



Journal of Veterans Studies

Pilot Data on the Nature of Trauma Exposure in Military Couples

Austin R. Beck, Lauren M. Rublmann, & Briana S. Nelson Goff*

Abstract

Using a sample of 50 couples, this pilot study examined the associations between service member and spouse posttraumatic stress disorder (PTSD) symptoms on both self and partner relationship quality across trauma-type (i.e., interpersonal, non-interpersonal, military) and perpetrator-type (i.e., family member, non-family member, military) groups. Four multiple-group actor-partner interdependence models were used to analyze the actor and partner effects of husband and wives' PTSD symptoms and relationship quality. Results suggest that under some conditions, husband and wife PTSD symptoms were negatively associated with both their own and their partner's relationship quality. Findings from the current analyses may invite a more dynamic conceptualization of the possible relationship between PTSD, relationship quality, and distinct facets of trauma exposure in veteran couples.

Keywords: Couples, Interpersonal, Military, Perpetrator, PTSD, Trauma, Veteran

Traumatic stress can have a paradoxical effect on intimate relationships in that it threatens the stability of the very relationships that support recovery and resilience (see Schwerdtfeger & Oseland, 2013). Trauma-related adverse effects on individual and relational functioning can last long after initial exposure to the event (see Goff & Smith, 2005). Yet, high levels of marital quality have been linked with greater personal well-being (Proulx, Helms, & Buehler, 2007; Waite & Gallagher, 2000). Further, research with military and veteran-specific samples shows that the health of the marital relationship can even influence soldier retention and readiness (Booth, Segal, & Bell, 2007; Schumm, Bell, & Resnick, 2001). Although many military and veteran couples report that they are satisfied in their relationships (Anderson, Johnson, Nelson Goff, Cline, Lyon, & Gurss, 2011), service-related stressors like posttraumatic stress can negatively affect couple dyads (Karney & Crown, 2007). Based on a growing body of literature illustrating the duality of trauma exposure in the context of couple relationships, it is important to enhance our understanding of precisely how and under what conditions trauma threatens these relationships that are key to promoting resilience for service members. The purpose of this pilot study was to explore the associations between PTSD symptoms and relationship quality among military couples classified into groups based on characteristics of trauma exposure (i.e., trauma-type and perpetrator-type).

Literature Review

Traumatic stress – the biopsychosocial effects of exposure to traumatic events (e.g., posttraumatic stress disorder [PTSD], APA, 2013) – was once thought to affect only the immediate survivor of the event. However, there is now a growing body of evidence suggesting that trauma is communicable and can also compromise the mental, emotional, and relational health of survivors' family members, romantic partners, and peers (e.g., Campbell & Renshaw, 2016; Campbell, Renshaw, Kashdan, Curby, & Carter, 2017; Figley & Kiser, 2013; Goff & Smith, 2005; Johnson & Williams-Keeler, 1998). This reciprocal exchange of traumatic stress is significant based on findings that interpersonal relationships often serve as protective buffers and recovery resources (e.g., James,

Van Kampen, Miller, & Engdahl, 2013; Johnson & Williams-Keeler, 1998; Matsakis, 2004; van der Kolk, 2007). Despite gains in the systemic conceptualization of traumatic stress, though, little is known about the specific mechanisms by which, or conditions under which trauma influences relational functioning.

The Couple Adaptation to Traumatic Stress (CATS) Model (Goff & Smith, 2005; Oseland, Gallus, & Nelson Goff, 2016) is a middle-range theory that offers a conceptual framework for understanding the bidirectional and recursive effects of traumatic stress within romantic relationships. This empirically-based theory describes a continuous feedback loop in which the traumatic stress of primary survivors affects the functioning of non-traumatized partners which, in turn, exacerbates the distress of primary survivors, and so on (Campbell & Renshaw, 2016; Monson, Fredman, & Dekel, 2010; Goff & Smith, 2005 for an in-depth review of systemic traumatic stress). According to the CATS Model, this process occurs through reciprocal interactions between each partner's (1) predisposing factors and resources (e.g., previous trauma), (2) individual functioning (e.g., biopsychosocial symptoms), and (3) the couple's overall functioning (e.g., satisfaction, intimacy, etc.). For example, in a daily diary study of military couples, Campbell et al. (2017) found that service members' PTSD symptoms predicted secondary partners' subsequent (next day) accommodating behaviors, which, in turn, predicted subsequent (next day) increases in some clusters of service members' PTSD symptoms. Renshaw and Caska (2012) also found that even secondary partners' internal perceptions of service members' PTSD symptoms predicted an increase in their psychological and marital distress.

Through bidirectional exchanges such as these, traumatic stress concurrently affects the intrapersonal and interpersonal functioning of both partners in a couple dyad. Goff and Smith (2005) suggested that there are multiple processes that may promote this transference, including "chronic stress, attachment, identification and empathy, projective identification, conflict, and physiological responses" (p. 152). Moreover, research from other scholars has also identified dyadic communication, perceptions and attributions of PTSD, sexual functioning, and trauma-related behaviors commonly seen in veterans and their partners (e.g., symptoms, accommodation), among others, as dynamics that contribute to the co-experience of traumatic stress (see Campbell & Renshaw, 2016; Renshaw, Blais, & Caska, 2011).

These findings make important contributions to our comprehensive understanding of systemic traumatic stress. However, much of the existing literature focuses on individual (e.g., symptoms, coping) and systemic (e.g., communication, violence) factors when examining the effects of trauma on relationships, overlooking the foundational role that characteristics of the traumatic event itself (e.g., type of exposure, perpetrator) may play in post-traumatic intrapersonal and/or interpersonal functioning. To address this question, researchers should begin by examining the nature of trauma as it varies based on a variety of factors including the survivor's age at victimization, the duration of victimization, poly-victimization, type of trauma exposure, and perpetrator of the traumatic event, among others. This study focuses first on type of trauma exposure, and secondly on the relationship between the perpetrator and survivor.

Trauma-Type

Trauma-type refers simply to the type of victimization – interpersonal or non-interpersonal. Interpersonal trauma involves incidences perpetrated by another individual, such as sexual assault, physical abuse, robbery, and other similar experiences; non-interpersonal trauma refers to events that are non-relational, such as natural disasters, car accidents, and serious illnesses (Forbes et al., 2014). To date, research examining trauma-type has focused generally on these two classifications (e.g.,

Forbes et al., 2014; Taft, Resick, Watkins, & Panuzio, 2009). However, in the present study we identify military trauma as a third and separate category.

Military service is unique because it can involve simultaneous interpersonal (e.g., shooting and/or killing an enemy combatant, witnessing the death of a unit member) and non-interpersonal (e.g., motor vehicle accidents, conducting drone strikes) trauma exposure. Unlike civilians, service members also receive advanced training for their combat duties and begin deployments with the knowledge that they will be exposed to traumatic events (Committee on the Assessment of Ongoing Effects in the Treatment of Posttraumatic Stress Disorder, 2012). Further, service members regularly experience military trauma in the context of a unit and support from these individuals has been found to buffer the detrimental effects of posttraumatic stress (Brailey, Vasterling, Proctor, Constans, & Friedman, 2007). In addition to these unique exposure factors, studies show that military trauma is even distinct from civilian trauma in terms of PTSD symptom profiles (Kimble, Fleming, & Bennion, 2013; Pietrzak, Whealin, Stotzer, Goldstein, & Southwick, 2011). For example, service members consistently report more symptoms of hypervigilance and compulsive checking behaviors than their civilian counterparts (Kimble et al., 2013; Pietrzak et al., 2011). Thus, when examining the effects of trauma-type, existing literature suggests that it is conceptually appropriate to parse out military from civilian interpersonal and non-interpersonal exposure (Kimble, Fleming, & Bennion, 2013; Pietrzak, Whealin, Stotzer, Goldstein, & Southwick, 2011).

Underpinning this pilot investigation's examination of couple relationship quality across trauma-type and perpetrator groups is the foundational etiological research from the field of traumatic stress demonstrating that the circumstances surrounding trauma exposure are significant predictors of post-traumatic adaptation (Breslau et al., 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Although both interpersonal and non-interpersonal trauma have been associated with posttraumatic stress, interpersonal trauma has been linked with greater vulnerability to complex PTSD and comorbid mental health diagnoses, affect dysregulation, anxious attachment, and relational challenges (e.g., Amstadter & Vernon, 2008; D'Andrea, Ford, Stolbach, Spinazzola, & van der Kolk, 2012; Forbes et al., 2014; McCall-Hosenfeld, Winter, Heeran, & Liebschutz, 2014; Taft et al., 2009). For example, multiple studies report that assault survivors experience significantly higher distress and suicidal ideation than survivors of non-interpersonal, non-assaultive crimes (Chung & Breslau, 2008; Wilcox, Storr, & Breslau, 2009). Other research also suggests that military sexual assault may be more strongly associated with poor mental health outcomes than combat exposure (Kang, Dalager, Mahan, & Ishii, 2005; Street, Gradus, Giasson, Vogt, & Resick, 2013).

Perpetrator-Type

In addition to empirically validated distinctions between types of trauma exposure, there is also evidence suggesting that, in the context of interpersonal trauma, survivor relationship to the perpetrator has a significant effect on individual and relational functioning. The threat of interpersonal trauma centers on its relational violation (Forbes et al., 2014). Betrayal Trauma Theory (Sivers, Schooler, & Freyd, 2002) suggests that the degree to which a traumatic experience constitutes a betrayal by a significant or trusted other affects how survivors process and integrate the experience into their working narrative. Consistent with the premise of this theory, Briere and Jordan (2004) found that the most severe trauma symptoms are experienced by survivors whose perpetrator was a well-known and trusted individual (e.g., parent, family member, romantic partner). When trauma is perpetrated by a known and trusted other, as opposed to a stranger, many survivors develop disorganized or dissociative attachment styles, particularly if the event occurred during childhood (Ford & Courtois, 2009). These attachment orientations can provoke acute emotion dysregulation, somatic stress, impaired self-development, and interpersonal dysfunction (Ford &

Courtois, 2009). Further, some individuals who experience trauma at the hands of a perpetrator with whom they share a close bond report more challenges developing trust, communicating, and cultivating intimacy in future relationships (Briere & Jordan, 2004). Even when the current partner is not a perpetrator of abuse, betrayal trauma appears to have a particularly adverse effect on relationship functioning. Childhood sexual abuse, for example, has been consistently linked with poor marital quality in adulthood (Godbout, Sabourin, & Lussier, 2008; Nelson & Wampler, 2000; Whisman, 2006). For this reason, the present pilot study sought to move beyond the broad dual faction delineation of trauma-type, toward the exploration of more specific and meaningful distinctions in the characteristics of exposure.

This line of inquiry is significant because although mental and relational health services available to veterans tend to focus on combat-related trauma, researchers have long known that pre- or non-service related traumas can have detrimental outcomes independent of combat experience (Rosen & Martin, 1996). Further, many treatment programs provided to veterans do not include romantic partners or family members, and thus, neglect the reciprocal relationship between individual and social system functioning. The most commonly used models for treating combat-related trauma include individually focused cognitive-behavioral therapies such as prolonged exposure and cognitive processing therapy (CPT; Monson et al., 2006), Eye Movement Desensitization and Reprocessing (EMDR; Shapiro & Maxfield, 2003), psychodynamic psychotherapy (Kudler, Krupnick, Blank, Herman, & Horowitz, 2009), and/or pharmacological interventions (Friedman, Davidson, & Stein, 2009). These approaches effectively address some aspects of trauma exposure but may ultimately fall short at addressing veteran issues rooted in non-military trauma and systemic stress. To conceptualize veteran family stress in a military-service vacuum is to miss broader historical and contextual factors that may interact to shape resilience and well-being. Meeting the complex needs of veteran couples coping with posttraumatic stress and relational adversity, requires service providers to adopt a wider, more varied lens for understanding the challenges – both past and present – facing this population.

The Present Pilot Study

The purpose of this pilot study was to begin exploring the associations between PTSD symptoms and relationship quality among military couples classified into groups based on characteristics of trauma exposure (i.e., trauma-type and perpetrator-type). By extending the dialogue to various components of trauma exposure and non-military related trauma, this study opens the door to the possibility of a more comprehensive conceptualization of intrapersonal and relational functioning in veteran couples. Two research questions were addressed in this study:

1. Is the severity of service member and spouse PTSD symptoms related to both their own relationship quality and to the relationship quality of their spouse within trauma type groups (i.e., interpersonal, non-interpersonal, military trauma exposure)?
2. Is the severity of service member and spouse PTSD symptoms related to both their own relationship quality and to the relationship quality of their spouse within perpetrator type groups (i.e., family member perpetrator, non-family member perpetrator, military trauma)?

We hypothesized that greater PTSD symptom severity for service members and spouses would be related to both their own and their partner's decreased relationship quality. Further, we hypothesized these associations may vary by group membership.

Method

Procedure

This study was part of a larger mixed methods project examining traumatic stress and relationship dynamics in military/veteran couples completed by the Trauma Research, Education, and Consultation at Kansas State University (TRECK) Team. The research team consisted of three doctoral students and one faculty member who conducted a series of interviews with veteran couples (For additional publications from the larger study, see Hamilton, Nelson Goff, Crow, & Reisbig, 2009; Nelson Goff et al., 2007, 2009; Wick & Nelson Goff, 2014). The study sample included 50 couples who were recruited from two cities in the Midwest that neighbor Army posts near the university where the research was conducted. Participants were recruited from within the local communities through a variety of methods, including publicly posted flyers and newspaper announcements; referrals from Army Family Readiness Groups, chaplains, and other local military/veteran sources; as well as referrals by other research participants. At least one partner had to have been deployed to Iraq or Afghanistan, all study participants had to be 18 years of age or older, and both partners had to deny current substance abuse or domestic violence during an initial telephone screening to be included in the study. Each couple that completed questionnaires and the interview process received \$50 for their participation. The research procedure was approved by the University's Institutional Review Board (IRB). Because the research project was not completed within the military/VA system, nor were data collected on military posts, military IRB approval was not required for the research procedure.

Sample

The sample included 50 couples (50 post 9/11 service members and 50 female spouses). Although female service members were not excluded from the sample, none elected to participate. All service member husbands served at least one post 9/11 deployment in Iraq or Afghanistan. The mean age for husbands was 32.0 ($SD = 7.43$) and 30.47 ($SD = 7.02$) for wives. The average length of relationship reported by participant couples was 6.23 years ($SD = 6.46$). Most couples had been married only once; 25% of husbands and 28% of wives had been married two or more times. Most husbands reported their race as Caucasian/White (80%) as did their wives (78%). Other participants identified their race as Black (9% of husbands, 4% of wives), Latino (4% of husbands, 2% of wives), Asian or Pacific Islander (4% of wives), American Indian or Alaska Native (4% of husbands, 8% of wives), or other (2% of husbands, 4% of wives). For level of education, half of the husbands completed some college (50%); similarly, most wives completed some college (36%) or completed college (22%). Veteran/soldier rank was not included in the assessment and therefore no data is available to report for this variable. Half of the wives reported working full- or part-time. The median annual income range for participants was \$30,000 –\$39,999. In this sample, all but two veterans/soldiers were deployed to Iraq (OIF) and the dates of deployment ranged from January 1, 2003 to February 24, 2005; all had only one post 9/11 deployment experience. Four wives reported previous military service, with two spouses reporting a post 9/11 deployment to Iraq. The mean length of deployment for the male soldiers was 10.06 months ($SD = 3.91$).

Measures

See Table 1 (below) for means and standard deviations of study variables.

Table 1

Soldier and Spouse Reports of PTSD Symptoms and Relationship Quality: Correlations (N = 100)

Variables	1	2	3	4
1. Husband Relationship Quality	–			
2. Husband PTSD Symptoms	-.47**	–		
3. Wife Relationship Quality	.73**	-.29*	–	
4. Wife PTSD Symptoms	-.50**	.24	-.54**	–
Variables	1	2	3	4
<i>M</i>	116.10	104.27	114.39	34.82
<i>SD</i>	17.85	14.39	17.66	17.65
<i>Range</i>	70-149	17-68	63-149	17-78

* $p < .05$. ** $p < .01$ (two-tailed).

Demographics. A standard demographic questionnaire was used to determine participant age, gender, race, relationship status, education, and military-related experience.

Trauma symptoms. The Purdue Posttraumatic Stress Disorder Scale - Revised (PPTSD-R; Vrana & Lauterbach, 1996) was used to assess husbands' and wives' trauma-related symptoms. This is a 17-item self-report scale that evaluates trauma-related symptoms according to the DSM-IV (APA, 1994). The PPTSD includes three subscales indicative of the DSM-IV's PTSD symptom categories: re-experiencing, avoidance, and arousal. Before completing this measure, participants were asked to indicate their "most traumatic experience." With this experience in mind, participants responded to each question on a 5-point Likert scale from 1 (*Not at all*) to 5 (*Often*). Total scores range from 17–85, with higher scores indicating greater trauma symptoms. The PPTSD has adequate internal consistency, with a coefficient alpha of .91 (Lauterbach & Vrana, 1996). This scale has also shown good test-retest reliability at .72 (Lauterbach & Vrana, 1996). For the current study, alpha estimates were strong for soldiers ($\alpha = .92$) and wives ($\alpha = .95$).

Relationship quality. Relationship quality was assessed with the Dyadic Adjustment Scale (DAS; Spanier, 1976), a 32-item Likert-type measure measuring participants' perceived marital relationship quality. Total scores range from 0–151, with higher scores indicating greater relationship satisfaction. Examples of items include: "How often have you discussed or considered divorce, separation, or terminating your relationship?"; "How often do you and your partner 'get on each other's nerves'?" and "Do you and your partner engage in outside interests together?" Reliability results for this measure in the current study were strong at .94 for soldiers and .93 for wives.

Trauma & perpetrator type. The grouping variables, trauma type and perpetrator type, were assessed using the Traumatic Events Questionnaire (TEQ; Vrana & Lauterbach, 1994). The TEQ is a self-report measure assessing exposure to six categories of war trauma (e.g., *Did you ever serve in a war zone where you received hostile incoming fire from small arms, artillery, rockets, mortars, or bombs?*), two

categories concerning traumatic events in childhood (e.g., *As a child, were you the victim of physical abuse?*), as well as nine other traumatic life events (e.g., *Have you been a victim of a violent crime such as rape, robbery, or assault?*). For each exposure endorsed, participants were asked to answer follow-up questions using a 7-point Likert-type scale regarding the frequency of the event(s), their age at the time of the event(s), severity of injury incurred, degree of life threat, and the extent to which they found the event traumatic (1 = *not at all*, 7 = *extremely*).

In one-on-one follow-up interviews, participants were asked to indicate which event on the TEQ they viewed as the most traumatic life event they had ever experienced. This information was used in Phase 1 of the reported analyses to categorize participants into one of three trauma-type groups: interpersonal trauma exposure, non-interpersonal trauma exposure, and military trauma exposure. Because military and combat experience is neither both interpersonal and non-interpersonal depending on the context, we created the third category – military trauma exposure – in recognition of the unique aspects of this experience. Interpersonal trauma exposure included those traumas in which one person was victimized at the hands of another person (e.g., sexual assault, physical assault, robbery). Non-interpersonal trauma exposure included those traumatic events that were caused by acts of nature or accident (e.g., natural disaster, car accident, life-threatening illness). Finally, military trauma included any traumatic life event affiliated with military service. Based on the definition of traumatic life events outlined in the Diagnostic and Statistical Manual for Mental Disorders (APA, 2013), these traumatic life events could either have been directly experienced by the participant or by someone with whom they maintain a close relationship. Interestingly, all participants indicated that they had been exposed to at least one traumatic life event; no participants had a TEQ final score of zero.

For those participants who experienced an interpersonal trauma (there was at least one partner in all 50 couples who reported an interpersonal trauma), their qualitative interviews were used to identify the perpetrator of their most traumatic life event. All interpersonal trauma survivors reported that their perpetrator was either a family member (e.g., parent, grandparent, aunt/uncle, sibling), a non-family member (e.g., peer, colleague, stranger), or military-related.

Data Analysis Plan

Data were analyzed using SPSS-IBM 22.0 and IBM-SPSS AMOS 21.0 software. Missing data were handled using full-information maximum likelihood (FIML; Acock, 2005). FIML does not impute missing values but uses all of the information available in order to provide a maximum likelihood estimation for the missing data (Acock, 2005). In Phase 1, actor and partner effects from husbands' and wives' PTSD symptoms to their relationship quality among trauma-type groups (i.e., interpersonal, non-interpersonal, and military) were tested by two a multiple multiple-group actor-partner interdependence models (APIM; Cook & Kenny, 2005). In model one, the grouping variable was husband trauma-type; in model two, the grouping variable was wife trauma-type. In Phase 2, the analysis was repeated with perpetrator-type (i.e., family member, non-family member, and military) as the grouping variable. In APIM analyses, actor-effects are the influences individuals have on themselves, whereas partner-effects are the influences individuals have on their spouses. A multiple-group APIM allows the same set of predictive pathways to be tested simultaneously for two or more groups.

Generally, the multiple-group APIM enables tests of moderation to determine if the path coefficients significantly differ in magnitude (i.e., are moderated) by group membership. These tests of moderation are conducted by constraining individual pathways, one at a time, to be equal, and testing if the chi-square for model fit indicated a significant reduction in model fit, which would denote significant moderation by group membership. We would have preferred to run these analyses;

however, based on statistical limitations relative to our sample size (see Kline, 2011), we were unable to perform these tests. Although there are secondary dyadic datasets with that many participants in existence, they generally do not have multiple informants in conjunction with strong measures of traumatic stress.

In this pilot study, we wanted to add to the field by exploring the impact of PTSD on relationship quality in the context of varying types of trauma exposure and varying relationships with perpetrators. Therefore, in this pilot study, we did not examine group membership as a moderator; rather, we examined findings within trauma-type and perpetrator-type classifications. Future studies with access to larger, dyadic datasets should replicate our methodology with the addition of moderation analyses to test for statistical difference (i.e., moderation) across groups.

Results

For the first phase of analyses, participants were grouped based on their type of trauma exposure. When asked about their most traumatic life event, seven husbands indicated that they experienced an interpersonal trauma, 42 indicated that their trauma was military-related, and one indicated that his trauma was non-interpersonal. For wives, 27 indicated that they experienced an interpersonal trauma, 11 indicated that their trauma was related to their spouse's military service, and 12 indicated that their trauma was non-interpersonal. For Phase 2 of the analyses, participants were then grouped based on their relationship with the perpetrator of their trauma. When asked about their most traumatic life event, six husbands indicated that the perpetrator was a family member, one was a non-family member, 42 were military-related, and one was a non-interpersonal trauma. For wives, 20 indicated that their perpetrators were family members, seven were non-family members, 12 were military-related, and 11 were non-interpersonal.

Preliminary Analyses

Pearson correlations among husband and wife PTSD symptoms and relationship quality were conducted to explore potential associations prior to performing the APIM analyses. Results showed that husband PTSD symptoms were negatively associated with their own ($r = -.47, p < .01$) as well as their wives' relationship quality ($r = -.29, p < .05$). Similarly, wives' PTSD symptoms were negatively associated with their own ($r = -.54, p < .01$) and their husbands' relationship quality ($r = -.50, p < .01$). There was not a significant relationship between husband and wife PTSD symptom scores in this preliminary analysis.

Trauma-Type APIM Results

Both the trauma-type and perpetrator-type multiple-group APIM models were just identified, meaning there are no model fit indices to report (Kline, 2011). Phase 1 of the analyses involved two multiple-group APIMs examining trauma-type as the grouping variable. The first APIM used husband trauma-type as the grouping variable; the second APIM used wife trauma-type as the grouping variable. Phase 1 results suggest that when husbands reported that their most traumatic life event was an interpersonal trauma, their PTSD symptoms were negatively associated with both their own ($\beta = -.93, p < .01$) and their wife's ($\beta = -.77, p < .05$) relationship quality (see Figure 1 below).

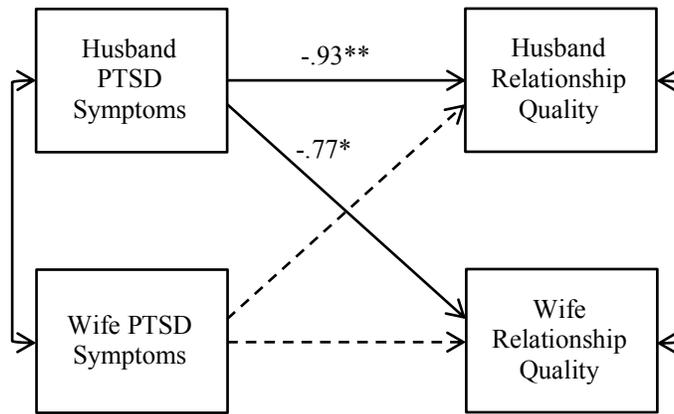


Figure 1. Significant standardized path coefficients for seven couples in which the husband’s trauma was interpersonal ($n = 14$) – reports of PTSD symptoms and relationship quality. Significant paths indicated with a solid line. $*p < .05$, $**p < .01$, $***p < .001$ (two-tailed)

When husbands reported that their most traumatic life event was a military-related experience, their PTSD symptoms were only associated with a decrease in their own relationship quality ($\beta = -.23, p < .05$). However, under this condition, wives’ PTSD symptoms were negatively associated their own ($\beta = -.52, p < .01$) and their husband’s ($\beta = -.56, p < .01$) relationship quality (see Figure 2 below).

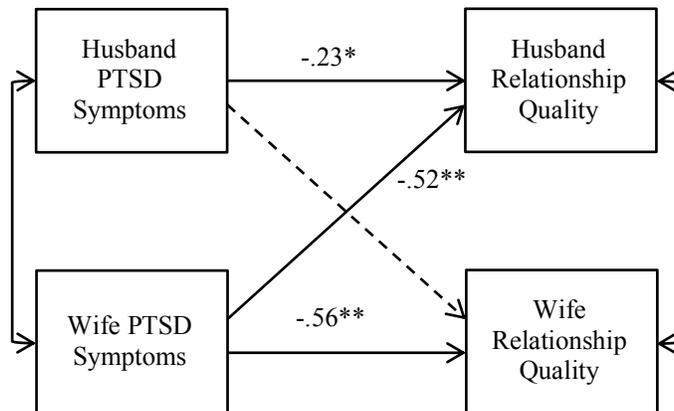


Figure 2. Significant standardized path coefficients for 42 couples in which the husband’s trauma was military-related ($n = 84$) – reports of PTSD symptoms and relationship quality. Significant paths indicated with a solid line. $*p < .05$, $**p < .01$, $***p < .001$ (two-tailed)

The effect size of these associations is moderately larger for the path between wife PTSD and husband relationship quality than the path from husband PTSD to his own relationship quality. This could potentially suggest that wives’ mental health may have a stronger influence on husbands’ relationship quality than even the husbands’ own symptom severity. Finally, when wives reported that their most traumatic life event was an interpersonal trauma, their PTSD symptoms were

negatively associated with their own relationship quality ($\beta = -.67, p < .001$), and their husband's PTSD symptoms were negatively associated with the husbands' own relationship quality ($\beta = -.45, p < .01$; see Figure 3 below). However, there were no significant partner effects in this model. Husband non-interpersonal, wife non-interpersonal, and wife military groupings did not yield any significant results.

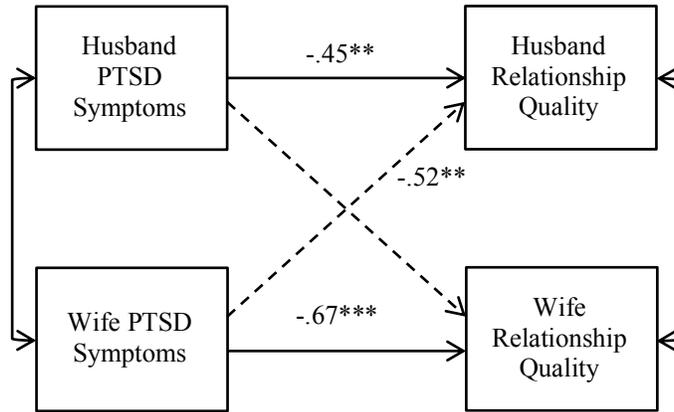


Figure 3. Significant standardized path coefficients for 27 couples in which the wife's trauma was military-related ($n = 54$) – reports of PTSD symptoms and relationship quality. Significant paths indicated with a solid line. $*p < .05$, $**p < .01$, $***p < .001$ (two-tailed)

Perpetrator-Type APIM Results

In Phase 2, we wanted to understand couple dynamics as they varied across groups relative to another aspect of trauma exposure – relationship of the perpetrator to the survivor. Interestingly, when grouped by husband perpetrator-type, there were no significant associations in any of the three groups. When grouped by wife perpetrator-type, results revealed that under the condition of a family member as the trauma perpetrator, wives' PTSD symptoms were negatively associated with their own relationship quality ($\beta = -.40, p < .01$; see Figure 4 below).

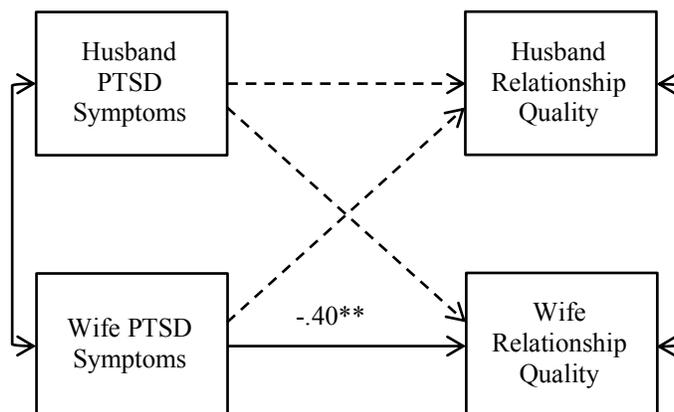


Figure 4. Significant standardized path coefficients for 20 couples in which the wife's trauma was perpetrated by a family member ($n = 40$) – reports of PTSD symptoms and relationship quality. Significant paths indicated with a solid line. $*p < .05$, $**p < .01$, $***p < .001$ (two-tailed)

When the spouse's perpetrator was a non-family member, there were significant actor and partner effects. Higher reports of husbands' PTSD symptoms were associated with decreases in both their own ($\beta = -.30, p < .001$) and their wife's ($\beta = -.49, p < .05$) relationship quality (see Figure 5 below).

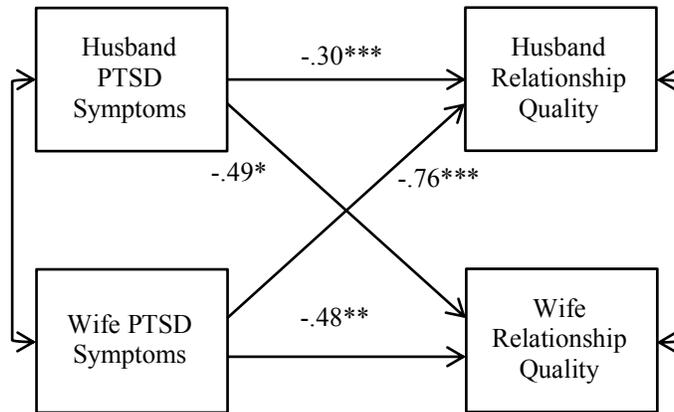


Figure 5. Significant standardized path coefficients for 7 couples in which the Wife's trauma was perpetrated by a non-family member ($n = 14$) – reports of PTSD symptoms and relationship quality. Significant paths indicated with a solid line. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed)

Similarly, wives' PTSD symptoms were negatively associated with both their own ($\beta = -.48, p < .01$) and their husband's relationship quality ($\beta = -.76, p < .001$). Similar to a finding from the trauma-type analyses, the effect size of the association between wife PTSD and husband relationship quality was large in this analysis. Finally, when wives indicated that their most traumatic experience was their husbands' military experience, wives' PTSD symptoms were negatively associated with both their own ($\beta = -.38, p < .01$) and their husband's ($\beta = -.70, p < .001$; see Figure 6 below) relationship quality.

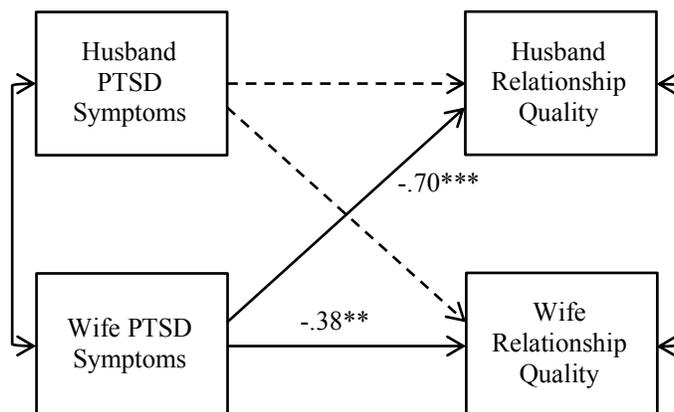


Figure 6. Significant standardized path coefficients for 7 couples in which the wife's trauma was perpetrated by a non-family member ($n = 14$) – reports of PTSD symptoms and relationship quality. Significant paths indicated with a solid line. * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed)

Similar to patterns identified in the trauma-type analyses, the effect sizes of these associations may suggest that wives' PTSD symptoms could play a stronger role in husband relationship quality than even the husbands' own symptom severity.

Discussion

This pilot study is a preliminary exploration of the association between PTSD symptoms and relationship quality across trauma-type and perpetrator-type groups in a sample of veteran couples. Phase 1 of the analyses grouped participants based on type of trauma exposure (i.e., interpersonal, non-interpersonal, military). Initial results suggest that among service members who indicated that their worst trauma was interpersonal in nature, their PTSD symptoms significantly predicted lower levels of both their own and their spouse's relationship quality. Among service members whose worst trauma was military-related, their PTSD symptoms predicted lower levels of their own relationship quality and their spouse's PTSD symptoms predicted lower levels of both their own, and the soldier's relationship quality. Among spouses, only the group who identified their worst trauma as interpersonal had significant results. Within this group, higher PTSD scores among soldiers and spouses significantly predicted lower levels of their own relationship quality. These results confirm the findings of previous research and may be explained by either or both partners' behavioral impairments (e.g., traumatic stress symptoms), as well as cognitive appraisals (e.g., perceptions, attributions) made about self and partner PTSD symptoms (Campbell & Renshaw, 2016; Renshaw et al., 2011).

Interestingly, in Phase 2 of the study, when participants were grouped by perpetrator-type (i.e., family member, non-family member, military), there were no significant effects among groups categorized by husbands' perpetrator-type. However, spouse perpetrator-type produced several meaningful results. Spouse PTSD scores were negatively associated with their own relationship quality across all three groups (family member, non-family member, military-related). Further, when a non-family member perpetrated the spouses' trauma, there were significant actor and partner effects suggesting that husbands' and wives' PTSD symptoms were negatively associated with both their own and their partner's relationship quality. Finally, among wives who indicated that their trauma was related to their husband's deployment, their PTSD symptoms were negatively linked with their own and their partner's relationship quality. Findings are consistent with previous research identifying the uniquely intrapersonal and relational effects of interpersonal trauma exposure (Forbes et al., 2014). However, further research is needed to understand the full nature of these effects.

Results from these preliminary analyses invite further exploration into the fundamental characteristics of trauma exposure and their effects on veteran couple functioning. They suggest that trauma type and perpetrator type could moderate the relationship between posttraumatic stress and relationship quality. Further, findings are consistent with previous studies illustrating the reciprocal nature of traumatic stress (e.g., Campbell & Renshaw, 2016; Campbell et al., 2017; Figley & Kiser, 2013; Goff & Smith, 2005; Johnson & Williams-Keeler, 1998). Thus, this pilot data appears to echo the call for more systemic, couple- and family-based treatment programs for trauma survivors, specifically military service members and veterans (e.g., Oseland, Gallus, & Nelson Goff, 2016). Much of the research and treatment literature on veteran couples focuses exclusively on military-related stress (Nelson Goff, Crow, Reisbig, & Hamilton, 2007). However, this is a myopic conceptualization of trauma exposure that could overlook the complex nature of trauma and the contextual reality in which it occurs. A more systemic and contextually-sensitive approach may require professionals to apply a broader lens for clinical assessment and intervention.

Rather than falling into the trap of assuming that service members' military trauma is the primary source of their psychological and relational distress, clinicians should thoroughly assess for a

history of both military and non-military related trauma with service members and their partners. This would allow clinicians to develop a more complete picture of the multi-level factors that might be influencing individual and couple functioning. This information, in turn, could invite the use of modified and potentially more effective treatment approaches that address multiple sources of trauma when the couple history calls for such approaches. The adoption of such holistic treatment approaches may possibly enhance treatment outcomes for veteran families and thereby promote greater resilience for this often-underserved population.

Limitations

To our knowledge, this was one of the first studies to examine actor and partner associations between service member and spouse PTSD symptoms and their relationship quality as participants are grouped by their type of trauma exposure and the perpetrator of their most traumatic life event. While there are many strengths of this study, these preliminary results should be interpreted in the context of key limitations. As mentioned, we would have liked to examine group membership as a moderator in these analyses. Similarly, we would have liked to control for the age at and duration of trauma exposure, among other variables. However, due to the small sample size and limited statistical power, we were unable to do so. In order to further understand the potential moderating effect on various aspects of trauma exposure (e.g., trauma-type, perpetrator-type), future researchers should replicate this study with a larger sample and systematically constrain pathways in the APIM model to evaluate group membership as a moderator, while controlling for other potentially confounding constructs.

Another limitation of this pilot study is the fact that the PPTSD-R assesses PTSD according to DSM-IV (APA, 1994) criteria and it is not a diagnostic tool. Future studies should employ more timely and robust measures of PTSD such as the PCL-5 (Blevins, Weathers, Davis, Witte, & Domino, 2015), which was modified to suit the updated DSM-5 (APA, 2013) PTSD diagnostic criteria. Also, only individual reports were available in the present study. Based on the limitations of self-reporting, researchers who replicate this protocol should include measures that assess both individual and perceived partner relationship quality to enhance results.

Conclusion

Findings from this pilot study suggest that veteran and spouse PTSD symptom severity may be negatively associated with both their own, and their partner's relationship quality when couples are grouped by characteristics of trauma exposure (i.e., trauma-type and perpetrator-type). Further, effect sizes allude to the possibility that spouse PTSD may be more strongly associated with a decrease in veteran relationship quality than even their own symptom severity in the context of some groups. As future researchers continue exploring these effects with larger and more diverse samples, we will gain greater understanding of the relationship between characteristics of trauma exposure, intrapersonal symptoms, and interpersonal functioning. These results would contribute to a more dynamic theoretical conceptualization of the recursive relationship between PTSD, relationship quality, and distinct facets of trauma exposure in veteran couples. As future studies verify these preliminary results, they will also have tangible implications for mental and relational health professionals working to promote resilience among veterans and their families.

* Denotes equal contribution as first author.

References

- Acock, A. C. (2005). Working with missing values. *Journal of Marriage and Family, 67*, 1012–1028. doi: 10.1111/j.1741-3737.2005.00191.x
- American Psychiatric Association. [APA] (1994). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- American Psychiatric Association. [APA] (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Amstadter, A. B., & Vernon, L. L. (2008). Emotional reactions during and after trauma: A comparison of trauma types. *Journal of Aggression, Maltreatment & Trauma, 16*(4), 391–408. doi:10.1080/10926770801926492
- Anderson, J. R., Johnson, M. D., Nelson Goff, B. S., Cline, L. E., Lyon, S. E., & Gurss, H. (2011). Factors that differentiate distressed and nondistressed marriages in Army soldiers. *Marriage & Family Review, 47*(7), 459–473. doi:10.1080/01494929.2011.619301
- Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2015). The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *Journal of Traumatic Stress, 28*(6), 489–498. doi:10.1002/jts.22059
- Booth, B., Segal, M. W., & Bell, D. B. (2007). *What we know about army families: 2007 update*. Washington, DC: Caliber.
- Brailey, K., Vasterling, J. J., Proctor, S. P., Constans, J. I., & Friedman, M. J. (2007). PTSD symptoms, life events, and unit cohesion in U.S. soldiers: Baseline findings from the neurocognition deployment health study. *Journal of Traumatic Stress, 20*(4), 495–503. doi:10.1002/jts.20234
- Breslau, N., Kessler, R. C., Chilcoat, H. D., Schultz, L. R., Davis, G. C., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: The 1996 Detroit area survey of trauma. *Archives of General Psychiatry, 55*(7), 626–632. doi:10.1001/archpsyc.55.7.626
- Briere, J., & Jordan, C. E. (2004). Violence against women: Outcome complexity and implications for assessment and treatment. *Journal of Interpersonal Violence, 19*(11), 1252–1276. doi:10.1177/0886260504269682
- Campbell, S. B., & Renshaw, K. D. (2016). Military couples and posttraumatic stress: Interpersonally based behaviors and cognitions as mechanisms of individual and couple distress. In S. M. Wadsworth & D. S. Riggs (Eds.), *War and family life* (pp. 55–75). Cham, Switzerland: Springer International Publishing AG.
- Campbell, S. B., Renshaw, K. D., Kashdan, T. B., Curby, T. W., & Carter, S. P. (2017). A daily diary study of posttraumatic stress symptoms and romantic partner accommodation. *Behavior Therapy, 48*(2), 222–234. doi:10.1016/j.beth.2016.04.006
- Chung, H., & Breslau, N. (2008). The latent structure of post-traumatic stress disorder: Tests of invariance by gender and trauma type. *Psychological Medicine, 38*(4), 563–573. doi:10.1017/S0033291707002589
- Committee on the Assessment of Ongoing Effects in the Treatment of Posttraumatic Stress Disorder (2012). *Treatment for posttraumatic stress disorder in military and veteran populations: Initial assessment*. Washington, DC: The National Academies Press.

- Cook, W. L., & Kenny, D. A. (2005). The Actor-Partner Interdependence Model: A Model of bidirectional effects in developmental studies. *International Journal of Behavioral Development, 29*(2), 101–109. doi:10.1080/01650250444000405
- D'Andrea, W., Ford, J., Stolbach, B., Spinazzola, J., & van der Kolk, B. A. (2012). Understanding interpersonal trauma in children: Why we need a developmentally appropriate trauma diagnosis. *American Journal of Orthopsychiatry, 82*(2), 187–200. doi:10.1111/j.1939-0025.2012.01154.x
- Figley, C. R., & Kiser, L. J. (2013). *Helping traumatized families* (2nd ed.). New York, NY: Routledge.
- Forbes, D., Lockwood, E., Phels, A., Wade, D., Creamer, M., Bryant, R. A.,... O'Donnell, M. (2014). Trauma at the hands of another: Distinguishing PTSD patterns following intimate and nonintimate interpersonal and noninterpersonal trauma in a nationally representative sample. *Journal of Clinical Psychology, 75*(2), 147–153. doi:10.4088/JCP.13m08374
- Ford, J. D., & Courtois, C. A. (2009). Defining and understanding complex trauma and complex traumatic stress disorders. In C. A. Courtois & J. D. Ford (Eds.), *Treating complex traumatic stress disorders: Scientific foundations and therapeutic models* (pp. 13–30). New York, NY: Guilford Press.
- Friedman, M. J., Davidson, J. R. T., & Stein, D. J. (2009). Psychopharmacology for adults. In E. Foa, T. Keane, M. Friedman, & J. Cohen (Eds.), *Effective treatments for PTSD* (pp. 245–268). New York, NY: Guilford Press.
- Godbout, N., Sabourin, S., & Lussier, Y. (2008). Child sexual abuse and adult romantic adjustment: Comparison of single- and multiple-indicator measures. *Journal of Interpersonal Violence, 24*(4), 693–705. doi:10.1177/0886260508317179.
- Goff, B. S. N., & Smith, D. B. (2005). Systemic traumatic stress: The couple adaptation to traumatic stress model. *Journal of Marital and Family Therapy, 31*(2), 145–157. doi:10.1111/j.1752-0606.2005.tb01552.x
- Hamilton, S., Nelson Goff, B. S., Crow, J. R., & Reisbig, A. M. J. (2009). Primary trauma of female partners in a military sample: Individual symptoms and relationship satisfaction. *American Journal of Family Therapy, 37*, 336–346. doi:10.1080/01926180802529965
- James, L. M., Van Kampen, E., Miller, R. D., & Engdahl, B. E. (2013). Risk and protective factors associated with symptoms of post-traumatic stress, depression, and alcohol misuse in OEF/OIF veterans. *Military Medicine, 178*(2), 159–165. doi:10.7205/MILMED-D-12-00282
- Johnson, S. M., & Williams-Keeler, L. (1998). Creating healing relationships for couples dealing with trauma: The use of emotionally focused marital therapy. *Journal of Marital and Family Therapy, 24*, 25–40. doi:10.1111/j.1752-0606.1998.tb01061.x
- Kang, H., Dalager, N., Mahan, C., & Ishii, E. (2005). The role of sexual assault on the risk of PTSD among Gulf War veterans. *Annals of Epidemiology, 15*(3), 191–195. doi:10.1016/j.annepidem.2004.05.009
- Karney, B. R., & Crown, J. S. (2007). *Families under stress: An assessment of data, theory, and research on marriage and divorce in the military*. Santa Monica, CA: RAND Corporation.

- Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the national comorbidity survey. *Archives of General Psychiatry*, *52*(12), 1048–1060. doi:10.1001/archpsyc.1995.03950240066012
- Kimble, M. O., Fleming, K., & Bennion, K. A. (2013). Contributors to hypervigilance in a military and civilian sample. *Journal of Interpersonal Violence*, *28*(8), 1672–1692. doi:10.1177/0886260512468319
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford Press.
- Kudler, H. S., Krupnick, J. L., Blank, A. S., Herman, J. L., & Horowitz, M. J. (2009). Psychodynamic therapy for adults. In E. Foa, T. Keane, M. Friedman, & J. Cohen (Eds.), *Effective treatments for PTSD* (pp. 346–369). New York, NY: Guilford Press.
- Lauterbach, D., & Vrana, S. R. (1996). Three studies on the reliability and validity of a self-report measure of posttraumatic stress disorder. *Assessment*, *3*, 17–25. doi:10.1177/107319119600300102
- Matsakis, A. (2004). Trauma and its impact on families. In D. Catherall (Ed.), *Handbook of stress, trauma, and the family* (pp. 15–32). New York, NY: Brunner-Routledge.
- McCall-Hosenfeld, J. S., Winter, M., Heeran, T., & Liebschutz, J. M. (2014). The association of interpersonal trauma with somatic symptom severity in a primary care population with chronic pain: Exploring the role of gender and the mental health sequelae of trauma. *Journal of Psychosomatic Research*, *77*(3), 196–204. doi:10.1016/j.jpsychores.2014.07.011
- Monson, C. M., Fredman, S. J., & Dekel, R. (2010). Posttraumatic stress disorder in an interpersonal context. In J. G. Beck, (Ed.), *Interpersonal processes in the anxiety disorders: Implications for understanding psychopathology and treatment* (pp. 179–208). Washington, DC: American Psychological Association.
- Monson, C. M., Schnurr, P. P., Resick, P. A., Fredman, S. J., Young-Xu, Y., & Stevens, S. P. (2006). Cognitive processing therapy for veterans with military-related posttraumatic stress disorder. *Journal of Clinical Psychology*, *74*, 898–907. doi:10.1037/0022/006X.74.5.898
- Nelson Goff, B. S., Crow, J. R., Reisbig, A. M. J., & Hamilton, S. (2007). The impact of individual trauma symptoms of deployed soldiers on relationship satisfaction. *Journal of Family Psychology*, *21*, 344–353. doi:10.1037/0893-3200.21.3.344
- Nelson Goff, B. S., Crow, J. R., Reisbig, A. M., & Hamilton, S. (2009). The impact of soldiers' deployments to Iraq and Afghanistan: Secondary traumatic stress in female partners. *Journal of Couple & Relationship Therapy*, *8*(4), 291–305
- Nelson, B. S., & Wampler, K. S. (2000). Systemic effects of trauma in clinic couples: An exploratory study of secondary trauma resulting from childhood abuse. *Journal of Marital and Family Therapy*, *26*(2), 171–184. doi:10.1111/j.17520606.2000.tb00287.x
- Oseland, L. M., Gallus, K. L., & Nelson Goff, B. S. (2016). Clinical application of the couple adaptation to traumatic stress (CATS) model: A pragmatic framework for working with traumatized couples. *Journal of Couple & Relationship Therapy*, *15*(2), 83–101. doi:10.1080/15332691.2014.938284

- Pietrzak, R. H., Whealin, J. M., Stotzer, R. L., Goldstein, M. B., & Southwick, S. M. (2011). An examination of the relation between combat experiences and combat-related posttraumatic stress disorder in a sample of Connecticut OEF–OIF Veterans. *Journal of Psychiatric Research, 45*(12), 1579–1584. doi:10.1016/j.jpsychires.2011.07.010
- Proulx, C. M., Helms, H. M., & Buehler, C. (2007). Marital quality and personal well-being: A meta-analysis. *Journal of Marriage and Family, 69*(3), 576–593. doi:10.1111/j.1741-3737.2007.00393.x
- Renshaw, K. D., Blais, R. K., & Caska, C. M. (2011). Distress in spouses of combat veterans with PTSD: The importance of interpersonally based cognitions and behaviors. In S. M. Wadsworth & D. S. Riggs (Eds.), *Risk and resilience in U.S. military families* (pp. 69–84). New York, NY: Springer.
- Renshaw, K. D., & Caska, C. M. (2012). Relationship distress in partners of combat veterans: The role of partners' perceptions of posttraumatic stress symptoms. *Behavior Therapy, 45*(2), 416–426. doi:10.1016/j.beth.2011.09.002
- Rosen, L. N., & Martin, L. (1996). Impact of childhood abuse history of psychological symptoms among male and female soldiers in the U.S. Army. *Child Abuse & Neglect, 20*(2), 1149–1160. doi:10.1016/S0145-2134(96)00112-3
- Schumm, W. R., Bell, D. B., & Resnick, G. (2001). Recent research on family factors and readiness: Implications for military leaders. *Psychological Reports, 89*, 153–165. doi:10.2466/pr0.2001.89.1.153
- Schwerdtfeger, K. L., & Oseland, L. M. (2013). The interpersonal paradox of trauma. In T. Van Leeuwen & M. Brouwer (Eds.), *Psychology of trauma* (pp. 183-196). New York: Nova Science Publishers, Inc.
- Shapiro, F., & Maxfield, L. (2003). EMDR and information processing in psychotherapy treatment: Personal development and global implications. In M. Solomon, & D. Siegel (Eds.), *Healing trauma* (pp. 196–220). New York, NY: Norton & Company.
- Sivers, H., Schooler, J., & Freyd, J. J. (2002). Recovered memories. In V.S. Ramachandran (Ed.) *Encyclopedia of the human brain, Volume 4*. (pp. 169–184). San Diego, CA: Academic Press.
- Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family, 38*, 15–28. doi:10.2307/350547
- Street, A. E., Gradus, J. L., Giasson, H. L., Vogt, D., & Resick, P. A. (2013). Gender differences among veterans deployed in support of the wars in Afghanistan and Iraq. *Journal of General Internal Medicine, 28*(2), S556–S562. doi:10.1007/s11606-013-2333-4
- Taft, C., Resick, P., Watkins, L., & Panuzio, J. (2009). An investigation of posttraumatic stress disorder and depressive symptomology among female victims of interpersonal trauma. *Journal of Family Violence, 24*(6), 407–415. doi:10.1007/s10896-009-9243-6
- van der Kolk, B. A. (2007). The body keeps the score: Approaches to the psychobiology of posttraumatic stress disorder. In B. van der Kolk, A. McFarlane, & L. Weisaeth. (Eds.), *Traumatic stress: The effects of overwhelming experience on mind, body, and society* (1st ed.) (pp. 214–241). New York, NY: Guilford.

- Vrana, S. R., & Lauterbach, D. (1994). Prevalence of traumatic events and post-traumatic psychological symptoms in a nonclinical sample of college students. *Journal of Traumatic Stress, 7*, 289–302. doi:10.1002/jts.2490070209
- Waite, L. J., & Gallagher, M. (2000). *The case for marriage: Why married people are happier, healthier, and better off financially*. New York, NY: Doubleday
- Whisman, M. A. (2006). Childhood trauma and marital outcomes in adulthood. *Personal Relationships, 13*(4), 375–386. doi:10.1111/j.1475-6811.2006.00124.x
- Wick, S., & Nelson Goff, B. S. (2014). A qualitative analysis of military couples with high and low trauma symptoms and relationship distress levels. *Journal of Couple & Relationship Therapy, 13*(1), 63-88. doi:10.1080/15332691.2014.865983
- Wilcox, H. C., Storr, C. L., & Breslau, N. (2009). Posttraumatic stress disorder and suicide attempts in a community sample of urban American young adults. *Archives of General Psychiatry, 66*(3), 305–311. doi:10.1001/archgenpsychiatry.2008.557
-

Austin R. Beck, M.S., LMFT

College of Human Ecology, Kansas State University
arbeck@ksu.edu

Lauren M. Rublmann, M.S., LMFT

College of Human Ecology, Kansas State University
loseland@ksu.edu

Briana S. Nelson Goff, PhD

College of Human Ecology, Kansas State University
bnelson@ksu.edu
