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A Dyadic Analysis of the Influence of Trauma Exposure and Posttraumatic Stress Disorder Severity on Intimate Partner Aggression

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Abstract

This study used structural equation modeling to evaluate a mediation model of the relationship between trauma exposure, posttraumatic stress disorder (PTSD) symptoms, and perpetration of intimate partner physical and psychological aggression in trauma-exposed veterans and their cohabitating spouses ($n = 286$ couples; 88% male veteran/female spouse, 80.8% White, non-Hispanic). Dyadic data analyses were used to simultaneously evaluate actor and partner effects using the Actor-Partner Interdependence Model (Kashy & Kenny, 2000). The primary hypothesis was that PTSD would mediate the association between trauma exposure and intimate partner physical and psychological aggression with these effects evident both within and across members of a couple (i.e., actor and partner effects). The best fitting model included: (a) equivalent actor and partner direct effects of trauma on veterans' acts of psychological aggression ($\beta = .17 - .20$, $p = .001$) and (b) equivalent actor and partner indirect effects via PTSD on veterans' acts of physical aggression ($\beta = .08 - .10$, $p < .001$). There were no direct or indirect effects predicting the spouses' aggression. Results suggest it is important to consider the trauma histories and possible presence of PTSD in both partners as this may be a point of intervention when treating distressed couples.

Posttraumatic stress disorder (PTSD) has detrimental effects on military veterans' intimate relationships (Monson, Taft, & Fredman, 2009; Riggs, Byrne, Weathers, & Litz 1998). A meta-analysis by Taft, Watkins, Stafford, Street, and Monson (2011) revealed medium-sized

associations between PTSD and measures of intimate partner (IP) relationship disturbance, including physical and psychological aggression perpetration, particularly in military samples. Research suggests that the spouses of veterans with PTSD also report engaging in more violent behavior compared to the spouses of veterans without PTSD (Jordan et al., 1992). IP aggression has major individual, family, and societal costs, including increased incidence of psychiatric disorders and physical injury, risk of death, divorce, lost work productivity, and financial strain (Center for Disease Control, 2003). However, one limitation of research conducted to date is that it has focused primarily on the role of the veteran's trauma and psychiatric symptomatology on aggression in IP relationships, with relatively little consideration of the potential complementary role of the spouse's independent trauma history and psychiatric symptoms. The aim of this study was to evaluate the associations among veteran and spouse trauma history, symptoms of PTSD, and psychological and physical aggression perpetrated by both members of the couple.

Research evaluating PTSD symptoms among spouses of trauma victims often focuses on the role of secondary traumatization (Figley, 1995; see also Campbell & Renshaw, 2012; Ein-Dor, Doron, Solomon, Mikulincer, & Shaver, 2010). Secondary traumatization occurs when non-trauma-exposed partners of those directly exposed to trauma are so emotionally impacted by the aftereffects of trauma and/or couple communication about the trauma that they manifest symptoms similar to that of the trauma-exposed member of the couple. Increased aggression on the part of the non-traumatized spouse may be a manifestation of secondary traumatization. Trauma is thought to exert indirect effects on the perpetration of couple aggression through PTSD symptoms (Taft, Schumm, Marshall, Panuzio, & Holtzworth-Munroe, 2008; Taft, Schumm, Orazem, Meis, & Pinto, 2010). When both members of a couple have a trauma history, it is possible that the trauma history and symptoms of PTSD affect an individual's own IP behavior (i.e., a within-subjects effect), and also have a dynamic effect on the spouse's IP behavior (i.e., a between or across-subjects effect). One framework for evaluating these within- and between-subject direct and indirect effects in a dyad is the Actor-Partner Interdependence Model (APIM; Kashy & Kenny, 2000; Kenny & Ledermann, 2010). This model differentiates "actor" from "partner" effects (i.e., within versus between-subject effects, respectively) and provides a method for testing if these effects are equal to one another. Actor and partner effects that are equivalent in strength are referred to as a "couple" pattern and imply that both members of the couple exert an equal effect on one or both members of the dyad (Kenny & Ledermann, 2010). The APIM approach lends itself well to testing mediation as parallel and cross-person direct and indirect effects can be evaluated (Ledermann, Macho, & Kenny, 2011). This study used structural equation modeling (SEM) to evaluate direct and indirect actor and partner effects of trauma and PTSD symptoms on physical and psychological aggression perpetration by veterans and their spouses.

Study Aims and Hypotheses

The primary aim of this study was to examine the role of trauma exposure and PTSD severity on relationship aggression in both members of an intimate relationship. We expected that PTSD severity would fully mediate the association between trauma exposure and IP physical and psychological aggression. Specifically, we hypothesized that this effect would be evident for both veterans and their spouses¹ (i.e., actor effects) and that the veterans' PTSD symptoms would also predict the spouses' IP aggression and vice versa (i.e., partner effects). To our knowledge, no prior study has evaluated the evidence for these

¹We refer to the veteran and the spouse to differentiate members of the dyad. The "veteran" was the individual who was recruited into the study; however 36 "spouses" were also veterans. We use the term spouse instead of partner in order to avoid confusion when describing partner effects using the Actor-Partner Interdependence model, which can involve either the veteran or the spouse.

specific partner effects, however, related work suggests that trauma history and psychiatric symptoms in either member of a couple can have an effect on the other person's marital distress and acts of aggression (Hamilton, Nelson Goff, Crow, & Reisbig, 2009; South, Krueger, & Iacono, 2011). As veterans were expected to have greater severity of PTSD and concomitant functional impairment and distress, we hypothesized that all effects involving the veteran's trauma history and PTSD symptoms would be stronger than the complementary effects in the spouse. Finally, prior research has yielded conflicting results with respect to whether trauma and PTSD are differentially associated with IP physical versus psychological aggression. One study suggested that PTSD mediated the association between trauma and physical and psychological aggression to an equivalent degree (Taft et al., 2010), however, other work suggests greater variability in the pathways that lead to physical versus psychological aggression (Taft et al., 2008). We evaluated both IP physical and psychological aggression to address this question.

Method

Participants

We enrolled 298 couples (596 individuals) from two U.S. Department of Veterans Affairs (VA) Healthcare Systems. Of these, seven were terminated due to difficulty conforming to the protocol, three voluntarily withdrew, and two were found not to meet inclusion criteria, yielding a final sample of 286 couples. Veterans were predominantly male (89.9%) and spouses predominantly female (92.3%). The sample included seven female-female same-sex couples. Veterans' age ranged from 22 to 74 ($M = 52.4$, $SD = 11.0$) and their spouses from 19 to 75 ($M = 50.4$, $SD = 11.0$). Participants were primarily White, non-Hispanic (80.8%); 9.8% self-identified as Black or African American, 9.3% as American Indian or Alaskan Native, 1.6% as Asian, 0.7% as Hawaiian or Pacific Islander, and 6.8% reported unknown racial origin (these categories were not mutually exclusive). In addition, 19.4% endorsed Hispanic or Latino/a ethnicity. Couples reported being in long-standing relationships: 40.2% were together for more than 20 years and an additional 24.3% were together 10–20 years. Reported eras of military service were: 9.9% World War II, 41.3% Vietnam War, 15.5% Operation Desert Storm, 15.2% Operation Iraqi Freedom or Operation Enduring Freedom, 0.6% Korean War, and 0.1% other eras. All veterans reported history of trauma exposure (a study inclusion criterion) and all but 15 spouses also reported history of trauma exposure. Prevalence of current *DSM-IV* PTSD, as determined by the Clinician Administered PTSD Scale (CAPS), was 43% in the veterans and 14.3% in the spouses; 65.7% of the veterans and 32.9% of the spouses met criteria for a lifetime diagnosis. CAPS administration was linked to a single index (i.e., worst) traumatic event for each participant: 29.5% of the sample endorsed combat-related trauma as the index event (52.5% of the veterans), 10.0% sudden death of a friend or loved one, 7.4% childhood sexual trauma, 6.9% physical assault, 6.6% motor vehicle accident, and 4.7% childhood physical assault. Several additional index trauma types were endorsed, each occurring in less than 4% of the sample. Intimate partner violence (IPV) was rarely endorsed by veterans as the index traumatic event ($n = 2$ or 0.7%) and in both these instances, the IPV was not associated with the co-enrolled spouse. Twenty-two spouses (7.7%) endorsed IPV as the index trauma. Thirteen spouses (4.5% of all spouses) reported that the index IPV event occurred with a former spouse. Six spouses (2% of all spouses) reported that the index IPV event occurred with the veteran co-enrolled in the study; of these, one spouse reported on-going IPV and the remaining five reported past but not current IPV. Information on whether the index IPV occurred in the current relationship was not available for three spouses.

Procedure

Study participants were recruited through flyers, hospital databases, and clinician referrals and were screened by telephone to determine eligibility (i.e., veteran history of trauma exposure, cohabitating IP, and spouse willing to participate). Participants completed self-report measures of trauma exposure and IP relationship aggression and underwent structured diagnostic interviews as part of a larger study on PTSD and couple functioning. All interviews were videotaped for reliability purposes. The study was approved and reviewed annually by human subjects and research committees; the protocol included comprehensive safety and clinical management plans.

Measures

The self-report Traumatic Life Events Questionnaire (TLEQ; Kubany et al., 2000) was administered to assess exposure to 22 *DSM-IV* Criterion A traumatic events, each on a 7-point scale ranging from “never” to “more than five times.” The scale has good test-retest reliability and content and convergent validity (Kubany et al., 2000). The 78-item Conflict Tactics Scale-Revised (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) was used to assess acts of physical and psychological aggression via the 12-item Physical Assault and 8-item Psychological Aggression subscales, respectively. The Physical Assault subscale assesses a range of behaviors such as being kicked, bit, slapped, pushed, punched, choked, or grabbed by the partner, and use of knife or gun against the partner. The Psychological Aggression subscale measures verbal and non-verbal behaviors such as shouting, stomping out of the room, threatening to hit or throw something at the partner, and calling the partner “fat” or “ugly.” Participants rated the frequency of each item for themselves (i.e., being a perpetrator of aggression) and their partners (i.e., being a victim of aggression from the spouse) during the previous 6 months on a scale ranging from 0 (never) to 6 (more than 20 times). Items were re-coded to reflect the estimated number of incidents in the past 6 months (e.g., *3 to 5 times* equals a score of 4) and the recoded frequency scores were then summed for each subscale (Straus et al., 1996). The CTS2 has excellent internal consistency and content and construct validity (Gully & Dengerink, 1983; Straus et al., 1996; Newton, Connelley, & Landsverk, 2001). Coefficient alpha in this sample was .78 and .73 for the Physical Assault and Psychological Aggression subscales, respectively.

PTSD was assessed with the CAPS (Blake et al, 1990), the gold-standard 30-item structured interview that assesses the frequency and intensity of the 17 *DSM-IV* PTSD symptoms and five associated features. A validated scoring rule (Weathers, Ruscio, & Keane, 1999) was used to determine PTSD diagnosis (i.e., at least one reexperiencing symptom, three avoidance and numbing symptoms, and two hyperarousal symptoms each with a frequency score of one or greater and an intensity score of two or greater). Dimensional severity scores were calculated by summing the frequency and intensity ratings across the 17 items. Interrater reliability was excellent for both current PTSD diagnostic status ($\kappa = .84$) and current severity score ratings (intraclass correlation coefficient = .99) as determined by independent ratings of 23% of the video recordings. Coefficient alpha for the 17 items was excellent in this sample ($\alpha = .91$).

Statistical Analysis

Variables included in the analyses—SEM was used to test alternative models for associations between trauma, PTSD, and IP physical and psychological aggression perpetration. Trauma exposure was operationalized as the total number of lifetime traumatic experiences meeting *DSM-IV* PTSD Criteria A1 and A2 (as reported on the TLEQ). PTSD was modeled as a latent variable indicated by four parcels of CAPS severity scores corresponding to reexperiencing (*DSM-IV* PTSD criteria B1-B5), avoidance (C1-C2), emotional numbing (C3-C7), and hyperarousal (D1-D5) symptoms, following the King,

Leskin, King, and Weathers (1998) model of the disorder. Intimate relationship physical and psychological aggression perpetration were defined by frequency scores on the Physical Assault and Psychological Aggression subscales of the CTS2, respectively (Straus et al., 1996). The spouses' reports of physical and psychological victimization perpetrated by the veterans were used to measure veteran IP aggression (and vice versa). This approach was undertaken to account for potential social desirability biases that might arise if self-report of one's own perpetration were evaluated (cf., Arias & Beach, 1987; Taft, Murphy, King, Dedeyn, & Musser, 2005). This approach was preferred over one using the highest total score reported by either member of the couple because of our focus on parallel, dyadic data analyses.

Mediation models—The mediation models were evaluated simultaneously for veterans and their spouses. Veteran and spouse lifetime trauma exposure variables were set to predict latent veteran and spouse PTSD symptom severity (i.e., the mediator variables), which, in turn, predicted veteran and spouse IP physical and psychological aggression perpetration. The baseline model was structurally saturated and symmetrical with all possible direct and indirect actor and partner effects freely estimated. We then evaluated a nested model which tested if all indirect paths in the model could be eliminated, leaving only direct paths (i.e., only paths from trauma exposure to IP aggression were estimated). Our third model examined the impact of eliminating the direct paths between trauma and IP aggression and retaining only the indirect (i.e., mediated) paths. Finally, we tested the equivalence of significant veteran-based versus spouse-based paths in the model to determine if veterans' trauma histories and PTSD symptoms exerted larger effects on IP aggression relative to those of the spouses.

Model estimation and evaluation—All models were estimated with the Mplus 5.2 statistical modeling software (Muthén & Muthén, 2008) using the robust maximum likelihood estimator (MLR) to account for non-normality in the data.² Cases with partial missing data were modeled under direct maximum likelihood estimation. There was no more than 2% missingness on any variable. Model fit was evaluated with χ^2 , root mean square error of approximation (RMSEA), standardized root mean squared residual (SRMR), Tucker-Lewis index (TLI), and comparative fit index (CFI) using cut-off guidelines recommended by Hu and Bentler (1999). Specifically, RMSEA values .06 and SRMR values .08 were considered consistent with good model fit and CFI and TLI values .90 and .95 were considered as indicators of adequate and good model fit, respectively. Akaike information criterion (AIC; Akaike, 1987) and Bayesian information criterion (BIC; Schwartz, 1978) were also used to compare the relative fit of models; with these indices, lower relative values across competing models are preferred. Competing models were also evaluated using the chi-square difference test (corrected for the use of the MLR estimator). Eliminating or constraining paths typically results in poorer model fit (although indices of model parsimony may improve); the chi-square difference test evaluates if the degradation of model fit is statistically significant compared to the model in which the path was freely estimated.

Results

Mean Scores for Veterans and their Spouses

Veterans produced higher scores than spouses on measures of total trauma history (veteran $M = 25.21$, $SD = 18.70$; spouse $M = 17.32$, $SD = 16.52$), and PTSD severity (veteran $M =$

²Bootstrapped standard errors and confidence intervals for the indirect effect are not available from Mplus 5.2 when the MLR estimator is employed.

43.68, $SD = 28.50$; spouse $M = 18.06$, $SD = 23.24$); paired-sample $t(278) = 5.70$ and $t(275) = 12.66$, respectively, both $p < .001$. In contrast, there were no significant differences in the frequency of acts of IP physical (veteran $M = 1.60$, $SD = 5.30$; spouse $M = 1.33$, $SD = 4.94$) or psychological aggression perpetration (veteran $M = 18.29$, $SD = 21.90$; spouse $M = 15.75$, $SD = 22.69$); paired-sample $t(277) = .64$, $p = .52$ and $t(274) = 1.70$, $p = .09$, respectively.

Structural Mediation Models

Structurally saturated model—first, we tested the structurally saturated mediation model that incorporated all possible direct and indirect effects of veteran and spouse trauma exposure on IP physical and psychological aggression perpetration via latent veteran and spouse PTSD severity.³ This model provided good fit to the data (see Table 1, Model 1) and yielded two significant direct and two significant indirect paths. Specifically, Veteran and Spouse Trauma history showed direct effects on Veteran Psychological Aggression perpetration ($\beta s = .17$, and $.19$, respectively, both $ps = .04$), providing evidence of actor and partner effects contributing to the veteran engaging in psychological aggression towards his or her spouse. Veteran Trauma history exerted an indirect effect on Veteran Physical Aggression perpetration via Veteran PTSD severity (indirect $\beta = .05$, $p = .046$) and Spouse Trauma history also exerted an indirect effect on Veteran Physical Aggression perpetration via Spouse PTSD severity (indirect $\beta = .17$, $p = .007$), providing evidence of both actor and partner effects in the prediction of the veteran engaging in physical aggression towards his or her partner. There was no significant association between Veteran Trauma history and Spouse PTSD severity (nor between Spouse Trauma history and Veteran PTSD severity).

Direct vs. indirect paths—Next, we tested the impact of removing all indirect paths from the structurally saturated baseline model. As shown in Table 1, Model 2 demonstrated poor fit to the data. Results of the chi-square difference test revealed that removing the indirect effects significantly degraded model fit relative to the baseline model and the AIC and BIC values were substantially greater (i.e., worse) than the saturated model. We then examined the impact of eliminating the direct paths between trauma and IP aggression from the saturated model. This third model showed good fit, but the chi-square difference test suggested that the fit was degraded relative to the saturated model (see Table 1, Model 3).

Equality of Effects—The baseline model included two significant direct paths from Veteran and Spouse Trauma to Veteran Psychological Aggression perpetration and two significant indirect paths from Veteran and Spouse Trauma to Veteran and Spouse PTSD severity (respectively) to Veteran Physical Aggression perpetration. To test the hypothesis that veterans' trauma histories and PTSD severity were stronger predictors of veterans' physical and psychological aggression compared to the spouses' trauma histories and PTSD severity, we evaluated a model in which we constrained the actor path from Veteran Trauma to Veteran Psychological Aggression to be equivalent to the complementary partner path from Spouse Trauma to Veteran Psychological Aggression. At the same time, we constrained the actor path from Veteran Trauma to Veteran PTSD severity to Veteran Physical Aggression to be equal with the complementary partner path from Spouse Trauma to Spouse PTSD severity to Veteran Physical Aggression. This model was nested within the baseline model with all paths freely estimated, but was more parsimonious because it estimates three fewer paths. This model fit the data well (See Table 1, Model 4) and the nested chi-square test suggested that constraining these paths did not degrade fit. As shown in Figure 1, results provided evidence of two significant "couple" patterns: the actor effects

³Prior to evaluating the regressive models, we evaluated the fit of the measurement model of PTSD. The measurement model fit the data well (details available from first author) and all indicators loaded significantly (all $\beta > .76$) on their respective latent variables.

predicting Veteran Psychological and Physical Aggression were equivalent in magnitude to that of the partner effects predicting these variables. Specifically, the unstandardized direct effects from Veteran and Spouse Trauma to Veteran Psychological Aggression were both $\beta = .23$, $p = .001$ (standardized β s = .20 and .17, respectively, both $p = .001$). The unstandardized indirect effects of Veteran and Spouse Trauma to Veteran Physical Aggression via Veteran and Spouse PTSD severity were both $\beta = .03$, $p = .002$ (standardized β s = .10 and .08, respectively, both $p < .001$).⁴ Although none of the indirect effects predicting Spouse Physical or Psychological Aggression were statistically significant at the $p < .05$ level, two of them just failed to reach this threshold. Specifically, the unstandardized indirect partner effect of Veteran Trauma to Veteran PTSD severity to Spouse Psychological Aggression was $\beta = .10$, $p = .10$ (standardized $\beta = .08$, $p = .09$) and the unstandardized indirect actor effect of Spouse Trauma to Spouse PTSD severity to Spouse Psychological Aggression was $\beta = .12$, $p = .076$ (standardized $\beta = .09$, $p = .08$). Veteran and spouse trauma history were correlated with one another ($r = .15$, $p = .045$) and there was a weak trend towards significant covariation of veteran and spouse PTSD severity ($r = .13$, $p = .08$). The final model explained 9.7% and 9.5% of the variance in veteran and spouse psychological aggression perpetration, respectively, and 7.1% and 1.3% in veteran and spouse physical aggression perpetration, respectively.⁵

Differential Association with Trauma Type

We focused on the role of lifetime trauma exposure history in our analyses due to substantial differences in trauma history across veterans and their spouses, which precluded us from evaluating the role of specific trauma types in the SEMs. However, because the question of differential effects of various types of trauma is important, we conducted preliminary analyses to examine the correlations between the number of instances of any combat exposure (among the veterans only), the number of instances of any childhood sexual assault (among the veterans, and separately, the spouses), and the frequency of IP physical and psychological aggression. Veteran combat exposure was not significantly correlated with acts of IP physical or psychological aggression on the part of either the veteran or the spouse. Only one statistically significant association emerged: veteran exposure to childhood sexual assault (base rate = 23% for any exposure) was associated with spousal acts of psychological aggression ($r = .14$, $p = .023$). Likewise, t -tests that compared mean IP aggression as a function of endorsement of select index traumatic events (i.e., those related to CAPS administration) revealed no differences in mean IP physical or psychological aggression (as perpetrated by the veteran or the spouse) as a function of (a) veteran combat exposure history; (b) veteran childhood sexual assault history; or (c) spouse childhood sexual assault history (details available from first author).

⁴We also re-evaluated our final model (Table 1, Model 4) in a subsample of male veteran/female spouse couples ($n = 251$ couples). The model fit the data well, the pattern of results was unchanged from that for the full sample, and the magnitude of the paths were within .01 of that reported in the full sample. We also evaluated the final model with participant age and length of the IP relationship as covariates of the four aggression perpetration variables. The covariates were significant predictors of veteran perpetration of physical aggression only. Veteran age was positively associated with veteran physical aggression ($\beta = .18$, $p = .001$) while longer lasting relationships were associated with less veteran physical aggression ($\beta = -.32$, $p < .001$). The unexpected positive association between veteran age and IP physical aggression was a function of collinearity between veteran age and the length of relationship variable ($r = .51$), as demonstrated by the lack of this association between age and IP physical aggression ($\beta = .02$, $p = .57$) in a subsequent SEM which excluded the length of relationship variable. In that SEM, an inverse association between spouse age and spouse IP psychological aggression emerged ($\beta = -.15$, $p = .02$). Inclusion of covariates in the SEM did not otherwise change the results; the magnitude of the standardized parameter estimates with these covariates in the model was within .03 of those reported for Model 4 (details available from first author).

⁵Given prior work suggesting that the PTSD hyperarousal symptoms may be particularly associated with physical aggression (Taft et al., 2007, 2009), we compared the pattern of bivariate correlations between severity scores on the four PTSD symptom clusters and total scores on the CTS2 Physical Assault and Psychological Aggression subscales. There was no differential strength of association between the PTSD symptom clusters and veteran perpetration of aggression (details available from first author).

Discussion

The aim of this study was to examine the relationships between trauma exposure, PTSD symptoms, and IP physical and psychological aggression in both members of a couple. We predicted that lifetime exposure to trauma would operate through PTSD severity to predict IP aggression and that there would be evidence of both individual effects (i.e., one's own history and symptoms affecting one's own IP behavior) as well as dynamic effects across the couple (i.e., one's own history and symptoms affecting the partner's IP behavior). These hypotheses were partially supported in that both veteran and spouse trauma history and PTSD symptoms increased the risk of the veteran (but not the spouse) engaging in IP physical aggression. The association between PTSD and IP aggression is well supported in the literature (Taft et al., 2011) and is thought to reflect a process in which hypervigilance to perceived threat leads to reactive and aggressive behavior (Chemtob, Hamada, Roitblat, & Muraoka, 1994; Novaco & Chemtob, 1998). In contrast, the effects of veterans' and spouses' trauma histories on veterans engaging in IP psychological aggression were independent of PTSD. The direct association between trauma and psychological aggression was a more novel finding; it is likely that psychosocial processes not evaluated in this study, but which are generally important for relationship functioning (e.g., attachment, relationship schemas, affect regulation, and the ability to trust and relate to others; Cloitre et al., 2010; DePrince, Combs, & Shanahan, 2009; Ehlers & Clark, 2000) may underlie this association between trauma and IP psychological aggression.

Results have implications for providers treating individuals with PTSD and for those providing couple's treatment for IP aggression. First, our finding that trauma history and PTSD symptoms predict both psychological and physical IP aggression highlights the need for clinicians treating individuals with PTSD to assess IP aggression and to ensure that IP aggression becomes a focus of treatment where appropriate. Second, this same result implies that clinicians engaged in couple's therapy to address relationship discord should consider assessment and treatment of trauma and PTSD in both members of the couple. One treatment that could prove useful in this endeavor is that of Monson and colleagues' couple-based cognitive behavioral conjoint therapy for PTSD, which has been shown to be effective in reducing PTSD symptoms and improving relationship quality (Monson et al., 2008, 2011, 2012; Monson, Schnurr, Stevens, & Guthrie, 2004). While this therapy was designed to treat couples in which one member has PTSD, in clinical practice, the trauma history and symptoms of both members of the couple are addressed as needed (Monson & Fredman, 2012). Third, the differential pathways for the prediction of physical versus psychological aggression suggest the need for a multi-pronged treatment approach to eliminate such aggression; a diverse approach would address both the role of PTSD symptoms specifically, and the effects of trauma, generally, on broader interpersonal, emotional, and cognitive processes that, together, increase the risk for IP aggression. Finally, results which suggested that the trauma history of the spouse was associated with subsequent acts of IP psychological aggression by the veteran and that veteran exposure to childhood sexual assault was positively associated with IP psychological aggression by the non-veteran spouse suggests the need to educate couples about the phenomenon of revictimization (e.g., Noll, Horowitz, Bonanno, Trickett, & Putnam, 2003). Research suggests that individuals who have experienced early trauma may: (a) expect that harm is a normal part of relationships (DePrince et al., 2009); (b) engage in risky behaviors (i.e., West, Williams, & Siegel 2000); and/or (c) may not adequately attend to cues in the environment that signal that a situation is dangerous (Soler-Baillo, Marx, & Sloan, 2005). Although these data do not address the role of these processes in IP aggression, such mechanisms offer possible points of intervention to reduce IP aggression and are deserving of further study.

While not a primary aim of this study, the analytic design provided the opportunity to evaluate the evidence for secondary traumatization on the part of veterans and their spouses. We found that the veteran's trauma history was not predictive of the spouse's PTSD symptoms (or vice versa), thus providing no support for secondary traumatization in this sample. However, we did observe modest, yet significant, co-variation of trauma history across members of a couple. This was unexpected and there are a number of potential explanations for this association, including: (a) the possible influence of assortative mating (e.g., couples who are genetically similar to each other are drawn together because of shared biologically-based attributes, such as temperament); and (b) the influence of shared experiences that occur in the context of the relationship (e.g., if both members of the couple are exposed to the same trauma; see McLeod, 1995). As both exposure to assaultive trauma and PTSD have genetic and environmental etiologies (Affi, Asmundson, Taylor, & Jang, 2010), it is impossible to determine if assortative mating and/or shared couple experiences are the source of the observed couple covariation. This is an interesting area for further research.

Limitations

Our focus on veterans and their spouses limits generalizability to the population of trauma-exposed veterans and their cohabitating partners, and precluded us from fully examining possible sex and gender effects. The effects observed were modest in magnitude and were only predictive of the veterans' (not the spouses') acts of IP aggression. The lack of an effect for the prediction of spouse IP behavior may be due to a number of methodological factors such as: (a) reduced statistical power to detect weaker effects among the spouses; (b) less spouse impairment in the domain of relationship functioning which would be expected to decrease true-score variance available for prediction and/or (c) limitations associated with the cross-sectional design (e.g., we were not able to evaluate if spouse IP aggression occurred in response to veteran IP aggression). In addition, prior work suggests a lack of concordance across couples in their reports of aggression victimization versus perpetration (Simpson & Christensen, 2005), which raises questions about whether reports of victimization as an indication of the partner's perpetration of aggression are sufficiently comprehensive or accurate on their own. More generally, as a self-report measure, the CTS2 may be limited by memory, recency, and social desirability biases, as well as safety-related concerns. The CTS2 also does not reflect the severity of reported acts of aggression, nor does it assess concerns related to coercion or power and control that arguably impact acts of IP aggression. The CTS2 does not distinguish between acts of IP aggression and those that occur in self-defense. In addition, due to differences in the type of traumatic events experienced by veterans compared to spouses, we were unable to comprehensively evaluate potential differential roles of trauma types in predicting IP aggression; this is an important area for future research as this question could be addressed in larger samples recruited on the basis of exposure to specific trauma types. Finally, there are undoubtedly other intervening variables and directions of effect that were not evaluated in this cross-sectional study that are important for conceptualizing and treating IP aggression.

Conclusion

The majority of prior studies investigating PTSD and IP discord have been limited to self-report data of one member of the couple rather than utilizing dyadic data techniques to understand the complex and dynamic processes involved in IP relationships. This study improved upon this by simultaneously evaluating individual and dynamic cross-person effects of trauma exposure and PTSD symptom severity on the perpetration of both physical and psychological aggression. The study was also strengthened by the use of a gold-standard structured interview to assess PTSD in a large sample of cohabitating intimate couples. Results suggested that veteran and spouse trauma history were, to an equivalent degree,

associated with veteran psychological aggression perpetration and this effect was independent of PTSD symptoms. In contrast, the association between veteran and spouse trauma history and veteran physical aggression perpetration was mediated by PTSD. The magnitude of these associations was small, suggesting that there are additional intervening variables that are also important for understanding IP aggression in the context of trauma exposure. These findings highlight the importance of comprehensively studying both members of a couple in order to test within- and across-subject effects of trauma and psychiatric symptoms. Attention to couple aggression, trauma history, and PTSD symptoms in both members of a couple is important for maintaining the safety of the couple and improving the quality and functioning of the family.

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Figure 1.

Note. The figure shows all factor correlations and the statistically significant regressive structural associations in the final model. The p -value for all regressive structural paths was $< .01$. The p -value for the correlation between Veteran and Spouse Trauma was .045 and for Veteran and Spouse PTSD was .08. Standardized parameter values are shown and unstandardized parameter values are provided in parentheses for regressive paths that were constrained to equality to test the couple patterns. Correlations between the two PTSD variables, and among the aggression variables reflect correlated disturbances (i.e., residual variance in each variable after partialing out the effects of all upstream variables). PTSD = posttraumatic stress disorder; psych = psychological; agg = aggression

Goodness-of-Fit Indices for Competing Models

Table 1

Model	χ^2 (df)	RMSEA (90% CI)	SRMR	CFI	TLI	AIC	BIC	Model Comparison	$\Delta \chi^2$ (Δ df) p-value
1. Structurally Saturated	76.08* (55)	.04 (.01 – .06)	.03	.98	.97	27186	27420		
2. Drop Indirect Effects	243.97*** (67)	.10 (.08 – .11)	.14	.84	.79	27359	27549	1 vs. 2	171.51 (12) p < .001
3. Drop Direct Effects	98.16** (63)	.04 (.03 – .06)	.03	.97	.96	27196	27400	1 vs. 3	22.72 (8) p = .004
4. Model 1 with Equality Constraints	79.44* (58)	.04 (.01 – .05)	.03	.98	.97	27186	27409	1 vs. 4	3.56 (3) p = .31

Note. df = degrees of freedom; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean squared residual; CFI = comparative fit index; TLI = Tucker-Lewis index; AIC = Akaike information criterion; BIC = Bayesian information criterion; PTSD = posttraumatic stress disorder; vs = versus.

* p < .05.

** p < .01.

*** p < .001.