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Hitting Home: Relationships between Recent Deployment, Post Traumatic Stress Symptoms, and Marital Functioning for Army Couples

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Abstract

Using a sample of 434 couples consisting of active duty Army husbands married to civilian wives, relationships between recent deployment, current PTSD symptoms, and a range of marital outcomes were investigated. Self-reports from both husbands and wives regarding relationship functioning did not differ between couples who were and were not separated due to deployment in the prior year. However, deployment in the past year was related to higher levels of current PTSD symptoms for husbands, and husbands' current PTSD symptoms were associated with lower marital satisfaction, confidence in the relationship, positive bonding between the spouses, parenting alliance, and dedication to the relationship for both husbands and wives. In addition, husbands' current PTSD symptoms were associated with higher levels of negative communication for both husbands and wives, and lower satisfaction with sacrifice for the relationship for husbands. Once positive bonding, negative communication, and parenting alliance were controlled, husband PTSD symptoms no longer significantly predicted marital satisfaction for wives. Husband PTSD symptoms continued to exert a significant, but reduced, unique effect on husband marital satisfaction once these variables were accounted for. The results provide greater understanding of the relationship of deployment/PTSD symptoms and marital functioning and suggest areas for intervention with military couples.

Keywords

marriage; relationship; military; deployment; PTSD

The United States' current military commitments have resulted in high demands on military families. Military life, particularly in this current period of long and frequent wartime deployments, involves significant stressors and challenges for active duty personnel and their families. Popular media often portrays the effects of these demands as devastating to military families, a belief echoed by many military couples themselves (Karney & Crown, 2007; Rosen & Durand, 2000). To explain theoretical links between military demands and marital outcomes, Karney and Crown (2007) propose an integrative model in which military experiences such as deployment can directly affect the “adaptive processes” of the couple. Adaptive processes

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include “all the ways that spouses interact, communicate, resolve problems, provide support, and understand each other” (Karney & Crown, 2007, p. 24). For example, the physical separation of deployment can interfere with intimacy, social activities, and types of communication. This model also specifies that military experiences can lead to “emergent traits” which in turn also affect adaptive processes of the couple. For example, deployment and combat exposure can lead to the development of Post Traumatic Stress Disorder (PTSD) symptoms which may undermine positive communication and connection between the couple. Within this model, the strength (or weakness) of the adaptive processes of couples influences marital satisfaction. Thus, this model indicates that deployment can have both direct impacts on the adaptive processes of the couple, as well as indirect effects via emergent traits such as PTSD, and these changes in adaptive processes are posited to affect marital satisfaction.

Despite popular belief and the logical pathways delineated by Karney and Crown (2007), they point out that empirical evidence for a link between deployment and problems in military marriages is “weak and inconsistent across studies” (p. 53). Thus, the relationship of deployment and marital outcomes remains an open question. In addition, because the experience of war and deployments change over time, continuing investigation into this issue with new samples is warranted. When studying deployment and marriage, typical outcomes in the literature are divorce, marital satisfaction, and domestic violence. However, there are several other important relationship variables that also could be linked to deployment. The current study included a wider range of relationship factors that may be impacted by deployment, including confidence that the marriage can survive over the long term, the level of dedication partners have to the marriage and each other, parenting alliance, and positive bonding behaviors.

The Role of Post Traumatic Stress

When considering deployment and military marriage, it is important to separately evaluate PTSD symptoms. During deployments, exposure to danger increases the risk of developing PTSD symptoms. Hoge et al. (2004) found that 18% of Army soldiers returning from Iraq reported significant levels of PTSD symptoms. In contrast to the limited data for the effects of deployment on marital outcomes, evidence for the negative impact of PTSD symptoms on marital functioning is robust across different military missions and multiple aspects of marital functioning, including divorce (Gimbel & Booth, 1994; Karney & Crown, 2007; Kulka et al., 1990; Riggs, Byrne, Weathers, & Litz, 1998; Sherman, Zanotti, & Jones, 2005). The avoidance/numbing and hyperarousal symptoms of PTSD seem most related to family adjustment problems (Evans et al., 2003; Hendrix et al., 1998; Riggs et al., 1998; Taft, Schumm, Panuzio, & Proctor, 2008). Relative to the research on deployment, research on PTSD symptoms and marriage is also more extensive in terms of relationship constructs assessed. However, there remain some meaningful dimensions of relationship functioning that have not been examined, or have not been examined with much specificity. In the current paper we seek to extend the literature by evaluating the associations between PTSD symptoms and a number of important relationship constructs, including confidence, dedication, parenting alliance, and positive bonding.

Thus, we plan to test the relationships between recent deployment, current PTSD symptoms, and a range of aspects of marital functioning. In addition, consistent with pathways delineated by Karney and Crown's (2007) model, we seek to evaluate the degree to which adaptive processes, such as communication and positive bonding, account for the relationship between recent deployment/PTSD symptoms and marital satisfaction. Below we review the aspects of relationship functioning to be examined in the current study.

Specific Adaptive Processes

Adaptive processes of the couple are posited as mediating the impacts of military experience on marital satisfaction (Karney & Crown, 2007). Adaptive processes include factors such as communication and positive bonding (e.g., fun, friendship, and physical intimacy). Indeed, these types of processes have been empirically demonstrated to be important in general marital success (Gottman, Ryan, Carrere, & Erley, 2002; Markman, Rhoades, Stanley, & Whitton, 2010). These processes might be particularly affected by deployments and PTSD symptoms. The separation of deployments can undermine opportunities for positive connections and require significant adaptations in the communication processes of the couple. For couples with recent deployments, there may be residual effects in these areas as many couples struggle with re-integrating back into couple and family life after deployment (e.g., Faber, Willerton, Clymer, MacDermid, & Weiss, 2008). The symptoms of PTSD can uniquely undermine these adaptive processes as well. For example, re-experiencing symptoms such as nightmares lead some couples to sleep separately, which can interfere with intimacy; avoidance symptoms can lead to isolation and rejection of fun activities with the spouse; and arousal symptoms can contribute to tension, anger, and rapid escalation of conflict (Sherman, Zanotti, & Jones, 2005). In fact, MacDonald, Chamberlain, Long, and Flett (1999), using a sample of New Zealand veterans of the Vietnam conflict, found that interpersonal problems in the areas of intimacy, aggression, and sociability accounted for the link between PTSD and dyadic adjustment. However, MacDonald et al. note the need for more specificity in the measurement of interpersonal problems and PTSD. The current study examines both communication and positive bonding as potential adaptive processes in a contemporary active duty sample.

For couples with children, another aspect of adaptive relationship functioning is the parenting alliance between spouses; this factor is associated with a range of marital and family outcomes (Hughes, Gordon, & Gaertner, 2004). The parenting alliance can also be uniquely affected by deployment and PTSD symptoms. During deployment, the nondeployed spouse often takes charge of parenting decisions and the process of rebuilding teamwork regarding parenting can be challenging for the spouses and children after the soldier returns (Ford et al., 1998). Moreover, PTSD among combat veterans undermines parenting behaviors and parenting satisfaction (Berz, Taft, Watkins, & Monson, 2008; Fals-Stewart & Kelley, 2005; Samper, Taft, King & King, 2004). Clinical literature contains accounts of the challenges couples face in co-parenting when a spouse has PTSD (e.g., Sherman, 2008). For example, spouses may seek to manage volatility by mediating all interactions between children and the parent with PTSD symptoms, but by doing so may inadvertently undermine re-integration of the parenting team.

Additional Indices of Marital Quality

Two additional aspects of relationship functioning heretofore unexamined in the military marriage literature are (a) the confidence in the future of the relationship, that is, a belief that one's relationship future is strong and that the couple can cope with challenges, and (b) the dedication, or personal commitment, to the relationship's long term stability. In other words, dedication reflects the intention to have a future with the partner and confidence reflects the appraisal of the possibility of having that future. These constructs of dedication and confidence both reflect one of the types of fundamental safety that have been suggested to be part of the foundation of healthy marriages: a sense of safety and security in the stability and future of the relationship (Stanley, Markman, & Whitton, 2002). This type of security in the future of the relationship both reflects and facilitates various pro-relationship behaviors; for example, dedication reflects a sense of being a team with a future that, in turn, facilitates ongoing investment in the relationship and a willingness to sacrifice for the good of the partner and the relationship (Doherty, 1981; Stanley & Markman, 1992; Whitton, Stanley, & Markman, 2007).

Confidence may be a particularly salient variable for military couples as both deployment and PTSD symptoms can challenge this aspect of relationship safety. As noted above, military couples often perceive the demands of military life as a threat to marital happiness and stability. For example, around 69% of spouses of currently or recently deployed personnel believe that infidelity is common during deployment (Alt, 2006). These perceived threats may undermine confidence in the long-term stability of the union. In addition, Ehlers and Clark (2000) describe how individuals with PTSD may be quite vulnerable to overgeneralizing from the trauma to a more general sense of threat and/or a feeling that one is less capable in their efforts to achieve life goals; for example, they might react to their own irritability and anger with thoughts of "My marriage will break up" (p. 322). And, PTSD is linked to more relationship conflict, which would logically shake confidence in being able to handle differences well and stay together. Thus, PTSD symptoms may undermine confidence in the long-term viability of the relationship. Confidence and dedication tend to be correlated (Whitton, Rhoades, Stanley, & Markman, 2008); therefore, it may be that if confidence in the marriage is negatively impacted there will also be lower dedication to the marriage.

As noted above, dedication predicts satisfaction with sacrifice, or a sense of pleasure and fulfillment from sacrificing one's own interests for the well-being of the spouse or relationship. This variable has been shown to be a longitudinal predictor of marital satisfaction, and to predict the maintenance of marital adjustment over time even more than prior marital adjustment (Stanley, Whitton, Sadberry, Clements, & Markman, 2006). Deployment and PTSD symptoms may affect satisfaction with sacrifice. The burdens of deployment may lead spouses to feel that their own needs have been neglected (Alt, 2006) and thus challenge ongoing commitment to and satisfaction with sacrifice. On the other hand, the sense of shared mission may provide more fulfillment in sacrifice, particularly for the spouse of an active duty soldier, as these partners could perceive that sacrifice to the spouse also represents sacrifice to country and mission (Alt, 2006). However, PTSD symptoms may uniquely challenge satisfaction with sacrifice, as increased husband PTSD symptoms have been linked to increased spousal perceptions of caregiver burden (Beckham, Lytle, & Feldman, 1996).

The Present Study

The present study examined whether a recent history of deployment and current PTSD symptoms are related to several aspects of marital functioning. In a sample of Army husbands and civilian wives, we compare couples with and without recent deployment on marital satisfaction, negative communication, positive bonding, parenting alliance, confidence, dedication, and satisfaction with sacrifice. Based on the inconclusive evidence that has emerged in the prior literature regarding the impact of deployment on marriage, it is possible that couples who have experienced military deployment in the prior year will not manifest greater relationship problems relative to those without deployment in the prior year. However, as noted throughout this introduction, there is reason to believe that many of these dimensions of relationship functioning might be uniquely affected by the experiences of recent deployment. We will then examine whether PTSD symptoms are related to these same indices of marital functioning. We predict that husbands' PTSD symptoms will be associated with poorer marital functioning across these indices for both husbands and wives. Lastly, we follow the framework of Karney and Crown's (2007) model and will examine whether certain adaptive processes (here specified as negative communication, positive bonding, and parenting alliance) mediate any associations between recent deployment/current PTSD symptoms and marital satisfaction.

These analyses can help us understand which relationship factors are more or less resilient to military stressors, as well as specific adaptive processes which might account for any associations between recent deployment/current PTSD symptoms and general marital satisfaction. Such understanding can then guide intervention efforts to help couples survive

and thrive in the face of deployments. In addition, the current paper provides timely updates with a recently deployed sample, and addresses the need noted in the literature for obtaining more specific and varied information about relationship functioning and assessing both members of the couple simultaneously (MacDonald et al., 1999; Karney and Crown, 2007).

Method

Participants

The current sample consists of 434 married couples comprised of an Active Duty U.S. Army husband and a non-active duty (civilian) wife. Couples were married an average of 4.7 years (*SD* = 4.4) and 72% of couples reported at least one child living in their household at least part time. Men averaged 27.8 years of age (*SD* = 5.6) and women averaged 27.1 years of age (*SD* = 6.0). In terms of education, 68.8% of men and 58.4% of women reported that the highest degree obtained was a high school diploma or GED. Of the husbands, 71% were White non-Hispanic, 13% were Hispanic, 9% were African American, 1% were American Indian/Alaska Native, 1% were Asian, 1% were Hawaiian or Pacific Islander, and 5% described themselves as multi-racial. Of the wives, 73% were White non-Hispanic, 10% were Hispanic, 9% were African American, 2% were American Indian/Alaska Native, 1% were Asian, 1% were Hawaiian or Pacific Islander, and 4% described themselves as multi-racial. Overall, 61% of the couples were both White non-Hispanic, while the remainder reported at least one minority spouse.

Procedures

Participants were selected from a sample of 476 couples who enrolled in a larger study of the effectiveness of a marriage education workshop conducted at Fort Campbell, KY. To enroll in the study, all couples were required to be married, have at least one active duty partner, speak and read English fluently, and not have participated in a similar marriage workshop already. To participate, all couples agreed to be randomly assigned to the workshop condition or the no-treatment control condition. The data for the current study were drawn from the baseline assessment, prior to random assignment and the intervention. For the current study, only couples consisting of an active duty Army husband and a civilian wife were chosen (91% of the larger sample). Other couple configurations (e.g., both spouses active duty, civilian husband married to active duty wife) were not included due to low numbers.

All couples completed baseline self-report measures at Fort Campbell under the supervision of study personnel between March and September of 2007. Couples completed the measures separately and privately without communicating. When completed, each individual sealed their questionnaire in an envelope to be sent directly to the researchers.

Measures

Deployment—Recent deployment was assessed with the item “Have you been deployed within the last year?” Husbands who answered “yes” to this item (69% of sample) were coded as being recently deployed. Modal length of deployment was 12 months.

PTSD symptoms—The PTSD Checklist (PCL; Weathers, Litz, Herman, Huska, & Keane, 1993) is a 17-item self-report measure of DSM-IV symptoms of PTSD. For each item, respondents rate how much they were “bothered by that problem in the past month”. Items are rated on a 5-point scale ranging from 1 (“not at all”) to 5 (“extremely”). A follow up question asked if the symptoms were related to one's own military experience. Scores are the average of the 17 items. For PTSD analyses, we eliminated those whose PTSD symptoms were completely unrelated to military experience (344 males remained). Of these, the average score

on the PCL was 2 (SD = .87; item mean corresponds to an average sum score of 34; α for this sample = .94).

Measures of Relationship Functioning

Means, standard deviations, and internal consistency (Cronbach's alpha) for the current sample are reported for all measures of relationship functioning in Table 1. In this study, abbreviated measures were often used to minimize subject burden, but internal consistency remained adequate and relationship measures converged together in theoretically consistent ways.

Marital satisfaction—The Kansas Marital Satisfaction Scale (KMS; Schumm et al., 1986) was used to assess marital satisfaction. This is a brief (3-item) scale assessing satisfaction with the marriage, the partner as a spouse, and the relationship with spouse. This scale has strong reliability and validity (Schumm et al.) and provides a pure global satisfaction rating without including other aspects of relationship functioning.

Confidence—Five items from the Confidence Scale (Stanley, Hoyer & Trathen, 1994) were selected to assess participants' level of confidence in their marital strength and stability. Example items are “I believe we can handle whatever conflicts will arise in the future” and “I am very confident when I think of our future together.” The larger scale has shown good concurrent validity (e.g., Whitton et al., 2008); these items are representative of the larger scale.

Positive bonding—The Positive Bonding Scale was adapted from the Couple Activities Scale (Markman, 2000). It consists of 9 questions assessing the friendship, intimacy, fun, felt support, and sensual/sexual relationship of the couple. Example questions include “We regularly have conversations where we just talk as good friends,” “We have a satisfying sensual or sexual relationship,” “I feel emotionally supported by my partner,” and “We regularly make time for fun activities together as a couple.” Stanley, Whitton, Kline, and Markman (2006) report logical convergence of the parent scale with other indices of individual and marital functioning.

Parenting alliance—For participants with children, 5 items from The Parenting Alliance Inventory (PAI; Abidin, 1988; as described in Abidin & Brunner, 1995) were used. The PAI assesses the degree to which parents perceive themselves to be in a cooperative, communicative, and mutually respectful alliance for the care of their children. Abidin and Brunner found high convergence with measures of marital distress and parenting style. The five items used were chosen on the basis of representativeness of teamwork between the parents (e.g., “My spouse and I are a good parenting team.”), rather than appraisals of the other parent's skill or enjoyment of parenting. The items chosen all had factor loadings of at least .50 for both men and women in the original validation sample (Abidin & Brunner, 1995).

Dedication—Based on the Dedication Scale from the multidimensional Commitment Inventory (Stanley & Markman, 1992), five items reflecting couple identity, long term view, and priority of the relationship were selected. Example items are: “My relationship with my spouse is more important to me than almost anything else in my life.” And “I want this relationship to stay strong no matter what rough times we may encounter.” Whitton et al. (2008) found good concurrent validity for the parent scale.

Satisfaction with sacrifice—To assess this construct, we utilized three items from the Satisfaction with Sacrifice Scale, which is also part of the Commitment Inventory (Stanley and Markman, 1992). Items reflect positive feelings and satisfaction derived from sacrificing for the spouse (e.g., “It makes me feel good to sacrifice for my spouse”). The parent measure

converges as expected with other relationship constructs; for example, predicting which couples become distressed over time (Stanley et al., 2006).

Negative communication—The 4-item version of the Communication Danger Signs Scale (Stanley & Markman, 1997) was used to assess problematic communication patterns. Items reflect escalation ("Little arguments escalate into ugly fights with accusations, criticisms, name calling, or bringing up past hurts"), invalidation ("My spouse criticizes or belittles my opinions, feelings, or desires."), negative interpretation ("My spouse seems to view my words or actions more negatively than I mean them to be."), and withdrawal ("When we argue, one of us withdraws…that is, does not want to talk about it anymore, or leaves the scene."). Forms of this measure have demonstrated convergence with other theoretically related constructs and predicted changes subsequent to communication skill interventions (e.g., Stanley et al., 2005).

Results

Overview of Data Analyses

To test the research questions and hypotheses, we first compared couples with and without recent deployment on marital satisfaction, negative communication, positive bonding, parenting alliance, confidence, dedication, and satisfaction with sacrifice using t-tests. Next, we examined whether husbands' PTSD symptoms were related to husbands' and wives' reports of marital functioning using correlations. After examining these bivariate relationships between PTSD symptoms and marital functioning, we used a series of regressions to test whether adaptive processes mediated the associations between PSTD symptoms and marital satisfaction, consistent with the Karney and Crown (2007) model. Lastly, given that the adaptive processes were significantly correlated with each other, we entered all of them simultaneously as predictors of marital satisfaction, controlling for PTSD symptoms. These regressions allowed us to test the unique effects of each adaptive process and whether these adaptive processes, when combined, fully accounted for the link between PTSD symptoms and marital satisfaction.

Recent Deployment and Marital Functioning

To evaluate whether couples who had experienced a deployment within the last year reported poorer marital functioning relative to couples who did not report deployment in the last year, we compared husbands and wives with and without recent deployment on our measures of relationship functioning (e.g., marital satisfaction, communication, dedication) using t-tests. Although husbands with recent deployment reported significantly more PTSD symptoms than husbands without deployment, ($t(422) = 2.10$, $p < .05$)), a history of recent deployment was not associated with differences in any aspect of relationship functioning measured in the current study.

PTSD and Marital Functioning

In support of our hypotheses regarding PTSD symptoms and marital functioning, husbands' PTSD symptoms were significantly correlated with all indices of marital functioning for both husbands and wives, with the exception of wives' satisfaction with sacrifice (see Table 2). These significant correlations ranged from -.12 to -.39.

Tests of Mediation: PSTD Symptoms, Adaptive Processes, and Marital Satisfaction

Due to the lack of significant differences between couples with and without recent deployment, we did not test the role of adaptive processes in the context of recent deployment. However, we did examine whether the link between PTSD symptoms and marital satisfaction is mediated

by adaptive processes. Utilizing Kenny's (2009) mediation program, Baron and Kenny's (1986) mediation steps were tested to evaluate the degree to which the adaptive processes of negative communication, positive bonding, and parenting alliance mediate the relationship between husband PTSD and marital satisfaction (see Table 3)[1]. Six separate tests of mediation were conducted, using the husband's report of PTSD as the independent variable for all, and either the husband or wife report of negative communication, positive bonding, or parenting alliance as the mediator paired with his or her own report of marital satisfaction as the dependent variable. Tests of mediation using parenting alliance only included the subset of couples with at least one child (n=260). For all mediations, initial steps establishing significant relationships between the predictor, mediator, and outcome were supported. Full mediation was not supported for any of the variables, but all showed significant indirect effects whereby the percentage of the total effect of PTSD symptoms on marital satisfaction that was mediated ranged from 24 to 73%. Thus, the association between PTSD symptoms and marital satisfaction was significantly partially mediated by each of the adaptive processes.

Further Associations among PSTD Symptoms, Adaptive Processes, and Marital Satisfaction

The adaptive processes included in the mediation analyses are significantly correlated (see Table 4)[2]. Thus, some degree of the indirect effects found in the mediation analyses represents overlapping variance among these constructs. To evaluate both unique effects of these constructs and to evaluate whether these negative and positive adaptive processes combined fully account for the link between PTSD symptoms and marital satisfaction, we conducted additional regression analyses (see Table 5). In the first one, husband reports of negative communication, positive bonding, and own PTSD symptoms were simultaneously entered as predictors for husbands' marital satisfaction. In the second regression, wives' reports of negative communication and positive bonding, and husband report of own PTSD symptoms were simultaneously entered as predictors of wives' marital satisfaction. For husbands and wives, both of these adaptive processes exerted unique and significant effects on marital satisfaction. For wives, once these adaptive processes were combined in the model, husband PTSD symptoms no longer exerted significant unique effects on her marital satisfaction. For husbands, his PTSD symptoms continued to exert significant unique effects on marital satisfaction even accounting for both negative communication and positive bonding. Of course, this effect was significantly attenuated relative to the bivariate correlation between husbands' PTSD symptoms and husband marital satisfaction, consistent with the significant indirect effects seen in the test of mediation.

For couples with children, we then ran these regressions to include all three adaptive processes. That is, these regression analyses included parenting alliance along with negative communication and positive bonding as indices of adaptive processes. Results were the same: parenting alliance had additional unique effects (husband $\beta = .12$, $p < .01$; wife $\beta = .08$, $p < .05$) predicting marital satisfaction, and when all three measures of adaptive processes are accounted for, husband PTSD symptoms no longer exerted unique effects on wife marital satisfaction, yet husband PTSD symptoms continued to significantly predict lower husband marital satisfaction ($\beta = -.10$, $p < .05$).

[1] We also tested whether the association between PTSD symptoms and marital satisfaction was mediated by adaptive processes by using MacKinnon and Fritz's (2007) steps for testing for mediation and their related statistical program, PRODCLIN. In each of the six tests of mediation, the results were the same as when Baron and Kenny's guidelines and Kenny's statistical program were used.

[2] Evaluating the correlations in Table 4, it is clear that some constructs used in the mediation and regression analyses are very highly correlated, as high as .83 in the case of wives' rating of positive bonding and marital satisfaction. Although this raises the concern of redundancy among constructs, an evaluation of the actual items suggests rational or conceptual distinction (i.e., the marital satisfaction scale asks only about global satisfaction, while the positive bonding scale asks about specific areas of relationship functioning) and the regressions show that other variables can still carry unique and significant predictive weight even when positive bonding is in the model as a predictor of satisfaction.

Discussion

Using a large, recently collected, sample of active duty Army husbands and civilian wives, this study examined associations among recent deployment, PTSD symptoms, and marital functioning. For this sample, couples with and without a recent history of deployment did not differ, on average, in any of the aspects of current relationship functioning that we evaluated. However, husbands with recent deployment were significantly higher on PTSD symptoms, and symptoms of PTSD were negatively related to virtually all aspects of marital functioning for both husbands and wives measured in the current study, including constructs such as confidence, dedication, and satisfaction with sacrifice, which had not been examined before. Thus, recent deployment was indirectly linked with marital functioning through symptoms of PTSD.

The only exception to the pervasive negative relationship between PTSD symptoms and marital functioning was the relation between husbands' PTSD symptoms and wives' satisfaction with sacrifice; this was an unexpected finding given earlier research showing that increases in PTSD symptoms were associated with greater spousal perceptions of caregiver burden (Beckham et al., 1996). Beckham's findings, conducted with partners of Vietnam War veterans with diagnosed PTSD, may reflect caregiver stress living with diagnosable levels of PTSD over a longer time frame. It may be that wives' satisfaction with sacrifice will deteriorate more over time in the face of PTSD symptoms, but at the time of this assessment it remains relatively unaffected.

When evaluating the correlations between PTSD symptoms and marital functioning, some correlations were larger than others. For example, confidence in the longevity of the relationship was relatively more affected than the dedication to the relationship[3]. Thus, poignantly, this sample's confidence in their chances of making it in their marriages is relatively more damaged by PTSD symptoms than their desire for the relationship to last. Lower confidence may be a realistic appraisal given the associations between PTSD and divorce.

Using Karney and Crown's (2007) framework, we tested whether adaptive processes could account for the link between PTSD symptoms and marital satisfaction. Adaptive processes partially mediated the association for both husbands and wives. When adaptive processes were collectively controlled for in regression analyses, husband PTSD symptoms continued to have significant negative effects on husband marital satisfaction. There may be additional adaptive processes not measured here which would fully account for the relationship between PTSD and dissatisfaction for husbands, or perhaps general negative affect associated with the symptoms of PTSD colors husbands' appraisal of the quality of the relationship above and beyond specific problems in marital behaviors and events. In contrast, for wives, husbands' PTSD did not predict marital satisfaction above and beyond the effects on adaptive processes. Because the adaptive processes assessed here do account for at least some of the relationship between PTSD symptoms and marital satisfaction, helping couples with communication skills and positive bonding are particularly good areas for intervention to help couples protect and/or restore their relationship from the effects of PTSD, consistent with several current research-based couples interventions. In fact, these types of interventions could also serve to directly address aspects of PTSD itself such as avoidance, consistent with recent innovations in couples based interventions for PTSD (Monson & Fredman, in press). Parenting alliance is also a significant area of intervention, but appears relatively less potent as a predictive link between husband PTSD and marital satisfaction. Husbands experiencing PTSD symptoms may also

[3] To evaluate relative magnitude of correlations, we used Williams' t, a variation of Fisher's r to Z test designed for dependent correlations (see Hittner & May, 1998; Hittner, May, & Silver, 2003; Williams, 1959).

need more direct intervention helping them manage issues such negative affect and cognitions in order to preserve their marital satisfaction.

There are limitations to the findings, as participants in this sample all joined a research study explicitly focused on their marriage, with a 50/50 chance of being assigned to a marital intervention. Thus, participants in this sample may have been especially invested in their relationships and are not representative of all Army couples. Also, we did not analyze female service members' marriages, and thus the findings are limited to couples where the husband is active duty and the wife is civilian. We also only evaluated the presence of recent (within the last year) deployments, not lifetime deployments, cumulative length of deployments, stressors experienced during deployment, or other ways to model this experience. Moreover, this is an aggregate finding; clearly there will be some couples for whom deployment puts a lasting strain on the marriage, and others for whom deployment serves to strengthen the bond and happiness couples experience when reunited (Sayers, 2008). As the sample consisted of couples who were all intact at the time of the assessment, this particular sample does not represent those couples for whom deployment had already resulted in divorce. Thus, this index of deployment is very limited and leaves open many additional questions regarding the impact of deployment on military marriage. While we found that PTSD symptoms are correlated with a range of aspects of marital functioning, we did not assess certain factors such as depression (depression is related to both PTSD and relationship problems and could account for some of the association between variables) or pre-existing vulnerabilities (those with pre-existing vulnerabilities show the strongest links between combat exposure and marital problems (Gimbel & Booth, 1994)), both of which could help with greater understanding of these associations.

Overall, the results give us a greater understanding of the relationship of deployment/military related PTSD symptoms and marital functioning, suggest areas for future inquiry, and provide evidence for areas of intervention with military couples.

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Table 1

Means and (Standard Deviations/Internal Consistency) for Scales Used in Current Study

	Husbands M (SD/α)	Wives M (SD/α)
Marital Satisfaction[a]	5.76 (1.23/.95)	5.59 (1.36/.94)
Confidence[b]	6.09 (1.08/.91)	6.00 (1.19/.92)
Positive Bonding[b]	5.60 (1.08/.86)	5.54 (1.21/.89)
Parenting Alliance[b]	5.61 (1.30/.90)	5.34 (1.63/.94)
Dedication[b]	6.52 (.76/.86)	6.60 (.67/.85)
Satisfaction with Sacrifice[b]	6.08 (.97/.81)	6.03 (.97/.82)
Negative Communication[c]	1.93 (.52/.74)	1.87 (.53/.74)

Note. Scores are average of items on scale; Higher scores equal higher levels of the construct.

[a] Responses on a scale from 1 (“extremely dissatisfied”) to 7 (“extremely satisfied”).

[b] Responses on a scale from 1 (strongly disagree) to 7 (strongly agree).

[c] Responses on a three point scale: 1 = never or almost never, 2 = once in a while, and 3 = frequently.

Table 2

Correlations of Husband PTSD Symptoms with Marital Functioning

Husband PTSD symptoms correlated with…	**Husbands**	**Wives**
Measures of Adaptive Functioning		
Negative Communication	.36***	.28***
Parenting Alliance	-.30***	-.16*
Positive Bonding	-.31***	-.24***
Other indices of relationship quality		
Marital Satisfaction	-.39***	-.27***
Dedication	-.18**	-.14*
Satisfaction with Sacrifice	-.12*	-.08
Confidence	-.33***	-.30***

* $p < .05$,

** $p < .01$,

*** $p < .001$ (all two tailed)

Table 3

Summary of Tests of Mediation for the Association between PTSD Symptoms and Marital Satisfaction

	Mediator					
	Negative Communication		Positive Bonding		Parenting Alliance	
	%	c (c′)	%	c (c′)	%	c (c′)
Husband	47*	-.39* (-.21*)	54*	-.39* (-.18*)	24*	-.39* (-.30*)
Wife	60*	-.27* (-.11*)	73*	-.27* (-.07*)	26*	-.32* (-.23)*

Note. Predictor is husband PTSD symptoms, outcome is own marital satisfaction. % = percentage of total effect that is mediated; c = standardized estimate for path from husband PTSD symptoms to own marital satisfaction; c′ = standardized estimate for path from husband PTSD symptoms to own marital satisfaction controlling for mediator. N = 344 for negative communication and positive bonding analyses; 260 for parenting alliance analyses

* $p < .05$.

Table 4

Correlations for husband PTSD symptoms, negative communication, positive bonding, and marital satisfaction

	1	2	3	4	5
1. Husband PTSD Symptoms	___	-.27***	.28***	-.24***	-.16*
2. Marital Satisfaction	-.39***	___	-.62***	.83***	.56***
3. Negative Communication	.36***	-.59***	___	-.64***	-.46***
4. Positive Bonding	-.31***	.73***	-.58***	___	.59***
5. Parenting Alliance	-.30***	.40***	-.31***	.36***	___

Note. "Husband PTSD Symptoms" represents PTSD symptoms endorsed by the male. All other variables are participants' own level of given construct. Husband data are below the diagonal; wife data are above the diagonal. N = 344 for all analyses except for parenting alliance (N = 260).

*** $p < .001$

Table 5

Simultaneous regression of negative communication, positive bonding, and husband PTSD symptoms predicting marital satisfaction

	Husbands	Wives
	β	β
Negative Communication	-.22***	-.12**
Positive Bonding	.56***	.74***
Husband PTSD Symptoms	-.14***	-.06
	F = 161.79	F = 274.01
	R^2 = .59	R^2 = .71

Note. N = 344 for each regression.

* p < .05,

** p < .01,

*** p < .001 (all two tailed)