012; 2:154–164.10.1037/a0027106
- Swan SC, Gambone LJ, Fields AM, Sullivan TP, Snow DL. Women who use violence in intimate relationships: the role of anger, victimization, and symptoms of posttraumatic stress and depression. *Violence Vict*. 2005; 20(3):267–285. [PubMed: 16180367]
- Tabachnick, BG.; Fidell, LS. Using multivariate statistic. New York, NY: Harper Collins; 2007.
- Taft CT, Monson CM, Hebenstreit CL, King DW, King LA. Examining the correlates of aggression among male and female Vietnam veterans. *Violence and Victims*. 2009; 24:639–652.10.1891/0886-6708.24.5.639 [PubMed: 19852404]
- Taft CT, Watkins LE, Stafford J, Street AE, Monson CM. Posttraumatic stress disorder and intimate relationship problems: A meta-analysis. *Journal of Consulting and Clinical Psychology*. 2011; 79:22–33.10.1037/a0022196 [PubMed: 21261431]

- Testa M, Livingston JA, Leonard KE. Women's substance use and experiences of intimate partner violence: A longitudinal investigation among a community sample. *Addictive Behaviors*. 2003; 28:1649–1664.10.1016/j.addbeh.2003.08.040 [PubMed: 14656551]
- Teten AL, Schumacher JA, Bailey SD, Kent TA. Male-to-female sexual aggression among Iraq, Afghanistan, and Vietnam veterans: Co-occurring substance abuse and intimate partner aggression. *Journal of Traumatic Stress*. 2009; 22:307–311.10.1002/jts.20422 [PubMed: 19588515]
- Teten AL, Sherman MD, Han X. Violence between therapy-seeking veterans and their partners: Prevalence and characteristics of nonviolent, mutually violent, and one-sided violent couples. *Journal of Interpersonal Violence*. 2009; 24:111–127.10.1177/0886260508315782 [PubMed: 18378807]
- Vrana S, Lauterbach D. Prevalence of traumatic events and post-traumatic psychological symptoms in a nonclinical sample of college students. *Journal of Traumatic Stress*. 1994; 7:289–302.10.1002/jts.2490070209 [PubMed: 8012748]
- Weathers, FW.; Litz, BT.; Herman, DS.; Huska, JA.; Keane, TM. The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility; Paper presented at the International Society for Traumatic Stress Studies; 1993.

Figure 1.

Probable PTSD by AD interaction for physical aggression (including physical victimization in the model). PTSD = posttraumatic stress disorder. AD = alcohol dependence. Participants were assigned to one of four groups: No-PTSD/No-AD ($n = 68$), No-PTSD/AD ($n = 42$), Probable PTSD/No-AD ($n = 24$), and Probable PTSD/AD ($n = 13$).

Figure 2.

Probable PTSD by AD interaction for sexual aggression (including sexual victimization in the model). PTSD = posttraumatic stress disorder. AD = alcohol dependence. Participants were assigned to one of four groups: No-PTSD/No-AD ($n = 66$), No-PTSD/AD ($n = 39$), Probable PTSD/No-AD ($n = 24$), and Probable PTSD/AD ($n = 12$).

Table 1
The Main and Interactive Effects of Probable PTSD and AD on Women's Use of Aggression with Victimization in the Model

	Probable PTSD Status				AD Status		Victimization		Probable PTSD × AD	
	PTSD (n = 37)	No PTSD (n = 110)	η^2	M (SD)	AD (n = 55)	No AD (n = 92)	η^2	M (SD)	η^2	η^2
Physical Aggression ^a	30.78 (46.55)	21.48 (31.85)	.02	39.53 (44.26)	14.43 (26.45)	.12***	.21***	.03*		
Psychological Aggression ^b	62.32 (52.44)	54.17 (40.13)	.01	74.42 (48.65)	45.35 (36.22)	.03*	.42***	.01		
Sexual Aggression ^c	6.08 (15.20)	3.62 (8.31)	.02	6.65 (13.74)	2.89 (7.91)	.01	.04*	.03*		

Note.

PTSD = posttraumatic stress disorder. AD = alcohol dependence.

^aCorresponding experiences of physical, psychological, and sexual victimization. Means and standard deviations calculated using non-transformed values. Analyses of covariance were calculated using transformed values.

* $p < .05$.

*** $p < .001$.