Routledge
Taylor & Francis Group

Psychiatry
Interpersonal and Biological Processes

ISSN: 0033-2747 (Print) 1943-281X (Online) Journal homepage: http://www.tandfonline.com/loi/upsy20

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To cite this article: Yael Lahav, Rebecca Rodin & Zahava Solomon (2015) Somatic Complaints and Attachment in Former Prisoners of War: A Longitudinal Study, Psychiatry, 78:4, 354-366, DOI: 10.1080/00332747.2015.1061311

To link to this article: http://dx.doi.org/10.1080/00332747.2015.1061311

Psychiatry, 78:354–366, 2015

ISSN: 0033-2747 print / 1943-281X online
DOI: 10.1080/00332747.2015.1061311

Somatic Complaints and Attachment in Former Prisoners of War: A Longitudinal Study

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Objective: War captivity includes a unique constellation of simultaneous somatic and interpersonal assaults. This raises questions about the link between attachment and somatic complaints among ex–prisoners of war (ex-POWs). Although the attachment literature assumes that attachment affects somatic complaints and not vice versa, to date no empirical studies assess the association between the two variables over time. In this article we prospectively examine the association between attachment and somatic complaints over time among ex-POWs and comparable veterans. *Method*: The current study included two groups of male Israeli veterans of the 1973 Yom Kippur War: ex-POWs and comparable veterans who were not taken captive. Both groups were assessed via self-report measures at three times: T1 (1991), T2 (2003), and T3 (2008)—18, 30, and 35 years after the war, respectively. *Results*: Ex-POWs reported higher levels of somatic complaints and attachment insecurities. These levels increased over time compared to combatant veterans. Moreover, while there was a unidirectional influence of somatic complaints on attachment security over time among combatant veterans, this relationship was bidirectional among ex-POWs. *Conclusions*: The present study suggests that the combined physical and interpersonal assaults experienced during captivity have adverse effects on combatants and on attachment security, even three decades later. More important, in ex-POWs the relationship between these domains appears to be interactive and mutual, with one reinforcing the other, and vice versa.

War captivity is an extremely traumatic experience that exposes the victim to multiple prolonged stressors. Prisoners of war (POWs) are often subjected to harsh physical and psychological abuse by means of humiliation, torture, and severe deprivation of basic needs (i.e., food, water, sleep) (e.g., Herman, 1992). This assemblage of somatic and interpersonal assaults raises questions regarding the implications of war captivity in both domains as well as regarding the associations between somatic and interpersonal aspects among ex-POWs. The present study assesses these questions with respect to somatic complaints and attachment.

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SOMATIC COMPLAINTS AND WAR CAPTIVITY

Exposure to captivity has implications on the somatic domain. The following studies, using medical indicators, consistently reported higher rates of morbidity among ex-POWs compared to combat veterans who were not taken captive. A study of World War II (WWII) and Vietnam War ex-POWs found higher rates of disorders of the peripheral nervous system, joints, and back than comparable combat veterans (Nice, Garland, Hilton, Baggett, & Mitchell, 1996). Similarly, a study of Australian WWII ex-POWs found that they reported a greater number of medical diagnoses and suffered from poorer functional status than a comparable group of veterans (Creasey et al., 1999). More recent research has demonstrated that some of the detrimental physical health outcomes of war captivity can appear even after several decades (e.g., Page, Engdahl, & Eberly, 1991).

Other studies that used subjective reports of somatic complaints (i.e., self-reports of somatic difficulties without distinguishing between medically explained and unexplained symptoms) indicated a similar trend. A study of Vietnam War ex-POWs found poorer perceived health and higher frequencies of somatic complaints of arthritis and back/neck problems compared to control veterans (Hourani & Hilton, 2002). Similarly, an earlier investigation of the present sample of Yom Kippur War ex-POWs indicated higher rates of somatic complaints among ex-POWs compared to control veterans (Ohry et al., 1994).

Although in general the psychopathological effects of trauma over time might wax and wane (e.g., Port, Engdahl, & Frazier, 2014), the trauma literature implies that entering old age is usually related with a trend of deterioration. Multiple losses (e.g. loss of loved ones, declining physical health) and the tendency to experience a reactivation of the traumatic event (e.g., Buffum & Wolfe, 1995) in old age may lead to elevated distress among aging trauma victims. This also seems to apply in regard to the somatic domain, with aging ex-POWs suffering from a considerable deterioration of health and higher rates of mortality compared to combatants (e.g., Guest & Venn, 1992; Solomon et al., 2014).

ATTACHMENT AND WAR CAPTIVITY

According to attachment theory (e.g., Bowlby, 1969), social interactions with significant others are internalized in the form of mental representations of self and relationship partners (internal working models of self and others) that affect close relationships and emotion-regulation strategies throughout life (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 interactions undermine self-worth, emotion-regulation, and psychosocial functioning.

Research on adults' attachment indicates that attachment orientations can be measured in terms of two orthogonal dimensions: attachment-related anxiety and avoidance (Mikulincer & Shaver, 2007). Attachment anxiety refers to the extent to which an individual worries about the availability of others in times of need. Attachment avoidance refers to the extent to which an individual distrusts the goodwill of others and strives to achieve independence (Mikulincer & Shaver, 2007). Those scoring low on both dimensions are considered to have secure attachments.

Attachment may change as a result of meaningful interpersonal life events (Bowlby, 1969). In this regard, studies revealed that positive life events, such as marriage, are associated with increased attachment security (e.g., Crowell, Treboux, & Waters, 2002), while negative life events, such as

separation, are associated with increased attachment insecurity (Davila & Cobb, 2003). As such, according to Herman (1992), exposure to prolonged interpersonal trauma, such as captivity, may undermine earlier internalized models of human relations. The negative interaction with the captor (Herman, 1992) as well as loss of comrades (Beebe, 1975) might increase insecure attachment tendencies. Moreover, given the amplified vulnerability in old age among trauma survivors, which was mentioned previously, one might expect worsening of attachment in this life period.

Research among ex-POWs indicated higher rates of insecure attachment (e.g., Solomon et al., 2014) and found attachment insecurities to be a strong predictor of posttraumatic stress disorder (PTSD) symptom severity (Dieperink, Leskela, Thuras, & Engdahl, 2001). Moreover, two longitudinal studies conducted on the current sample indicated long-term implications of captivity on attachment (Mikulincer, Ein-Dor, Solomon, & Shaver, 2011; Solomon, Dekel, & Mikulincer, 2008). These studies revealed that higher levels of attachment insecurities increased over time among ex-POWs, compared to the decreased or unchanged attachment insecurities among controls. In addition, these studies found that posttraumatic symptoms predicted a change in attachment insecurities over time, but not vice versa.

ASSOCIATION BETWEEN SOMATIC COMPLAINTS AND ATTACHMENT INSECURITIES

According to attachment theory, individuals' health-related conditions, such as pain or sickness, activate the attachment system (Bowlby, 1969). This suggests a possible relationship between attachment and somatic complaints. Indeed, a series of studies investigated the relations between adult romantic attachment and somatic complaints. Some of these studies used the four-category model of Bartholomew and Horowitz (1991), which contrasts secure attachment with three insecure attachments (preoccupied, fearful, and dismissing). The findings of the studies indicated that both preoccupied and fearful attachment are linked to an intense experience of physical complaints (e.g., Ciechanowski, Walker, Katon, & Russo, 2002; Meredith, Strong, & Feeney, 2006). Other studies used the three-category attachment model (secure, avoidant, and anxious). These studies indicated the same trend, with both anxious (e.g., McWilliams & Bailey, 2010; Wearden, Cook, & Vaughan-Jones, 2003) and avoidant attachment (e.g., McWilliams & Bailey, 2010; Wearden et al., 2003) associated with more somatic complaints.

Despite abundant evidence supporting the association between attachment and somatic complaints, most previous research has been cross-sectional and, therefore, cannot illuminate the directionality of this relationship. According to the literature, individual attachment might act as a personal resource that affects individual health, but not vice versa (e.g., Maunder & Hunter, 2001). Maunder and Hunter (2001) claim that attachment insecurity harms the individual's physiological reaction, self-regulation, and ability to use others as a source of support. This, in turn, leads to poorer health and more somatic complaints.

While the association between attachment and somatic complaints may typically be unidirectional among the general population, reflecting the impact of attachment on somatic complaints, the question arises as to whether this association differs among ex-POWs, specifically, whether the assemblage of interpersonal and somatic attacks during captivity undermines both and gives rise to unique associations between attachment and somatic complaints that are bidirectional. The trauma literature regarding memory processes implies this possibility.

Traumatic memories tend to reemerge in response to reminders of the trauma, resulting in the reexperiencing of the original emotions, sensations, and responses to the

traumatic event, as if it were happening again (e.g., Van der Kolk, 1994). According to learning theory (Pavlov, 2010), this phenomenon results from classic conditioning; with repeated aversive stimulation, the stimuli that were associated with the trauma are thereby capable of eliciting the original reaction.

Somatic experiences might trigger reexperiencing. For example, Charney, Deutch, Krystal, Southwick, and Davis (1993) found that trauma survivors' reactions to physiological arousal caused by medical interventions resembled their original response to the traumatic event. Similarly, case studies among victims of sexual assaults found that somatic experiences triggered the traumatic memory (e.g., Courtois & Riley, 1992).

This triggering mechanism led us to hypothesize that the association between attachment and somatic complaints among ex-POWs might be bidirectional, in other words, that the association includes not only the effect of attachment on somatic complaints but also the effect of somatic complaints on attachment. Because physical suffering is an inherent element of captivity, it is possible that ex-POWs' subjective experiences of the body and health, as reflected in somatic complaints, might become powerful reminders of their traumas. Furthermore, classic conditioning may occur due to the repeated concurrent emergence of physical suffering with malignant interpersonal interaction during captivity. As a result, the experience of ill health could become a conditional stimulus that predicts an aversive interpersonal interaction with the captor. Somatic complaints of ex-POWs would, therefore, lead to reliving past abusive interactions and to reexperiencing their original responses, which could deepen insecure attachment.

Given the theoretical perspective on the relations between captivity trauma, somatic complaints, and attachment, we hypothesize the following:

H1. Ex-POWs will report more somatic complaints and higher attachment insecurities compared to controls.

H2. Ex-POWs will report an increase in somatic complaints and attachment insecurities over time compared to controls.

H3. Associations between somatic complaints and attachment insecurities over time will be unidirectional among controls, with attachment insecurity predicting somatic complaints. However, we predict this association to be bidirectional among ex-POWs, with somatic complaints predicting attachment insecurities and vice versa.

METHOD

Participants

The present study uses data from a longitudinal study on the psychological implications of war (Solomon, Horesh, Ein-Dor, & Ohry, 2012). The sample consisted of two groups of Israeli veterans of the 1973 Yom Kippur War. The ex-POW group included 164 participants in 1991 (T1, 18 years after the war), 144 in 2003 (T2, 30 years after the war), and 183 in 2008 (T3, 35 years after the war). In the present study we included only the 106 ex-POWs who participated in all three waves of measurement.

The control group included former Israeli combat soldiers who fought in the Yom Kippur War but were never held captive. Control participants were selected on the basis of their similarity to the ex-POWs in regard to relevant military service and personal variables such as age and rank. There were 185 participants in 1991 (T1), 143 in 2003 (T2), and 118 in 2008 (T3). In the present study we included only 64 controls who participated in all three waves of measurement. The two groups did not differ in sociodemographic variables, such as age (M = 57.91, SD = 3.52, for ex-POWs; M = 57.89, SD = 3.57, for controls), length of marriage (M = 28.48, SD = 6.86, for ex-POWs; M = 26.44, SD = 6.41, for controls), divorce rate (5.5% of ex-POWs, 5% of

controls had divorced) and number of children (M = 3.27, SD = 1.12, for ex-POWS; M = 3.24, SD = 1.33, for controls) at T3. The two groups did not differ in marital status during the war (76.4% of ex-POWs and 77.8% of controls were married) as well as in combat exposure (M = 1.39, SD = .63, for ex-POWs; M = 1.27, SD = .68, for controls).

Procedure

We contacted the participants by telephone and invited them to participate in the study. Questionnaires were administered in the participants' homes or in another location of their choice. Before filling out the questionnaires, participants signed an informed consent agreement. This study was approved by the Tel Aviv University Ethics Committee.

Measures

Attachment Insecurities

Attachment anxiety and avoidance were assessed via 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 a*ll) to 7 (*Very much*). Studies have found this scale to be reliable, valid, and correlated with other adult attachment scales (e.g., Mikulincer & Shaver, 2007). In the current study, Cronbach's alphas were .66, .72, and .71 for attachment anxiety; .70, .67, and .74 for avoidance. We computed anxiety and avoidance scores by averaging items from each subscale.

Symptoms Checklist-90-Revised Somatization Subscale

We used the Symptoms Checklist-90-Revised (SCL-90-R) somatization subscale (Derogatis, 1977) which is composed of 12 questions regarding somatic complaints. For each item, the respondent was asked to rate, on a 5-point scale, the degree to which he or she suffered from the symptom during the preceding two weeks. Mean score reflects the respondent's level of somatic complaints, with higher scores reflecting greater somatic complaints. The scale's internal consistency (Cronbach's alpha) in this study was high at each time point, .89, .92, and .88.

Data Analysis

To compare somatic complaints and attachment between the study groups, we conducted series analyses of variance (ANOVAs) and multivariate analyses of variance (MANOVAs). To examine the trajectories of attachment insecurities and somatic complaints among ex-POWs and controls, we used latent trajectory modeling (LTM; Bollen & Curran, 2006). LTM extends latent variable analysis within a structural equation modeling (SEM) framework to provide a flexible tool for testing hypotheses concerning change over time and prediction of such change. In the models, two latent factors were estimated: one to define the initial level (intercept) of the developmental trajectories of attachment or somatic complaints (with all factor loadings fixed to 1.0) and one to define the linear slope of the trajectory. To examine the bidirectional relations between attachment and somatic complaints over time, we used autoregressive cross-lagged modeling (ARCL; e.g., Anderson, 1960). ARCL provides an indicator of temporal precedence in the absence of an experimental design.

We assessed the LTMs and ARCLs using Mplus 6.1 (Muthén & Muthén, 2010) and estimated model fit using the comparative fit index (CFI), the Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). A model fits a data set well if the CFI and TLI are greater than .95 and the RMSEA is less than .05. Missing data were handled with case-wise maximum likelihood estimation (Muthén & Muthén, 2010).

RESULTS

Somatic Complaints and Attachment Insecurities Among Ex-POWs and Controls

We conducted series of ANOVAs and MANOVAs to examine the difference between ex-POWs and controls in somatic complaints and attachment insecurities in each time measurement, respectively. The study group was treated as a between-subjects factor. The dependent variables were somatic complaints and attachment insecurities (Table 1).

ANOVAs revealed significant effects for grouping on somatic complaints at each time measurement. Ex-POWs reported more somatic complaints compared to controls. A MANOVA for attachment insecurities at T1 revealed nonsignificant effect of group, Pillai's trace F (2, 148) = 1.31, p = .27, η^2 = .02. There were no significant differences between the groups in attachment insecurities at T1. However, MANOVAs for attachment insecurities at T2 and T3 revealed significant effect of group, Pillai's trace F (2, 166) = 29.49, p < .001, η^2 = .26; Pillai's trace F (2, 161) = 22.15, p < .001, η^2 = .22, respectively. Separate univariate ANOVAs for attachment avoidance and attachment anxiety revealed significant effects. Ex-POWs reported higher levels of attachment avoidance and attachment anxiety compared to controls at T2 and T3.

Trajectories of Somatic Complaints and Attachment Insecurities Over Time

We conducted a series of LTMs for the repeated measures of somatic complaints in T1, T2, and T3 among ex-POWs and controls. Ex-POWs' unconditional LTMs did not fit the data adequately for somatic complaints, $\chi^2(1)$ = 26.73, p < .001, CFI = .66, TLI = –.01, RMSEA = .51. Ex-POWs showed a general increase in somatic complaints, but this trend was not linear. Somatic complaints increased from T1 to T2 but then decreased, reaching a level of 1.03 at T3. Controls' unconditional LTMs did not fit the data adequately for somatic complaints, $\chi^2(1)$ = 3.44, p < .01, CFI = .97, TLI = .90, RMSEA = .15. There was no linear trend over time. Controls' somatic complaints increased from T1 to T2 but did not change significantly from T2 to T3.

TABLE 1. Means, Standard Deviations, and Univariate F results of Somatic Complaints and Attachment Insecurities for Ex–Prisoners of War and Controls

	Ex–Prisoners of War *M* (*SD*)	Controls *M* (*SD*)	*F* (*df1*, *df2*)	η^2
Somatic complaints				
Time 1	.47 (.65)	.29 (.33)	4.26* (1, 150)	.03
Time 2	1.37 (1.06)	.46 (.55)	40.28*** (1, 167)	.19
Time 3	1.09 (.95)	.42 (.70)	24.08*** (1, 165)	.13
Attachment avoidance				
Time 1	3.11 (1.25)	3.07 (1.06)	.08 (1, 149)	.00
Time 2	4.38 (1.28)	2.87(1.18)	58.70*** (1, 167)	.26
Time 3	4.09 (1.36)	2.79 (1.21)	37.54*** (1, 162)	.18
Attachment anxiety				
Time 1	2.79 (.93)	2.56 (.79)	2.47 (1, 149)	.02
Time 2	3.20 (1.13)	2.61 (1.20)	10.26** (1, 167)	.06
Time 3	3.06 (1.19)	2.26 (.92)	20.18*** (1, 162)	.11

*p < .05; **p < .01; ***p < .001.

As a continuation of the LTM analysis, to examine whether ex-POWs and controls differed in the rate of increase of somatic complaints from T1 to T2, we conducted a repeated-measure ANOVA. Time of measurement (T1, T2) was treated as a within-subject repeated factor. The study groups were treated as a between-subject factor. The dependent variable was somatic complaints. ANOVA revealed a significant effect for time × group interaction, F (1, 203) = 49.590, $p < .001$, $\eta^2 = .20$. Simple effects analyses revealed that although both groups showed an increase in somatic complaints between T1 and T2 this increase was higher among ex-POWs (mean difference = .85, $p < .001$) than among controls (mean difference = .17, $p < .05$).

We conducted a series of LTMs for the repeated measures of attachment insecurities at T1, T2, and T3 among ex-POWs and controls. Ex-POWs' unconditional LTMs did not fit the data adequately for attachment avoidance, $\chi^2(1) = 19.05$, $p < .001$, CFI = .61, TLI = −.16, RMSEA = .42. There was a linear trend over time. Ex-POWs' attachment avoidance increased from T1 to T2 but did not change significantly from T2 to T3. However, ex-POWs' unconditional LTMs fit the data adequately for attachment anxiety, $\chi^2(1) = 1.73$, $p = .19$, CFI = .97, TLI = 91, RMSEA = .09. There was a linear trend over time. Ex-POWs' attachment anxiety increased from T1 to T2 and from T2 to T3 ($b = .02$, $p = .006$).

Controls' unconditional LTMs fit the data adequately for attachment avoidance, $\chi^2(1) = .31$, $p < .58$, CFI = 1.00, TLI = 1.00, RMSEA = .00. There was a linear trend over time. Controls' attachment avoidance decreased from T1 to T2 and from T2 to T3 ($b = -.02$, $p = .005$). Controls' unconditional LTMs fit the data adequately for attachment anxiety, $\chi^2(1) = .72$, $p = .40$, CFI = 1.00, TLI = 1.00, RMSEA = .00. There was a linear trend over time. Controls' attachment anxiety decreased from T1 to T2 and from T2 to T3 ($b = -.02$, $p = .001$).

Associations Between Somatic Complaints and Attachment Insecurities

To examine the concurrent associations between attachment insecurities and somatic complaints we computed Pearson correlations (Table 2). Apart from nonsignificant correlations among ex-POWs at T1, analyses revealed positive significant correlations between somatic complaints and attachment insecurities among ex-POWs and controls: the greater the number of endorsed somatic complaints, the greater the attachment avoidance and anxiety.

To examine the bidirectional relationships between attachment insecurities and somatic complaints across time, we used ARCL modeling. The model of bidirectional relations between insecure attachment and somatic complaints across time among both groups fit the data fairly well, $\chi^2(28) = 23.96$, n.s., CFI = 1.00, TLI = 1.00, 1-RMSEA = 1.00.

The analyses revealed a high stability of insecure attachment and somatic complaints among both groups: Veterans with high levels of attachment insecurities or somatic complaints at T1 tended to have high levels of attachment insecurities and somatic complaints at T2 and T3. At the same time there are different patterns of stability for the two groups. Among the controls, the stability of attachment is similar regardless of the time gap, while the stability of somatic complaints is higher in the shorter

TABLE 2. Pearson Correlations Between Somatic Complaints and Attachment Insecurities

	Controls		Ex–Prisoners of War	
Time	Attachment Anxiety	Attachment Avoidance	Attachment Anxiety	Attachment Avoidance
1	.230*	.210*	.13	.01
2	.480***	.250*	.330**	.280**
3	.280*	.260*	.310**	.340**

*$p < .05$; **$p < .01$; ***$p < .001$.

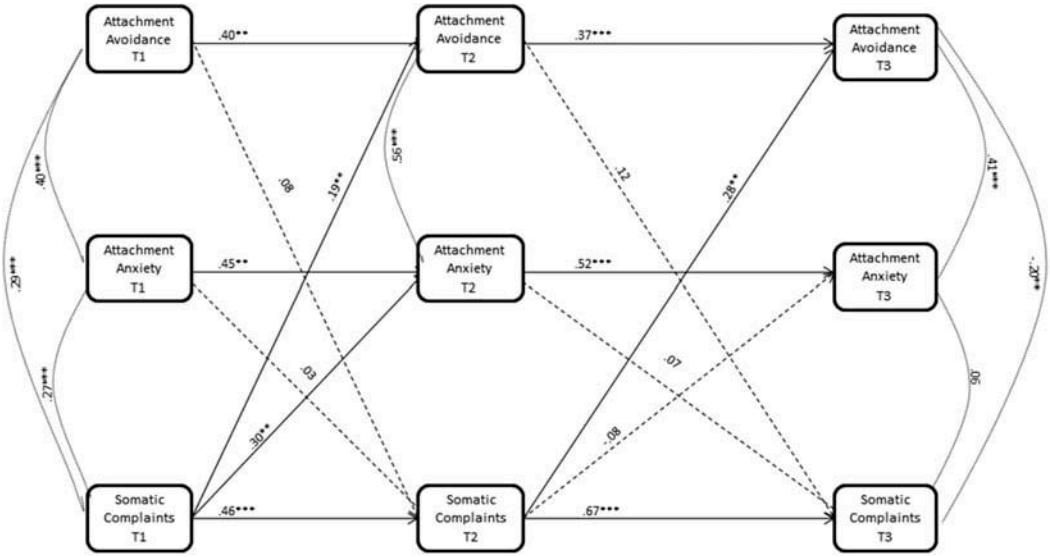

FIGURE 1. Autoregressive cross-lagged model assessing bidirectional relationships between attachment insecurities and somatic complaints across time among controls. Curved lines represent covariates between constructs. Dashed lines represent nonsignificant predictions. Solid lines represent significant predictions.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

time gap (between T2 and T3) (Figure 1). However, among ex-POWs, the stability in attachment is higher in the shorter time gap (between T2 and T3), while the stability of somatic complaints is similar regardless of the time gap (Figure 2). In both groups somatic complaints have high stability between T2 and T3, which makes it more difficult to predict changes in somatic complaints in the time period.

More important, in contrast to the hypothesis, the model among controls revealed that the initial level of somatic complaints at T1 predicted an increase of attachment avoidance and attachment anxiety between T1 and T2. Also, the level of somatic complaints at T2 predicted an increase of attachment avoidance between T2 and T3, beyond the stability of attachment insecurities (Figure 1).

The model revealed a different trend among ex-POWs. Initial levels of somatic complaints at T1 predicted an increase of attachment anxiety between T1 and T2. However, the prediction direction changed between T2 and T3: Somatic complaints did not predict attachment insecurity, but attachment avoidance predicted an increase of somatic complaints, beyond the stability of somatic complaints. Other prediction axes were nonsignificant (Figure 2).

DISCUSSION

The present study aimed to prospectively assess the relationship between somatic complaints and attachment among ex-POWs and comparable veterans. The results indicated that ex-POWs suffer from more somatic complaints compared to controls as well as a higher rate of deterioration over time. These results are consistent with previous studies (e.g., Hourani & Hilton, 2002) and indicate that captivity is associated with poor health, even many years after release.

Elevated somatic complaints among ex-POWs may reflect actual, long-lasting medical problems directly caused by the torture, deprivation, and unsanitary environment in

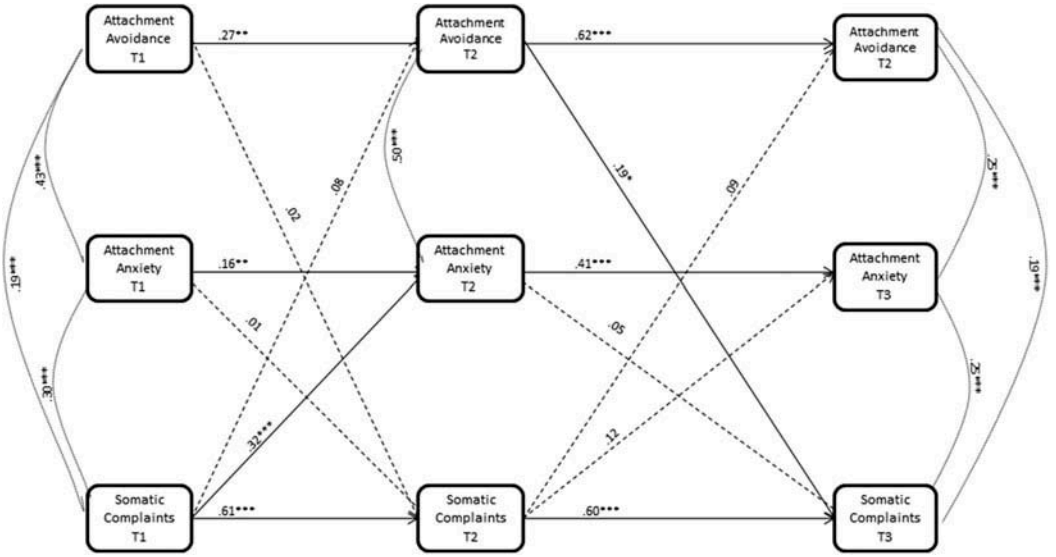

FIGURE 2. Autoregressive cross-lagged model assessing bidirectional relationships between attachment insecurities and somatic complaints across time among ex-POWs. Curved lines represent covariates between constructs. Dashed lines represent nonsignificant predictions. Solid lines represent significant predictions.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

captivity (e.g., Ursano & Benedek, 2003). Alternatively, the somatic complaints among ex-POWs may reflect the process of somatization (e.g., Diamond, 2001) whereby emotional distress is expressed through the physical channel. Although the use of self-report measures in this study does not indicate whether the ex-POWs' somatic complaints reflects their objective medical state or somatization, there is much evidence to support the former (e.g., Ursano & Benedek, 2003). Therefore, we believe that while somatization processes may partly explain the present results, they are unlikely to completely account for them.

Our finding that ex-POWs showed a higher rate of somatic complaints over time, compared to control veterans, supports the theoretical perspective that the implications of trauma worsen with time and aging (e.g., Buffum & Wolfe, 1995). Therefore, ex-POWs seem to suffer not only from physical discomfort years after captivity but also from more somatic difficulties as they age. This trend may have resulted from repeated exposure to physical assaults during captivity, leading to increased physical vulnerability during aging. Alternatively, it may have resulted from reactivation of the trauma of captivity, which may lead the ex-POW to relive painful physical sensations that are then manifested in somatic complaints

As expected, results indicated that ex-POWs reported higher levels of attachment insecurities compared to controls and that these levels increased over time. Relying on prospective follow-up, the higher attachment insecurities among ex-POWs may reflect destruction of the ex-POWs' internalized interpersonal representations, resulting from captivity (Herman, 1992).

Alternatively, the present results might be derived from the ex-POWs' lack of social support after release, rather than from the captivity itself. Social support is critical for trauma survivors' healing process, and the lack thereof may be pathogenic (e.g., Ohry et al., 1994). Yom Kippur War ex-POWs received mixed support upon their return;

they were warmly welcomed but sustained high levels of suspicion from the Israeli Defense Forces (Gavriely, 2006). One may wonder whether these responses not only failed to mitigate the negative implications of captivity but intensified them, shattering the ex-POWs' feelings of belonging and trust that were a source of strength and coping during captivity.

The observed increase in ex-POWs' attachment insecurities over time has been previously reported. One can understand this finding as reflecting the negative impact of captivity on the normative aging processes. According to Labouvie-Vief (2003), older individuals compensate for the decline in executive functions and socioemotional resources by optimizing positive feelings, that is to say, by increasing their balance between positive and negative affect. Ex-POWs may have difficulty in optimizing positive feelings if their basic beliefs, enabling an optimistic worldview, were shattered by the traumatic event (Dekel, Peleg, & Solomon, 2013).

The main contribution of the present study is in regard to the nature of association between attachment insecurities and somatic complaints over time among ex-POWs and comparable controls. Contrary to our expectation, we found a unidirectional association between attachment and somatic complaints among controls, whereby somatic complaints predicted attachment insecurities but not vice versa. Our findings suggest that individuals' physical discomfort, as represented by somatic complaints, may heighten their difficulties with interpersonal relations and increase their defensive tendencies in attachment over time.

A possible mechanism underlying this association may involve the potential for somatic problems to adversely affect the social domain. An individual reporting multiple somatic complaints may suffer from a reduced ability to perform daily activities and also an inability to participate in activities to maintain a healthy lifestyle, which in turn might narrow social interactions and create more interpersonal conflicts. Over time, this may lead to feelings of alienation from others and to increased avoidance and attachment anxiety.

Alternatively, these findings may be understood with reference to an evolutionary perspective. According to the social pain theory (e.g., Eisenberger & Lieberman, 2004), physical pain and social distress are based on a shared neurological system that developed through mammalian evolution. The system of social attachment, which increases a young mammal's chance of survival by encouraging caregivers to provide subsistence, evolved through the same neural pathways as the physical pain system (e.g., Eisenberger & Lieberman, 2004). This overlap is advantageous for survival because it enables the organism to respond to attachment threats in the same way as to physical danger. With regard to the present study, we may assume that somatic complaints reflect, inter alia, physical pain or discomfort and that insecure attachment is a form of social distress. Therefore, somatic complaints, which are triggered by activation of pain pathways, may act as a signal for interpersonal threats and hence may cause increased insecurity.

Supporting our hypothesis, in ex-POWs we observed a bidirectional association between attachment insecurities and somatic complaints. While the three explanations discussed here elucidate the mechanism by which somatic complaints predict attachment insecurities, they do not apply to the unique finding of this study that attachment also predicts somatic complaints among ex-POWs.

This inverse directionality among ex-POWs, in other words, the prediction of somatic complaints by attachment, might result from the process of somatization. Victims of interpersonal trauma tend to displace traumatic interpersonal material to the somatic channel (e.g., Diamond, 2001). This unique process might lead to physical symptoms with no organic basis or

psychosomatic disorders (e.g., Diamond, 2001). Thus, negative perceptions of others, such as distrust of others' goodwill or unavailability of others in time of need which were reinforced by the abusive captor-captive relationship and which characterize attachment avoidance, may also be expressed somatically.

Finally, classic conditioning following exposure to trauma can also help explain the bidirectional association between attachment and somatic complaints among ex-POWs. According to this theory (Pavlov, 2010), the simultaneous and persistent emergence of somatic and interpersonal assaults during captivity leads to classic conditioning. In this way, both somatic and interpersonal stimulation become conditional stimuli that predict one another. This mutual relationship creates a vicious circle: Ex-POWs' negative somatic experience cause a reexperiencing of the abusive interaction with the captor as well as the original mental response of an increasing insecure attachment. At the same time, insecure attachment acts as a poignant trauma reminder, triggering reexperiencing of physical suffering.

Our study has several limitations. First, we used self-report measures, which may be subject to response biases and shared method variance. Second, we did not collect information concerning ex-POWs' and controls' attachment and somatic complaints before or immediately after the war. Therefore, we were unable to assess the complete trajectories of attachment insecurity and somatic complaints from the prewar period up to 35 years after the war. Third, the present study pointed to general trends over time among ex-POWs and did not take into account the possible variability among this population. This limitation stands out in light of the literature that indicates processes of recovery might also occur among trauma survivors (Sulway et al., 1996).

Despite these limitations, the present study has important theoretical implications for survivors of cumulative interpersonal trauma. Our findings of the bidirectional association between attachment insecurities and somatic complaints among ex-POWs add complexity to our understanding of the implications of cumulative trauma. It seems that the victims of such traumatic events suffer not only from direct harm in the somatic and social domains but also from the unique reinforcing relationship between these two kinds of suffering.

REFERENCES

Anderson, T. W. (1960). Some stochastic process models for intelligence test scores. In K. Arrow, S. Karlin, & P. Suppes (Eds.), *Mathematical methods in the social sciences* (pp. 205–220). Stanford, CA: Stanford University Press.

Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, *61*(2), 226–244. doi:10.1037/0022-3514.61.2.226

Beebe, G. W. (1975). Follow-up studies of World War II and Korean War prisoners. II. Morbidity, disability, and maladjustments. *American Journal of Epidemiology*, *101*(5), 400–422.

Bollen, K. A., & Curran, P. J. (2006). *Latent curve models: A structural equation perspective* (Vol. 467). Hoboken, NJ: John Wiley & Sons.

Bowlby, J. (1969). *Attachment: Attachment and loss* (Vol. I). London, UK: Hogarth.

Buffum, M. D., & Wolfe, N. S. (1995). Posttraumatic stress disorder and the World War II veteran: Elderly patients who were in combat or were prisoners of war may have special health care needs that may not be obvious. *Geriatric Nursing*, *16*(6), 264–270. doi:10.1016/S0197-4572(95)80006-9

Charney, D. S., Deutch, A. Y., Krystal, J. H., Southwick, S. M., & Davis, M. (1993). Psychobiologic

mechanisms of posttraumatic stress disorder. *Archives of General Psychiatry*, *50*(4), 294–305. doi:10.1001/archpsyc.1993.01820160064008

Ciechanowski, P. S., Walker, E. A., Katon, W. J., & Russo, J. E. (2002). Attachment theory: A model for health care utilization and somatization. *Psychosomatic Medicine*, *64*(4), 660–667. doi:10.1097/00006842-200207000-00016

Courtois, C. A., & Riley, C. C. (1992). Pregnancy and childbirth as triggers for abuse memories: Implications for care. *Birth*, *19*(4), 222–223. doi:10.1111/bir.1992.19.issue-4

Creasey, H., Sulway, M. R., Dent, O., Broe, G. A., Jorm, A., & Tennant, C. (1999). Is experience as a prisoner of war a risk factor for accelerated age-related illness and disability? *Journal of the American Geriatrics Society*, *47*(1), 60–64. doi:10.1111/j.1532-5415.1999.tb01901.x

Crowell, J. A., Treboux, D., & Waters, E. (2002). Stability of attachment representations: The transition to marriage. *Developmental Psychology*, *38* (4), 467–479. doi:10.1037/0012-1649.38.4.467

Davila, J., & Cobb, R. J. (2003). Predicting change in self-reported and interviewer-assessed adult attachment: Tests of the individual difference and life stress models of attachment change. *Personality and Social Psychology Bulletin*, *29*(7), 859–870. doi:10.1177/0146167203029007005

Dekel, S., Peleg, T., & Solomon, Z. (2013). The relationship of PTSD to negative cognitions: A 17-year longitudinal study. *Psychiatry: Interpersonal and Biological Processes*, *76*(3), 241–255. doi:10.1521/psyc.2013.76.3.241

Derogatis, L. R. (1977). *The SCL-90 manual, I: Scoring, administration, and procedures for the SCL-90*. Baltimore, MD: Johns Hopkins University School of Medicine, Clinical Psychometrics Unit.

Diamond, N. (2001). Towards an interpersonal understanding of bodily experience. *Psychodynamic Counselling*, *7*(1), 41–62. doi:10.1080/13533330010018478

Dieperink, M., Leskela, J., Thuras, P., & Engdahl, B. (2001). Attachment style classification and posttraumatic stress disorder in former prisoners of war. *American Journal of Orthopsychiatry*, *71* (3), 374–378. doi:10.1037/0002-9432.71.3.374

Eisenberger, N. I., & Lieberman, M. D. (2004). Why rejection hurts: A common neural alarm system for physical and social pain. *Trends in Cognitive Sciences*, *8*(7), 294–300. doi:10.1016/j.tics.2004.05.010

Gavriely, D. (2006). Israel's cultural code of captivity and the personal stories of Yom Kippur War ex-POWs. *Armed Forces and Society*, *33*(1), 94–105. doi:10.1177/0095327X05282531

Guest, C., & Venn, A. (1992). Mortality of former prisoners of war and other Australian veterans. *Medical Journal of Australia*, *157*(2), 132–135.

Herman, J. L. (1992). *Trauma and recovery*. New York, NY: Basic Books.

Hourani, L., & Hilton, S. (2002). The long-term psychiatric sequelae of the prisoner of war experience: Findings from Operation Homecoming Vietnam veterans. San Diego, CA: Naval Health Research Center.

Labouvie-Vief, G. (2003). Dynamic integration affect, cognition, and the self in adulthood. *Current Directions in Psychological Science*, *12*(6), 201–206. doi:10.1046/j.0963-7214.2003.01262.x

Maunder, R. G., & Hunter, J. J. (2001). Attachment and psychosomatic medicine: Developmental contributions to stress and disease. *Psychosomatic Medicine*, *63*(4), 556–567. doi:10.1097/00006842-200107000-00006

McWilliams, L. A., & Bailey, S. J. (2010). Associations between adult attachment ratings and health conditions: Evidence from the national comorbidity survey replication. *Health Psychology*, *29*(4), 446–453. doi:10.1037/a0020061

Meredith, P., Strong, J., & Feeney, J. A. (2006). Adult attachment, anxiety, and pain self-efficacy as predictors of pain intensity and disability. *Pain*, *123*(1), 146–154. doi:10.1016/j.pain.2006.02.025

Mikulincer, M., Ein-Dor, T., Solomon, Z., & Shaver, P. R. (2011). Trajectories of attachment insecurities over a 17-year period: A latent growth curve analysis of the impact of war captivity and posttraumatic stress disorder. *Journal of Social and Clinical Psychology*, *30*(9), 960–984. doi:10.1521/jscp.2011.30.9.960

Mikulincer, M., Florian, V., & Tolmacz, R. (1990). Attachment styles and fear of personal death: A case study of affect regulation. *Journal of Personality and Social Psychology*, *58*(2), 273–280. doi:10.1037/0022-3514.58.2.273

Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*. New York, NY: Guilford Press.

Muthén, L., & Muthén, B. (2010). *Mplus user's guide* (Vol. 6.1). Los Angeles, CA: Muthen & Muthen.

Nice, D. S., Garland, C. F., Hilton, S. M., Baggett, J. C., & Mitchell, R. E. (1996). Long-term health outcomes and medical effects of torture among U. S. Navy prisoners of war in Vietnam. *JAMA*, *276*(5), 375–381. doi:10.1001/jama.1996.03540050035020

Ohry, A., Solomon, Z., Neria, Y., Waysman, M., Bar-On, Z., & Levy, A. (1994). The aftermath of captivity: An 18-year follow-up of Israeli ex-POWs. *Behavioral Medicine*, *20*(1), 27–33. doi:10.1080/08964289.1994.9934613

Page, W. F., Engdahl, B. E., & Eberly, R. E. (1991). Prevalence and correlates of depressive symptoms among former prisoners of war. *Journal of Nervous and Mental Disease*, *179*(11), 670–677. doi:10.1097/00005053-199111000-00004

Pavlov, I. P. (2010). Conditioned reflexes: An investigation of the physiological activity of the cerebral cortex. *Annals of Neurosciences*, *17*(3), 136. doi:10.5214/ans.0972-7531

Port, C. L., Engdahl, B., & Frazier, P. (2014). A longitudinal and retrospective study of PTSD among older prisoners of war. *American Journal of Psychiatry, 158*(9), 1474–1479. doi:10.1176/appi.ajp.158.9.1474

Solomon, Z., Dekel, R., & Mikulincer, M. (2008). Complex trauma of war captivity: A prospective study of attachment and post-traumatic stress disorder. *Psychological Medicine*, *38*(10), 1427–1434. doi:10.1017/S0033291708002808

Solomon, Z., Greene, T., Ein-Dor, T., Zerach, G., Benyamini, Y., & Ohry, A. (2014). The long-term implications of war captivity for mortality and health. *Journal of Behavioral Medicine*, *37*(5), 849–859. doi:10.1007/s10865-013-9544-3

Solomon, Z., Horesh, D., Ein-Dor, T., & Ohry, A. (2012). Predictors of PTSD trajectories following captivity: A 35-year longitudinal study. *Psychiatry Research*, *199*(3), 188–194. doi:10.1016/j.psychres.2012.03.035

Sulway, M., Broe, G., Creasey, H., Dent, O., Jorm, A., Kos, S., & Tennant, C. (1996). Are malnutrition and stress risk factors for accelerated cognitive decline? A prisoner of war study. *Neurology*, *46*(3), 650–655. doi:10.1212/WNL.46.3.650

Ursano, R. J., & Benedek, D. M. (2003). Prisoners of war: Long-term health outcomes. *The Lancet*, *362*, s22–s23. doi:10.1016/S0140-6736(03)15062-3

Van der Kolk, B. A. (1994). The body keeps the score: Memory and the evolving psychobiology of posttraumatic stress. *Harvard Review of Psychiatry*, *1*(5), 253–265. doi:10.3109/10673229409017088

Wearden, A., Cook, L., & Vaughan-Jones, J. (2003). Adult attachment, alexithymia, symptom reporting, and health-related coping. *Journal of Psychosomatic Research*, *55*(4), 341–347. doi:10.1016/S0022-3999(02)00635-9