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Posttraumatic Stress Disorder Symptom Clusters and Perpetration of Intimate Partner Violence: Findings from a U.S. Nationally Representative Sample

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Abstract

Associations between posttraumatic stress disorder (PTSD) and perpetration of intimate partner violence (IPV) have not been extensively studied in nonveteran samples. Secondary analysis was conducted using a nationally representative U.S. sample and limited to those who reported being in a relationship in the past year ($N = 25,652$). This sample was mostly white (72.0%), the majority had completed high school/GED (87.8%), about half were female (49.2%), and the mean age was 46.44 ($SD = 15.92$). We hypothesized that a diagnosis of PTSD in the past year would be associated with greater perpetration of IPV and that the arousal/reactivity and intrusion symptom clusters would evidence the strongest associations with IPV. Consistent with expectations, a PTSD diagnosis in the past year was associated with greater perpetration of IPV ($OR = 2.07$; 95% CI [1.89, 2.26]). Among those with a PTSD diagnosis in the past year ($n = 1,742$), arousal/reactivity symptom cluster scores were associated with greater perpetration of IPV for both men and women (*adjusted OR* = 1.27; 95% CI [1.11, 1.44]), intrusion symptom cluster scores were associated with perpetration of IPV for men only (*adjusted OR* = 1.56; 95% CI [1.20, 2.04]), whereas negative cognitions/mood symptom cluster scores were only significant among women (*adjusted OR* = 1.12, 95% CI [1.01, 1.24]). Results suggested that theoretical and empirical work linking PTSD and perpetration of IPV in military samples extends to the general population.

Posttraumatic stress disorder (PTSD) is a potentially modifiable risk factor for perpetration of intimate partner violence (IPV). Researchers have documented strong relationships

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between PTSD and perpetration of IPV among veterans from Vietnam (e.g., Orcutt, King, & King, 2003; Taft, Monson, Hebenstreit, King, & King, 2009), Iraq (Teten et al., 2010) and Afghanistan (Hellmuth, Stappenbeck, Hoerster, & Jakupcak, 2012). Few studies have examined the relationship between PTSD and IPV in nonveteran samples (Bell & Orcutt, 2009), which is problematic as military samples have higher rates of both PTSD (Gates et al., 2012) and perpetration of IPV (Rentz et al., 2006) than the general U.S. population. Therefore, it is unclear whether PTSD represents a similar risk for perpetration of IPV in the general population.

Efforts to understand the relationship between PTSD and perpetration of IPV have focused on information-processing biases. Chemtob, Novaco, Hamada, Gross, and Smith (1997) argued that PTSD symptoms, particularly symptoms reflecting reexperiencing/intrusion and heightened arousal/reactivity, increase the probability for violence by activating a survival mode network, which leads to biased threat perception and, in turn, enhanced anger and a greater likelihood of committing aggressive acts. Consistent with this theory, several studies have indicated unique relationships between symptom clusters reflecting heightened arousal/reactivity and re-experiencing/intrusion with both perpetration of IPV and general aggression in military samples (e.g., Hellmuth et al., 2012; Taft, Weatherill, et al., 2009).

There are a number of potential confounding variables related to both PTSD and IPV that could account for epidemiological associations between the two variables. These primarily include sociodemographic variables (i.e., age and race/ethnicity), as well as personality (i.e., antisocial personality disorder) and substance use factors (i.e., alcohol use disorder) (Brewin, Andrews, & Valentine, 2000; Capaldi, Knoble, Shortt, & Kim, 2012; Marshall, Jones, & Feinberg, 2011; McFarlane, 1998). For example, both IPV and PTSD prevalence vary across personality and substance use factors, with prevalence of both IPV and PTSD being higher among those with antisocial personality disorder and alcohol use disorders (Brewin et al., 2000; Capaldi et al., 2012; McFarlane, 1998). In addition, both IPV and PTSD prevalence are higher among those with a minority status and among those with a younger age (Brewin et al., 2000; Capaldi et al., 2012).

Our primary goal was to examine the relationship between a PTSD diagnosis in the past year and perpetration of IPV in a nationally representative sample. Second, we sought to examine how PTSD symptom clusters would relate to perpetration of IPV among those with a PTSD diagnosis in the past year. We also examined sex differences in these associations. Consistent with previous findings (e.g., Hellmuth et al., 2012; Taft, Weatherill, et al., 2009), we hypothesized that symptom clusters reflecting heightened arousal/reactivity and intrusion would be most strongly associated with perpetration of IPV for both sexes.

Method

Participants

We analyzed data from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a nationally representative sample of the U.S. adult, non-institutionalized population. Participants in Wave 1 of NESARC were surveyed during 2001–2002 ($N = 43,093$) and 80.4% of the original sample ($N = 34,653$) participated in Wave 2

during 2004 – 2005. Survey weights were applied to account for oversampling, non-response rates and sociodemographic factors, based on the 2000 Census. For a more thorough description of the NESARC methodology, see Grant et al. (2004, 2009). We limited our sample to those who reported being in a relationship during the past year because IPV was assessed only for these respondents. This resulted in a final sample size of 25,652.

When examining associations between specific symptom clusters and perpetration of IPV, we further limited the sample to those with a PTSD diagnosis in the past year, and whom IPV victimization was not the index trauma. This resulted in a subsample size of 1,742. The sample was limited in this way because (1) NESARC only assessed PTSD symptoms that occurred in the past year among those with a PTSD diagnosis and (2) we wanted to reduce potential confounding associations between IPV victimization with both perpetration of IPV and PTSD symptoms. Descriptive statistics for the sample and subsample are presented in Table 1.

Measures

PTSD diagnosis and symptoms were assessed as part of the trauma assessment, using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-4th edition. (AUDADIS-IV; Houry et al., 2008). PTSD diagnosis was a dichotomous variable (yes/no) based on the diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) and was a coded variable in the NESARC dataset. This coded variable was used for analyses. The *DSM-IV* PTSD symptom questions were asked for the most traumatic event that was endorsed by participants and response options were dichotomous (Y/N). These *DSM-IV* symptoms were recategorized into four symptom clusters based on how they are organized in fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (*DSM-5*; American Psychiatric Association, 2013): intrusion; avoidance; negative cognitions/mood; and arousal/reactivity (see Table 1, Friedman, 2013). Each of the respondents' PTSD symptom cluster scores were calculated by dividing the number of symptoms endorsed (Y/N) for a specific cluster by the total number of symptoms for that cluster (e.g., 1 out of 4 symptoms is a score of 0.25). This method placed each symptom cluster variable on a consistent range of 0 to 1.

Perpetration of IPV was assessed at Wave 2 of NESARC with the AUDADIS-IV (Houry et al., 2008). Five questions asked how often the respondent perpetrated any of the following actions against their spouse/partner during the past year: (1) push, grab or shove; (2) slap, kick, bite, or hit; (3) threaten with a weapon like a knife or gun; (4) cut or bruise; and (5) injured to the point that medical care was necessary. Responses from all five perpetration questions were converted into a binary variable (i.e., a 'yes' response to any of the questions was represented by '1'), representing any perpetration of IPV during the past year.

Several variables were included as covariates: race/ethnicity, gender, education (highest grade attained), alcohol use disorder diagnosis, antisocial personality disorder diagnosis.

Data Analysis

We conducted all analyses using Stata Statistical Software: Release 13 (StataCorp, 2013). Parameter estimates were weighted to be representative of the U.S. population based on the 2000 census. Estimates also accounted for the NESARC sampling design, and standard errors were computed using Taylor Series Linearization (Williams, 2008) using the SVY: prefix in Stata. We used logistic regression modeling to calculate odds ratio estimates and confidence intervals. In our first model, we analyzed data from the NESARC sample of those in a relationship; subsequent models, which examined PTSD symptom clusters, were based on the subsample ($n = 1,742$) described above. For the first model and subsequent models, less than 1% were missing on perpetration of IPV. For the subsequent models, one individual was missing on negative cognitions/mood symptom cluster. For the subsample who were in a relationship and had a PTSD diagnosis in the past year ($n = 1,742$), The PTSD symptom cluster variables were standardized (i.e., scores were mean centered and divided by the standard deviation). In our final model, we included interactions between PTSD symptom clusters and sex, dropping non-significant interaction terms.

Results

All results are weighted to account for the complex survey design. Approximately 6.4% of those in a relationship had a PTSD diagnosis in the past year. For those in a relationship in the past year, women were more likely to be diagnosed with PTSD in the past year than men (8.9% for women, 3.9% for men, $F(1, 65) = 672.56, p < .001$). Perpetration of IPV was reported by 5.4% of those in a relationship, and the prevalence was higher for women (6.9%) than men (4.0%); $F(1, 65) = 282.27, p < .001$. In addition, the prevalence of perpetration of IPV was higher for those with a PTSD diagnosis (12.7%) than those without (4.9%); $F(1, 65) = 638.84, p < .001$. After adjusting for covariates (i.e., race/ethnicity, gender, education, alcohol use disorder diagnosis, antisocial personality disorder diagnosis), those with a PTSD diagnosis were more likely to report perpetration of IPV ($OR = 2.14, 95\% CI [1.95, 2.34]$). The interaction between PTSD diagnosis and sex was significant ($AOR = 1.27, 95\% CI [1.00, 1.60], p = .049$) and indicated that a PTSD diagnosis had a stronger association with perpetration of IPV for men than women.

In unadjusted bivariate analyses, all four standardized symptom cluster scores were positively associated with perpetration of IPV: arousal/reactivity ($OR = 1.60; 95\% CI [1.42, 1.79]$); avoidance ($OR = 1.26; 95\% CI [1.10, 1.45]$); negative cognitions/mood ($OR = 1.23; 95\% CI [1.13, 1.33]$); and intrusion ($OR = 1.37; 95\% CI [1.20, 1.56]$). Results of multivariable analyses are displayed in Table 2. In the fully adjusted model, which included sex and all covariates (race/ethnicity, age, education, antisocial personality disorder, alcohol use disorder), only arousal/reactivity symptom cluster scores were associated with greater odds of perpetration of IPV ($aOR = 1.30; 95\% CI [1.14, 1.48]$) prior to testing interactions. After testing interactions, it was found that intrusion symptom cluster scores were significantly associated with perpetration of IPV for men ($AOR = 1.56; 95\% CI [1.20, 2.04]$), but not women ($p = .727$). Probing the interaction revealed that a one standard deviation increase in the intrusion symptom cluster score yielded 56% greater odds of IPV perpetration for men; for women the adjusted odds ratio was non-significant. The negative

cognitions/mood symptom cluster scores were significantly associated with perpetration of IPV for women ($AOR = 1.11$, 95% CI [1.00, 1.23]), but not men ($p = .215$). Probing this interaction revealed that a one standard deviation increase in negative cognitions/mood symptom cluster score was associated with 11% greater odds of IPV perpetration for women; for men the adjusted odds ratio was non-significant.

Discussion

Results of the present study extend upon past studies utilizing military samples. Results were that a PTSD diagnosis was associated with approximately 2 times greater odds of reporting perpetration of IPV in a nationally representative sample. When examining specific symptom cluster scores, results were mostly consistent with previous theoretical and empirical work based in military samples. In adjusted models, arousal/reactivity symptom cluster scores were associated with perpetration of IPV for both men and women, while avoidance symptom cluster scores were not associated with IPV for either sex. Contrary to expectations, intrusion scores were only significantly associated with IPV among men, whereas negative cognitions/mood scores were only significant among women.

The sex difference for the symptom cluster scores for intrusion and negative cognitions/mood was unexpected. Given the epidemiological nature of the data, we were unable to examine temporal or dynamic relationships that may have shed light on the underlying mechanisms and helped to explain this sex difference. It may have been that men and women differed substantially in how distressing they found different symptoms (e.g., men may have been more distressed by intrusion symptoms, though women may have been more distressed by negative cognitions/mood symptoms), which could have been related to aggression. Alternatively, it could have been that certain symptoms in one partner may have elicited aggression in the other partner, which led to mutual perpetration of IPV. In addition, although Chemtob and colleagues' (1997) theory suggests that particular PTSD symptoms lead to anger/aggression in the moment, there could be a substantial lag time between the experience of a specific PTSD symptom and later IPV. Methods such as ecological momentary assessment would be better suited to examine these potential underlying mechanisms.

This study had several limitations. We were unable to examine sub-diagnostic PTSD symptoms and so it is unclear if our findings extend to those with sub-diagnostic symptoms. Although we categorized symptoms into clusters based on *DSM-5*, the clusters only included the 17 *DSM-IV* symptoms, rather than the 20 *DSM-5* symptoms. Results may have been different had the assessment been based on *DSM-5* symptoms. Our data were cross-sectional and measures assessed both PTSD and perpetration of IPV over the previous year; therefore, it was impossible to determine if the perpetration of IPV occurred as a result of the PTSD symptoms. The available items for perpetration of IPV did not allow for a thorough assessment of IPV as the items only measured physical violence and did not include measures of severity or context. Lastly, given that our sample was limited to those for whom the index trauma was not IPV, our results may not generalize to those with IPV-related PTSD or to those who have been victims of severe IPV.

Despite these limitations, this study extends our understanding of the association between PTSD and perpetration IPV. Overall, the results highlighted the importance of PTSD symptoms as a risk-factor for perpetration of IPV and suggested that the proposed mechanisms linking PTSD and perpetration of IPV in military samples, may also extend to the general population. In addition, the results of the present study suggest that examining symptom clusters of PTSD and sex differences may aid us in identifying PTSD sufferers who are most at-risk for perpetration of IPV.

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Table 1

Descriptive Statistics for Overall Sample and Subsample

Variable	Sample (<i>N</i> = 25,652)		Subsample (<i>n</i> = 1,742)	
	<i>n</i> or <i>M</i>	% or <i>SD</i>	<i>n</i> or <i>M</i>	% or <i>SD</i>
Age	46.44	15.92	45.21	14.92
Female	13,857	49.2	1,230	67.8
Race				
White/Caucasian	15,208	72.0	999	71.0
Black/African American	4,277	9.7	348	12.3
Hispanic	4,973	11.8	318	11.2
Other	1,193	6.5	77	5.5
Education				
HS/GED or more	22,246	87.8	1,464	85.4

Note. Means, standard deviations, and percentages are weighted and account for the complex survey design. All frequencies are unweighted. HS = High School; GED = General Educational Development.

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Table 2

Associations Between PTSD Symptom Clusters and Perpetration of IPV

Variable	Main effects		Main effects and interactions		Main effects and covariates		Main effects, covariates, and interactions	
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
PTSD symptom clusters								
Arousal/reactivity	1.40	[1.23, 1.59]***	1.39	[1.22, 1.57]***	1.30	[1.14, 1.48]***	1.28	[1.13, 1.46]***
Avoidance	1.11	[0.98, 1.27]	1.12	[0.98, 1.28]	1.00	[0.88, 1.14]	1.00	[0.89, 1.14]
Negative cognitions/mood	1.08	[0.99, 1.18]	1.08	[0.99, 1.18]	1.05	[0.96, 1.15]	1.11	[1.00, 1.23]
Intrusion	1.13	[1.00, 1.29]	1.03	[0.89, 1.18]	1.11	[0.97, 1.27]	0.98	[0.85, 1.12]
Sex								
Female		Ref.		Ref.		Ref.		Ref.
Male	0.78	[0.62, 1.00]	0.48	[0.32, 0.72]**	0.72	[0.57, 0.91]**	0.55	[0.34, 0.88]
Interactions								
Arousal/reactivity × Sex		---		ns ^a		---		ns ^a
Avoidance × Sex		---		ns ^a		---		ns ^a
Negative cognitions/mood × Sex		---		ns ^a		---	0.81	[0.67, 0.98]*
Intrusion × Sex		---	1.40	[1.09, 1.80]*		---	1.60	[1.20, 2.12]**

Note. n = 1,742. All parameter estimates were weighted to adjust for the complex survey design. The symptom cluster variables were standardized prior to analyses. All non-significant interaction terms were removed from the final model. Estimates in the last two columns were adjusted for race/ethnicity, age, education, antisocial personality disorder, and alcohol use disorders.

^aNon-significant interaction terms were removed for model parsimony.

* p < .05,

** p < .01.

*** p < .001.