Posttraumatic Symptoms, Marital Intimacy, Dyadic Adjustment, and Sexual Satisfaction among Ex-Prisoners of War

Gadi Zerach, PhD,* Ben-David Anat, MSW,† Zahava Solomon, PhD,‡ and Rafi Heruti, MD§

*Department of Behavioral Sciences, Ariel University Center of Samaria, Ariel, Israel; †School of Social Work, Haifa University, Haifa, Israel; ‡Bob Shappell School of Social Work, Tel Aviv University, Tel Aviv, Israel; §Reuth Medical Center, Tel Aviv, Israel

DOI: 10.1111/j.1743-6109.2010.01784.x

ABSTRACT

Introduction. The aversive impact of combat and combat-induced posttraumatic stress disorder (PTSD) on marital intimacy and sexual satisfaction has been examined in several studies. Nevertheless, the toll of war captivity on marital intimacy in relation to dyadic adjustment and sexual satisfaction remains unknown. In particular, the mediating role of marital intimacy in the relationship between PTSD symptoms and dyadic adjustment and between PTSD symptoms and sexual satisfaction has not yet been systematically explored thus far.

Aims. This study aimed to examine the interrelationships of PTSD symptoms, dyadic adjustment, sexual satisfaction, and marital intimacy among ex-prisoners of war (ex-POWs).

Methods. A sample of Israeli veterans ex-POWs (ex-POWs: N = 105) from the 1973 Yom Kippur War and a matched comparison group of veterans who participated in the same war but were not held captive (control: N = 94) were compared in the study variables.

Main Outcome Measures. The PTSD inventory, dyadic adjustment scale, index of sexual satisfaction, and capacity for intimacy questionnaire.

Results. Findings revealed that ex-POWs reported higher levels of PTSD symptoms and lower levels of dyadic adjustment and sexual satisfaction than comparable controls. There were also differences between the groups in the pattern of relations between PTSD symptoms, dyadic adjustment, sexual satisfaction, and marital intimacy. Finally, for ex-POWs, marital intimacy partially mediated the relationships between PTSD symptoms and dyadic adjustment and sexual satisfaction outcome measures.

Conclusions. PTSD symptoms are implicated in marital problems of ex-POWs. A significant relationship was found between the traumatized ex-POW’s capacity for intimacy and both their sexual satisfaction and dyadic adjustment.


Key Words. Marital Intimacy; PTSD; POWs; Sexual Satisfaction

Introduction

Participation in combat entails highly traumatogenic experiences (e.g., references [1,2]). Combatants often face exposure to physical injury and potential loss of life. Among combatants, those who are captured by the enemy experience additional stressors of extreme nature. It is highly common that prisoners of war (POWs) are repeatedly subject to intentional torture, systematic humiliation, and deprivation deliberately aimed at breaking their spirit [3]. Unlike a single traumatic event (e.g., a motor vehicle accident), in war captivity, the prisoner is subject to repeated and prolonged traumatic experiences that are unavoidable. Research on adaptation following war captivity has found ex-POWs to be a subgroup at risk for elevated psychological distress, including the endorsement of posttraumatic stress disorder (PTSD: e.g., [4]). High rates of PTSD, ranging...
from 30% to 88%, were observed in ex-POWs samples [5,6].

Among Israeli veterans of the 1973 Yom Kippur War, 23.2% of ex-POWs and only 4.3% of the matched group (i.e., veterans who participated in the same war but were not held captive) met PTSD criteria assessed as far as 30 years after the war [7].

Not surprisingly, the detrimental effects of war trauma extend above and beyond psychiatric distress. Studies reveal that traumatized veterans reported lower levels of family functioning [8], outbursts of rage and aggression [9], and difficulties in intimacy and marital communication [10]. Furthermore, traumatized veterans reported experiencing marital arguments, disputes, and overall low marital dissatisfaction (e.g., [11]) [12]. The present study aims to extend existing knowledge regarding the relationship between PTSD symptoms and dyadic adjustment. Dyadic adjustment refers to compatibility in marital relation as coined by cohesion, consensus, and affective expression. Furthermore, the study aims to explore the relationship between sexual satisfaction and marital intimacy among ex-POWs and matched control veterans.

**War Captivity, Marital Relations, and Sexual Satisfaction**

Empirical studies focusing on the relationship between war captivity and marital life revealed that ex-POWs endorsed more marital adjustment problems [13] and reported higher rates of divorce and separation [14]. For example, Bernstein [15] found that ex-POWs were relatively emotionally detached and prone to outbursts of anger toward their loved ones. Similarly, Cook and colleagues [10] found that ex-POWs diagnosed with PTSD reported more marital distress, less marital satisfaction, and less constructive communication in their marriages than their non-PTSD counterparts.

Sexual relationships are deemed to be an integral part of marital relations [16,17] and an important aspect of emotional and physical health [18]. Sexual satisfaction is defined as an affective response arising from one’s subjective evaluation of the positive and negative dimensions of one’s sexual relationship [19]. A positive association was found between sexual satisfaction and marital quality and stability [20].

One of the factors that are known to undermine sexual functioning and satisfaction is psychological distress manifested in anxiety, fatigue, and depression (e.g., [21]). Nevertheless, to date, only a few studies have examined sexual problems in marital relations of combat veterans with PTSD. These traumatized veterans were found to experience a wide range of problems including impotence and premature ejaculation, up to complete avoidance of sexual intercourse and overall lack of sexual satisfaction (e.g., [22–24]).

The “Couple Adaptation to Traumatic Stress” model (CATS model; [25]) is a theoretical systemic model that incorporates clinical and empirical aspects of the traumatic stress impact on the couple dyad. Accordingly, it is proposed that the survivor’s basic level of functioning or trauma-induced symptoms will set in motion a systemic response. This response, in turn, will result in amplification of posttraumatic symptoms leading to the outbreak of secondary traumatization or marital relationship dysfunction. The model assumes circularity such that the survivor’s symptoms may impact his spouse’s functioning, which, in turn, may amplify the survivor’s distress. Overall, the model puts forward three factors involved in CATS including predisposing elements and both individual as well as couple functioning.

Once empirical research has demonstrated the detrimental effects of captivity and PTSD on interpersonal relations; the next step is to explore the mediating mechanisms that might affect couples’ functioning. The present study aims to extend the literature by examining the role of marital intimacy as a mediating factor in the relationship between PTSD symptoms and each of the following outcome measure: dyadic adjustment and sexual satisfaction, among ex-POWs.

**Intimacy, Marital Relations, and Sexual Satisfaction**

Intimacy plays an essential role in enduring romantic relationships and is also implicated in psychological and physiological health [26]. Most people long for a meaningful and intimate relationship and consider it a personal and social goal [25]. Several attempts have been made to conceptualize intimacy over the years. Mills and Turnbull [27], for example, defined intimacy as “the ability to be sensitive and aware of each other’s psychological, emotional, physical, operational, social and spiritual needs” (p. 301). Schaffer and Olson [28] described marital intimacy as comprising of five domains: emotional, social, intellectual, sexual, and recreational. Intimacy is therefore viewed as a multidimensional concept consisting of the ability to trust one another, share thoughts and feelings, and engage in a relationship involving friendship and sexuality [27].
The relationship between a couple’s intimacy and satisfaction from sexual activity has been examined by a number of studies [29]. For example, in their research concerning different effects of long-term sexual relationships, Haning and colleagues [30] found that optimal sexual satisfaction was related to orgasmic likelihood and both sexual partner’s intimacy and general intimacy. Byers [31], who looked at relationship satisfaction and sexual satisfaction, found that dyadic communication quality, which is a factor of intimacy, accounted for the changes in both sexual and relationship satisfaction. Therefore, it seems that positive and meaningful intimacy among both healthy and non-healthy (e.g., [32]) couples may contribute to better sexual satisfaction.

**Traumatic Experiences and Intimacy**

Marital intimacy may be impaired when one of the partners experienced a traumatic event resulting in severe emotional injury. The psychological effects of war on marital intimacy have been examined and documented in several studies. Mikulincer, Solomon, and Florian [33] reported that spouses of veterans who had suffered from combat stress reaction (CSR) reported lower levels of intimacy in their marriage than spouses of veterans without CSR. Another study found high levels of posttraumatic symptoms and fear of intimacy among Holocaust child survivors [34]. Only a few studies, however, examined marital intimacy in relation to PTSD following war. As might be expected, veterans with PTSD (e.g., [12,35]), including those held in captive [10], endorsed lower levels of intimacy. Furthermore, in a recent study among Israeli ex-POWs, Solomon, Dekel, and Zerach [36] found that avoidance and hyperarousal posttraumatic symptoms, in particular, were implicated in intimacy through their effect on self-disclosure and verbal aggression, respectively.

In light of the findings that PTSD impinges on intimacy on the one hand and the clinical recognition that intimacy “fuels” marital relations [37] on the other hand, it is quite surprising then that the mediating role of intimacy in marital relations [37] has been for the most part overlooked. The two studies, to examine the mediating effect of marital intimacy, reveal promising findings. Pielage, Luteijn, and Arrindell [38], for example, found that intimacy partially mediated the relationship between spouses’ attachment styles and their emotional distress. Cordova, Gee, and Warren [39] found that intimacy mediated the relationship between emotional skills and marital satisfaction. In light of these findings, the aim of the current investigation is to explore the potential role of marital intimacy in mediating the relations between PTSD and both outcome measures: sexual satisfaction and dyadic adjustment.

In the present study, we put forward the hypothesis that one’s capacity for intimacy may serve as an intrapsychic mechanism affecting dyadic adjustment and sexual satisfaction. Cordova and Scott [40] posit that intimacy is generated by events in which one’s interpersonal vulnerability is met by a supportive and reassuring reaction. We further suggested that feeling comfortable, yet vulnerable, in the dyad might lead to higher levels of relationship satisfaction. Thus, we proposed that PTSD symptoms induced by war captivity may hinder the process of intimacy which, in turn, is likely to affect the different aspects of marital relations.

 Particularly, we hypothesized that ex-POWs will endorse more PTSD symptoms and lower levels of dyadic adjustment, sexual satisfaction, and marital intimacy, compared to matched controls. Additionally, we expect to find negative associations between PTSD symptoms, dyadic adjustment, sexual satisfaction, and marital intimacy among ex-POWs. Lastly, for ex-POWs, we proposed a mediation model in which marital intimacy mediates the relations between PTSD symptoms and both outcome measures: dyadic adjustment and sexual satisfaction.

**Method**

**Participants**

This study examined two groups of Israeli veterans of the 1973 Yom Kippur War.

**POWs**

This target group consisted of the 240 ex-POWs who had been captured from the Israel Defense Forces (IDF) during that war. Of these 240 individuals, 37 could not be located, nine had died, and 10 could not participate due to serious health problems. Of the remaining 184 ex-POWs, 125 participated in the study (response rate: 67%). One hundred five ex-POWs, who were married or lived with their partners at the time of the study, were included in the current analyses.

During captivity, the ex-POWs had been subjected to intense isolation and systematic torture, consisting of the infliction of severe physical pain and great mental pressure. Mental pressure was applied by a range of techniques, including fright-
en ing the prisoner with numerous threats (of death, mutilation, or killing family and friends), exhausting him through inadequate food, extremes of heat or cold, prolonged standing or deprivation of exercise, and prolonged interrogations. POWs were humiliated verbally and by interfering with their personal hygiene and natural bodily functions.

### Controls

A control group of 280 combat veterans of the same war, matched to the POWs in personal and military background, was sampled from IDF computerized data banks. The controls were exposed to similar combat stressors as the ex-POWs but were not exposed to the repeated traumatic events that captivity entailed. Of these 280 individuals, we attempted to contact the 185 veterans who had served as a control group in a former wave of this longitudinal study. Forty-one could not be located and one had died. Of the remaining 143 controls, 94 filled out the questionnaires for this study (response rate: 74%).

The two groups did not differ in age ($F(1,223) = 3.56$, ns), education ($F(1,222) = 0.62$, ns), number of years in the relationship (marital relationship or live-in relationship) ($F(1,215) = 0.58$, ns), and number of children ($F(1,220) = 2.52$, ns). Furthermore, the groups did not differ significantly in religious orientation ($\chi^2(1) = 1.55$, $P = 0.46$, ns) and location of residence in Israel ($\chi^2(4) = 1.19$, $P = 0.88$, ns). There was a significant difference between the groups, however, in their fathers’ country of birth ($\chi^2(2) = 17.10$, $P < 0.01$). Among the ex-POWs, more participants reported that their fathers’ country of birth was Asia/Africa as compared to control veterans. Mean age of participants at the time of data collection was 54.6 (standard deviation [SD] = 4.63). Mean length of marriage was 29.08 years. Mean years of education was 13.94 (SD = 3.56) and mean number of children was 3.24 (SD = 1.17).

### Procedure

This study is part of an ongoing prospective longitudinal study that has examined the psychological and social consequences of captivity among Israeli ex-POWs. Approval for this study was obtained by both IDF and Tel Aviv University human subject committees. The names of ex-POWs were divulged by IDF authorities as part of the periodic examination of veterans after their military service. Each one of the participants had taken part in an earlier study conducted in 1991. Participants were contacted by telephone and were asked to take part in the study. Only veterans who are currently married or had a live-in girlfriend participated in this study. A battery of questionnaires was administered to those who gave their consent in their homes or in other locations of their choice. Before completing the questionnaires, the participants signed informed consent forms and were assured that the data would remain confidential. The participants were told that the aim of this study was to assess their current psychological and psychosocial state after their participation in war. All of the questionnaires were administered in Hebrew. Excluding the PTSD inventory, all of the questionnaires were translated to Hebrew using back translation method and the adequacy of the translation was further examined by experienced mental health professionals (social workers and clinical psychologist).

### Measures

**PTSD Inventory [41]**

PTSD symptoms were assessed using a self-report scale. The PTSD inventory consists of 17 statements corresponding to the 17 core PTSD symptoms listed in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) [42]. For each statement, subjects were asked to indicate whether or not they had the symptom in the previous month on a scale ranging from 0 (not at all) to 4 (almost always). The inventory enables measuring both the number and intensity of PTSD symptoms, as well as identifying the symptoms in each symptoms cluster (i.e., intrusion, avoidance, and hyperarousal). The inventory has proven psychometric properties in terms of high test–retest reliability ($\alpha = 0.93$; [43]), concurrent validity, and convergent validity compared with structured clinical interviews conducted by trained psychiatrist and mental health professionals ($\phi = 0.48–0.61$; [41,44]). The PTSD inventory showed high internal consistency in the present study (Cronbach’s alpha 0.93).

**Capacity for Intimacy Questionnaire**

In order to examine the capacity for intimacy, we used the “Intimate partner questionnaire” [45] modified for adults by Harsheleg [46]. This self-report scale includes 29 items corresponding to eight different aspects of intimacy (e.g., sincerity, closeness, sharing, help seeking, loyalty, privacy, mutual activities, and empathy). In order to modify it for an adult population, two additional intimacy aspects were added: emotional openness with regard to sexuality (three items) and the
capacity to deal with anger and frustration (four items). Participants were asked to rate the degree of similarity between the item content and their feelings toward their spouse on a scale ranging from 1, totally true, to 6, totally not true. For every participant in the study, an intimacy index was calculated consisting of the mean scores of all the items. This scale has an established internal consistency ranging from 0.53 to 0.89 among a sample of adult Holocaust child survivors [47] and was validated (criterion and content validation) among an Israeli adult student population [46]. The content validation of the scale was assessed and approved by experienced marital mental health professionals who work with couples. These professionals approved that the new items were taken from the intimacy conceptual field and later confirmed that the items reflect a capacity for intimacy. Furthermore, criterion validity was assessed and established as positive correlations were obtained between the intimacy scale’s mean score and subjective appraisals of intimacy. Internal consistency in the current sample was 0.93.

**Dyadic Adjustment Scale [48]**
Marital adjustment was assessed by the dyadic adjustment scale which consists of 32 items divided to four subscales: consensus, cohesion, satisfaction, and affection expression. Participants were asked to indicate the extent to which each item described their current marital relationship. The dyadic adjustment score is the sum rating of the 32 items, in which high scores reflect better adjustment. Heyman, Sayers, and Bellack [49] reported that the scale has very good convergent validity and discriminant validity. The scale has been widely used among Israeli populations, including couples undergoing treatment for infertility (e.g., [50]) and patients with severe affective disorders (e.g., [51]). In the present study, Cronbach’s alpha was 0.96.

**The Index of Sexual Satisfaction**
The Index of Sexual Satisfaction [52] is a 25-item self-report scale that taps three aspects of sexual satisfaction: personal sexual satisfaction, satisfaction with a partner’s sexuality, and satisfaction with the sexual interaction. Participants were asked to indicate how often they are satisfied on a Likert-like scale ranging from 1, rarely, to 5, most of the time. We employed a 5-point response scale, which served as an easier version of the 7-point response scale that has been used in other studies and is also capable of obtaining significant variance without difference from the 7-point scale (e.g., [53,54]). Each participant was given a total score based on the mean of the 25 items. The measure total score was also changed so that the “negative” scale items were reversed and the mean score reflects more sexual satisfaction. The Index of Sexual Satisfaction has high reliability and good construct validity [55]. The scale has been used previously within a study of Israeli veterans with high internal consistency (Cronbach’s alpha was 0.93) [56]. Internal consistency in the current sample was 0.93.

**Sociodemographic Background**
Items assessed included age, father’s country of origin, family status, religiosity, education, and income level.

**Results**

**Differences between ex-POWs and Controls on PTSD Symptoms, Dyadic Adjustments, Sexual Satisfaction, and Marital Intimacy**
We hypothesized that ex-POWs will endorse higher levels of PTSD symptoms and lower levels of dyadic adjustment, sexual satisfaction, and marital intimacy than controls. Table 1 shows the means, standard deviations, and multivariate test results of the study variables for ex-POWs and controls. A multivariate analysis of variance test for the four variables yielded a significant main effect for group $F (4,171) = 42.52$, $P < 0.00$, $\eta^2 = 0.49$. As can be seen in Table 1, ex-POWs reported more PTSD symptoms than the control group. Control group participants endorsed higher levels

**Table 1** Means and SD of study variables according to research groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Controls M (SD)</th>
<th>Ex-POWs M (SD)</th>
<th>$\eta^2$</th>
<th>$F$ (1,177)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTSD symptoms</td>
<td>1.52 (0.50)</td>
<td>2.68 (0.89)</td>
<td>0.48</td>
<td>166.04***</td>
</tr>
<tr>
<td>Dyadic adjustment</td>
<td>3.78 (0.59)</td>
<td>3.47 (0.67)</td>
<td>0.05</td>
<td>10.67***</td>
</tr>
<tr>
<td>Sexual satisfaction</td>
<td>4.03 (0.61)</td>
<td>3.62 (0.67)</td>
<td>0.09</td>
<td>18.03***</td>
</tr>
<tr>
<td>Marital intimacy</td>
<td>4.70 (0.73)</td>
<td>4.52 (0.65)</td>
<td>0.01</td>
<td>2.95 ns.</td>
</tr>
</tbody>
</table>

***$P < 0.001$.**

POW = prisoners of war; SD = standard deviation; PTSD = posttraumatic stress disorder.
of sexual satisfaction and dyadic adjustment than ex-POWs. The two groups did not differ in their reported levels of intimacy.

**Associations of PTSD Symptoms, Marital Intimacy, Sexual Satisfaction, and Dyadic Adjustment Variables among ex-POWs and Controls**

We hypothesized that ex-POWs will report negative relations between PTSD symptoms, dyadic adjustment, sexual satisfaction, and marital intimacy. Table 2 presents bivariate associations between PTSD symptoms, marital intimacy, sexual satisfaction, and dyadic adjustment variables separately for ex-POWs and control groups.

As seen in Table 2, the correlation analysis indicated that, for ex-POWs, PTSD symptoms were negatively related to marital intimacy, sexual satisfaction, and dyadic adjustment. In other words, the more an ex-POW endorsed posttraumatic symptoms, the more he reported intimacy and dyadic adjustment difficulties in his marital relationship and lower levels of sexual satisfaction. These associations were not found among the controls.

Moreover, the analyses revealed that the relationship variables were strongly related to each other among both ex-POWs and controls. Marital intimacy was positively associated with both sexual satisfaction and dyadic adjustment.

**Examining Mediation Models for the Study Variables among ex-POWs**

In this section, we examined a mediation model hypothesizing that, among ex-POWs, (i) the association between PTSD symptoms and veterans’ dyadic adjustment will be mediated by marital intimacy; and (ii) the association between PTSD symptoms and veterans’ sexual satisfaction will be mediated by veterans’ marital intimacy.

In order to examine the mediation processes, we followed the Shrout and Bolger [57] procedure (the logic of which is modeled after Baron and Kenny, [58]) that requires five steps. Assuming that A represents predictor variables, B represents mediator variables, and C represents an outcome variable, one first needs to assess the fit of the direct effect (A–C) model. According to Kenny, Kashy, and Bolger [59], this first step establishes that there is an effect that may be mediated. In other words, we tested the fit of the overall model in which PTSD symptoms predicted veterans’ sexual satisfaction and dyadic adjustment. Second, we tested whether the predicting variable, PTSD symptoms, predicted the mediator, marital intimacy. Third, we tested whether the mediating variable, marital intimacy, predicted the outcome variables, sexual satisfaction and dyadic adjustment, separately. At this point, the A–C, A–B, and B–C paths should all be significant in the directions predicted. On the fourth step, we assessed whether there is a mediational effect from PTSD symptoms through marital intimacy to sexual satisfaction and dyadic adjustment (A–B–C model). A significant bias-corrected bootstrap would support the mediation model. This analysis is a more powerful substitute for the well-known Sobel tests. Finally, we examined whether the PTSD symptoms and dyadic adjustment/sexual satisfaction (A–C model) path is still significant above and beyond the mediator effect (B–C model). A result of no significance would point to full mediation, whereas a result of significance would point to partial mediation. The mediation models were examined solely in the ex-POW group.

First, we assessed whether PTSD symptoms predicted veterans’ sexual satisfaction and dyadic adjustment. The structural model describing the pattern among the ex-POWs showed a significant negative relationship between PTSD symptoms and dyadic adjustment: $\gamma = -0.41$, standard error (SE) = 0.09, $t = -4.81$, $P < 0.001$. Likewise, we found a significant negative relationship between PTSD symptoms and sexual satisfaction: $\gamma = -0.30$, SE = 0.09, $t = -3.24$, $P < 0.01$. The more ex-POWs endorsed PTSD symptoms, the lower they reported their sexual satisfaction and dyadic adjustment.

Table 2  Bivariate Pearson correlations between the study variables for ex-POWs and controls

<table>
<thead>
<tr>
<th></th>
<th>Ex-POWs</th>
<th></th>
<th>Controls</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1. PTSD symptoms</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2. Sexual satisfaction</td>
<td>$-0.32^{***}$</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3. Marital intimacy</td>
<td>$-0.20^{*}$</td>
<td>0.47***</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4. Dyadic adjustment</td>
<td>$-0.43^{***}$</td>
<td>0.57***</td>
<td>0.78***</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. *$P < 0.05$; **$P < 0.001$. POW = prisoners of war; PTSD = posttraumatic stress disorder.
Second, we examined whether PTSD symptoms predicted veterans’ marital intimacy. A structural model describing the patterns of relationships among the variables for ex-POWs, when dyadic adjustment was the outcome variable, indicated a significant negative relationship between PTSD symptoms and marital intimacy: \( \gamma = -0.19, SE = 0.09, t = -2.16, P < 0.05 \). Similarly, we also found a significant negative relationship between PTSD symptoms and marital intimacy, when sexual satisfaction was the outcome variable: \( \gamma = -0.24, SE = 0.09, t = -2.47, P < 0.05 \). The more ex-POWs endorsed PTSD symptoms, the lower their reported marital intimacy (see Figure 1).

Third, we set out to examine whether marital intimacy predicted veterans’ sexual satisfaction and dyadic adjustment. The structural model indicated that the more ex-POWs reported good marital intimacy, the more they endorsed good dyadic adjustment: \( \gamma = 0.75, SE = 0.06, t = 12.39, P < 0.001 \). Likewise, the structural model indicated that the more ex-POWs reported higher levels of marital intimacy, the more they endorsed higher levels of sexual satisfaction: \( \gamma = 0.41, SE = 0.09, t = 4.47, P < 0.001 \). These relationships were found to be significant above and beyond the contribution of PTSD symptoms (see Figure 1).

Fourth, we examined if the mediation path between PTSD symptoms through marital intimacy to both outcome measures of dyadic adjustment and sexual satisfaction was significant. In order to examine the mediational model, we used bias-corrected bootstrap analysis. This analysis indicated that the mediation path was significant when dyadic adjustment was the outcome variable: 95% confidence interval (CI) \((-0.26, -0.04)\), \(P < 0.01\). The analysis also indicated that the mediation path was significant when sexual satisfaction was the outcome variable: 95% CI \((-0.20, -0.03)\), \(P < 0.01\). In other words, marital intimacy was found to mediate the relationships between PTSD symptoms and veterans’ dyadic adjustment and sexual satisfaction (see Figure 1).

Finally, we examined whether the PTSD symptoms, dyadic adjustment, and sexual satisfaction path was still significant above and beyond the mediator effect. The analyses indicated that the relationship between PTSD symptoms and dyadic adjustment remained significant above and beyond the contribution of marital intimacy: \( \gamma = -0.20, SE = 0.09, t = -2.33, P < 0.05 \). In other words, we found two partial mediation effects as PTSD symptoms affected dyadic adjustment and sexual satisfaction both directly and indirectly via the negative impact on veterans’ marital intimacy.

**Discussion**

This study examined the interrelationship among posttraumatic stress symptoms, dyadic adjustment, sexual satisfaction, and marital intimacy in Israeli ex-POWs of the 1973 Yom Kippur War. The first aim was to investigate the long-term impact of war captivity by assessing differences between ex-POWs and controls (i.e., noncaptured veterans) in levels of PTSD symptoms, marital adjustment, marital intimacy, and sexual satisfaction. Initial results indicated that ex-POWs endorsed higher levels of PTSD symptomatology than controls. These findings are in accordance with the extensive body of literature documenting PTSD as the most common pathological outcome of captivity (e.g., [7]). This pattern of results was also found in relation to marital adjustment and sexual satisfaction whereby ex-POWs reported lower levels than controls. On the other hand, no significant differences were found in reported levels of marital intimacy.

To further examine the impact of PTSD symptoms on couple dyad above and beyond level of exposure (i.e., war captivity), we assessed the interplay between PTSD symptoms, marital intimacy, dyadic adjustment, and sexual satisfaction. As might
be expected, the data revealed significant relationships between the variables lending support to the notion that PTSD has an aversive impact on marital adjustment and that its sequela can result in marital problems. It should be noted, however, that significant relations between the study variables were found only among the ex-POWs group and not among controls. Possibly that the relatively small number of participants classified in the latter group, and their endorsement of low levels of posttraumatic symptoms accounts for the non-significant relations in this group.

While our findings on the inverse relation of PTSD to marital adjustment are consistent with the literature for over the last 20 years [60], the underlying processes mediating the relation require further clarification. Mills and Turnbull [61] propose that trauma produces a memory imprint affecting intimacy. They claim that survivors experience an array of neurobiological changes which can result in impaired capacity for psychological intimacy. The decline of intimacy and close relationships may subsequently generate a sense of isolation among the survivors while hindering their spouses’ ability to be supportive.

Alternatively, it might be that the survivors’ dual-mode of behavior entails both avoidance and aggression that is responsible for the negative link between PTSD and marital adjustment. For example, Dekel and Solomon [56] found that, within their marital relationships, traumatized veterans exhibit emotional numbing and withdrawal from their spouses on one hand and outbursts of aggressive behaviors on the other hand. It is suggested that the veteran’s avoidance initiates a vicious cycle in which withdrawal and reluctance to discuss the traumatic past coexists with aggression, which in turn offsets in motion feelings of estrangement and loneliness, subsequently reinforcing the spouse’s apprehension, rejection, and anger and resulting in further withdrawal on the veteran’s part [62,63].

The study’s second finding indicating that PTSD is also related to sexual dissatisfaction has received empirical support within past studies. It has been documented that men suffering from PTSD often lose some of their sexual drive, exhibit difficulties in sexual functioning, and report low sexual satisfaction [22,23]. These results may be explained by both sexual functioning and sexual satisfaction being related to an intimate domain of communication that requires confidence and trust. Thus, it may be that traumatized ex-POWs, who had their capacity for interpersonal trust repeatedly compromised by their captors, find it hard to re-muster trust and confidence as they sexually interact with their spouse, which, in turn, limit their sexual satisfaction.

To summarize, both sexual satisfaction and dyadic adjustment may be detrimentally affected by ex-POWs’ limited capacity for intimacy as a by-product of posttraumatic symptoms. This hypothesized mode of relations has led us to assess the mediating role of marital intimacy in the relationship between PTSD symptoms and both outcome measures: dyadic adjustment and sexual satisfaction. As suggested by past studies [7], we found marital intimacy to partially mediate the relationship between the assessed variables among the ex-POWs.

Several mechanisms may account for the mediating role of marital intimacy. The first may be related to the PTSD symptom clusters that are implicated in intimacy. A recent study found avoidance and hyperarousal clusters to undermine marital intimacy via their influence on self-disclosure and verbal aggression, respectively [36]. Herman [3] argued that avoidance and hyperarousal, which once were means of survival, turn into atrophy and lack of basic trust of others. Ex-POWs experience the controlling and coercive captor–captive relationship, which then impends on their sense of self and their capacity to relate to others. Our results lend support to this view and are in line with previous studies showing a positive association between posttraumatic avoidance symptom severity and deteriorated intimacy [10,12].

The mediation model of the relations between PTSD symptoms and sexual satisfaction among ex-POWs warrants further discussion. The findings supporting our mediation model are in line with theories that understand sexual arousal as combination of both biological and mental factors (e.g., [64]). While it is well known that people engage in sexual interactions lacking intimacy or trust, empirical evidence emphasizes the importance of intimacy for both sexual functioning [30] and satisfaction (e.g., [65]). Basson [66], for example, showed that women’s sexual arousal and desire are intertwined with intimate relationships which contain mutual understanding and companionship. Our findings suggest that the traumatized ex-POWs’ impaired ability for intimacy may indirectly affect their sexual satisfaction, along side with the direct negative relationship between PTSD and sexual functioning and satisfaction. It is likely that the extreme and prolonged traumatic experience of
captivity stirs conflicting emotions including a sense of betrayal, abandonment, resentment, guilt, shame, and anger, which, in turn, may hinder sexual functioning and satisfaction [1,3].

It is worth noting that the trauma in the form of captivity may also entail a direct assault on the captive’s sexuality. Among the ex-POWs in this study, some underwent harsh sexual torture when held captive. For these highly traumatized ex-POWs, sexual activity may bear meaning of humiliation, fear, pain, and brutality. Thus, marital intimacy can serve as a rebuilding bridge of trust and understanding over the deleterious impact of captivity and posttraumatic symptomatology on ex-POWs’ sexuality. Moreover, the relationship between intimacy and sexual satisfaction can be bidirectional. Hence, if sexual experiences are linked with trauma, the casualty may avoid physical intimacy and achieve less satisfaction from physical intimacy. This, in turn, could reduce emotional intimacy. It is important to note, however, that sexual satisfaction may be affected even without previous direct sexual trauma. For example, among Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) soldiers, it was found that sexual problems significantly predicted relationship satisfaction for soldiers, even though very few reported previous sexual trauma [67].

This study suffers from several limitations. The assessment was based solely on self-report questionnaires, which, although common in trauma research, are susceptible to bias (e.g., social desirability). The measures in our study were not counterbalanced and, hence, are susceptible to order effects. The study was based only on veterans’ self-report and did not include their partner’s reporting. In order to gain a more comprehensive and valid understanding of the couple’s marital intimacy, future studies should collect data from both spouses (e.g., reference [68]). The inference of causal associations should be made with caution, as this study is correlative in nature. As suggested, it is possible that the relationships in the model that we put forward are reversed or that some unmeasured variable contributes to the links. It should also be noted that the intimacy questionnaire we employed in this study did not target some aspects of intimacy, such as commitment or mutual, positive physical closeness, a construct which is known to be multidimensional [26]. Future studies should therefore include a more comprehensive and valid measurement of intimacy.

Our study did not include measures of other traumatic events or alcohol and drug intake in the 30 years which passed since the 1973 Yom Kippur War. These measures could possibly impede sexual satisfaction. Also, the study focused on single sex, heterosexual couples with no extramarital relationship sexual activity, which might somewhat confound our findings and limit their generalization. Moreover, we did not assess the differences between married couples and live-in relationship couples, although it is possible that these two groups each have exhibited unique marital relations. Finally, the study did not examine the possibility that marital relationships could have an effect on PTSD. Future studies should test this alternative model in which interpersonal intimacy contributes to the intrapsychic condition. As noted in the CATS model [25], the more complex and elaborated picture of traumatized veterans’ marital life includes both interpersonal and interpersonal effects with mutual impact between individual trauma and couple system.

Notwithstanding these limitations, the findings of the current study have important practical implications. First, the study lends further insight into the understanding and brings the front stage of the enduring sexual dissatisfaction in the life of traumatized veterans, including individual’s POWs. Second, the findings suggest that improvement in ex-POW’s marital intimacy may promote improvement in other domains of marital relations, such as sexual satisfaction and dyadic adjustment. Finally, the findings imply that an integrative therapy, combining biological as well as emotional interventions, may offer robust healing solutions for sexual complaints of the traumatized individual (e.g., reference [29]).

Acknowledgment

We would like to thank Danny Horesh for his help in preparation of the manuscript.

Corresponding Author: Gadi Zerach, PhD, Behavioral Sciences, Ariel University Center of Samaria, Ariel 40700, Israel. Tel: 972-3-6407204; Fax: 972-3-6409182; E-mail: gadizy@gmail.com

Conflict of Interest: None.

Statement of Authorship

Category 1
(a) Conception and Design
  Gadi Zerach; Zahava Solomon; Ben-David Anat; Rafi Heruti
(b) Acquisition of Data
  Zahava Solomon

J Sex Med 2010;7:2739–2749
References

PTSD and Sexual Satisfaction


