Together in Pain:
Attachment-Related Dyadic Processes and Posttraumatic Stress Disorder

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We used actor–partner interdependence modeling to explore associations among attachment-related dyadic processes, posttraumatic stress disorder (PTSD) in war veterans, and secondary traumatic stress (STS) in their wives. A sample of 157 Israeli couples (85 former prisoners of war and their wives and a comparison group of 72 veterans not held captive and their wives) completed self-report scales assessing attachment insecurities (anxiety, avoidance) and PTSD symptoms. For both groups of veterans and their wives, attachment anxiety was associated with the severity of their own and their spouses’ PTSD and STS. Avoidant attachment was associated with PTSD and STS only in couples that included a former prisoner of war. A complex pattern of associations involving avoidant attachment was observed in the actor–partner analyses of these couples. The study demonstrates that attachment-related dyadic processes play a role in the development and maintenance of PTSD in traumatized veterans and STS in their wives.

Keywords: adult attachment, dyadic processes, PTSD, secondary traumatic stress, ex-POWs

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Human-engendered traumatic experiences increase the likelihood, severity, and duration of posttraumatic stress disorder (PTSD) more than do other kinds of traumatic events (American Psychiatric Association [APA], 1994; Charuvastra & Cloitre, 2008). Being captured in war is an extremely traumatic experience because it usually involves repeated psychological, and sometimes physical, assaults designed to destroy the prisoner of war’s identity and national loyalty. These stressors include torture, solitary confinement, and systematic deprivation of basic needs such as food, sleep, shelter, physical activity, and privacy (e.g., Herman, 1992). Indeed, research around the world has consistently found ex-POWs to be at risk for psychiatric disorders (e.g., Engdahl, Dikel, Eberly, & Blank, 1997; Solomon, Neria, Ohry, Waysman, & Ginzburg, 1994), including PTSD (e.g., Surker & Allain, 1996).

PTSD consists of the repeated reexperiencing of traumatic events (intrusive symptoms such as unwanted and dreaded mental images and dreams), reduced involvement with the external world (trauma-related avoidance), and cognitive–affective hyperarousal (APA, 1994). Of special interest here, PTSD can affect a victim’s significant others (e.g., spouse, children; see Munguno-Mire et al., 2007; Stamm, 1999), causing close relationship partners to develop symptoms that mimic PTSD, a phenomenon that Figley (1986) labeled secondary traumatic stress (STS). In the case of war trauma, for example, wives of veterans may experience mental images and dreams about their husband’s war experiences, and they may avoid activities, people, or places that remind them of their husband’s war trauma. Indeed, studies have shown that spouses of veterans with PTSD are at risk of developing PTSD symptoms as well as anxiety, depression, low self-esteem, and feelings of having to bear a heavy burden (e.g., Beckham, Lytle, & Feldman, 1996; Calhoun, Beckham, & Bosworth, 2002; Solomon et al., 1992; Verbosky & Ryan, 1988). Given that captivity is one of the most traumatic aspects of warfare, it is likely that spouses of ex-POWs are particularly vulnerable to STS.

Even following extreme circumstances such as captivity, however, there are individual differences in coping and adjustment in ex-POWs and their wives. Whereas some ex-POWs and their wives develop psychiatric disorders, others seem resilient in the face of trauma (e.g., Hall & Williams, 1973; McCubin, Dahl, Lester, & Ross, 1975; Surker & Allain, 1991). Current conceptualizations of PTSD emphasize information-processing capacities and belief systems in the development and maintenance of PTSD (e.g., Foa, Steketee, & Rothbaum, 1989; Resick & Schnicke, 1992). But studies have also found that individual differences in attachment also play a role in exacerbating or attenuating PTSD symptoms in both traumatized individuals and their spouses (see Mikulincer & Shaver, 2007, for a review). In the present study, we examined the role of ex-POWs’ and their wives’ attachment insecurities in the long-term repercussions of war captivity.
Attachment Insecurities, PTSD, and STS

According to Bowlby’s (1973, 1982) attachment theory, a person’s history of interactions with significant others contributes to individual differences in distress regulation, mental representations of self and others, and interpersonal cognitions and behavior. Numerous studies have found that these individual differences can be conceptualized in terms of regions in a two-dimensional space (e.g., Brennan, Clark, & Shaver, 1998; see Mikulincer & Shaver, 2007, for a review). The first dimension, typically called attachment-related avoidance, reflects the extent to which an individual distrusts the goodwill of relationship partners, strives to maintain behavioral independence and emotional distance from partners, and relies on deactivating emotion-regulation strategies, such as denial of attachment needs and suppression of attachment-related thoughts and emotions (Mikulincer & Shaver, 2003). The second dimension, typically called attachment-related anxiety, reflects the degree to which an individual worries that a partner will be unavailable in times of need and adopts hyperactivating attachment and emotion-regulation strategies (i.e., energetic, insistent attempts to obtain care, support, and love from a relationship partner) as a means of regulating distress and coping with threats (Mikulincer & Shaver, 2003). Attachment security is located in the region of the two-dimensional space where both anxiety and avoidance are low; it is characterized by comfort with closeness and trust in the availability, responsiveness, and supportiveness of relationship partners.

There is extensive evidence that attachment insecurities of both kinds—anxiety and avoidance—are associated with hostility (e.g., Kobak & Scery, 1988), depression (e.g., Carnelley, Petromonaco, & Jaffe, 1994), mistrust of others (e.g., Collins & Read, 1990), loneliness (e.g., Hazan & Shaver, 1987), and heightened fear of death (e.g., Mikulincer, Florian, & Tolumac, 1990). Moreover, attachment anxiety is also associated with exaggerated appraisals of threat (e.g., Mikulincer, Birnbaum, Woddis, & Nachmias, 2000), difficulties in suppressing negative thoughts and feelings (e.g., Mikulincer, Dolev, & Shaver, 2004), and rumination on distressing thoughts (e.g., Mikulincer & Florian, 1998). Attachment-related avoidance is also associated with reliance on cognitive and behavioral distancing and the denial or suppression of distress (e.g., Berant, Mikulincer, & Florian, 2001; Birnbaum, Orr, Mikulincer, & Florian, 1997). However, studies also show that in prolonged, extremely stressful situations (e.g., caring for a child with a life-threatening illness), avoidant defenses can collapse, causing attachment-related avoidance to be associated with emotional problems and even psychopathology (e.g., Berant et al., 2001; Wijngaards-de Meij et al., 2007).

These kinds of research findings led Mikulincer, Shaver, and Horesh (2006) to suggest that attachment insecurities may contribute to the development and maintenance of PTSD. Attachment insecurities may keep people who are exposed to traumatic events from calling upon either inner representations of security or external sources of support and comfort, thus making it more difficult to regulate distress. This regulatory failure may initiate a cascade of psychological processes, including strong feelings of loneliness and rejection; negative working models of self and others; intensification of distress; and reliance on less effective (i.e., anxious or avoidant) strategies of affect regulation, which prevent resolution of the trauma and enhance the likelihood of prolonged PTSD. In other words, attachment insecurity may predispose a traumatized person to PTSD. Although this sequence of events and the direction of causality of the attachment–PTSD link have not been directly examined, numerous studies have found that attachment insecurities are associated with PTSD, regardless of the type or severity of the traumatic event (e.g., Dieperink, Leskela, Thuras, & Engdahl, 2001; Fraley, Fazzari, Bonanno, & Dekel, 2006; Muller & Lemieux, 2000). In an earlier study of the cohort of ex-POWs from the 1973 Yom Kippur War that we are examining in the present study, Solomon, Ginzburg, Mikulincer, Neria, and Ohry (1998) found that anxious attachment was associated with more severe PTSD symptoms even 20 years after the war.

Attachment theory also emphasizes the importance of taking a dyadic perspective on attachment-related processes, because one partner’s attachment insecurities can affect the other partner’s cognitions, emotions, and behavior (Mikulincer & Shaver, 2003). Indeed, several studies have shown that each partner’s attachment insecurities contribute to the other partner’s construction of, and dissatisfaction with, their relationship (e.g., Brennan & Shaver, 1995; Collins & Read, 1990). These partner effects have been noted in studies using observational methods, diary keeping, and narrative accounts as well as self-report questionnaires (e.g., Collins & Feeney, 2000; Feeney, 2002; Feeney & Holahan, 2001).

The notion that attachment insecurities and psychopathology are associated can be extended from the individual level to the dyadic level, because one partner’s attachment insecurities contribute to the other partner’s emotional distress. For example, Whiffen, Kallos-Lilly, and MacDonald (2001) and Whiffen (2005) found that husbands’ insecurities predicted the persistence of wives’ depressive symptoms over a 6-month period. In the case of PTSD, a person (husband or wife) who scores high on anxious attachment, which implies being self-focused and easily overwhelmed by a partner’s distress (e.g., Kunce & Shaver, 1994), may be unable to provide sensitive and responsive care to a traumatized spouse. And a person who scores high on avoidant attachment may remain distant from a spouse even when he or she needs emotional closeness and support (e.g., Kunce & Shaver, 1994). Moreover, one partner’s attachment insecurities, in the form of either anxiety or avoidance, may cause the other partner to feel rejected, abandoned, and lonely (e.g., Mikulincer & Shaver, 2007; Rokach & Brock, 1998), which may be associated with increased likelihood of PTSD. Indeed, a review of PTSD studies found that perceived lack of partner support before and after a traumatic event is one of the most important factors determining vulnerability to PTSD (Churuvastra & Cloitre, 2008).

Attachment insecurities can also contribute to STS. For example, spouses scoring high on attachment anxiety may be overwhelmed by a traumatized partner’s painful experiences and expressions of distress because of their own difficulties in regulating emotion and their tendency to identify with other people’s suffering (Kunce & Shaver, 1994; Mikulincer & Shaver, 2003). Spouses scoring high on avoidant attachment may attempt to distance themselves emotionally from a traumatized partner (e.g., Kunce & Shaver, 1994), perhaps protecting themselves from STS. However, as mentioned earlier, this kind of defense may collapse under prolonged and demanding stressful conditions (e.g., Berant et al., 2001).

The association between attachment insecurities and STS can be considered at the dyadic level of analysis, because a traumatized
person’s attachment insecurities may be associated with a spouse’s STS. Traumatized people who score high on anxious attachment—and who are often unable to suppress negative thoughts and feelings and tend to disclose them indiscriminately to their partners (e.g., Mikulincer et al., 2004; Mikulincer & Nachshon, 1991)—may overwhelm their spouse by repeatedly sharing traumatic memories and current distress. This may increase the spouse’s distress, compassion fatigue, and caregiving burden, which may result in STS. In contrast, traumatized people scoring high on avoidant attachment may be less likely to seek support, to express their distress, and to share their traumatic experiences with their spouse (Mikulincer & Shaver, 2007), which may reduce the likelihood of their spouse’s developing STS.

The Present Study

This study is part of a long-term project examining PTSD and related psychopathology among Israeli ex-POWs from the 1973 Yom Kippur War, as well as control veterans who fought in the same war but were not held in captivity. Previous publications based on the database have focused on differences in PTSD between ex-POWs and controls 20 and 28 years after the war (e.g., Neria, Solomon, & Dekel, 1998; Solomon, Ginzburg, Neria, & Ohry, 1995; Solomon & Horesh, 2007; Solomon et al., 1994), correlates of attachment insecurities (Solomon et al., 1998), and marital adjustment (e.g., Dekel, Enoch, & Solomon, 2008; Solomon, Dekel, & Zerach, 2008; Solomon, Dekel, Zerach, & Horesh, 2009). In addition, previous publications have begun to examine associations between attachment insecurities and PTSD in the group of ex-POWs (e.g., Solomon, Dekel, & Mikulincer, 2008; Zakin, Solomon, & Neria, 2003). However, no previous study has examined these associations at the dyadic level or the contribution of ex-POWs’ and their wives’ attachment insecurities to increasing the associations of avoidant attachment with PTSD and STS. Moreover, no previous publications based on this project have examined the unique and interactive contributions of study group (ex-POW, control) and trauma status (primary/husband vs. secondary/wife) on the links between attachment insecurities and PTSD.

Here, we examine both within-person and dyadic associations between attachment insecurities and the severity of PTSD symptoms among veterans (ex-POWs, controls) and their wives. Specifically, we ask (a) whether veterans’ or wives’ attachment insecurities are associated with their own PTSD or STS and (b) whether one person’s (husband’s or wife’s) attachment insecurities are associated with the severity of his or her spouse’s PTSD or STS, while considering the extent to which these associations are moderated by trauma status (primary/husbands vs. secondary/wives)1 and study group (ex-POW vs. control; see Figure 1).

At the within-person level, we hypothesize that attachment anxiety will be associated with more severe PTSD in both ex-POWs and control veterans and with more severe STS in their wives. With regard to avoidant attachment, we hypothesize that avoidant strategies may provide a defense against the long-term effects of trauma among control veterans and their wives but that avoidant defenses will break down in the case of ex-POWs, increasing the vulnerability of traumatized husbands and their wives to PTSD and STS, respectively.

At the dyadic level, we hypothesize that (a) a wife’s attachment anxiety will be associated with more severe PTSD in her husband and (b) a husband’s attachment anxiety will be associated with more severe STS in his wife. With regard to avoidant attachment, we hypothesize that (a) a wife’s avoidant attachment will be associated with more severe PTSD in the husband but (b) a husband’s avoidance will be associated with less severe STS in his wife. We expect all of these associations to be stronger among ex-POWs than among controls, because the trauma experienced by the ex-POWs was more severe, on average.

Method

Participants

The sample consisted of 157 Israeli couples in which the husband was a veteran of the 1973 Yom Kippur War. The sample was divided into the following two groups: (a) 85 former combat soldiers who had been held captive and their spouses and (b) 72 control couples in which the husband fought in a combat unit in the same war but was never a captive. More specifically, the control group was drawn from a pool of combat soldiers who fought on the same fronts as the ex-POWs did. Control participants were selected on the basis of their similarity to the ex-POWs on relevant military and personal variables such as age, combat exposure, and rank. The names of the veterans in both groups were obtained from the records of the Israeli Ministry of Defense. The sample included only veterans who were currently married or cohabiting with a spouse and whose partner agreed to participate. The self-report questionnaires were completed individually in the couple’s home or in another location of their choice. Before completing the questionnaire, participants signed an informed consent agreement.

The two groups did not differ in sociodemographic variables such as length of marriage (M = 27.37 years, SD = 6.19), divorce rate (9.5% of the participants had divorced), age (M = 53.37 years, SD = 4.68, for veterans and M = 53.36, SD = 4.68, for wives), or number of children (M = 3.25, SD = 1.21). Moreover, the groups did not differ in response rate (71.5% for the ex-POWs and 74.1% for the controls) or survival rate (2.94% died in the ex-POW group, and 1% died in the control group).

Measures

Attachment insecurities. Attachment anxiety and avoidance were assessed with the 10-item Adult Attachment Styles scale developed by Mikulincer and colleagues (1990), who decomposed Hazan and Shaver’s (1987) descriptions of avoidant and anxious attachment styles and constructed five items for each dimension. The five anxiety items (e.g., “I worry about being abandoned”) corresponded to items in Brennan and colleagues’ (1998) anxiety subscale of the Experiences in Close Relationships (ECR) measure, and the five avoidance items (e.g., “I feel uncomfortable when others get close to me”) corresponded to items in Brennan

1 Primary status refers to either ex-POWs or war veterans (i.e., in our sample, the husbands). Secondary status refers to spouses of ex-POWs or war veterans (i.e., in our sample, the wives). The trauma status variable is not meant to imply PTSD or STS symptom severity levels.
and colleagues’ avoidance subscale. Participants rated the extent to which an item described them using a 7-point scale ranging from 1 (not at all) to 7 (very much). Mikulincer and Florian (2000) reported high concordance between this measure and the 36-item ECR inventory in a sample of Israeli undergraduates (r/1 = .67 for anxiety items, r/1 = .73 for avoidance items). In addition, many studies conducted in Mikulincer’s laboratory have demonstrated this measure’s high construct and predictive validity (e.g., Mikulincer & Florian, 1998; Mikulincer, Florian, & Weller, 1993). It is associated in theoretically predictable ways with measures of attachment-related cognitive processes, emotion-regulatory processes, personal adjustment, and relationship quality (see Mikulincer & Shaver, 2007, for a review). In the current study, Cronbach’s alphas for the five anxiety items and the five avoidance items, respectively, were adequate for both veterans (.65 and .76) and their wives (.60 and .66). We therefore computed two scores (anxiety, avoidance) for each participant by averaging items corresponding to each attachment subscale.

PTSD. We assessed PTSD symptoms with the Posttraumatic Stress Disorder Inventory (PTSDI; Solomon et al., 1994), a self-report scale consisting of 17 statements corresponding to the 17 core PTSD symptoms listed in the Diagnostic and Statistical Manual of Mental Disorders (4th ed.; DSM–IV; APA, 1994). Each statement was accompanied by a 4-point Likert-type scale asking participants to indicate how intensely they had experienced the symptom during the previous month. The intensity rating scale ranged from 1 (not at all) to 4 (very much). These symptoms were divided into three categories corresponding to the following three DSM–IV criteria for diagnosing PTSD: (a) persistent reexperiencing of the traumatic event (i.e., intrusion; Criterion B; e.g., “I had bad dreams or nightmares about the traumatic event”), (b) persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (i.e., avoidance; Criterion C; e.g., “I have tried to avoid activities, people, or places that remind me of the traumatic events”), and (c) persistent symptoms of increased arousal (i.e., hyperarousal; Criterion D; e.g., “I have been jumpy or easily startled”). The scale was found to have high reliability and high convergent validity when compared with diagnoses based on structured clinical interviews (Solomon et al., 1994).

In the current study, the 17 PTSDI items were tailored for each group of veterans and their wives. For ex-POWs, items referred to PTSD symptoms related to their captivity (e.g., “I had bad dreams or nightmares about my captivity”). For control veterans, items referred to PTSD symptoms related to their experiences during the Yom Kippur War (e.g., “I had bad dreams or nightmares about the Yom Kippur War”). For wives, items referred to secondary PTSD symptoms related to their husbands’ traumatic experiences (e.g., “I had bad dreams or nightmares about my husband’s captivity” or “I had bad dreams or nightmares about my husband’s experiences in the Yom Kippur War”). That is, the PTSDI adapted for use by the wives assessed the severity of their STS. In this study, Cronbach’s alphas for the 17 items and the three PTSD clusters (intrusion, avoidance, and hyperarousal) were acceptable for both veterans (ranging from .88 to .94) and their wives (ranging from .77 to .91). Overall, 24.8% of the ex-POWs and 14.1% of their wives were classified as suffering from clinical PTSD or STS (endorsing at

![Figure 1. The proposed moderation model. Using this model we examined both within-person and dyadic associations between attachment insecurities and the severity of posttraumatic stress disorder (PTSD) symptoms among veterans (ex-POWs, controls) and their wives. Specifically, we asked (a) whether veterans’ or wives’ attachment insecurities are associated with their own PTSD or secondary traumatic stress (STS) and (b) whether one person’s (husband’s or wife’s) attachment insecurities are associated with the severity of his or her spouse’s PTSD or STS, while considering the extent to which these associations are moderated by trauma status (primary/husbands vs. secondary/wives) and study group (ex-POW vs. control).]
least one intrusive symptom, three avoidance symptoms, and two hyperarousal symptoms). In the control group, only 3.8% of the veterans and none of their wives were classified as suffering from clinical PTSD or STS.

Procedure

Potential participants for the study were identified using updated Israel Defense Force files. In 2001, one of the researchers contacted all potential participants from the files (both partners in the dyad) by phone and explained the purpose of the study. Those who agreed to take part (81.3%) were offered the option of completing the research questionnaires either in their homes or in a location of their choice. Husbands and wives were interviewed separately. As mentioned earlier, before taking part in the study all participants read and signed an informed consent agreement.

Results

Pearson correlations among the main study measures are presented in Table 1. Missing data were handled using WinMICE software (Jacobusse, 2005), which enables multilevel multiple imputation (Rubin, 1987; Schafer, 1997), as recommended by Bollen and Curran (2006). The imputation algorithm included the following measures: attachment insecurities, PTSD symptoms scores, study group (ex-POW, control), trauma status (primary vs. secondary), length of marriage, age of both partners, and number of children. Overall, between 0.6% and 3.1% of the data was missing. No analysis was conducted on predictors of missingness because of the small rates of missing values.

Trauma Status and Group Differences in PTSD Symptoms

In this section, we report (a) trauma status (primary vs. secondary) effects on PTSD intrusion, avoidance, and hyperarousal symptoms and (b) whether these effects were moderated by study group (ex-POW, control). We conducted a series of mixed analyses of variance with study group as a between-subjects variable; trauma status as a within-subject variable; and severity of PTSD intrusion, avoidance, and hyperarousal symptoms as dependent variables. Because these analyses are interdependent, we controlled for Type I error with Bonferroni corrections for multiple comparisons. Relevant means and standard deviations are presented in Table 2.

The significant main effects of study group—$F(1, 155) = 72.86$, $p < .0001$, $\eta^2_p = .32$, for intrusion; $F(1, 155) = 74.29$, $p < .0001$, $\eta^2_p = .33$, for avoidance; and $F(1, 155) = 88.31$, $p < .0001$, $\eta^2_p = .36$, for hyperarousal—were reported in previous publications. Therefore, we focus here on the effects of trauma status and interactions between trauma status and study group. Whereas the main effects of trauma status were not significant, all of the interactions reached statistical significance, $F(1, 155) = 37.37$, $p < .001$, $\eta^2_p = .19$, for intrusion; $F(1, 155) = 85.90$, $p < .001$, $\eta^2_p = .36$, for avoidance; and $F(1, 155) = 59.51$, $p < .001$, $\eta^2_p = .28$, for hyperarousal. Simple main effects tests revealed that the effects of trauma status on severity of PTSD symptoms for intrusion, avoidance, and hyperarousal, respectively, were significant in the ex-POW group ($t_s = 5.53, 9.32, 6.28$; all $ps < .001$) but not in the control group ($t_s < 1.80$; $ps > .08$). That is, veterans reported more severe PTSD symptoms than did their wives only in the ex-POW group and not in the control group. Stated differently, ex-POWs’ PTSD was more severe, on average, than their wives’ STS.

Table 1

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<td>9. Women’s PTSD avoidance</td>
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Note. PTSD = posttraumatic stress disorder.

*p < .01. **p < .001.
In the APIM, actor and partner effects are aggregated across both members of a couple. However, when members of couples are distinguishable on some variables, such as trauma status or study group, as is the case in the present study, it is possible to ask whether actor and partner effects are moderated by these variables. Therefore, we examined the extent to which trauma status, study group, and their interaction moderated the actor and partner effects of attachment insecurities on PTSD and STS.

We used hierarchical linear modeling (HLM) analyses because the effects of interest included both within-couple variables (husband’s and wife’s attachment variables, PTSD or STS symptoms, and trauma status) and between-couple variables (study group). HLM provides independent coefficients for effects at the lower (within-couple) level and models them at the upper (between-couples) level. At the lower level, we examined the main effects of trauma status (0 = secondary/women; 1 = primary/men) on the severity of PTSD or STS intrusion, avoidance, and hyperarousal symptoms; the main actor and partner effects of attachment insecurities (anxiety, avoidance) on these symptoms; and the interactive actor and partner effects of attachment insecurities and trauma status. At the upper level, we examined the unique contribution of study group (0 = controls; 1 = ex-POWs) to lower level main effects and interactive actor and partner effects of attachment insecurities and trauma status on PTSD or STS. In sum, we tested for main effects, two-way interactions, and three-way interactions (the cross-level actor and partner interactive effects of attachment insecurities, trauma status, and study group).²

To facilitate interpretation, we standardized all variables, with the exception of trauma status and study group, around the grand mean. The relevant HLM coefficients for each step are presented in Table 3.

The HLM analyses revealed significant actor effects for attachment anxiety and avoidance: The higher a person’s (husband’s or wife’s) attachment anxiety or avoidance, the more severe were the PTSD intrusion, avoidance, and hyperarousal symptoms that he or she reported. The analyses also revealed that actor effects for attachment anxiety were not significantly moderated by trauma status or study group (see nonsignificant interactions with attachment anxiety in Table 3). That is, the significant contribution of attachment anxiety to PTSD symptoms was not specific to the ex-POW group or to the primary traumatized person. Rather the pattern seemed to generalize across the two study groups and across veterans’ PTSD and wives’ STS.

In contrast, actor effects of avoidant attachment on PTSD intrusion and avoidance symptoms (but not hyperarousal symptoms) were significantly moderated by study group (see Table 3). Avoidant attachment was significantly associated with more severe PTSD intrusion and avoidance symptoms in couples in the ex-POW group (β = .26, p < .01, for intrusion symptoms, and β = .33, p < .001, for avoidance symptoms) but not in control couples (βs of .03 and .10 for intrusion and avoidance symptoms, respectively). That is, avoidant attachment among ex-POWs or their wives was associated with their own report of more severe PTSD or STS symptoms, but these associations were not significant in control veterans and their wives.

HLM analyses also revealed a significant partner effect for attachment anxiety: The higher a person’s (husband’s or wife’s) attachment anxiety, the more severe the PTSD or STS symptoms reported by his or her spouse (see Table 3). However, these effects were qualified by a significant interactive partner effect of attachment anxiety and trauma status (see Table 3). Anxious attachment among veterans (either ex-POWs or controls) was significantly associated with their wives’ STS severity (β = .47, p < .001, for intrusion symptoms; β = .28, p < .001, for avoidance symptoms; and β = .33, p < .001, for hyperarousal symptoms). However, wives’ anxious attachment was not significantly associated with veterans’ PTSD severity (βs of –.09, –.03, and –.03 for intrusion, avoidance, and hyperarousal symptoms, respectively). These links were not significantly qualified by study group (see Table 3). That is, the dyadic contribution of veterans’ attachment anxiety to their wives’ STS was not specific to the ex-POW group.

The unique partner effects of avoidant attachment were not significant (see Table 3). However, the HLM analysis conducted on PTSD intrusion symptoms revealed significant interactive partner effects for avoidant attachment and trauma status and for avoidance, trauma status, and study group (see Table 3). In the ex-POW group, veterans’ avoidant attachment scores were inversely associated with their wives’ STS severity (β = -.46, p < .01), and wives’ avoidant attachment was positively associated with veterans’ PTSD severity (β = .31, p < .01). Supporting our hypotheses, (a) avoidant attachment among ex-POWs was associated with their wives’ less severe STS, and (b) avoidant attachment among spouses of ex-POWs was associated with ex-POWs’ more severe PTSD. These effects were specific to the ex-POW group. No significant partner effects of avoidant attachment were found in the control group (βs < .08).

² The model equations and a description of how the model was computed are available as an online supplement.
Overall, the HLM analyses conducted on PTSD intrusion symptoms explained 35.99% of the person-level variance and 64.76% of the couple-level variance (see Kret & de Leeuw, 1998, for more information about the calculation procedure). The HLM analysis conducted on PTSD avoidance symptoms explained 55.51% of the person-level variance and 68.45% of the couple-level variance. Finally, the HLM analysis conducted on PTSD hyperarousal symptoms explained 29.72% of the person-level variance and 89.99% of the couple-level variance.

### Discussion

In this study, we examined actor and partner effects of attachment insecurities on the severity of PTSD and STS among ex-POWs and their wives. We also compared couples including ex-POWs with couples including war veterans who were not held captive during the war in which the ex-POWs were captured. As expected, analyses revealed that both members of couples containing an ex-POW reported more severe PTSD and STS than did control couples. Nevertheless, ex-POWs’ PTSD was more severe than their wives’ STS. These findings are consistent with previous research on the deep and enduring pathogenic consequences of war-related stress (e.g., Keane, Newman, & Orsillo, 1997; Titchener, 1985). Of the numerous war stressors assessed in previous studies, captivity is one of the most complex because it entails repeated harsh efforts to destroy a prisoner’s identity and loyalty to his comrades and country (e.g., Herman, 1992).

Our findings reveal some of the complex links between attachment insecurities and PTSD symptoms. Supporting our hypotheses, war veterans, either ex-POWs or controls, who scored higher on attachment anxiety also reported more severe war-related PTSD than did their less attachment-anxious counterparts. In addition, wives of war veterans, either ex-POWs or controls, who scored higher on attachment anxiety reported more severe war-related STS than did less anxious wives. So anxious attachment is implicated in both PTSD and STS. These findings are consistent with numerous studies (see Mikulincer & Shaver, 2007, for a review) indicating that anxious attachment interferes with effective coping and exacerbates emotional problems and psychopathology.

Anxious attachment may contribute to PTSD and STS by increasing vigilance to threat-related cues, intensifying fear-related responses to even minimal signs of threat, exaggerating the catastrophic implications of threats, and encouraging rumination on threats and their imagined consequences (e.g., Ein-Dor, Mikulincer, Doron, & Shaver, 2010). Attachment anxiety may also contribute to PTSD and STS by instigating dyadic processes that increase vulnerability to psychopathology. For instance, previous findings in nonclinical samples have linked attachment anxiety with lack of support for a close relationship partner (e.g., Collins & Feeney, 2000), an important psychosocial factor in the development of PTSD (e.g., Brewin, Andrews, & Valentine, 2000; Ozer, Best, Lipsey, & Weiss, 2003). All of these processes may increase vulnerability to PTSD symptoms regardless of the severity (e.g., captivity vs. war experiences) of the trauma or type of traumatization (e.g., primary vs. secondary).

We also hypothesized that a person’s (husband’s or wife’s) attachment anxiety would be associated with his or her spouse’s PTSD or STS symptoms, but the findings only partially support this hypothesis. In line with the hypothesis, wives’ PTSD was associated not only with their own attachment anxiety but also with the attachment anxiety of their traumatized husbands. Anxiously attached traumatized husbands may be more likely to engage in intrusive and excessive efforts to seek reassurance (e.g., Shaver, Schachner, & Mikulincer, 2005), which in turn may overwhelm their wives’ coping resources and increase the wives’ vulnerability to STS. Unexpectedly, however, wives’ attachment anxiety was not associated with greater severity of their husbands’ PTSD symptoms. It may be that anxious wives’ behavior paradoxically discourages the use of PTSD-related avoidant strategies.
by their husbands, causing the traumatized husbands to reflect on their traumatic experiences. This would be consistent with Foa and colleagues’ (1989) emphasis on the healthy effects of prolonged exposure to trauma-related experiences and the negative effects of cognitive and emotional distancing from trauma.

With regard to avoidant attachment, we hypothesized that it would be associated with the development of PTSD and STS only in the case of extreme trauma, such as captivity, but not under less extreme traumatic conditions. Our findings are fully consistent with this hypothesis: Only for ex-POWs— who endured human- engendered, prolonged, and extremely traumatic conditions— was avoidant attachment associated with more severe intrusion and avoidance symptoms of PTSD. Avoidant attachment was not associated with the severity of symptoms among war veterans who were not held in captivity. A conceptually similar association was found between avoidant attachment and more severe STS among wives of ex-POWs. But again, this association was not significant among control wives.

These findings fit with previous theoretical analyses (Mikulincer & Shaver, 2007) and research findings (e.g., Wijngaards-de Meij et al., 2007) emphasizing that the adverse effects of avoidant attachment on mental health are observed mainly under prolonged, highly demanding stressful conditions. It may be that when challenged over a prolonged period of time under extreme conditions such as captivity, the otherwise relatively effective avoidant strategies of suppressing attachment needs and distress tend to break down, resulting in a flood of intense trauma-related emotions, thoughts, and imagery. Similarly, avoidant strategies may collapse among wives of ex-POWs, because they live with highly traumatized husbands and need to deal for years, on a daily basis, with their husbands’ trauma-related thoughts, imagery, and distress. Ignoring husbands’ severe distress is not really an option if women are going to remain married to them.

Interestingly, PTSD hyperarousal was associated with avoidant attachment regardless of study group. Although unexpected, this finding is consistent with studies showing that avoidant attachment is associated with high levels of somatic complaints and physiological arousal (see Mikulincer & Shaver, 2007, for a review). The fact that avoidant attachment was not associated with PTSD symptoms of intrusion and avoidance in the control group may indicate that avoidant strategies are effective ways to cope only for war veterans who did not undergo the traumatic experience of captivity. Nevertheless, the cross-sectional nature of our findings does not allow us to exclude the possibility that the link between avoidant attachment and PTSD symptoms is partly a reflection of the captivity experience itself or of other stressful events following the initial trauma.

We also tested two specific hypotheses concerning partner effects (husband to wife or wife to husband) of avoidant attachment on PTSD and STS. First, we expected that traumatized husbands’ PTSD would be exacerbated by their wives’ avoidant attachment and that this effect would be observed mainly among couples that included an ex-POW. Consistent with expectations, avoidant attachment in wives of ex-POWs was associated with ex-POWs’ PTSD intrusion symptoms. This partner effect was not observed among couples that included a war veteran who was not held in captivity. It is possible that the reluctance of avoidant wives to provide reassurance and support to their traumatized husbands (e.g., Simpson, Rholes, & Nelligan, 1992) and their tendency to maintain emotional and cognitive distance from their husbands even when the husbands want to share their trauma-related thoughts, feelings, or nightmares contributes to the intensification of the husbands’ PTSD symptoms.

We also hypothesized that traumatized husbands’ avoidant attachment would reduce wives’ STS. Avoidant individuals do not commonly share their distress with close relationship partners (e.g., Mikulincer & Nachshon, 1991). As a result, their traumatic experiences are less likely to affect their spouses’ mental health, thereby inhibiting the transfer of trauma from veteran husbands to wives, reducing the wives’ likelihood of developing STS. Our findings supported this hypothesis: Higher avoidance scores among ex-POWs were associated with wives’ reduced PTSD intrusion symptoms. Although being less emotionally supportive, avoidant husbands—who are somewhat emotionally distant and reluctant to share their trauma-related thoughts, images, emotions, and nightmares—may spare their wives a burden that might undermine the wives’ mental health. To further explore this possibility, future studies should seek to replicate this finding while observing actual dyadic interactions involving support provision and disclosure of distress-related thoughts and feelings or while having study participants maintain daily diaries concerning disclosure and support.

Theory and research on trauma and posttrauma have focused mainly on the effects of person-level variables on the development and maintenance of PTSD; less attention has been paid to dyadic processes (e.g., Foa et al., 1989; Resick & Schnicke, 1992). For instance, according to social cognitive models of PTSD (e.g., Resick & Schnicke, 1992), traumatic events lead to faulty beliefs regarding safety, trust, control, esteem, and intimacy (McCann & Pearlman, 1990), which generalize to broad negative appraisals of the self, others, and the world; fuel secondary emotions (e.g., guilt, self-blame); and thus hinder the healthy processing of the trauma. This line of reasoning led to the development of effective cognitive–behavioral therapies for PTSD such as cognitive processing therapy (Resick & Schnicke, 1992). Our findings suggest that these social cognitive models should be supplemented with dyadic models that could be considered when treating primarily or secondarily traumatized people suffering from PTSD or STS.

Future studies should also examine whether one can generalize our findings to people exposed to other kinds of traumatic events (e.g., rape, natural disaster) and to couples in different stages of their relationship. Our findings were based exclusively on a cohort of midlife veterans exposed to war trauma or captivity and their wives. Because we wanted to examine the transmission of trauma from traumatized veterans to their wives, we selected only married veterans and did not invite divorced veterans to participate in the study. We therefore probably introduced a selection bias that may have influenced the results, especially if there are important differences between married and divorced veterans. Future studies could address that issue and also examine whether other family members (e.g., children, nonmarried partners, parents) experience STS. Replication of our study is desirable, and caution is warranted in interpreting the findings (particularly the high-order interactions) until they are confirmed in a separate sample.

Another feature of our study worth mentioning is that all of our primary traumatized participants (ex-POWs and controls) were men, and all secondary traumatized spouses were women. This makes it impossible to evaluate the role of gender in our findings.
One possibility is that gender is irrelevant to the links between attachment insecurities and PTSD symptom severity, and similar results would be obtained if all primary traumatized participants were women and all secondary traumatized participants were men. Alternatively, gender might act as a moderator of the effects of attachment insecurity on PTSD symptoms. It is possible that if the ex-POWs were women and their partners were men, a different pattern of associations would be observed. Research suggests that women are more likely (perhaps twice as likely) to develop PTSD following a traumatic event compared with men (see Norris, Foster, & Weisshar, 2002, for a review). Tolin and Foa (2002) have further argued that gender may moderate several cognitive processing mechanisms in the development of PTSD. However, men and women do not differ substantially in their attachment orientations (e.g., Schmitt et al., 2004) or in the way they provide care to their partners (see Miller & Cafasso, 1992, for a meta-analysis). Future research should examine the issue of gender and secondary trauma.

Our findings are based on data collected 28 years after the 1973 Yom Kippur War. Although a considerable length of time elapsed between the war and our study, and PTSD may have been influenced by other postwar stressful events, the results still call attention to the long-term ramifications of trauma. It is also important to note that the cross-sectional nature of our study design precludes any conclusions about the direction of causality in the dyadic processes linking attachment insecurities and PTSD. In fact, findings from a previous prospective study conducted with the same cohort of Israeli ex-POWs (Solomon, Dekel, & Mikulincer, 2008) revealed that PTSD 20 years after the war predicted an increase in attachment insecurities 8 years later than attachment insecurities predicted an increase in PTSD symptoms. However, that study did not examine the role of attachment-related dyadic processes in the development of PTSD and STS, and unfortunately we do not have data on wives’ attachment orientations and STS at the time of the two previous waves of data collection (20 and 28 years after the war). Future prospective studies should use dyadic designs to assess the temporal relations between attachment patterns and trauma symptoms at both the individual and dyadic levels.

Although research suggests high concordance between self-reported measures of PTSD symptoms and structured clinical interview (e.g., Forbes, Creamer, & Biddle, 2001; Solomon, 1988), future studies could benefit from using both types of measures. Because previous negative life events (e.g., Widom, 1999) may affect the development of PTSD, future researchers should also collect data regarding lifetime trauma exposure, particularly exposure occurring in childhood and time since the trauma occurred. In this way, the role of pretraumatic and posttraumatic experiences could be controlled while examining associations between adult attachment insecurities and PTSD symptoms. Finally, PTSD severity was significantly lower in the control group than in the ex-POWs group, raising concerns about restriction of range effects. But attachment anxiety was associated with PTSD symptoms in both the control and the ex-POW groups. Moreover, avoidant attachment was related to PTSD hyperarousal in both groups. This implies that restriction of range is unlikely to be the main reason for the lack of association between some of the other variables in the control group.

Despite the limitations, our findings have important implications for theories and treatments of PTSD. The associations we found between attachment insecurities and PTSD couple members call attention to the importance of dyadic processes in maintenance of the disorder. Attachment anxiety in both members of couples may be important for clinicians to address when one or both partners have PTSD symptoms. Mikulincer and Shaver (2007) suggested that when dealing with highly anxious individuals, therapy benefits from focusing on clients’ sense of helplessness and fear of abandonment, with the aim of strengthening emotional regulation. Interpersonal problem-solving techniques would be an effective way to challenge fear of abandonment and provide clients with new relational experiences that increase self-worth, self-acceptance, and positive perceptions of others. Our findings suggest that individuals suffering from PTSD and their partners would benefit from couples therapy (e.g., Wheeler, Christensen, & Jacobson, 2001; see Christensen & Heavey, 1999, for a review).

Avoidant attachment seems to be related to PTSD symptoms under extreme traumatic circumstances. It may be that the strategies used by avoidant individuals break down under extreme conditions and increase the severity of PTSD symptoms. Alternatively, extreme human-engendered traumatic experiences may result in the challenging of beliefs about the benevolence of human nature, which in turn may increase avoidant attachment. A future study might follow army recruits from enlistment to discharge and examine the links between attachment insecurities and PTSD symptoms among those who experience traumatic events. In conclusion, we hope that our findings will encourage additional research on the associations among attachment insecurities, dyadic processes, and PTSD and encourage creators of future theoretical and therapeutic models of PTSD to include both traumatized individuals and their spouses.

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