



Military-related PTSD and intimate relationships: From description to theory-driven research and intervention development

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ABSTRACT

Military operations in Iraq and Afghanistan have brought heightened awareness of military related PTSD, as well as the intimate relationship problems that accompany the disorder and can influence the course of veterans' trauma recovery. In this paper, we review recent research that documents the association between PTSD and intimate relationship problems in the most recent cohort of returning veterans and also synthesize research on prior eras of veterans and their intimate relationships in order to inform future research and treatment efforts with recently returned veterans and their families. We highlight the need for more theoretically-driven research that can account for the likely reciprocally causal association between PTSD and intimate relationship problems to advance understanding and inform prevention and treatment efforts for veterans and their families. Future research directions are offered to advance this field of study.

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1. Introduction

Our military involvements in Iraq and Afghanistan, Operations Enduring Freedom and Iraqi Freedom (OEF/OIF), have raised awareness about the individual mental health consequences, such as

posttraumatic stress disorder (PTSD), that can arise from traumatic stress exposure during the course of military deployment. At the same time, the scientific and lay communities have become more attuned to the family issues that surround a veteran when s/he returns with PTSD, as well as the individual and familial effects that are likely reciprocally related to the veteran's trauma recovery. This paper reviews recent research documenting the intimate relationship problems related to PTSD in OEF/OIF veterans and their intimate partners. We also synthesize research on prior eras of veterans and their intimate relationships and briefly review intervention efforts that have involved veterans' intimate partners. A next crucial step in advancing the study of veterans' PTSD and intimate relationship functioning is to

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develop and test theoretical models that can account for the well-established association between this individual psychopathology and relationship problems. We conclude the paper by reviewing these efforts and offering suggestions to improve the understanding and treatment of problems in both areas.

2. Military-related PTSD and intimate relationship problems

Research with combat veterans and their families from different countries and prior eras has long documented the strong association between PTSD and family relationship problems (see Galovski & Lyons, 2004 for review). These studies consistently reveal that veterans diagnosed with chronic PTSD, compared with those exposed to military-related trauma but not diagnosed with the disorder, and their romantic partners report more numerous and severe relationship problems and generally poorer family adjustment. Veterans with PTSD also have been shown to divorce at higher rates than do their trauma-exposed counterparts without PTSD (e.g., Cook, Riggs, Thompson, Coyne, & Sheikh, 2004; Jordan et al., 1992). Male veterans with chronic PTSD have also been found to be less self-disclosing and emotionally expressive with their partners (Carroll, Rueger, Foy, & Donahoe, 1985) and to have greater anxiety related to intimacy (Riggs, Byrne, Weathers, & Litz, 1998), as compared with veterans without PTSD.

2.1. Role of trauma exposure versus posttraumatic psychopathology

The extant research from veterans and their family members indicates that individual posttraumatic stress symptomatology largely accounts for the harmful effects of war-zone stress exposure on family functioning, at least in male veterans (Gimbel & Booth, 1994; Orcutt, King, & King, 2003). A recent longitudinal study that included both male and female Gulf War I veterans contributed important methodological advancements and findings regarding possible gender differences in the role of PTSD symptoms and trauma exposure in family adjustment problems. Taft, Schumm, Panuzio and Proctor (2008) used structural equation modeling with prospective data and found that combat exposure led to family adjustment difficulties in the overall sample (male and female veterans combined) through its relationship with specific PTSD symptom groupings (i.e., withdrawal/numbing and arousal/lack of control symptoms). However, there was also evidence of a direct negative effect of combat exposure on family adjustment in addition to PTSD symptoms for women, suggesting that PTSD symptoms may not fully explain the deleterious aspects of war-zone stressor exposure on family adjustment problems for female veterans. These findings, if replicated, may prove important in understanding potentially differential impacts of warzone stressor variables on family outcomes between male and female service members.

Several studies of combat veterans with chronic PTSD have found that, of the PTSD symptom clusters, avoidance/numbing symptoms are relatively more strongly associated with intimate relationship dissatisfaction and impaired intimacy (e.g., Evans, McHugh, Hopwood, & Watt, 2003; Solomon, Dekel, & Mikulincer, 2008). Solomon and colleagues (2008) recently examined the mediating role of self-disclosure and verbal aggression in the association between PTSD symptoms and impairments in marital intimacy in a sample of Israeli ex-prisoners of war (POWs) and a control group of combat veterans who had not been POWs. They found that self-disclosure partially mediated the association between the avoidance symptoms of PTSD and marital intimacy. Consistent with other research (Koenen, Stelman, Sommer, & Steelman, 2008), this study suggests that diminished self-disclosure is one mechanism accounting for the connection between avoidance symptoms and intimate relationship problems.

Avoidance/numbing symptom severity has similarly been negatively associated with Vietnam veterans' parenting satisfaction (Berz, Taft, Watkins, & Monson, 2008; Glenn et al., 2002; Samper, Taft, King, & King, 2004). Moreover, among samples of male veterans, these symptoms

exhibit the strongest relative associations with parenting satisfaction when considered alongside other PTSD symptom clusters (Samper et al., 2004), and when controlling for other covariates such as combat exposure and other forms of trauma, childhood adversity variables, and other psychopathology (Ruscio, Weathers, King, & King, 2002). Taken together, these findings suggest that veterans' inability to experience and express emotions and to engage with others takes its toll on all family relationships and is not limited to romantic relationship difficulties.

2.2. Intimate aggression and PTSD

Findings across settings and study methodology indicate that male veterans diagnosed with PTSD are more likely to perpetrate psychological and physical aggression against their partners and children than are veterans without PTSD (Carroll et al., 1985; Glenn et al., 2002; Jordan et al., 1992; Sherman, Sautter, Jackson, Lyons, & Xiaotong, 2006; Verbosky & Ryan, 1988), with rates as high as 63% for some act of physical aggression in the past year (Byrne & Riggs, 1996). It is noteworthy that the occurrence and frequency of aggression in combat-exposed veterans without PTSD parallels rates found in the general population (e.g., Straus & Gelles, 1990). The severity of aggressive behavior has been shown to be positively correlated with PTSD symptom severity (Byrne & Riggs, 1996; Glenn et al., 2002; Taft, Kaloupek et al., 2007; Taft, Street, Marshall, Dowdall, & Riggs, 2007).

PTSD symptoms have been associated with intimate aggression perpetration, even when considering a range of other factors such as early life stressors, personality disorders, and war-zone stressor exposure variables (e.g., Orcutt et al., 2003). Evidence suggests that the PTSD hyperarousal symptom cluster is salient with respect to aggressive behavior; hyperarousal symptoms are an especially strong relative predictor of intimate partner (Savarese, Suvak, King, & King, 2001) and general aggression (Taft, Kaloupek et al., 2007) perpetration among samples of Vietnam veterans. Taft, Street, and colleagues (2007) recently demonstrated that trait anger mediates the effects of PTSD symptoms on physical and psychological aggression perpetration in a sample of Vietnam veterans. Thus, it appears that difficulties in regulating anger may represent a particularly important component of hyperarousal with respect to the perpetration of aggression.

Several studies have examined the role of comorbid conditions in the association between PTSD and intimate partner aggression. Savarese, Suvak, King and King (2001) found interactions between alcohol use dimensions and PTSD hyperarousal symptoms on intimate partner physical aggression perpetration such that more frequent, but smaller, quantities of alcohol use diminished the association between hyperarousal and aggression. Larger quantities of alcohol paired with more frequent use strengthened the association between hyperarousal and physical aggression. Taft and colleagues (2005) found that PTSD-positive male veterans who were physically aggressive toward relationship partners were higher on major depression, drug abuse/dependence, and war-zone atrocity exposure, and lower on marital adjustment than nonviolent veterans with PTSD. These findings suggest that conditions and problems that commonly co-occur with PTSD also play an important role in the association between PTSD and intimate aggression perpetration against partners.

2.3. Emerging research with OEF/OIF veterans

The published research on OEF/OIF veterans and their intimate relationships has been mostly descriptive in nature. Using data collected as part of the large longitudinal Walter Reed Army Institute of Research Land Combat Study (Hoge, Auchterlonie, & Milliken, 2006; Hoge, Castro, & Messer, 2004), Milliken, Auchterlonie and Hoge (2007) documented a four-fold increase in reported interpersonal problems from the first to second waves of assessment (median of six months) in their longitudinal study of over 88,000 Soldiers who served in Iraq. The

authors comment on the cumulative burden of mental health problems on family relationships, call for greater mental health resources for family members, and suggest that family members can serve as an important conduit to treatment to overcome the documented stigma associated with military service members and veterans accessing mental health care.

Consistent with this study, Sayers, Farrow, Ross and Oslin (2009) found high rates of family difficulties among recently returned veterans who screened positive for mental health problems in a VA outpatient treatment clinic. More than three-quarters of the married/partnered service members in their sample reported difficulties with partners or children. PTSD and major depression were especially associated with difficulties in family role adjustment.

Other studies of OEF/OIF veterans have found that PTSD symptoms are associated with more intimate relationship discord. For instance, in a study of recently returned male Soldiers (Nelson Goff, Crow, Reisbig, & Hamilton, 2007), self-reported PTSD symptom severity was inversely related to the Soldiers' intimate relationship satisfaction. The Soldiers' dissociation and anxiety were inversely related to satisfaction for both members of the couple. A recent study of male National Guard members deployed to Iraq and their wives has extended our understanding of the association between PTSD and intimate relationship problems by examining the role of cognitive variables in these associations. The association between the wives' relationship satisfaction and their husbands' PTSD symptoms depended on the wives' perceptions of the husbands' combat experiences (Renshaw, Rodrigues, & Jones, 2008). Wives reported higher levels of marital distress when they perceived that their husbands had experienced low levels of combat exposure and their husbands reported high levels of PTSD symptoms. When wives perceived their husbands to have experienced high levels of combat, however, husbands' self-reported PTSD symptoms had no association with their wives' relationship satisfaction. This suggests that wives' attributions and perceptions of husbands' combat experiences, and particularly differences between the partners in this regard, serve as an important contributor to post-deployment intimate relationship difficulties.

In sum, available evidence from studies of veterans from prior eras, as well as the most recent cohort of veterans, indicates that PTSD is strongly associated with intimate relationship problems and a number of other indices of family adjustment difficulties. It appears that, at least for men, it is not combat exposure *per se* that directly leads to intimate relationship problems, but rather the post-traumatic psychopathology that can ensue following combat exposure that is the primary determinant of post-combat relationship difficulties. Spouse/partner attributions regarding military trauma experiences may also play a role with respect to the couples' relationship satisfaction. When examining different PTSD symptom clusters, avoidance/numbing symptoms appear to have a particularly strong association with overall relationship satisfaction, and hyperarousal symptoms are especially related to aggressive behavior and abuse in relationships. Other problems that often co-occur with PTSD, such as substance use and depression, may further increase risk for intimate relationship problems.

3. Brief review of treatment outcome efforts involving intimate partners

Based on research with veterans from prior eras, the type of couple therapy with the most evidence supporting its efficacy for individual psychopathology and the relationship problems associated with these problems is behavioral/cognitive-behavioral therapy, hereafter collectively referred to as Behavioral Conjoint Therapies (BCT) because of their historical behavioral roots. There have been two completed controlled trials of conjoint therapy for PTSD in general, and both of them involved a generic form of BCT with a focus on improving the overall relationship milieu in which the veteran resides. In the larger of these trials, Glynn and colleagues (1999) used a serial trial design in which they randomly assigned 42 Vietnam veterans to directed

therapeutic exposure (DTE; Carroll & Foy, 1992) only, DTE followed by BCT, or wait list. The vast majority of the significant others who participated in the study (approximately 90%) were the veterans' romantic partners. Both treatment conditions improved more than wait list on what the authors refer to as "positive" PTSD symptoms (i.e., reexperiencing, hyperarousal) but not the "negative" symptoms of PTSD (i.e., avoidance, numbing) or social adjustment. There were no statistically significant differences between DTE and DTE + BCT in PTSD symptom improvement, likely due to sample size and the high dropout rate of participants by the time they received the BCT intervention. However, there was a moderate effect size advantage ($d = .46$) for improvements in positive symptoms for the group who received DTE + BCT compared with the group who received DTE alone. Participants who completed BCT also showed significantly more improvements in interpersonal problem-solving than did participants who did not receive BCT.

Sweany (1987) randomly assigned 14 couples in which the male partner suffered from combat-related PTSD to generic group BCT or a wait list condition. Those in the BCT group received eight, two-hour weekly sessions focused on increasing positive interactions, improving communication and problem-solving skills, and enhancing intimacy. Post-treatment, those receiving BCT self-reported significant improvements in relationship satisfaction, depression, and PTSD symptoms compared with those in the control group.

There have been three uncontrolled trials of BCT for veterans with PTSD. One consisted of generic BCT delivered in a group, and the others were disorder-specific BCTs specifically designed to treat PTSD symptoms and concurrent relationship problems. Cahoon (1984) reported the results of a seven-week group BCT focused on communication and problem-solving training for combat veterans and their female partners. Group leaders reported statistically significant improvements in veterans' PTSD symptoms and coping abilities ($d = .47$ and $.72$, respectively) and female partners reported significant improvements in intimate relationship satisfaction and problem-solving communication ($d = .34$ and $.56$, respectively). However, the veterans did not report improvements in problem-solving or emotional communication skills ($d = .41$ and $.18$, respectively).

Sautter, Glynn, Thompson, Franklin and Han (2009) have developed Strategic Approach Therapy (SAT), a 10-session manualized BCT specifically designed to target the avoidance/numbing symptoms of PTSD. Findings from six veteran couples who completed the intervention indicate significant improvements in these symptoms according to patient, partner, and clinician ratings. There were also significant improvements in the veterans' self-reported total PTSD symptoms but not re-experiencing or hyperarousal symptoms. The authors did not assess relationship adjustment in this pilot study; thus, the potential effects of the intervention on dyadic functioning or the utility of the intervention for couples with different levels of distress is not yet known.

Cognitive-behavioral conjoint therapy (CBCT) for PTSD (Monson & Fredman, *in press*) is the only disorder-specific BCT designed to ameliorate all of the symptoms of PTSD and to enhance relationship functioning concurrently. The 15-session, manualized treatment has three stages involving psychoeducation about the dynamic interplay between PTSD and relationship difficulties. The specific treatment components consist of conflict management strategies to enhance safety, behavioral interventions to decrease avoidance and improve dyadic communication, and dyadic cognitive interventions to address maladaptive thinking patterns that maintain both PTSD symptoms and relationship distress. Monson, Stevens, & Schnurr (2005) and Monson, Schnurr, Stevens and Guthrie (2004) reported the results of an uncontrolled pilot study of Vietnam veterans with combat-related PTSD and their wives. There were statistically significant and large effect size improvements in clinicians' ($d = 1.60$) and partners' ($d = 1.18$) ratings of veterans' PTSD symptoms from pre- to post-treatment. By comparison, the veterans reported moderate

improvements in PTSD ($d = 0.64$) and statistically significant and large effect size improvements in depression ($d = 1.55$), anxiety ($d = 1.01$), and social functioning ($d = 1.0$ across domains). For their part, wives reported large effect size improvements in relationship satisfaction ($d = -0.92$), general anxiety ($d = 1.29$), and social functioning ($d \sim 1.0$ for all domains of social functioning) (Monson, Stevens, & Schnurr, 2005). More recent application of the therapy to both veterans and non-veterans with PTSD has revealed statistically significant and large effect size improvements in clinicians' ($d = 1.47$), patients' ($d = 1.35$), and partners' ($d = 1.56$) ratings of patients' PTSD symptoms from pre- to post-treatment. Partners also reported large effect size improvements ($d = 1.41$) in relationship satisfaction in both partners (Monson et al., 2009).

Other efforts to include family members in veterans' treatment have been described in the literature, but minimal outcome data have yet been published to support their efficacy. For example, Johnson (2002)'s Emotionally Focused Couple Therapy (EFT) for trauma survivors has been described in a book that includes case examples of its application to combat trauma. Similarly, Erbes, Polusny, MacDermid and Compton (2008) have described the application of integrative behavioral couple therapy (IBCT; Jacobson & Christensen, 1996), a form of BCT, for combat veterans with PTSD. As described by the authors and illustrated with a case example, IBCT may be well-suited to the conjoint treatment of PTSD given the combination of acceptance strategies and traditional BCT techniques to decrease both relationship conflict and experiential avoidance. Sherman's (2003) Support and Family Education (S.A.F.E.) Program, a multi-session educational program for families dealing with a wide range of mental illnesses, has been used in cases in which at least one member of the family suffers from PTSD. Program evaluation data indicate high satisfaction with the program by family members, but no outcome data for patients with PTSD or other psychological problems were reported. Two different intensive residential programs for veterans with PTSD have included significant others in treatment, and the authors reported some positive effects for individual or relationship functioning (Devilly, 2002; Rabin & Nardi, 1991).

There have been increasing efforts to incorporate significant others into the prevention and treatment of military service members' and veterans' mental health and intimate relationship problems specifically in the OEF/OIF cohort. With regard to relationship distress prevention efforts for current military personnel, the Army has invested in the Strong Bonds program for families (www.strongbonds.org), which includes a program specifically for couples (Strong Bonds for Couples). Strong Bonds for Couples is delivered in a weekend retreat format by Army chaplains and focuses on relationship enrichment through enhanced communication and intimacy. The original developers of the Premarital Enhancement Program (PREP; Markman, Stanley, Blumberg, Jenkins, & Whiteley, 2004) have also adapted and tested their program for Army couples as delivered by Army chaplains with promising results (Building Strong and Ready Families; Stanley et al., 2005). In addition, we are currently developing and testing a multi-couple group prevention intervention funded by the Centers for Disease Control and Prevention aimed at decreasing the likelihood of intimate partner perpetration in OEF/OIF veterans diagnosed with PTSD (Taft, Monson, Feldner, Murphy, & Resick, 2007–2012).

In summary, a growing body of research suggests that involving partners and close family members in treatment for PTSD is beneficial. Research suggests that generic conjoint/family therapies can lead to improvements in PTSD symptoms, most likely by decreasing ambient interpersonal stress that can exacerbate individual symptoms. Some BCTs tested to date have led to improvements in certain PTSD symptom clusters, which we attribute to the explicit targets of these interventions (e.g., SAT specifically focuses on avoidance symptoms). Disorder-specific conjoint treatments for PTSD that aim to simultaneously improve both PTSD symptoms and relationship impairments appear to hold particular promise by improving the overall affective

climate that the patient resides in, while also targeting the mechanisms that account for problems in both areas (e.g., addressing cognitions that maintain PTSD and are related to relationship discord). As additional basic research is conducted on the association of PTSD and relationship difficulties, it is expected that new, increasingly targeted and efficient conjoint treatments for PTSD will be developed to assist veterans and their loved ones.

4. Advancing theory accounting for PTSD and intimate relationship problems

There have been a few constructs and fewer theories put forth to account for the well-documented association between PTSD and intimate relationship problems. We believe that study of the connection between PTSD and intimate relationship functioning is sorely in need of theory development and testing to further understanding of these associations and ultimately advance prevention and treatments efforts aimed at both areas. These constructs/theories can be broadly classified based on their assumptions about the direction of causality between PTSD and intimate relationship problems. Only a few theories have been put forth postulating a reciprocally-determined association between individual PTSD and couple/family problems.

4.1. PTSD as a cause of intimate relationship problems

Most of the constructs and theories put forth to date have presumed a causal pathway from traumatization or PTSD to intimate relationship problems. Secondary or vicarious traumatization in close loved ones is one such construct (Figley, 1989; McCann & Pearlman, 1990a,b; Solomon et al., 1992). Buttressing this construct, several studies have documented an association between veterans' PTSD symptoms and symptoms of PTSD or more general psychological distress in intimate partners (Jordan et al., 1992; Waysman, Mikulincer, Solomon, & Weisenberg, 1993; Westerink & Giarratano, 1999). However, studies with children of veterans with PTSD have not consistently documented an association between veterans' PTSD symptoms and child PTSD and/or behavioral problems (Ahmadzadeh & Malekian, 2004; Beckham et al., 1997; Davidson & Mellor, 2001; Davidson, Smith, & Kudler, 1989; Souzzia & Motta, 2004; Westerink & Giarratano, 1999).

This construct has suffered inconsistency in the operationalization of it when studied. For example, partners have not generally anchored their reported PTSD symptoms to the veterans' traumatic experience when completing self-report measures of PTSD symptomatology, which raises questions about whether the symptoms are related to partners' general distress/psychopathology or their own trauma experiences, or the veterans' specific trauma experiences. Moreover, partners' distress may or may not be related to the trauma experience itself versus living with the related psychopathology in their loved one.

Caregiver burden, or caregivers' perception that their emotional or physical health, social life, or financial status is affected by their caring for an impaired relative (Zarit, Todd, & Zarit, 1986), is another construct that has been put forth to account for veterans' couple/family relationship problems. Several studies have documented an association between the severity of veterans' PTSD symptoms and degree of caregiver burden in intimate partners. In turn, caregiver burden has been associated with intimate partners' psychological distress both cross-sectionally and longitudinally (e.g., Calhoun, Beckham, & Bosworth, 2002; Dekel, Solomon, & Bleich, 2005; Manguno-Mire et al., 2007). Similarly, ambiguous loss, which is defined as the experience of psychological absence with physical presence of a loved one (Boss, 1999, 2007), has been applied to intimate relationships and PTSD and shown to be associated with psychological difficulties in intimate others (Dekel, Goldblatt, Keidar,

Solomon, & Polliack, 2005). According to this theory, the uncertainty or lack of information about the whereabouts or status of a loved one as absent or present negatively affects individuals, couples, and families (Boss, 1999). A qualitative study of wives of Israeli veterans with PTSD provides some support for ambiguous loss associated with PTSD in that ambiguity in wives' perceptions of whether the spouse is a husband or another child, and whether he is an independent adult or a dependent person who needs constant care, was associated with psychological distress in the women (Dekel, Solomon et al., 2005).

All of these constructs presume that traumatization or PTSD *causes* intimate relationship problems or individual distress in significant others in relation to those with PTSD. We argue that intimate relationship problems are just as likely to serve as impediments to recovery. For example, traumatized individuals who exist in a critical, hostile interpersonal environment that may not only be unsupportive but also characterized by victim blame or other negative beliefs or behaviors on the part of significant others may be particularly susceptible to PTSD.

4.2. Couple/family functioning as contributor to the onset or exacerbation of PTSD

An exception to the tendency to presume that PTSD *causes* interpersonal relationship problems is the literature on social support. Meta-analysis reveals that social support is one of the factors most robustly and negatively associated with PTSD symptoms (Brewin, Andrews, & Valentine, 2000). Social support in the acute aftermath of trauma has been found to be related to less PTSD symptomatology, but has also been documented to diminish over time in the presence of chronic PTSD (e.g., Kaniasty & Norris, 2008; King, Taft, King, Hammond, & Stone, 2006). The longitudinal course of social support is perhaps one of the most important facets to understanding the PTSD-intimate relationship problem connection.

An additional future direction in the study of social support in trauma recovery is determining the specific aspects of social support that account for the association between social support and PTSD. For example, some have argued that social support promotes recovery by supportive others correcting problematic trauma appraisals (Joseph, Williams, & Yule, 1997). Other possible mechanisms may exist, including less avoidance of trauma-related cues because of increased social activity, practical/logistic supports provided by others that can be diminished post-traumatization, or modeling of tolerance of negative emotional states on the part of supportive others. The developmental course of social support in trauma recovery and elucidation of the specific factors involved in the social-support and PTSD connection are important areas in need of further investigation.

4.3. Theories presuming a bidirectional association

We are aware of only two more fully elaborated models that account for the likely reciprocally causal association between intimate relationship problems and PTSD. Nelson Goff and Smith (2005) put forth the Couple Adaptation to Traumatic Stress (CATS) model. The CATS model provides a systemic description of how individuals and couples are affected when trauma occurs. The model proposes that adaptation to traumatic stress in the couple is dependent on the systemic interaction of three different levels of factors: individual level of functioning of each of the partners, predisposing factors and resources, and couple functioning.

The model assumes that a survivor's level of functioning or trauma symptoms will set in motion a systemic response with the potential to result in secondary traumatic stress symptoms in the partner. However, because the model is bi-directional, partners' reactions and symptoms may intensify trauma-related symptoms in the survivor. Individual and couple functioning are determined by predisposing factors and resources (McClubbin & Patterson, 1982),

which refer to individual characteristics or unresolved stress experienced by either partner prior to the trauma. Lastly, in between the individual and predisposition layers, there is a "couple functioning" system, which relates to the level and quality of variables such as, relationship satisfaction, support/nurturance, intimacy, communication, and conflict, which are described as mutually influential components of the dyad system. They postulate that there are several mechanisms that may underlie the systemic response to traumatic stress in couples, including chronic stress, attachment, identification and empathy, projective identification, and conflict and physiological response models.

Monson, Fredman and Dekel (in press) have put forth a cognitive-behavioral interpersonal theory of PTSD that encompasses the associations between PTSD and romantic and non-romantic adult close relationship functioning. They postulate that there are behavioral, cognitive, and emotional variables that dynamically interact within each individual. In turn, these factors in each individual interact at the dyadic level to influence the relationship milieu shared by the dyad, as well as the components acting within each individual. In other words, there are within and between individual cognitive, behavioral, and affective interactions that influence the individuals involved and the relationship that they co-create.

An additional important assumption to Monson and colleagues' theory is that PTSD is a disorder characterized by disturbances in a range of emotions in addition to anxiety (e.g., guilt, shame, anger, grief). They also expand the notion of avoidance to include the avoidance of emotional experience and expression. Emotional process disturbances such as alexithymia and difficulties with identifying and expressing emotions have been associated with PTSD (e.g., Monson, Price, Rodriguez, Ripley, & Warner, 2004). These emotional content and process disturbances are suspected to contribute to emotional communication deficits and their related relationship impairments.

Their theory draws on intrapersonal behavioral conceptualizations of PTSD such as the role of learning processes that account for the development and maintenance of emotional responding (e.g., Mowrer, 1960). Consistent with these theories, avoidance of trauma-related stimuli and emotions is key to maintenance of the disorder. Interpersonally, significant others' well-intended caretaking behaviors can serve to promote or maintain avoidant behavior. In this way, the significant others' behavior "accommodates" the disorder. Examples of behavioral accommodation include a significant other managing their loved ones' interactions with others, facilitating "work arounds" in the PTSD-identified partner's activities of daily living (e.g., driving them everywhere in the case of a combat transportation accident, accompanying them to "protect their safety"). Some loved ones consider these behaviors expressions of their affection for their distressed loved one; others feel angry or resentful about taking on extra, burdensome responsibilities. Irrespective of intentionality, these behaviors inadvertently reinforce the traumatized individual's avoidance and interfere with his or her recovery from PTSD. Behavioral accommodation can also diminish close relationship satisfaction through less engagement in mutually reinforcing activities, constriction of affective expression, and limited self-disclosure, including trauma-related disclosure.

An additional behavioral mechanism in their theory accounting for the association between relationship problems and PTSD is poor communication. There is long-standing evidence of communication deficits in those with PTSD (e.g., Frueh, Turner, Beidel, & Cahill, 2001). These communication deficits are theorized to maintain the disorder and contribute to relationship problems because of difficulties with effective trauma disclosure and poor conflict resolution and management. Trauma disclosure in an encouraging and supportive environment can lead to the development of a more cogent trauma narrative and emotional processing of traumatic memories. Limited conflict management and problem-solving skills are also theorized to mediate

the relationship between the hyperarousal symptoms of PTSD and aggressive relationship behavior.

Monson and colleagues postulate that there are also inter-related cognitive processes and thematic content that account for the association between PTSD and close relationship problems. Individual and dyadic dysfunction is theorized to arise from reliance on enduring, rigid, and maladaptive schemas in making meaning of experiences. Borrowing from earlier work by McCann and Pearlman (1990a,b), also found in cognitive processing therapy (Resick, Monson, & Chard, 2007), schemas related to safety, trust, power, esteem, and intimacy are disrupted as a result of the trauma and are pertinent to close relationship functioning. With regard to cognitive process variables, filtered attention and memory biases toward negative and threatening behavior has been found in both PTSD and intimate relationship distress (Baucom & Epstein, 1995; Ehlers & Clark, 2000).

5. Future directions

There are a number of questions that remain unanswered about PTSD and the myriad of intimate relationship maladies that co-occur with it. We believe that one of the foremost challenges in this field is the refinement of theories that can account for the likely interacting and recursive effects of these individual and couple-level problems. Well-articulated theories will also need to take into account the developmental course of PTSD and intimate relationship functioning. Prospective research designs, paired with advanced statistical modeling techniques, can then begin to test these theories. Some of the most pressing issues to be answered in these models include discerning the role of relationship variables in trauma recovery in the acute period of recovery, or development of PTSD, versus their role in the persistence of the disorder, and vice versa. Longitudinal, laboratory-based paradigms and daily diary methods may be particularly well-suited to examining such questions in this work. Also, much more investigation needs to be done to isolate the unique relationship between PTSD and family functioning measures when accounting for other forms of psychopathology, and we have much to learn about how PTSD may interact with physical trauma (e.g., traumatic brain injury) to lead to family difficulties.

A relatively uncharted but exciting area for future research is investigation of the interacting cognitive variables underlying the PTSD-intimate relationship connection. Renshaw and colleagues' (2008) work previously described on the moderating effect of partners' perceptions of Soldiers' trauma exposure and Monson, Gradus, La Bash, Griffin and Resick, 2009 research on couples' interacting trauma-relevant beliefs in individual post-disaster adjustment are illustrative of these efforts. In addition, continued work on the role of disclosure following a traumatic event is also warranted, and especially in light of concerns about possible secondary or vicarious traumatization in veterans' loved ones. For example, is disclosure of all types and forms of trauma beneficial for the traumatized individual? What are the potentially positive and negative effects on intimate relationship functioning and the person bearing witness to the disclosure? In this vein, more fine-grained research that carefully operationalizes vicarious or secondary traumatization is needed. We postulate that the untoward effects of traumatization on loved ones are much more likely to arise as a consequence of living with someone with the symptoms of PTSD than the traumatized person sharing about his/her specific trauma. That said, careful empirical research is needed to test these assertions.

Nearly all research heretofore on the association between PTSD and intimate relationship problems has been done with samples of heterosexual male veterans who have had chronic PTSD for years. In these times of a growing number of women who are serving in a range of positions in frontless wars, we need to better understand the potentially different associations between PTSD and intimate relationship functioning by gender. In addition, we need to conduct

research on these associations in same sex couples. We are aware of no empirical research on this topic, in spite of high rates of victimization in sexual minorities (e.g., Balsam, Rothblum, & Beauchaine, 2005) and some unique relationship characteristics of these couples (Kurdek, 2005).

Although this review was focused on intimate adult relationships, it is important to point out that there are a range of close others that can affect and be affected by a veteran's PTSD. As reviewed above, there is an association between poorer parenting satisfaction and PTSD, and there is some evidence of greater behavior problems in the children of parents with PTSD (e.g., Ahmadzadeh & Malekian, 2004). More research is needed on broader family functioning and the effects of parental PTSD on children in order to better intervene at the family and parent-child dyad level. Moreover, a significant proportion of veterans is not in a longer-term romantic relationship. Parents, siblings, close friends, and/or fellow veterans may be the veteran's family.

There is exciting work on the horizon as it relates to including veterans' family members in prevention and treatment efforts. We look forward to reviewing the research that continues to unfold documenting the value of couple-based prevention strategies in warding off future relationship problems and improving individual functioning in service members' and their partners and children. With regard to treatment of PTSD and intimate relationship problems after they have developed, we believe that one of the pressing questions to be more systematically addressed is how family members can be used to facilitate engagement in mental health treatment in this cohort of veterans. Anecdotally, we have treated several OEF/OIF veterans who have commented that, if not for their wives' urging they would not have sought treatment for their PTSD and other mental health and substance use problems. There has been discussion about the role of family members in overcoming stigma and facilitating engagement, but this discussion has been met with minimal empirical research (see Manguno-Mire et al., 2007, for exception).

Another important question to be answered in this arena is how conjoint/family therapies for PTSD will stack up against existing evidence-based therapies designed to improve PTSD and intimate relationship functioning. A trial comparing our CBCT for PTSD to Prolonged Exposure in a sample of active duty service members and their intimate partners has been funded by the U.S. Department of Defense. We also need to determine whether generic couple/family therapies will reduce PTSD symptoms and improve relationship functioning as well as the emerging PTSD-specific couple/family interventions. This research has important health services implications in terms of developing staff capacity to deliver more or less complicated interventions. Down the road, there are interesting dismantling study designs that will help elucidate the active ingredients of these interventions and increase the efficiency in delivering them (e.g., trauma-focused interventions may not be necessary to achieve equivalent treatment gains).

The wars in Iraq and Afghanistan have brought greater attention to the consequences of military trauma exposure on the individual, but also on the intimate relationships and loved ones of those who serve. There has been significant progress in explicating the role of intimate relationship functioning on PTSD and vice versa, but the work is not yet complete. As increasing numbers of veterans return from war, it is imperative that we continue to conduct basic research on the interpersonal processes that affect their adjustment and innovate prevention and treatment interventions for them and their loved ones. We remain hopeful that these efforts will result in improvements in healthcare and ultimately the well-being of our newest generation of veterans and their families.

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