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The Impact of Individual Trauma Symptoms of Deployed Soldiers on Relationship Satisfaction

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Abstract

Research traditionally has focused on the development of individual symptoms in those who experienced trauma directly but has overlooked the interpersonal impact of trauma. The current study reports data from 45 male Army soldiers who recently returned from a military deployment to Iraq (Operation Iraqi Freedom) or Afghanistan (Operation Enduring Freedom) and their female spouses/partners. The results indicated that increased trauma symptoms in the soldiers significantly predicted lower marital/relationship satisfaction for both soldiers and their female partners, particularly sleep problems, dissociation, and severe sexual problems. The results suggest that individual trauma symptoms negatively impact relationship satisfaction in military couples in which the husband has been exposed to war trauma.

Key Words: military deployments, soldiers, traumatic stress, Operation Iraqi Freedom and Operation Enduring Freedom, relationship satisfaction, couples

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The Impact of War on Soldiers and Their Partners

Since 2001, military personnel and their families have experienced extraordinary separations. Toward the end of 2005, more than 160,000 soldiers were deployed to Iraq and Kuwait for *Operation Iraqi Freedom* (OIF) and 20,000 soldiers deployed to Afghanistan in support of *Operation Enduring Freedom* (OEF) (Globalsecurity.org, 2005). These operations have created the opportunity and the necessity to reassess how military deployments, specifically war-time deployments, are undertaken and endured by service members and their families.

Traumatic Stress and Related Symptoms in Soldiers

Particularly salient to soldiers are the mental health challenges that may be confronted while in theater or after redeployment. Posttraumatic stress disorder (PTSD; American Psychiatric Association [APA], 2000) is most often associated with war trauma. Other symptoms for which soldiers may be at risk include depression, anxiety, anger, sleep disturbances, somatization, substance abuse, dissociation, sexual problems, and related symptoms. Currently, the literature indicates that these additional symptoms are higher in soldiers with PTSD than those without, particularly related to anxiety and depression symptoms (Barak, Bodner, Klayman, Ring, & Elizur, 2000; Iowa Persian Gulf Study Group, 1997; Stimpson, Thomas, Weightman, Dunstan, & Lewis, 2003; Vogt, Pless, King, & King, 2005). Generally, the results suggest higher depression symptoms in military samples with PTSD, with some support for greater symptoms of anxiety or anxiety disorders. Other symptoms reported by soldiers with PTSD may include sexual problems (Iowa Persian Gulf Study Group, 1997; Ishøy et al., 2001) and substance abuse (Iowa Persian Gulf Study Group, 1997) (see Stimpson and colleagues' meta-analysis of individual symptoms in Persian Gulf War veterans).

Recent research with OIF/OEF soldiers by Hoge, Castro, Messer, McGurk, Cotting, and Koffman (2004) and Hoge (2005) reported increased post-deployment rates of PTSD symptoms (OIF = 12.9%; OEF = 6.2%), depression (OIF = 7.9%; OEF = 6.9%) and anxiety (OIF = 7.9%; OEF = 7.4%) in soldiers after deployment to Iraq and Afghanistan. However, currently, research that specifically identifies the impact PTSD, depression, anxiety, or similar symptoms have on OIF/OEF soldiers, their spouses/partners, or their relationship is not available.

The Impact of War on Relationship Functioning

Trauma, specifically combat or other military-related traumatic experiences, may be particularly detrimental to marriage (Dirkzwager, Bramsen, Adèr, & van der Ploeg, 2005; Ruger, Wilson, & Waddoups, 2002). Cook, Riggs, Thompson, Coyne, and Sheikh (2004) found that 31% of World War II ex-Prisoners of War (POWs) with PTSD reported marital distress, compared to 11% of those without PTSD. Research by Riggs, Byrne, Weathers, and Litz (1998) indicated that over 70% of the Vietnam veterans and partners in their sample reported clinically significant levels of relationship distress, compared to 30% of the non-PTSD couples. Other literature has focused on the perspective of the female spouse or partner of war veterans. Solomon et al. (1992) found combat stress reaction (CSR) and PTSD in husbands to be related to impaired marital, family, and social relations in wives. More recently, Dirkzwager et al. (2005) reported more marital/relationship problems in partners of Dutch military peacekeepers with PTSD than the partners of non-PTSD peacekeepers.

Theoretical Model of Trauma in the Couple System

The Couple Adaptation to Traumatic Stress (CATS) Model (Nelson Goff & Smith, 2005) provided a systemic description of how individual and couple systems are affected when trauma has occurred. This empirically-informed model includes a description of the mechanisms by

which trauma impacts the primary trauma survivor, the secondary partner, and the couple relationship (systemic traumatic stress effects). It suggests that a primary trauma survivor's level of functioning or trauma symptoms will set in motion a systemic response with the potential for secondary traumatic stress symptoms (Figley, 1983, 1998) to develop in the other partner. Because the model is circular, symptoms of secondary trauma in the partner may intensify symptoms of primary trauma in the spouse. In addition, the CATS Model proposes that adaptation to traumatic stress in the couple dyad involves three primary concepts: individual level of functioning of both partners, predisposing factors and resources, and couple functioning. The model suggests that individual symptoms in primary and secondary partners affects couple relationship functioning, a primary focus of the current study.

Purpose of the Current Study

Several limitations exist in the current literature on trauma in couples. First, trauma research predominately includes clinical samples of trauma survivors with diagnosed PTSD. However, we know from PTSD prevalence research that the actual number of trauma survivors, including war veterans, with PTSD is low. The National Comorbidity Survey Replication (2005) estimated the prevalence of lifetime PTSD to be 6.8% in the general adult population, with women (9.7%) over twice as likely as men (3.6%) to develop PTSD at some point in their lives. According to Cozza's (2005) review of the prevalence data in veteran samples, PTSD estimates of 13-15% for Vietnam veterans and OIF veterans and less than 2% for Desert Storm veterans indicate that the majority of war veterans do not experience PTSD. While it is recognized that more people who are exposed to traumatic events may be at risk for subclinical trauma symptoms, this larger population of trauma survivors often are excluded from trauma research. In addition, much of the available empirical literature focuses predominately on individual

symptoms in both primary trauma survivors (specifically PTSD) and their partners (secondary trauma symptoms), as opposed to understanding the impact on relationship satisfaction or other components of relationship functioning in couples. Because it is a relatively new area, current research on the impact of traumatic stress symptoms on the relationship satisfaction of OIF/OEF soldiers and their spouses/partners has not been conducted. The current study sought to identify how individual trauma history and trauma symptoms in a sample of OIF/OEF soldiers impacts the relationship satisfaction of soldiers and their spouse/partner. To specifically address the relationship satisfaction component of the CATS Model as it relates to individual trauma history and trauma symptoms, the primary hypothesis for the current study was:

1. Greater trauma history and trauma symptoms of soldiers will predict lower relationship satisfaction for soldiers and for the female spouses/partners.

Although it might be expected that more severe psychological symptoms (e.g., sexual trauma symptoms, dissociation) would more significantly impact relationship satisfaction in both partners, currently there is no empirical literature to support these hypotheses. In addition, because this sample was a nonclinical sample from a targeted population (i.e., military personnel), we expected that the participants would not be experiencing high levels of these types of severe symptoms, as might be reported from a clinical sample. Based on the preliminary analyses for Hypothesis 1, the supplemental hypotheses for the current study were:

2. Depression and anxiety symptoms of soldiers will predict their lower relationship satisfaction more than other individual trauma symptoms (dissociation, SATI, sleep disturbances, sexual problems).

3. Depression and anxiety symptoms of soldiers will predict lower relationship satisfaction in the female spouses/partners more than other individual trauma symptoms (dissociation, SATI, sleep disturbances, sexual problems).

Method

Procedure

This study included results from 45 couples in two small cities in the Midwest that neighbor Army posts near the university where the research was conducted. Ft. Riley includes approximately 10,000 active duty military personnel and 12,020 family members, housing several combat units (Globalsecurity.org, 2005). Ft. Leavenworth is primarily a training facility for majors and lieutenant colonels representing all branches of the Army, with a population of approximately 5,253 military personnel and 4,613 family members (Globalsecurity.org, 2005). A “class” of approximately 1,000 officers attends this training college annually.

Participants were recruited from within the local communities through a variety of methods, including publicly posted flyers and newspaper announcements; referral from Army Family Readiness Groups, chaplains, and other local military sources; and referral by other research participants. Participants were not recruited by contacting staff or soldiers directly through the military bases. All recruitment occurred through contacts in the surrounding communities or through contacts *to* the researchers.

The sampling method was both purposive and convenience, in that recent deployment to OIF or OEF was a criterion for participation and couples volunteered to participate. Inclusion criteria also included the following: all study participants were 18 years of age or older, had been in their current relationship for at least one year, and denied current substance abuse or domestic

violence during an initial telephone screening. Each couple that completed questionnaires and the interview process received \$50 for their participation.

The research procedure was approved by the University Institutional Review Board (IRB), with assurances made to follow informed consent procedures and to protect participant privacy and confidentiality. Because the research project was not completed within the military system, nor was data collected on the military posts, military IRB approval was not included in the research procedure process.

Data collection began 8/25/04 and concluded 6/20/05. Of 56 total couples who initially agreed to complete the study protocol, 11 cancelled or did not show for their appointment, resulting in a final sample size of 45 couples with complete data (response rate = 80.36%).

Research Participants

The total sample included 45 male soldiers and 45 female partners. Although female soldiers were not excluded from the sample, no female soldiers elected to participate. Of the soldiers, 95.6% ($n = 43$) served in OIF, while 4.4% ($n = 2$) served in OEF. In addition, 91.1% ($n = 41$) were recruited from the Ft. Riley area and 9.9% ($n = 4$) were recruited from the Ft. Leavenworth area. The average length of deployment was 10.03 months ($SD = 3.98$), with an average of 5.10 months ($SD = 3.39$) since the time the soldiers redeployed home and when they completed the research study.

Employment status indicated that 95.6% ($n = 43$) of soldiers worked full-time in the military, with 4.4% ($n = 2$) reporting that they were unemployed. For the female partners, 51.1% ($n = 23$) worked full- or part-time, compared to 46.3% of Army spouses who were employed full- or part-time (Peterson, 2002). The median annual income range for participants was \$30,000-39,999.

The participants indicated that 95.6% ($n = 43$) were currently married, compared to 51% of total Army soldiers (Office of Army Demographics, 2004). The average relationship length was 5.31 years ($SD = 5.47$; range = 5 months to 21 years; 5 months was the length of marriage for couples who had been together as a couple longer but recently had been married), compared to approximately 64.5% of total Army couples who have been married 10 years or less (Peterson, 2002). Additional descriptive statistics of the current sample in comparison to the Army demographics are presented in Table 1.

Measurement Instruments

Traumatic Events Questionnaire (TEQ). The TEQ (Vrana & Lauterbach, 1994) was used to confirm the history of trauma and types of trauma exposure reported by the participants. The purpose of the scale is to determine the experience of each participant with various types of trauma that have the potential to produce symptoms of post-traumatic stress (Lauterbach & Vrana, 1996). The scale used in the current study included six items addressing war events (*Did you ever serve in a war zone where you received hostile incoming fire from small arms, artillery, rockets, mortars, or bombs?*), two items about traumatic events in childhood (*As a child, were you the victim of physical abuse?*), and nine other traumatic events (*Have you been a victim of a violent crime such as rape, robbery, or assault?*). In the current study, affirmative answers on the 17 TEQ items were tallied to provide a “TEQ Total” score, ranging from 0 to 17, with higher scores indicating more types of traumatic events experienced. When asked a follow-up question about what they considered to be their most traumatic experience, the majority of the soldiers (82%) indicated that their OIF/OEF deployment (or an experience related to the war) was their most traumatic experience, while 24% of the female partners indicated that their husband’s deployment was the most traumatic experience they had endured. The TEQ has shown

appropriate reliability, with test-retest reliability coefficients ranging from .72 to 1.00 (Vrana & Lauterbach, 1994).

Purdue Post-Traumatic Stress Disorder Scale-Revised (PPTSD-R). The PPTSD-R (Lauterbach & Vrana, 1996) consists of 17 items that correspond to each *Diagnostic and Statistical Manual for Mental Disorders, 4th Edition*, diagnostic criteria for PTSD (APA, 1994), with three subscales that reflect the three general symptom categories of Re-experiencing (4 items), Avoidance (7 items), and Arousal (6 items). The PPTSD-R items are scored from 1 (“Not at all”) to 5 (“Often”), with continuous total scores ranging from 17-85, with higher scores indicating greater PTSD symptoms. The measure, which does not provide a diagnosis or cut-off score, asks participants to indicate how often each reaction occurred during the previous month. Examples of items from the PPTSD-R include the following: *Have you had upsetting dreams about the event; Did you avoid activities or situations that might remind you of the event; and Have you felt unusually distant or cut off from people?*

In the current study, soldiers reported an overall mean of 35.79 for the PPTSD-R, while female partners reported a mean of 34.77. These scores are comparable to other nonclinical samples (c.f., Lauterbach & Vrana, 1996 [male and female sample using the PPTSD-R: M = 31.5]), but they are lower than clinical samples and other veteran samples (c.f., Martz, 2005 [nonpsychiatric male and female sample using the PPTSD-R: M = 52.2 for participants with military combat exposure]; Nelson, 1999 [male and female sample using the PPTSD-R: M = 68.2 for male Vietnam veterans with a PTSD diagnosis and M = 41.6 for their female partners]). The PPTSD-R has been shown to have adequate internal consistency, with coefficient alpha for the total score at .91 (Lauterbach & Vrana, 1996). The scale also has demonstrated good test-retest reliability for the total score (.72). For the current study, Cronbach alpha estimates for the

total scale scores were adequate for soldiers (.92) and female partners (.95).

Trauma Symptom Checklist-40 (TSC-40). The TSC-40 (Briere, 1996; Briere & Runtz, n.d.) is a research measure that evaluates symptomatology in adults who have experienced previous traumatic experiences. The TSC-40 is a 40-item self-report instrument that ranges from 0 (“Never”) to 3 (“Often”) and includes six subscales: Anxiety (9 items), Depression (9 items), Dissociation (6 items), Sexual Abuse Trauma Index (7 items), Sexual Problems (8 items), and Sleep Disturbance (6 items). Total continuous scores range from 0-120. As with the PPTSD-R, higher scores indicate greater trauma symptoms. The measure, which does not provide a diagnosis or cut-off score, asks participants to indicate how often they have experienced symptoms in the last two months and includes such symptoms as headaches, insomnia, flashbacks, sexual problems and other individual symptoms that may result from previous childhood or adult traumatic experiences.

In the current study, soldiers reported an overall mean of 20.27 for the TSC-40, while female partners reported a mean 27.85 for the TSC-40. These scores are comparable to other nonclinical samples (c.f., Elliott & Briere, 1992 [female sample using the TSC-40: $M = 22.3$]), but they are lower than clinical samples (Whiffen, Benazon, & Bradshaw, 1997 [male and female sample using the TSC-40: 29.5-54.7]). Similarly, for the TSC-40 subscales, the soldiers’ scores were lower than the subscale scores of the participants in the Whiffen et al. (1997) study for all subscales except Sleep Disturbances. The soldiers’ scores also were lower than the participants in the Elliott and Briere (1992) study for all subscales except Dissociation, Sleep Disturbances, and SATI (the comparison with the Elliott and Briere study should be interpreted with caution due to their sample being exclusively female).

The TSC-40 was included in the current study because of the additional symptom

subscales it provides and because it provides a measure of general trauma symptoms beyond PTSD. The TSC-40, which has been used with a variety of trauma survivors (c.f., Briere & Runtz, n.d., for a list of references using the TSC-40), has demonstrated adequate reliability, with subscale alphas ranging from .66 to .77 and total score alphas averaging between .89 and .91. In the current study, Cronbach alpha estimates for the subscales ranged from .64 (soldiers' anxiety subscale) to .89 (female partners' sleep disturbance subscale), with Total estimates at .92 for soldiers and .94 for female partners.

In the current study, the correlation between the soldiers' TEQ and their PPTSD-R was .55 and between the soldiers' TEQ and their TSC-40 was .49. The correlation between the soldiers' PPTSD-R and the soldiers' TSC-40 in the current study was .82. (See Table 2 for additional correlation results for the specific study variables).

Assessment of Relationship Functioning

Dyadic Adjustment Scale (DAS). Relationship satisfaction/functioning was assessed with the DAS (Spanier, 1976), which is a 32-item, variable-Likert measure assessing the quality of the relationship as perceived by both partners. Total scores range from 0-151, with higher scores indicating greater relationship satisfaction. Examples of items include the following: *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?*

The DAS has demonstrated good internal consistency on the total score (alpha = .96; Fischer & Corcoran, 2000). The DAS has adequate convergent validity correlations (.86 - .88) with the Locke-Wallace Marital Adjustment Test (LWMAT, Locke & Wallace, 1959, as cited in L'Abate & Bagarozzi, 1993), from which it was derived. Cronbach alpha estimates for the DAS

were .93 for both soldiers and female partners.

Results

Statistical Procedures

A series of linear multiple regression models, using the Statistical Package for the Social Sciences (SPSS, 2004), were completed to determine the independent variable(s) (trauma history and trauma symptom scores, as measured by the TSC-40, PPTSD-R, and TEQ scores for the soldiers) that best predicted the dependent variable (relationship satisfaction, as measured by the DAS scores for soldiers and their female partners). Based on this multiple regression analysis, additional multiple regression analyses were conducted with the TSC-40 subscale results. Stepwise (statistical), multiple regression using backward deletion was used in the analyses resulting in the elimination of least predictive variables from each model. Pre-analysis screening for multivariate outliers using Mahalanobis distance (Mertler & Vannatta, 2002) led to the deletion of one couple's data, leaving 44 couples' data available for the regression analyses. Due to the sample size, eight separate regression analyses were conducted.

It was possible that the power of this study would be compromised because of the small sample size. Power estimates were made with a method suggested by Cohen and Cohen (1975) for determining power using R^2 estimates. The power estimates for this study, with alpha set at .05, ranged from high (i.e., $> .99$ for multiple regression analyses of the prediction of soldiers' DAS scores from soldiers' TEQ, TSC-40, and PTSD scores) to low (e.g., $> .30$ when predicting partners' DAS scores from the soldiers' TSC-40 subscales). The power estimate for the last step in the regression analysis to test the prediction of the partners' DAS score from soldiers' TSC-40 total score was $> .60$, and the last step in the analysis of the prediction of the partners' DAS from TSC-40 subscale scores had a power estimate of $> .50$. All of the power estimates for the

regression analyses of the prediction of the soldiers' DAS scores from soldiers' TSC-40 and the TSC-40 subscales were $> .95$.

Correlations

Significant negative correlations were found between soldiers' DAS and soldiers' PPTSD-R ($r = -.45, p < .01$) and TSC-40 scores ($r = -.58, p < .001$), but not for soldiers' TEQ total scores ($r = -.19$). Female partners' DAS scores were only significantly correlated with soldiers' TSC-40 scores ($r = -.32, p < .05$). For the soldiers' TSC-40 subscale results, significant negative correlations were found between all six of the soldiers' TSC-40 subscale scores and their DAS scores, but only soldiers' Dissociation ($r = -.46, p < .01$) and Anxiety ($r = -.42, p < .01$) subscale scores were significantly negatively correlated with the female partners' DAS scores. A summary of the relevant correlation results is presented in Table 2.

Current Relationship Satisfaction Based on Soldiers' Trauma Symptoms

To test Hypothesis 1, two regression analyses were conducted to examine the predictive contributions of the soldiers' trauma history and trauma symptoms, as measured by the TEQ, TSC-40, and PPTSD-R, on current relationship satisfaction (DAS scores) for both the soldiers (first regression analysis) and their partners (second regression analysis). Although it was expected that all three individual variable measures would significantly predict relationship satisfaction scores, the only significant predictor of the soldiers' current relationship satisfaction was the soldiers' own TSC-40 scores, $R^2 = 0.42, Adj R^2 = 0.41; F(1,42) = 30.50, p < .001$. Similarly, the soldiers' TSC-40 scores were also the most significant predictor of the female partners' current relationship satisfaction, $R^2 = 0.11, Adj R^2 = 0.09; F(1,42) = 5.23, p < .05$. Thus, Hypothesis 1 was partially supported, as the trauma symptoms (TSC-40 scores) in soldiers

significantly predicted relationship satisfaction for both soldiers and their female partners.

Results of these analyses are presented in Table 3.

Current Relationship Satisfaction Based on TSC-40 Subscales

Because the TSC-40 was the only measure that significantly predicted relationship satisfaction in the overall regression analysis, only the TSC-40 subscales were included in the analyses for Hypotheses 2 and 3. To test Hypotheses 2 and 3, the predictive value of the TSC-40 subscale scores (Dissociation, Depression, Anxiety, Sleep Disturbances, Sexual Problems, and Sexual Abuse Trauma Index [SATI]) on the soldiers' and the partners' current relationship satisfaction was examined through multiple regression analyses. Due to the sample size, three subscales (Dissociation, Depression, and Anxiety) were entered in the first set of regression analyses and the other three subscales (Sleep Disturbances, Sexual Problems, and SATI) were entered in the second set of regression analyses. Three separate regression analyses were conducted for each hypothesis, which are presented in Tables 4 and 5, respectively.

Soldiers' individual symptoms predicting their relationship satisfaction. To test Hypothesis 2, when soldiers' Dissociation, Anxiety, and Depression subscale scores were entered as independent variables, soldiers' Depression subscale scores significantly predicted the soldiers' relationship satisfaction (DAS) scores, $R^2 = 0.29$, $Adj R^2 = 0.28$; $F(1, 42) = 17.37$, $p < .001$. When the soldiers' Sleep Disturbances, Sexual Problems, and SATI subscale scores were entered into a model, the most significant predictors of the soldiers' relationship satisfaction scores were the soldiers' Sexual Problems and Sleep Disturbances subscale scores, $R^2 = 0.32$, $Adj R^2 = 0.29$; $F(2, 41) = 9.63$, $p < .001$. A final regression analysis was used to determine which of these three subscales (Depression, Sleep Disturbances, and Sexual Problems) significantly predicted soldiers' relationship satisfaction scores. Soldiers' Sleep Disturbances and

Sexual Problems subscales significantly predicted 29% of the variance in their current relationship satisfaction; thus, in the final model, Hypothesis 2 was not supported, as Depression and Anxiety subscale scores did not significantly predict soldiers' relationship satisfaction.

Soldiers' individual symptoms predicting female partners' relationship satisfaction.

Based on the overall TSC-40 multiple regression results, a cross-comparison also was made to test Hypothesis 3, pairing the soldiers' TSC-40 subscale scores as predictors of the female partners' relationship satisfaction (DAS) scores. Although only the soldiers' Dissociation and Anxiety subscale scores were significantly correlated with the female partners' DAS scores, the same multiple regression analyses were conducted as the soldiers' within-participants analysis (i.e., with all subscales analyzed). When soldiers' Dissociation, Anxiety, and Depression subscale scores were entered as independent variables, soldiers' Dissociation subscale scores significantly predicted the female partners' DAS scores in the final model, $R^2 = 0.21$, $Adj R^2 = 0.19$; $F(1, 42) = 11.04$, $p < .01$. When the soldiers' Sleep Disturbances, Sexual Problems, and SATI subscale scores were entered into a model, the most significant predictor of the female partners' relationship satisfaction scores was the soldiers' SATI (Sexual Abuse Trauma Inventory) subscale scores, $R^2 = 0.10$, $Adj R^2 = 0.08$; $F(1, 42) = 4.56$, $p < .05$.

The final regression analysis was used to determine which of the two subscales (Dissociation and SATI) significantly predicted the female partners' relationship satisfaction scores. Soldiers' Dissociation and SATI subscales significantly predicted female partners' relationship satisfaction scores in the final model, $R^2 = 0.26$, $Adj R^2 = 0.23$; $F(2, 41) = 7.28$, $p < .01$. Thus, the soldiers' Dissociation and Sexual Abuse Trauma Inventory (SATI) symptoms together accounted for approximately 23% of the observed variance in the female partners' relationship satisfaction. Hypothesis 3 was not supported, as the soldiers' Depression and

Anxiety subscale scores did not significantly predict the female partners' relationship satisfaction.

Discussion

Previous research has found greater risk of depression, anxiety, PTSD, and other trauma-related symptoms in war veterans (see Cozza, 2005 for a review of research on combat exposure and PTSD), and most recently in soldiers after their deployment to Iraq and Afghanistan (Hoge, 2005; Hoge et al., 2004). However, this research has not addressed the connection between individual trauma symptoms and relationship satisfaction, both within and between partners. The results of the current study indicate that soldiers' trauma symptoms significantly predicted their own and their partners' marital satisfaction, specifically their TSC-40 scores. Thus, in the current study, TSC-40 scores significantly predicted 41% of the variance in soldier relationship satisfaction (DAS) scores and 9% of the variance in partners' relationship satisfaction scores.

Although Hypothesis 1 was partially supported, as trauma symptoms (TSC-40 scores) in soldiers did predict lower relationship satisfaction for soldiers and the female spouses/partners, we wanted to further understand the specific symptom subscales that most significantly predicted relationship satisfaction. However, soldiers' Depression and Anxiety symptoms did not significantly predict relationship satisfaction, as was expected in Hypothesis 2. Although different from what was predicted based on the literature, the results indicate that for the current sample of OIF/OEF soldiers, sexual and sleep problems had the greatest impact on the soldiers' current relationship satisfaction.

To understand how individual trauma symptoms might affect relationship satisfaction across partners (e.g., similar to what studies on depression in partners have found [c.f., Mead, 2002]), we expected that individual symptoms (depression and anxiety) in soldiers would

significantly predict their female partners' relationship satisfaction (Hypothesis 3). However, as with Hypothesis 2, the results were not as expected. Dissociation and sexual trauma symptoms in soldiers predicted approximately 23% of the female partners' relationship satisfaction. Although not as predicted, these results also indicate a unique combination of symptoms in soldiers that may contribute to reduced relationship satisfaction in their partners.

The results suggest that high levels of individual trauma symptoms in the soldiers, particularly their sexual problems, dissociation, and sleep disturbances, significantly predicted lower marital/relationship satisfaction for both the soldiers and the female partners. The research by Hoge and colleagues (2004; Hoge, 2005) does not indicate whether these particular symptoms also were addressed in their research with OIF/OEF soldiers, so it is difficult to make comparisons with our current results. The results of the current study indicate a need for future research to specifically consider these symptoms in OIF/OEF soldiers, particularly if a combination of sexual, dissociative, and sleep problems are uniquely related to previous trauma exposure. Other research has found sleep disorders, dissociation, and sexual problems to be problems reported by veterans, especially in recent research with Gulf War veterans (Ishøy et al., 2001; Jones et al., 2003; Simmons, Maconochie, & Doyle, 2004) and peacekeepers in recent conflicts (Dirkzwager et al., 2005). However, these studies did not address relationship satisfaction specifically related to these individual symptom variables.

The current study provides further information about the relationship effects in a sample of individuals who have experienced recent extreme traumatic events. The individual trauma symptoms reported by the participants are directly related to their previous traumatic experiences and not necessarily general symptomatology. However, these results also point to the interpersonal impact of severe trauma symptoms, particularly sleep problems, dissociation and

severe sexual symptoms. If the data indicated a significant relationship between the within-participant variables alone, then the results could be considered indicative of an individual phenomenon. Because significant results were found between soldiers' symptoms and the female partners' relationship satisfaction scores, these results suggest that trauma affects interpersonal or systemic functioning, similar to other research findings (Cook et al., 2004; Dirkzwager et al., 2005; Riggs et al., 1998). The current results provide additional information about specific trauma-related symptoms beyond PTSD that affect relationship satisfaction in couples.

Although Hypothesis 3 was not supported, the results provide information about the impact of individual trauma symptoms in couples where the husband has been exposed to war trauma. The current study aids in further identifying the relationship between reported individual trauma symptoms and marital/relationship satisfaction described in the CATS Model (Nelson Goff & Smith, 2005). Although we expected both trauma symptoms and total traumatic events experienced (TEQ total) to significantly affect relationship satisfaction, only one measure of trauma symptoms (TSC-40) was statistically significant. In addition, this was a measure of general trauma symptoms, not the measure based on PTSD diagnostic criteria. These results suggest that it may be other trauma symptoms that most affect the couple relationship, not a greater exposure to traumatic events or specific PTSD diagnosis. However, most other trauma research has included participants experiencing clinical levels of PTSD. In our nonclinical sample, it is possible that OIF/OEF soldiers received such extensive training on recognizing PTSD symptoms that they are attuned to anything that "appears" to indicate PTSD, because of possible repercussions for active-duty soldiers, resulting in elevated "general" symptoms and lower scores on the PTSD-specific items.

It is particularly interesting that sexual problems and sexual abuse trauma symptoms

(SATI) were found to be predictors of marital satisfaction for soldiers and female spouses, respectively. However, interpreting the SATI as an automatic indicator of soldiers' sexual trauma should be avoided, as the SATI subscale includes only two of the seven items that actually assess sexual functioning (sexual problems and bad thoughts or feelings during sex). The other items include more general trauma symptoms (e.g., flashbacks, nightmares, memory problems). The current study did not specifically recruit soldiers or partners with a sexual trauma history, and only four soldiers reported childhood sexual abuse and no soldiers reported violent sexual experiences in adulthood. The presence of sexual problems and symptoms may be unique to the current sample and requires further study.

High levels of trauma symptoms may make it difficult for soldiers to be emotionally available to their female partners, thus decreasing their level of marital/relationship satisfaction. The emotional repercussions of trauma may be so consuming to those with first-hand experience that it may be difficult for soldiers to set aside or ignore those effects when dealing with non-war related situations and issues, both physically and emotionally. Those most emotionally connected to the soldiers, namely the female partners, may be more sensitive to and aware of its impact, as illustrated in the lower relationship satisfaction levels in female partners. It is possible that these particular symptom clusters are more recognizable because of their "external" nature, as opposed to anxiety and depression, which tend to be more internal and more easily masked or ignored.

There are several limitations of the current study, including the small, homogeneous sample. Participants were not directly recruited from a clinical sample, so these results may only be indicative of a fairly well-functioning, nonclinical sample. The individual symptom measures (PPTSD-R and TSC-40) are not diagnostic tools, so although general trauma symptoms can be described, whether the participants actually were diagnosed with a psychiatric disorder as a result

of their traumatic experiences is unknown. In addition, the average DAS scores for the sample were high (i.e., over 100 for both soldiers and partners; Eddy, Heyman, & Weiss, 1991) and included young couples who were currently married or in a committed relationship, which indicates, overall, a highly satisfied sample of couples. A clinical sample of couples may yield stronger results related to symptom severity, as the current results may not be generalizable to individuals experiencing severe trauma symptoms, severe dissatisfaction with their relationship, or those who have been married longer and experienced other deployments or separations.

Finally, there are several limitations related to the military sample included in the study. The study provided data on a limited number of predominately active duty soldiers and their partners recruited from two military installations that were selected due to geographic convenience. As a result of the recruitment and because the sample included a disproportionate number of European American, older, and more educated military officers, the soldiers in the current study may not be a representative sample of a broader Army population. Also, few participants were members of National Guard or Reserve Units that were deployed and no female soldiers were represented in the sample. Although we attempted to actively recruit participants from Guard and Reserve units through newspaper advertisements and direct contacts, there was limited participation from these groups.

In conclusion, the current study provided additional empirical support for the impact of trauma symptoms in a sample of military couples. We can no longer consider trauma to be a strictly individual experience. Continued research is needed to further understand the systemic repercussions of exposure to war trauma on soldiers, their partners, and their couple relationship.

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Table 1

Demographic Statistics

	Total Army		Current Sample (<i>n</i> = 45)	
	Soldiers _a (<i>n</i> = 494,291)	Spouses _b (<i>n</i> = 6,759)	Male Soldiers (<i>n</i> = 45)	Female Partners (<i>n</i> = 45)
Mean Age	28.2	31.0	31.18 (<i>SD</i> = 6.90)	29.36 (<i>SD</i> = 6.27)
Ethnicity				
European American	60.1%	68.1%	82.2% (<i>n</i> = 37)	77.8% (<i>n</i> = 35)
African American	22.7%	15.5%	11.1% (<i>n</i> = 5)	4.4% (<i>n</i> = 2)
Native American	n.a.	4.9%	2.2% (<i>n</i> = 1)	8.9% (<i>n</i> = 4)
Mexican Amer./Latino	10.3%	12.7%	2.2% (<i>n</i> = 1)	2.2% (<i>n</i> = 1)
Asian/Pacific Islander	3.8%	7.0%	0	4.4% (<i>n</i> = 2)
Other	3.1%	n.a.	2.2% (<i>n</i> = 1)	2.2% (<i>n</i> = 1)
Rank				
Enlisted	83.7%		69% (<i>n</i> = 31)	
Commissioned Officers	13.9%		27% (<i>n</i> = 12)	
Warrant	2.4%		4% (<i>n</i> = 2)	

^aOffice of Army Demographics FY 2004 (2004). ^bPeterson (2002).

Table 2

Descriptive Statistics and Correlations Between Key Study Variables

	<i>M</i>	<i>SD</i>	Correlation with Soldier DAS	Correlation with Partner DAS
Soldier TEQ	6.38	2.25	-.19	-.14
Soldier PPTSD-R	35.79	13.29	-.45**	-.23
Soldier TSC-40	20.27	15.26	-.58***	-.32*
Soldier Dissociation	3.09	2.91	-.51***	-.46**
Soldier Anxiety	2.49	2.42	-.52***	-.42**
Soldier Depression	4.45	3.85	-.54***	-.24
Soldier SATI	3.11	2.99	-.48***	-.28
Soldier Sleep Dist.	7.11	5.38	-.49***	-.22
Soldier Sexual Prob.	2.22	3.43	-.32*	-.05
Soldier DAS	116.42	17.20	—	0.66***
Partner DAS	113.56	18.74	0.66***	—

* $p < .05$. ** $p < .01$. *** $p < .001$, two-tailed.

Table 3

Backward Multiple Regression Analyses Testing Hypothesis 1

Measures	<i>Soldiers' Trauma → Soldiers' DAS</i>			<i>Soldiers' Trauma → Partners' DAS</i>		
	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>B</i>	<i>SE B</i>	<i>β</i>
Step 1	$R = 0.66, Adj R^2 = 0.39, \Delta R^2 = 0.43,$ $F(3, 40) = 10.10^{***}$			$R = 0.33, Adj R^2 = 0.04, \Delta R^2 = 0.11,$ $F(3, 40) = 1.67$		
TEQ	0.62	1.02	0.09	-0.06	1.48	-0.01
PPTSD-R	-0.20	0.27	-0.16	0.04	0.39	0.03
TSC-40	-0.58	0.22	-0.56*	-0.43	0.32	-0.35
Step 2	$R = 0.65, Adj R^2 = 0.40, \Delta R^2 = -0.01,$ $F(2, 41) = 15.20^{***}$			$R = 0.33, Adj R^2 = 0.07, \Delta R^2 = 0.00,$ $F(2, 41) = 2.56$		
PPTSD-R	-0.15	0.26	-0.13	0.03	0.37	0.02
TSC-40	-0.57	0.22	-0.54*	-0.43	0.32	-0.35
Step 3	$R = 0.65, Adj R^2 = 0.41, \Delta R^2 = -0.01,$ $F(1, 42) = 30.50^{***}$			$R = 0.33, Adj R^2 = 0.09, \Delta R^2 = 0.00,$ $F(1, 42) = 5.23^*$		
TSC-40	-0.68	0.12	-0.65^{***}	-0.41	0.18	-0.33*

Note: $n = 44$

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Backward Multiple Regression Analyses Testing Hypothesis 2

TSC-40 Subscales	<i>B</i>	<i>SE B</i>	β
Step 1	$R = 0.59, Adj R^2 = 0.29, \Delta R^2 = 0.35, F(3, 40) = 7.02^{***}$		
Dissociation	-0.91	1.20	-0.15
Anxiety	-1.35	1.25	-0.23
Depression	-1.19	0.89	-0.27
Step 2	$R = 0.58, Adj R^2 = 0.30, \Delta R^2 = -0.01, F(2, 41) = 10.35^{***}$		
Anxiety	-1.79	1.10	-0.30
Depression	-1.42	0.83	-0.32
Step 3	$R = 0.54, Adj R^2 = 0.28, \Delta R^2 = -0.04, F(1, 42) = 17.37^{***}$		
Depression	-2.41	0.58	-0.54^{***}
Step 1	$R = 0.57, Adj R^2 = 0.27, \Delta R^2 = 0.33, F(3, 40) = 6.42^{***}$		
SATI	-0.70	1.22	-0.12
Sleep Disturbances	-1.02	0.59	-0.32
Sexual Problems	-1.61	1.00	-0.25
Step 2	$R = 0.57, Adj R^2 = 0.29, \Delta R^2 = -0.01, F(2, 41) = 9.63^{***}$		
Sleep Disturbances	-1.24	0.44	-0.39^{**}
Sexual Problems	-1.88	0.87	-0.30^{*}
Step 1	$R = 0.58, Adj R^2 = 0.28, \Delta R^2 = 0.33, F(3, 40) = 6.63^{***}$		
Sleep Disturbances	-0.69	0.78	-0.22
Sexual Problems	-1.45	1.01	-0.23
Depression	-1.05	1.22	-0.24
Step 2	$R = 0.57, Adj R^2 = 0.29, \Delta R^2 = -0.01, F(2, 41) = 9.63^{***}$		
Sleep Disturbances	-1.24	0.44	-0.39^{**}
Sexual Problems	-1.88	0.87	-0.30^{*}

Note: $n = 44$

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

Backward Multiple Regression Analyses Testing Hypothesis 3

TSC-40 Subscales	<i>B</i>	<i>SE B</i>	β
Step 1	$R = 0.49, Adj R^2 = 0.18, \Delta R^2 = 0.24, F(3, 40) = 4.14^*$		
Dissociation	-2.86	1.38	-0.45*
Anxiety	-1.45	1.45	-0.23
Depression	1.12	1.03	0.24
Step 2	$R = 0.47, Adj R^2 = 0.18, \Delta R^2 = -0.02, F(2, 41) = 5.71^{**}$		
Dissociation	-3.50	1.22	-0.55**
Anxiety	0.66	0.92	0.14
Step 3	$R = 0.46, Adj R^2 = 0.19, \Delta R^2 = -0.01, F(1, 42) = 11.04^{**}$		
Dissociation	-2.89	0.87	-0.46**
Step 1	$R = 0.32, Adj R^2 = 0.03, \Delta R^2 = 0.10, F(3, 40) = 1.50$		
SATI	-1.55	1.50	-0.25
Sleep Disturbances	-0.16	0.73	-0.05
Sexual Problems	-0.38	1.24	-0.06
Step 2	$R = 0.32, Adj R^2 = 0.06, \Delta R^2 = 0.00, F(2, 41) = 2.27$		
SATI	-1.76	1.12	-0.28
Sexual Problems	-0.36	1.22	-0.05
Step 3	$R = 0.31, Adj R^2 = 0.08, \Delta R^2 = 0.00, F(1, 42) = 4.56^*$		
SATI	-1.94	0.91	-0.31*
Step 1	$R = 0.51, Adj R^2 = 0.23, \Delta R^2 = 0.26, F(2, 41) = 7.28^{**}$		
Dissociation	-6.00	1.99	-0.95**
SATI	3.37	1.95	0.54

Note: $n = 44$

* $p < .05$. ** $p < .01$. *** $p < .001$.