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ABSTRACT

The aim of the present study was to examine the directionality of the association between post-traumatic stress symptoms (PTSS) and attachment insecurities across time among indirect trauma survivors. Wives of former prisoners of war (ex-POWs), with and without post-traumatic stress disorder (PTSD), and comparable controls were assessed 30 (T1) and 38 (T2) years after the Yom Kippur War. As expected, wives of ex-POWs endorsed higher PTSS compared to wives of controls. Wives of ex-POWs with PTSD endorsed higher PTSS and higher attachment avoidance compared to wives of ex-POWs without PTSD and controls. There were significant associations between PTSS and attachment insecurities. Contrary to the hypothesis, the relationship between PTSS and attachment insecurities among wives of ex-POWs was unidirectional, with attachment anxiety at T1 predicting PTSS at T2, and not vice versa. Results indicate that attachment anxiety might act as a risk factor for secondary traumatic reactions.

Introduction

War captivity is a particularly extreme interpersonal trauma. Prisoners of war (POW) are often subjected to harsh physical and psychological abuse, torture, severe deprivation of basic needs (i.e., food, water, sleep), and repeated humiliation and degradation at the hands of their captors (Herman, 1992). As a result, former prisoners of war (ex-POWs) are at high risk for physical and psychiatric disorders, most notably post-traumatic stress disorder (PTSD; e.g., Dikel, Engdahl, & Eberly, 2005). Moreover, compared to combatants who were not held captive, ex-POWs suffer from long and enduring PTSD (e.g., Solomon & Dekel, 2005).

Post-traumatic stress symptoms in wives of ex-POWs

The negative effects of captivity are not restricted to ex-POWs and can be transmitted to their significant others, a phenomenon known as secondary traumatization (ST; e.g., Figley, 1986). Moreover, according to Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric Association, 2013) learning about

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a close family member's traumatic event, constitutes a firsthand trauma. ST generally describes the presentation of symptoms similar to those displayed by the primary trauma survivors, including post-traumatic stress symptoms (PTSS) and emotional distress (see review by Galovski & Lyons, 2004).

Spouses of ex-POWs may be particularly vulnerable to ST. Research has indicated that wives of ex-POWs endorse more PTSS and severe psychological distress compared to wives of combatants who were not held captive (e.g., Dekel & Solomon, 2006). ST in ex-POWs' wives is associated not only with the husbands' war captivity but also with the husbands' psychological reaction to the trauma, and PTSD in particular (e.g., Dekel & Solomon, 2006). Research has indicated that spousal ST and distress is correlated with their partners' PTSD symptoms (e.g., Dekel & Solomon, 2007; Greene, Lahav, Bronstein, & Solomon, 2014; Riggs, Byrne, Weathers, & Litz, 1998). A meta-analysis conducted by Lambert, Engh, Hasbun, and Holzer (2012) examined the relationship between primary trauma survivors' PTSD and their partners' psychological distress and found that the effect of PTSD with regard to the partners' psychological distress was moderate in magnitude, with a stronger effect seen among military samples. Therefore, the present study investigates manifestations of ST among ex-POWs' wives, with comparison to wives of combat veterans who were not held captive, taking into account the husbands' PTSD.

Attachment insecurities in wives of ex-POWs

According to the attachment theory (e.g., Bowlby, 1969), the interactions with significant others ("attachment figures") are internalized in the form of mental representations of self and relationship partners (internal working models of self and others), which affect close relationships and emotion-regulation strategies throughout life (e.g., Mikulincer & Shaver, 2007). While interactions with available and supportive attachment figures foster a sense of attachment security and positive internal working models, interactions with rejecting or unavailable attachment figures leads to attachment insecurity and negative internal working models. Such negative models shape future behavior, expectations, affects, and reactions to distress in relationships and may be intensified during times of stress (e.g., Ainsworth & Bowlby, 1991).

Research on adults' attachment indicates that attachment orientations can be measured in terms of two orthogonal dimensions (Brennan, Clark, & Shaver, 1998; Mikulincer & Shaver, 2007). The first dimension, "attachment anxiety", reflects the degree to which individuals worry that significant others will be unavailable in times of need (see review by Mikulincer & Shaver, 2007). Anxious individuals often use "hyperactivating" strategies of attachment and show energetic, insistent attempts to achieve care, support, and love from relationship partners – as a means of regulating distress (Mikulincer & Shaver, 2003). The second dimension, "attachment avoidance", reflects the extent to which individuals are suspicious of others' goodwill and strive to maintain behavioral independence and emotional distance from partners. Avoidant individuals often rely on "deactivating strategies" such as denial of attachment needs and suppression of attachment-related thoughts and emotions (Mikulincer & Shaver, 2003). Those scoring low on both dimensions are considered to be secure in their attachments.

Although attachment insecurities are often assumed to be stable, they may change in response to significant and meaningful interpersonal events. Research has shown that

both positive and negative interpersonal experiences are associated with positive and negative changes in attachment, respectively (Mikulincer & Shaver, 2007). In particular, the interpersonal traumatic event of captivity can undermine attachment security, leading to enhanced avoidance and anxious tendencies (e.g., Solomon, Dekel, & Mikulincer, 2008).

Captivity can have enduring negative effects on ex-POWs' interpersonal relationships, even after repatriation (Segal, Hunter, & Segal, 1976). Specifically, ex-POWs' sense of trust in significant others may be severely undermined, leading to emotional withdrawal from spouses (Herman, 1992). For wives of ex-POWs, this gives rise to feelings of rejection and anxiety. Furthermore, as a consequence of their PTSD, ex-POWs may reenact their trauma within their intimate relationships and show increased aggression and abusive behaviors (O'Donnell, Cook, Thompson, Riley, & Neria, 2006). In this way, the husbands' war captivity and PTSD may affect their wives' attachment insecurities.

PTSS and attachment insecurities

Attachment security is seen as a determinant of psychological resilience and adjustment (e.g., Mikulincer & Shaver, 2007), thereby suggesting a possible relationship between attachment insecurity and PTSS. Indeed, previous studies found associations between adult attachment insecurities and PTSS in the general population (e.g., O'Connor & Elklit, 2008). Moreover, studies conducted among ex-POWs and their wives indicated an association between high attachment anxiety and avoidance, and elevated PTSS (e.g., Ein-Dor, Doron, Solomon, Mikulincer, & Shaver, 2010). However, as most studies have been either cross-sectional or have focused only on the effect of attachment on PTSS, the directionality of the relationship between attachment and PTSS has not been clearly elucidated. This question of directionality highlights the need for longitudinal research in this area.

The literature implies that the association between attachment and PTSS among secondary trauma victims may be bidirectional and includes both directions of effects: the effect of attachment on PTSS, and the effect of PTSS on attachment. On the one hand, attachment insecurities may impact the level of PTSS. Anxious attachment in wives may contribute to their PTSS by increasing vigilance to threat-related cues, intensifying fear-related responses, and encouraging rumination on threats. Similarly, emotional regulation difficulties which characterize avoidant attachment may exacerbate the wives' distress and PTSS (e.g., Ein-Dor et al., 2010).

However, on the other hand, PTSS may affect attachment insecurities. PTSS, such as avoidance of close relationships or tendency for outbursts can lead to negative interpersonal events (e.g., Cook, Riggs, Thompson, Coyne, & Sheikh, 2004), which may, in turn, heighten insecure attachment. In addition, the intrusion element of PTSS, which is manifested by re-experiencing the husbands' captivity, may expose ex-POWs' wives to negative interpersonal interactions, such as the cruelty of capture or the loss of protection by significant others. This, in turn, may enhance attachment insecurities.

Investigating the directionality of the relationship between attachment insecurities and PTSS over time has theoretical as well as clinical importance. Examining this issue might reveal whether attachment insecurities act as a risk factor for the development of ST and/or whether developing post-traumatic reactions disrupts internal working models of self and others and leads to elevated attachment insecurities. This exploration could contribute to the development of clinical implications. Specifically, these findings

could point to whether there is a need for preventative interventions which reduce insecurity tendencies among trauma survivors or, alternatively, if there is a need for interventions aimed to rehabilitate attachment among survivors who suffer from ST. The present study aims to fill this gap in knowledge by investigating the associations between attachment insecurities and PTSS over time.

Given the existing theory and empirical research, we hypothesized that: (1) wives of ex-POWs would report more PTSS and score higher on measures of attachment insecurities compared to control wives, (2) wives of traumatized ex-POWs (ex-POWs with PTSD) would report more PTSS and score higher on measures of attachment insecurities compared to wives of non-traumatized ex-POWs (ex-POWs without PTSD) and control wives, (3) there would be positive correlations between PTSS and attachment insecurities among both study groups, and (4) PTSS and attachment insecurities would have a bidirectional association over time, i.e., with PTSS predicting attachment insecurities and vice versa.

Methods

Procedure and participants

This study constitutes part of a larger longitudinal study assessing the impact of war captivity on (a) former POW and (b) their wives (for more details, see Greene et al., 2014). Data was collected from two groups of Yom Kippur War combat veterans: (a) ex-POWs and (b) a matched control group of non-POW combat veterans (CVs), at three time points (1991, 2003, and 2008–2010). Data were also collected from these combat veterans' wives at two time points (2003/2004 = T1, and 2010–2011 = T2). The current study utilizes data collected from the wives at both T1 and T2, as well as the husbands' data at T1 with regard to husbands' PTSD status.

Both groups of wives were located through their husbands. Using Israel Defense Forces (IDF) files, we sent the potential participants a letter in which we introduced the study and informed them that research assistants (licensed social workers) would contact them in the following days. After receiving an explanation of the aim of this study, the wives who agreed to participate were offered the option of filling out research questionnaires either in their homes or at a location of their choice. Informed consent was obtained for all participants. This study was approved by the Tel Aviv University ethics committee.

Wives of ex-POWs

According to Israel's Ministry of Defense, 240 combat veterans from the Israeli infantry were captured during the YKW and held in Egypt or Syria for 1–8 months (ex-POWs). A total of 111 ex-POWs who participated in the T1 were married; 90 wives participated at T1 (81% response rate). A total of 147 ex-POWs who participated in T2 were married or had a partner; 116 wives participated at T2 (69% response rate). Of the 90 ex-POWs wives who participated at T1, 61 participated at T2 (67.8%) and 29 dropped out (32.2%). Fifty-five wives who participated at T2 did not participate at T1.

Wives of CVs

The CVs were sampled from IDF computerized data banks. They were from the same units as the ex-POWs, and matched to the ex-POWs for personal and military background

characteristics. A total of 102 combat veterans who participated in T1 were married or had a partner; 76 wives participated at T1 (74% response rate). A total of 103 combat veterans who participated in T2 were married or had a partner; 51 wives participated at T2 (50% response rate). Of the 76 control wives who participated at T1, 30 participated at T2 (39.5%) and 46 dropped out (60.5%). Twenty-six participated at T2 who did not participate at T1.

Handling missing data

Substantial attrition, and in several cases addition, occurred from T1 of assessment to T2. Wives were included in the sample only if they participated in at least one wave of measurement (n = 165, 171 at T1 and T2, respectively). Overall 34.3–37.1% data were missing across waves. To decide whether the data had missing values in a pattern that was random, we conducted analyses of differences between these groups in all of the variables, using Little's Missing Completely at Random (MCAR) test (Collins, Schafer, & Kam, 2001). The analysis revealed that the data was missing completely at random, chi square (46) = 10.048, p = 1.00.

Because the mechanism of missingness was not known to us and there were indications that the missingness was related to the observed data, we assumed that the data was missing at random (MAR). If there is no serious proof of non-randomness, erroneous assumption of MAR often has minor impact (Collins et al., 2001). Missing data were handled with maximum likelihood (ML) via the SPSS 21 and AMOS 21 programs. Compared to conventional methods such as arithmetic mean, listwise or pairwise deletion, and as the current data is longitudinal, ML method was recommended as an optimal method for computing missing data to avoid biased data (e.g., Schafer & Graham, 2002). It is a recommended to use all the available data relevant for study for each participant, because missing information can be then partially recovered from earlier or later waves. Longitudinal modeling by ML of missing responses is very effective if it is conducted under a longitudinal model that borrows information across waves that can serve as auxiliary variables (Schafer & Graham, 2002). This study utilized variables measured for wives across waves to increase the likelihood for optimal estimations of missing values. A total of 245 participants were included, 102 of them were control wives and 143 wives of ex-POWs.

Background variables

No significant differences were found between ex-POWs wives and control wives in terms of birthplace (χ^2 (2, N = 83) = .58, p = .75, Cramer's V = .08), age (t(77.93) = -1.56, p = .12, d = .31), years of education (t(80) = 1.57, p = .12, d = .38), years of marriage/cohabitation (t(81) = -.67, p = .51, d = -.17), religious (χ^2 (1, N = 82) = .00, p = .95, Cramer's V = .01), employment status (χ^2 (2, N = 83) = .10, p = .95, Cramer's V = .04), number of prior traumatic events (t(130.13) = -.61, p = .55, d = -.10), second generation Holocaust survivor status (χ^2 (1, N = 82) = 1.94, p = .16, Cramer's V = .15), and psychological treatment in the past (χ^2 (1, N = 82) = .12, p = .73, Cramer's V = .04) .Wives' ages at T2 ranged from 43 to 79 years old (M = 58.28, SD = 5.79). Duration of marriage/cohabitation at T2 ranged from two to 60 years (M = 34.20, SD = 9.19).

We subsequently divided the wives into groups according to their husband's PTSD status at T1. We excluded wives who had missing data regarding their husbands' PTSD status. Only 2.6% (n = 5) of the control husbands reported as having PTSD at T1. Due to

the small number, these wives were omitted from the analyses leaving three groups: wives of ex-POWs with PTSD ($n = 67$; 35.6%), wives of ex-POWs without PTSD ($n = 40$; 21.3%), and wives of controls without PTSD ($n = 81$; 43.1%).

Measures

Wives' PTSS and attachment insecurities were measured at T1 and T2. Husbands' PTSD was measured only at T1.

PTSD-inventory (PTSD-I; Solomon et al 1993)

Wives' PTSS and husbands' PTSD were assessed via the PTSD-I, a well-validated, 17-item, self-report questionnaire. The items on the PTSD-I correspond to the DSM-IV-TR diagnosis for PTSD. Respondents rated symptoms experienced in the previous month on a scale ranging from 0 (not at all) to 4 (almost always). Wives rated their symptoms relating to their husbands' experiences of combat or captivity to obtain their PTSS score. Husbands' PTSD was obtained by asking husbands to rate their post-traumatic symptoms relating to their experiences of combat or captivity.

The number of positively endorsed symptoms was calculated by the items answered as 3 (often) or 4 (almost always) as these responses best capture the DSM–IV–TR criteria of a persistent experience of symptoms. Husbands' symptoms were dichotomized (PTSD, no PTSD) using DSM–IV–TR PTSD criteria: a respondent was considered to have PTSD if he endorsed at least one intrusive, three avoidant, and two arousal symptoms.

The PTSD-I has proven psychometric properties with good convergent validity (e.g., Solomon et al., 1993). In the present study, Cronbach's alphas for wives' PTSS ranged between .75 and .91. Cronbach's alpha for husbands' PTSD at T1 was .95.

Attachment insecurities

Attachment anxiety and avoidance were assessed using a 10-item scale developed by Mikulincer, Florian, and Tolmacz (1990). 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). Studies have found this scale to be reliable and valid (e.g., Mikulincer & Shaver, 2007). We computed two scores (anxiety and avoidance) for each participant by averaging items corresponding to each attachment subscale. In the current study, Cronbach's alphas ranged between .64 and .71.

Data analysis

In order to compare PTSS between two groups (wives of ex-POWs and control wives) and three groups (wives of ex-POWs with PTSD, wives of ex-POWs without PTSD, and control wives), we conducted a series of one way Analyses of Variance (ANOVAs). In order to compare attachment insecurities between two groups and three groups we conducted a series of multivariate analysis of variance (MANOVAs). Group (two groups or three groups) was treated as the independent variable. PTSS and attachment insecurities were the dependent variables.

In order to examine the hypothesis regarding the bidirectional relations between attachment and PTSS, we used autoregressive cross-lagged modeling (ARCL; e.g.,

Anderson, 1960). This form of analysis provides an indicator of temporal precedence in the absence of an experimental design. Autoregressive cross-lagged designs allow for simultaneous assessment, enabling the examination of whether earlier measurement of PTSS predicts later measures of attachment insecurities and vice versa. This modeling strategy incorporates two main components. First, later measures of a construct are predicted by earlier measures of the same construct, thus giving rise to the "autoregressive" term. Second, the "cross-lagged" component by which later measures of a construct are predicted by earlier measures of other constructs is measured as well. For example, the measures of attachment insecurities could be incorporated such that indicating that later measures of PTSS are a function of an intercept, the weighted contribution of prior measure of PTSS, the weighted contribution of prior measure of attachment insecurities, and a random error term.

This model was analyzed with AMOS statistics, Version 21. We estimated the models' fit by using the comparative fit index (CFI), the normed fit index (NFI) and the root-mean-square error of approximation (RMSEA). A model is judged as reasonably fitting the data when CFI, NFI and 1- RMSEA are larger than .90 (Bollen & Curran, 2006; Schafer, 1997).

Results

PTSS and attachment in wives of ex-POWs

To investigate the differences of PTSS and attachment insecurities between wives of ex-POWs and control wives at T1 and T2, we conducted ANOVAs and MANOVAs (see Table 1).

Analyses revealed significant group effects for PTSS total score as well as for all subscales, at T1 and T2. Wives of ex-POWs scored higher for PTSS, compared to control wives. MANOVA for attachment insecurities at T1 and T2 revealed a non-significant effect of group, *Pillai's Trace F*(2,242) = .96, *p* = .385, η^2 = .01; *Pillai's Trace F*(2,242) = .19, *p* = .826, η^2 = .00, respectively. There were no differences between the groups in attachment insecurities.

Table 1. PTSS and attachment insecurities as a function of the husbands' captivity.

Variable	Control wives (n = 102)		Wives of ex-POWs (n = 143)		F(1,243)	η^2
	M	SD	M	SD		
PTSS total						
T1	2.10	2.29	4.65	3.88	35.44***	.13
T2	2.88	2.70	4.78	3.99	17.44***	.07
Intrusion						
T1	.33	.64	1.27	1.51	35.35***	.13
T2	.52	.73	1.39	1.51	29.29***	.11
Avoidance						
T1	.67	1.01	1.36	1.48	16.65***	.16
T2	.97	1.12	1.40	1.55	5.87*	.02
Hyperarousal						
T1	1.10	1.26	2.02	1.48	26.19***	.10
T2	1.39	1.38	1.98	1.63	8.91**	.04
Attachment Avoidance						
T1	3.09	1.12	3.28	1.04	1.90	.01
T2	3.11	1.01	3.15	1.15	.07	.00
Attachment Anxiety						
T1	2.45	1.00	2.53	.92	.41	.00
T2	2.49	.77	2.44	.93	.17	.00

Note: PTSS = post-traumatic stress symptoms; ex-POWs = ex-prisoners of war.
*p < .05; **p < .01; ***p < .001

Table 2. PTSS and attachment insecurities as a function of the husbands' PTSD.

Variable	Control wives (n = 81)		Wives of ex-POWs without PTSD (n = 40)		Wives of ex-POWs with PTSD (n = 67)		F(2,185)	η²	Group comparisons
	M	SD	M	SD	M	SD			
PTSS total									
T1	2.02	2.32	3.26	3.42	5.88	4.17	25.23***	.21	c > a, b
T2	3.01	2.85	3.69	3.29	5.61	3.98	11.16***	.11	c > a, b
Intrusion									
T1	.34	.69	.91	1.40	1.62	1.71	18.02***	.16	c > a, b
T2	.58	.76	1.05	1.25	1.64	1.57	14.03***	.13	c > a, b
Avoidance									
T1	.62	1.03	.79	1.12	1.78	1.71	15.13***	.14	c > a, b
T2	.99	1.16	1.01	1.32	1.68	1.59	5.30**	.05	c > a, b
Hyper-arousal									
T1	1.06	1.26	1.56	1.41	2.48	1.53	19.28***	.17	c > a, b
T2	1.43	1.33	1.62	1.42	2.29	1.59	6.89***	.07	c > a
Attachment Avoidance									
T1	3.09	1.23	3.00	.97	3.50	1.19	3.08*	.03	c > a, b
T2	3.12	1.03	3.08	1.19	3.23	1.17	.29	.00	
Attachment Anxiety									
T1	2.50	1.08	2.22	.67	2.69	1.00	2.81	.03	
T2	2.53	.78	2.31	.75	2.44	.72	1.21	.01	

Note: PTSS = post-traumatic stress symptoms; ex-POWs = ex-prisoners of war; PTSD = post-traumatic stress disorder. Group comparisons compare the mean level of the variable in each group: a = control wives; b = ex-POWs' wives without PTSD; c = ex-POWs' wives with PTSD.
*p < .05; **p < .01; ***p < .001.

PTSS and attachment in wives of traumatized ex-POWs

To investigate the differences of PTSS and attachment insecurities between wives of ex-POWs with PTSD, wives of ex-POWs without PTSD, and control wives at T2, we conducted ANOVAs and MANOVAs (see Table 2).

The ANCOVAs revealed significant group effects for total PTSS, as well as for all PTSS subscales at T1 and T2. Wives of ex-POWs with PTSD showed significantly higher scores compared to wives of ex-POWs without PTSD and control wives.

MANOVA for attachment insecurities at T1 revealed significant effect of group, *Pillai's Trace F*(4,370) = 2.32, *p = .05*, η² = .02. Wives of ex-POWs with PTSD reported significantly higher levels of attachment avoidance compared to the other two groups. MANOVA for attachment insecurities at T2, however, revealed non-significant effect of group, *Pillai's Trace F*(4,370) = .80, *p = .528*, η² = .01.

PTSS and attachment insecurities

In order to examine associations between PTSS and attachment insecurities, we computed Pearson correlations separately for each wave of measurement and for each study group (see Table 3).

Overall, we found positive significant correlations between attachment insecurities and PTSS among wives of ex-POWs and control wives; the higher the attachment insecurities, the higher the PTSS.

To examine the bidirectional relations between attachment insecurities and PTSS over time, we used an ARCL modeling strategy. First, we tested the model among control

Table 3. Pearson correlations between PTSS and attachment insecurities.

Variable	Control wives (n = 102)		Wives of ex-POWs (n = 143)	
	Attachment anxiety	Attachment avoidance	Attachment anxiety	Attachment avoidance
PTSS total				
T1	.34**	.27**	.50***	.46***
T2	.62***	.38**	.34***	.35***
Intrusion				
T1	.20*	.03	.37***	.24**
T2	.53***	.02	.22**	.16
Avoidance				
T1	.36***	.26**	.47***	.49***
T2	.51**	.44**	.30***	.40***
Hyperarousal				
T1	.22*	.27*	.46***	.48***
T2	.52***	.38**	.36**	.32**

Note: PTSS = post-traumatic stress symptoms; ex-POWs = ex-prisoners of war.
*p < .05; **p < .01; ***p < .001.

wives. Results indicated that the model did not have good fit, $\chi^2(8) = 20.69$, $p = .008$, CFI = .93, NFI = .90, 1-RMSEA = .875.

Next, we tested the model among ex-POWs' wives (see Figure 1). The model fit the data fairly well, $\chi^2(18) = 15.07$, $p = .058$, CFI = .98, NFI = .96, 1-RMSEA = .92. The model revealed high stability of total PTSS and attachment insecurities; wives with high levels
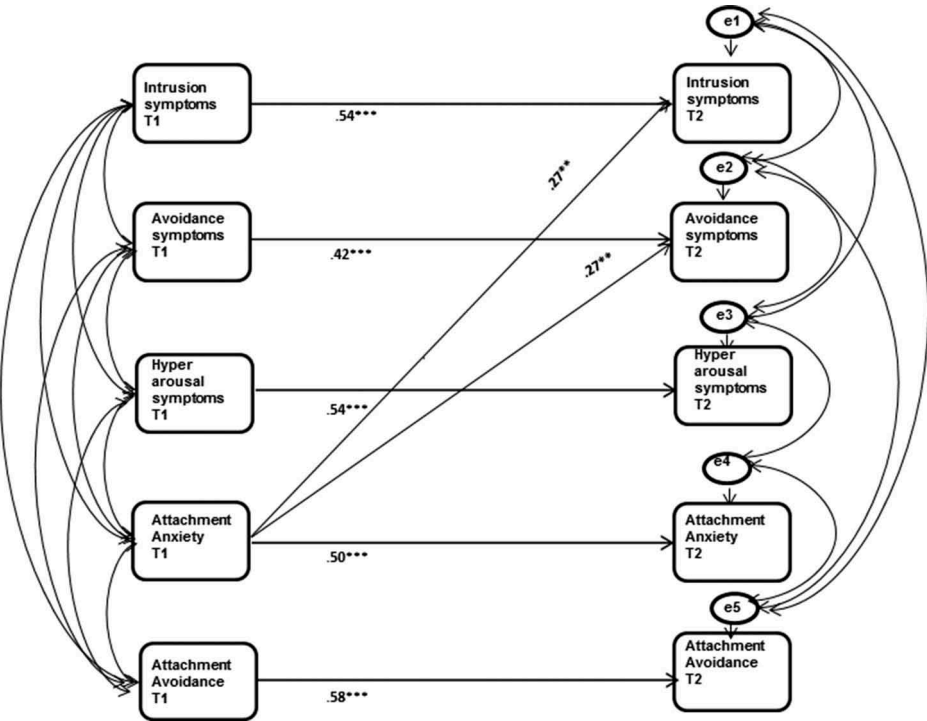

Figure 1. Autoregressive cross-lagged (ARCL) model assessing bidirectional relationships between PTSS and attachment insecurities across time among wives of ex-POWs. Curved lines represent covariates between constructs. Straight lines represent significant predictions. The other prediction axes were non-significant.
** p < 0.01; *** p < 0.001.

of PTSS at T1 tended to have high levels of these symptoms at T2. Similarly, wives with high levels of attachment avoidance or attachment anxiety at T1 tended to have high levels of attachment avoidance or attachment anxiety at T2.

More importantly, the analyses revealed that the initial level of attachment anxiety at T1 predicted intrusion and avoidance symptoms at T2, above and beyond the stability of intrusion and avoidance symptoms, but not vice versa. In other words, the higher the wives' attachment anxiety at T1, the higher their intrusion and avoidance symptoms at T2. The other prediction axes were non-significant.

Discussion

Our results showed that wives of ex-POWs reported higher PTSS compared to wives of controls. Results examining the impact of the husbands' PTSD indicated that wives of ex-POWs with PTSD, showed a higher magnitude of PTSS and higher attachment avoidance compared to wives of ex-POWs without PTSD and control wives. Overall, we found significant associations between PTSS and attachment insecurities. Finally, we found that among wives of ex-POWs, attachment anxiety at T1 predicted intrusion and avoidance symptoms at T2.

In line with our hypotheses, we found that wives of ex-POWs reported higher scores of PTSS compared to control wives, and that wives of ex-POWs with PTSD reported significantly higher overall PTSS compared to the other two groups of wives. These results support the contention that the effects of the traumatic event are not limited to the survivors who experience it but also impact their significant others. Moreover, the present results indicate that the husbands' PTSD severity is associated with elevated levels of PTSS among wives. These results may reflect a process of PTSD "contagion" (Figley, 1986), whereby the wife's identification with her husband leads to an internalization of his traumatic experience.

As expected, wives of ex-POWs with PTSD had elevated levels of attachment avoidance compared to the other two groups. The present results may reflect the impact of the husbands' PTSD on marital relationships. PTSD is characterized by significant interpersonal difficulties, including elevated suspiciousness, rage outbursts, and avoidance of closeness (American Psychiatric Association, 2000). Wives of ex-POWs with PTSD may experience loss of support, intimacy, and safety within their marital relationship, and therefore show elevated levels of avoidance tendencies.

Alternatively, it might be that the wives' attachment insecurities adversely affected the ex-POWs' mental health. Theory and research indicate an association between one partner's attachment insecurities and the other's distress and psychopathology (e.g., Mikulincer & Shaver, 2007; Whiffen, 2005). Therefore, it might be that wives of ex-POWs with high attachment avoidance do not provide support to their distressed husband which, in turn, harms the husbands' coping and leads to the development of PTSD. Although the present study cannot determine the precise association between wives' attachment avoidance and ex-POW husbands' PTSD, based on the interdependence that exists between spouses we postulate that our results reflect a bidirectional association.

As expected, we found significant correlation between PTSS and attachment insecurities. However, contrary to our hypothesis, our findings revealed a unidirectional relationship between PTSS and attachment insecurities among wives of ex-POWs. This

includes the prediction of intrusion and avoidance symptoms by attachment anxiety, but not vice versa. Our results are consistent with previous studies (Mikulincer & Shaver, 2007) and suggest that anxious attachment may not only predict the emergence of psychopathology after primary exposure to traumatic events, but may also be a risk factor for emotional morbidity among secondary trauma victims.

Regarding attachment as a personal resource, one explanation suggests that insecure attachment may reduce resilience in times of distress (e.g., Mikulincer & Shaver, 2007). Spouses with high attachment anxiety may be overwhelmed by their partner's traumatic experiences and suffer from difficulties in regulating stress, which enhances the likelihood of PTSS (e.g., Mikulincer, Shaver, & Horesh, 2006).

Alternatively, anxiously attached individuals tend to have enmeshed relationship, which may account for their vulnerability. Anxiously attached spouses who tend towards fusion in a relationship (e.g., Mikulincer & Shaver, 2007), might identify with their traumatized partners and internalize their partners' traumatic memories, which, in turn might "infect" them with trauma and lead to PTSS (e.g., Figley, 1986).

In the present study, attachment avoidance, unlike attachment anxiety, did not predict PTSS over time among wives of ex-POWs. This finding seems surprising in light of the trauma literature, which identifies attachment avoidance as a risk factor for the development of PTSD among trauma victims (e.g., Mikulincer et al., 2006). Several explanations can be offered for the present findings.

The deactivating strategies of attachment avoidance, which involve suppressing the experience of distress, can lead to undirected distress manifestation, such as somatic symptoms (e.g., Mikulincer & Shaver, 2007). Therefore, it is possible that avoidant wives of ex-POWs express their distress through somatic difficulties that the present study was unable to detect. Alternatively, it may be that while the interpersonal features of attachment avoidance have a negative impact on individuals' mental wellbeing following direct exposure to trauma, there may be protective effects for individuals in a relationship with a trauma victim. Specifically, it might be that the avoidant individuals' tendency for avoidance of intimacy (e.g., Mikulincer & Shaver, 2007) may protect such individuals from contracting their partner's trauma, thereby decreasing the risk of PTSS.

Several limitations may have affected the findings of the present study. First, this study was based on self-report measures, which may be subject to response biases and shared method variance. Second, we did not collect prospective information concerning wives' lifetime mental health, attachment insecurities before marriage, and before or immediately after the husbands' captivity. This prevented our ability to control for the role of psychopathology and attachment before the indirect exposure to trauma. Finally, this study did not examine the role of attachment-related dyadic processes in the development of PTSS among secondary trauma victims. Future prospective studies should use dyadic designs to assess the temporal relations between attachment and trauma symptoms at both the individual and dyadic levels.

Our findings have important implications for theory and treatment of post-traumatic reactions among secondary trauma victims. The association between attachment anxiety and PTSS over time calls attention to the implication of attachment in the development and maintenance of PTSS among secondary trauma victims. Anxious spouses might be particularly vulnerable to PTSS when their partners are direct trauma victims. According to Mikulincer and Shaver (2007), the treatment of anxious individuals should focus on their sense of helplessness

and fear of abandonment, with the aim to strengthen emotional regulation. Our findings suggest that there is a need for the development of clinical interventions for anxious individuals who are spouses of trauma victims. In order to develop appropriate interventions, future studies should investigate the potential goals of intervention, as well as the possible mechanisms underlying the association between attachment anxiety and PTSS.

Disclosure statement

No potential conflict of interest was reported by the authors.

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