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Suicidal Ideation Among Wives of Former Prisoners of War: A Longitudinal Dyadic Study

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Objectives: The associations between posttraumatic stress disorder (PTSD) and suicidal ideation (SI) among ex-prisoners of war (ex-POWs) has recently been exemplified. Several studies have revealed the toll of war captivity in the secondary traumatization (ST) of ex-POWs' wives. This study aimed to assess SI among ex-POWs' wives and the longitudinal associations between their husbands' PTSD and their own ST. *Method:* A sample of 233 Israeli couples (142 ex-POW couples and a comparison group of 91 veteran couples) completed self-report measures of PTSD symptoms, SI, and depression at two time points: T1 (2003) and T2 (2008), 30 and 37 years after the 1973 Yom Kippur War. *Results:* Among control wives, although not among ex-POWs' wives, the more ST symptoms they reported, the higher their level of SI. Furthermore, for both research groups, husbands' PTSD and wives' ST were positively associated with their own levels of SI, respectively. Autoregressive cross-legged (ARCL) analysis demonstrated that SI at T1 predicted ST at T2 among control wives but not among ex-POWs' wives. Surprisingly, an actor-partner interdependence modeling (APIM) analysis revealed, only among ex-POWs' couples, that the more the husbands suffered from PTSD and SI, the more moderate the increase of the wives' SI was between T1 and T2, thus, leading to better outcomes in terms of the wives' SI. *Conclusions:* Ex-POWs' posttraumatic distress is longitudinally related to their spouses' ST and SI. Clinical implications of these findings of the relations between captivity trauma and suicidality for veteran couples are discussed.

Because more than 1 million people commit suicide every year around the world, suicidal behaviors are considered to be a major public health concern (Nock, Nock, Borges, & Ono, 2012). One of the known powerful predictors of completed

suicide is suicidal ideation (SI) (Suominen et al., 2004), which entails the presence of current thoughts and plans to commit suicide. Reports about the prevalence of SI in the general population have indicated that lifetime prevalence rates of suicidal

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ideation, plans, and attempts were 13.3%, 4%, and 2.2%, respectively (Borges, Angst, Nock, Ruscio, & Kessler, 2008). Several studies have emphasized the close relationship between SI and suicide attempts in different populations (e.g., Kessler, Borges, & Walters, 1999; Nock et al., 2013). Moreover, in a cross-national sample, SI was found to be one of the best predictors of suicidal behavior in the future, above and beyond demographic and psychological factors (Nock et al., 2008). Kessler et al. (1999) found that about 90% of unplanned and 60% of planned first attempts occurred within one year of the onset of SI. In light of its significance and scope, better understanding of the factors associated with SI is of critical importance.

CAPTIVITY AND SUICIDAL IDEATION

A considerable body of research suggests that previous trauma in general, and specifically war-related trauma, has been associated with an increased risk of SI (e.g., Jakupcak et al., 2009). For example, Pietrzak et al. (2010) and Hellmuth, Stappenbeck, Hoerster, and Jakupcak (2012) found that among veteran samples 12.5% and 32.3%, respectively, reported SI. War captivity is considered a unique form of war-related trauma and one of the most severe human-inflicted traumatic experiences (e.g., Solomon, Horesh, Ein-Dor, & Ohry, 2012). Specifically, captivity trauma occurs in circumstances under which prisoners of war (POWs) cannot escape and are deliberately traumatized and often tortured by their captors over a prolonged period of time (Herman, 1992).

The physical conditions and emotional distress during captivity seem to contribute to long-term adverse outcomes and are recognized as a potent pathogen for psychiatric illness. Studies have shown elevated rates of psychological distress, anxiety, depression (e.g., Rintamaki, Weaver, Elbaum, Klama, & Miskevics, 2009), and, most commonly, post-traumatic stress disorder (PTSD; Solomon

et al., 2012). As a consequence of war captivity, high rates of PTSD, ranging from 16% to 88%, have been observed in former prisoner of war (ex-POW) samples (e.g., Rintamaki et al., 2009). A prospective study among Israeli ex-POWs found that 34.7% of ex-POWs and only 2.5% of a matched veterans group met PTSD criteria 35 years after the war (Zerach, Greene, Ein-Dor, & Solomon, 2012).

Few empirical studies have assessed the contribution of both war captivity and PTSD to SI (e.g., Zerach, Levi-Belz, & Solomon, 2014). For example, Hunt et al. (2008) examined the association between captivity and SI and found that 7.5% to 45.5% of Vietnam War ex-POWs reported SI 30 to 40 years after the war ended. Recently, two studies found that Israeli ex-POWs reported higher levels of SI and self-harming behaviors compared to a matched veterans group (Levi-Belz, Zerach, & Solomon, 2015). In addition, SI levels were found to increase over a 17-year period, with PTSD symptoms affecting SI at each measurement point, above and beyond the trajectories of SI (Zerach et al., 2014). The present study extends this research to examine the long-term effects of ex-POWs' PTSD symptoms and SI on their wives' psychological distress.

SECONDARY TRAUMATIZATION AND SUICIDAL IDEATION

A growing body of research shows that the detrimental impact of war trauma may entail long-term consequences for trauma survivors' significant others' psychological states in the form of secondary traumatization (ST). This term refers to those who have come in close contact with a traumatized person and experience emotional distress and display PTSD-like responses, similar to the trauma survivor's exhibited symptoms that are related to his or her identified trauma (Figley, 1995). War-related ST has been noted among wives of traumatized combat soldiers (Renshaw, Rodrigues, & Jones, 2008), wives of peacekeeping soldiers (Dirkzwager, Bramsen, Adlr, & van der Ploeg, 2005),

and wives of ex-POWs (Zerach, Greene, & Solomon, 2015).

It is plausible that wives of ex-POWs are at increased risk for ST and SI, as they often serve as the main source of support for their husbands and spend a considerable amount of time with them (Hall & Simmons, 1973). As ex-POWs are known to be an at-risk population for higher PTSD rates, compared to other veterans (e.g., Solomon et al., 2012), a recent study has shown that wives of ex-POWs with PTSD also exhibited higher distress in terms of ST and psychiatric symptoms (Greene, Lahav, Bronstein, & Solomon, 2014). Furthermore, many problems reported by ex-POWs are related to the marriage framework (e.g., Solomon, Dekel, & Mikulincer, 2008), with ex-POWs showing increased rates of divorce (Nice, McDonald, & McMillian, 1981) and marital aggression (O'Donnell, Cook, Thompson, Riley, & Neria, 2006). This may be due to the interpersonal nature of the traumatic experience, which can cause severe damage to the individual's sense of trust and belief in others (Herman, 1992). This, in turn, intrinsically interferes with intimate relationships and may cause distress in ex-POWs' partners (Zerach & Solomon, 2015).

The literature suggests that war-related ST is not limited to PTSD-like symptoms but rather includes a broad range of general distress manifestations (e.g., mood and anxiety symptoms; Renshaw et al., 2011). However, exploration of the relationship between war-related ST and SI has been limited. One study found that even 12 years after the war in Bosnia and Herzegovina, wives of veterans diagnosed with PTSD reported higher levels of SI relative to a control group of wives of veterans without PTSD (Klarić et al., 2012). In another study that examined wives' stress as a function of being in a relationship with a veteran with PTSD, it was found that 15% of the women reported SI (Manguno-Mire et al., 2007). A question remains regarding the possible SI among ex-POWs' wives and its association with their ST and their husbands' PTSD

symptoms and SI symptoms (Zerach et al., 2014).

INTERACTION OF HUSBANDS' PTSD AND WIVES' ST

A few studies among veteran couples have reported that wives' ST is correlated with their husbands' PTSD symptom severity (e.g., Riggs, Byrne, Weathers, & Litz, 1998). For example, Ahmadi, Azampoor-Afshar, Karami, and Mokhtari (2011) examined Iranian combat veterans and their wives and found that the duration of the husbands' PTSD significantly predicted the wives' ST. Furthermore, among ex-POWs' wives, the relationships between the husbands' prior captivity and the wives' ST and general psychiatric symptomatology were mediated by the husbands' PTSD symptoms (Greene et al., 2014). A meta-analysis conducted by Lambert, Engh, Hasbun, and Holzer (2012) showed a moderate effect for survivors' PTSD on partners' psychological distress, with a stronger effect seen among military samples.

Much research has been devoted to understanding the link between the mental state of individuals and their spouses (for a review, see Meyler, Stimpson, & Peek, 2007). Clinical (e.g., Benazon & Coyne, 2000), non-clinical (e.g., Butterworth & Rodgers, 2006), and longitudinal studies (e.g., Holahan et al., 2007) have shown that exposure to significant others who suffer from major depressive disorder may increase the probability for a diagnosis of depression for spouses. In a meta-analysis it was found that, over time, couples tended to have similar attributes and mind-sets that determined, to some extent, the similarity of emotional responses to situations, which led to the development of depressive thinking (Joiner & Katz, 1999). However, to our knowledge, no studies have examined couples' bidirectional effect in the context of SI. This study aims to fill this gap by examining the relations between veterans' SI and their spouses' SI.

The bidirectional cognitive-behavioral interpersonal model of Monson, Fredman, and Dekel (2010) provides a systemic framework for understanding the interactions between veterans' and their wives' reactions to trauma and SI. This model points to overlapping behavioral (e.g., classical conditioning processes), cognitive (e.g., disrupted schema of safety), and emotional (e.g., guilt, shame, anger) mechanisms that affect an individual's PTSD, ST, and relationship adjustment. These factors were also found to interact at the dyadic level and affect both spouses' psychological distress and their close relationship dimensions (e.g., intimacy, cohesion). The systemic process of this model potentially leads to outcomes that are at times adaptive and promote recovery, and at other times maladaptive and influence the chronicity of the veterans' PTSD, wives' ST, and both spouses' marital relations.

Unfortunately, bidirectional theoretical models have not been subjected to systematic and rigorous scientific investigation. As a result, empirical evidence for the mutual effects between husbands' PTSD and SI, and wives' ST and SI, are very limited (e.g., Zerach, Horesh, Ein-Dor, & Solomon, 2012). Thus, in the present study we aim to examine the bidirectional associations between husbands' PTSD and SI, and wives' ST and SI, factors which have previously been assessed through only one spouse at the dyadic level of analysis. Understanding that the clinical picture of traumatic residue is in constant change over the years and acts as a function of both partners' distress, there is a call for studies that will shed light on the dynamic interactions between husbands' and wives' psychopathology.

This study aims to assess SI among ex-POWs' wives and the longitudinal associations with their husbands' PTSD and their own ST. In particular we hypothesize the following:

H1: Ex-POWs' wives with ST symptoms will report higher levels of SI compared to ex-POWs' wives without ST

symptoms and control wives, above and beyond depression level.

H2: At the within-person level, we hypothesize that among ex-POWs' wives the levels of ST over time will be positively associated with a higher level of SI over time.

H3: At the dyadic level, we hypothesize that an increase in wives' SI over time will be associated with husbands' PTSD severity, above and beyond wives' own ST symptoms severity.

H4: An increase in wives' SI over time will be associated with husbands' SI severity, above and beyond wives' own SI in T1.

METHODS

Participants

This study constitutes part of a larger longitudinal study assessing the psychosocial impact of war captivity (for more details, see Dekel, Peleg, & Solomon, 2013). The sample consisted of 233 Israeli couples in which the husband was a veteran of the 1973 Yom Kippur War. The sample was divided into the following two groups: (a) 142 ex-POWs and their spouses and (b) 91 control couples in which the husband fought on the same fronts as the ex-POWs but was not held captive, and their spouses. 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, combat exposure, and military rank. Data were collected from husbands at three time points (1991, 2003, 2008–2010) and from wives at two time points (2003–2004, 2010–2011). The current study utilizes data collected from the husbands and wives at 2003–2004 (T1) and 2008–2011(T2).

Ex-POWs and controls did not differ at T2 in 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 and 5% of controls had divorced), number of children ($M = 3.27$, $SD = 1.12$, for ex-POWs; $M = 3.24$, $SD = 1.33$, for controls), education, religiosity, or income. Mean number of years of schooling was 13.97 ($SD = 3.93$). Over 60% of the participants in both groups (61.7%) defined themselves as secular; 16.3% assessed their income as lower than average, 25.3% as average, 26.7% as a somewhat higher than average, and 29.5% as much higher than average. No significant differences were found between those who participated in the follow-up assessments with regard to rank, age, education, or level of PTSD in 1991.

Ex-POWs' Wives

According to Israel's Ministry of Defense (MOD), 240 combat veterans from the Israeli infantry were captured during the Yom Kippur War and held in either Egypt or Syria for between one and eight months. Of the 144 ex-POWs who took part in the 2003–2004 measurement, 111 were married or had a partner; and 82 of their wives participated in T1 (2004; 74% response rate). Of the 183 ex-POWs who participated in 2008–2010 measurement point, 147 were married or had a partner, and 116 of their wives participated in T2 (2010–2011; 79% response rate).

Control Wives

The control veterans were sampled from Israel Defense Forces (IDF) computerized data banks. They served in the same units as the ex-POWs and were matched to the ex-POWs for personal and military background characteristics. Of the 143 combat veterans who participated in the 2003–2004 measurement, 102 were married or had a partner and 74 of their wives agreed to

participated in T1 (2004; 73% response rate). Of the 118 combat veterans who partook in the 2008–2010 measurement, 103 were married or had a partner; 56 of their spouses participated again in T2 (2010; 54% response rate).

The demographic data for the wives sample obtained in T2 revealed no significant differences between the groups of wives in terms of country of birth, age, number of children, years of marriage/cohabitation, religiosity, or employment status. Wives' ages ranged from 43 to 79 years old ($M = 58.28$, $SD = 5.79$). The duration of their marriage/cohabitation ranged from 2 to 60 years ($M = 34.20$, $SD = 9.19$), and they had an average of 3.23 children ($SD = 3.00$). Of all the wives, 47.7% had full-time jobs, 20.9% had part-time jobs, and 31.4% were unemployed. The groups differed in the level of education. Spouses of ex-POWs had fewer years of education ($M = 14.16$, $SD = 3.20$) compared to control spouses ($M = 15.50$, $SD = 2.92$).

Measures

Posttraumatic Stress and ST

Husbands' PTSD symptoms and wives' ST symptoms were measured via the PTSD Inventory (PTSD-I; Solomon et al., 1993), a well-validated, 17-item, self-report questionnaire. The items on the PTSD-I correspond to the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (*DSM-IV-TR*), diagnosis for PTSD (American Psychiatric Association, 2000). Respondents rated symptoms experienced in the previous month on a scale ranging from 1 (*Not at all*) to 4 (*Almost always*). Wives' ST scores were obtained by asking wives to rate their own posttraumatic symptoms specifically anchored to their husbands' experiences of combat or captivity (e.g., "When I see or hear things that recall my partner's captivity I have more severe sleep disturbances or oversensitivity to noise"). Husbands' current PTSD scores were

obtained by asking husbands to rate their posttraumatic symptoms related to their own combat or captivity experiences. The number of positively endorsed symptoms were calculated by counting the items in which the respondents answered 3 (*Often*) or 4 (*Almost always*), as these responses best capture the DSM-IV-TR criteria of “persistent” experiencing of these symptoms. Thus, the PTSD-I score was treated as a continuous variable. The PTSD-I has proven psychometric properties in terms of high test-retest reliability ($\alpha = 0.93$; Schwarzwald, Solomon, Weisenberg, & Mikulincer, 1987), concurrent validity, and convergent validity compared with structured clinical interviews conducted by trained psychiatrists and mental health professionals (Solomon, 1988). The PTSD-I reliability values for wives’ ST were $\alpha = .91$ for T1 and $\alpha = .90$ for T2. Cronbach’s alpha for husbands’ PTSD were $\alpha = .95$ for T1 and $\alpha = .95$ for T2.

Suicidal ideation symptoms. Suicidal ideation symptoms were assessed using two items out of the Symptom Checklist-90 (SCL-90), which is known as one of the most widely used measures of multiple aspects of psychological distress in clinical practice and research (Derogatis & Lipman, 1977). In our study, participants were asked to indicate how frequently they experienced each symptom during the past two weeks on a 5-point distress scale (from 0 = *Not at all* to 4 = *Very much*). The two items we used were “Thoughts about ending your life” and “Thoughts about death.” Due to the strong correlations between the two items at each measurement time ($r = .46$ to $r = .57$), we calculated the mean score of the two items as the SI index, with a range of 0 to 5. Based on norms for psychiatric outpatients (Derogatis & Lipman, 1977), scores above .73 were considered an indication of passing the clinical cutoff score. The SCL-90 has high concurrent validity, and the specific subscales display high empirical agreement across various samples (Derogatis, Rickels, & Rock, 1976; Peveler & Fairburn, 1990) and have been widely used in the Israeli

population (Solomon, Shklar, & Mikulincer, 2005). In this study, SI indexes reliability values for wives were $\alpha = .64$ for T1 and $\alpha = .49$ for T2. Cronbach’s alpha for husbands’ PTSD were $\alpha = .68$ for T1 and $\alpha = .69$ for T2.

Depressive symptoms. Depressive symptoms were assessed using the depression subscale of SCL-90 without the two SI items (i.e., five items; Derogatis & Lipman, 1977). Participants were asked to indicate how frequently they experienced each symptom during the past two weeks on a 5-point distress scale. For each participant, we calculated the average frequency of experiencing depressive symptoms at each of the time points. The SCL-90 has high concurrent validity, and the specific subscales display high empirical agreement across various samples (Derogatis et al., 1976; Peveler & Fairburn, 1990) and have been widely used in Israeli population (Solomon, Shklar, & Mikulincer, 2005). The depressive symptoms variable was used as a statistical control variable.

In this study, depressive symptoms reliability values for wives were $\alpha = .91$ for T1 and $\alpha = .90$ for T2. Cronbach’s alpha for husbands’ depressive symptoms were $\alpha = .87$ for T1 and $\alpha = .89$ for T2.

Procedure

Husbands and wives were located through contact information provided in previous waves of the longitudinal study (Dekel et al., 2013; Greene et al., 2014). Potential participants were sent a letter in which we introduced the present study and informed them that research assistants (licensed social workers) would contact them in the following weeks. After receiving an explanation of the aim of the present study, participants were offered the option of completing research questionnaires either in their homes or at a location of their choice. Informed consent was obtained from all participants. Approval for this study was given by the Tel Aviv University Ethics Committee.

Data Analyses

To test our hypotheses, we started with descriptive data of intercorrelations between the study variables among research groups. Next, we conducted a hierarchical regression analyses that was followed by probing interaction terms with the Preacher, Curran, and Bauer (2006) procedure (simple slopes method). In this approach one chooses several conditional values of z at which to evaluate the significance of the simple slope for the regression of y on x . In the current study we separated ST into two by adding and subtracting one standard deviation from the value for each participant (i.e., high ST and low ST) and left the study group variable dichotomous. Following that, we examined the bidirectional association between wives' ST and SI between T1 and T2. To this end, we employed an autoregressive cross-legged (ARCL) modeling strategy (e.g., Anderson, 1960), which allows for simultaneous assessment as to whether earlier measures of ST predict later measures of SI, and whether earlier measures of SI predict later measures of ST. Finally, we computed an actor-partner interdependence model (APIM; Kashy & Kenny, 2000), a data-analytic procedure designed to address violations of statistical independence that occur with dyadic data. To assess the appropriateness of the APIM, we used Mplus, Version 6, software (Muthén & Muthén, 1998–2010). All analyses were carried out with depressive symptoms as a covariate.

The sample was defined by three criteria: (1) participants who have been assigned to a study group, (2) with a serial number that allows the identification of her spouse, and (3) at least one data report on wives' main study variables at either T1 or T2. Accordingly, the present sample comprised 142 ex-POW couples and 91 control couples. Examination of the main study variables among this sample has shown that 25.94% of the information was missing. To assess whether the attrition was missing completely at random (MCAR), we conducted Little's (1988) MCAR test. The

analysis revealed that the data were not missing completely at random, $\chi^2(578) = 764.13$, $p < .001$. Accordingly, statistical analysis on participants with complete information (common method of listwise deletion) could lead to severe bias in research results. Therefore, to deal with missing information, we employed the method of multiple imputation (Rubin, 2009) using IBM SPSS Statistics, Version 21.

RESULTS

Associations Between ST Symptoms, SI, and Depressive Symptoms

Our first aim was to examine the interrelations between ST symptoms, SI, and depressive symptoms among wives only. As seen in Table 1 among ex-POWs' wives results revealed significant positive relations between ST and depressive symptoms and SI at each measurement point. Furthermore, SI at T1 was positively related to ST symptoms at T2.

The Contribution of the Study Group (Ex-POWs' Wives versus Control Wives) and ST Symptoms to SI

We next examined the hypothesis that ex-POWs' wives with ST symptoms will report higher levels of SI compared to ex-POWs' wives without ST symptoms and control wives, above and beyond the level of depression. To test this we conducted two hierarchical regression analyses. In the first analysis we examined the contribution of study variables to SI in T1. In the first step of the analysis, we entered the depression variable to control its association with SI. In the second step of the analysis, we entered the research group variable (ex-POWs' wives = 0.5, controls' wives = -0.5) and the ST symptoms as predictors. This step allowed us to examine the contribution of the study group and ST symptoms to explain SI above and beyond the contribution of depressive symptoms. In the last step, we added the interaction between

TABLE 1. Pearson Correlation Coefficients of Secondary Traumatization Symptoms, Suicidal Ideation, and Depressive Symptoms Among Ex-POWs' and Control Wives at T1 and T2

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---------------------|--------|--------|--------|--------|--------|--------|
| 1. ST symptoms (T1) | — | .68*** | .51*** | .31*** | .41*** | .50*** |
| 2. ST symptoms (T2) | .78*** | — | .42*** | .50*** | .45*** | .70*** |
| 3. SI (T1) | .22** | .34*** | — | .47*** | .63*** | .43*** |
| 4. SI (T2) | .16 | .30*** | .58*** | — | .40*** | .56*** |
| 5. Depression (T1) | .68*** | .67*** | .25** | .12 | — | .54*** |
| 6. Depression (T2) | .54*** | .69*** | .08 | .23** | .56*** | — |
| <i>M</i> | 1.86 | 5.16 | .43 | .49 | .65 | .73 |
| <i>SD</i> | .50 | 3.27 | .38 | .46 | .41 | .42 |

Note. Ex-POWs' wives ($N = 142$) correlations are presented below the diagonal; controls' wives ($N = 91$) correlations are presented above the diagonal. ST = secondary traumatization; SI = suicidal ideation.

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

TABLE 2. Predicting Suicidal Ideation in T1 and Changes in Levels of Suicidal Ideation Between T1 and T2 by Depressive Symptoms, Research Group, and Secondary Traumatization

| Predicting Variables | SI at T1 | | | | Change in SI | | | |
|----------------------|----------|---------|---------|-------------|--------------|-----|---------|-------------|
| | <i>b</i> | SEB | β | $R^2\Delta$ | <i>b</i> | SEB | β | $R^2\Delta$ |
| Step I | | | | | | | | 29.2** |
| SI at T1 | | | | | .64 | .06 | .54*** | |
| Step II | | | | 14.9** | | | | 0.0 |
| SI at T1 | | | | | .65 | .07 | .54*** | |
| Depression (T1) | .36 | .05 | .38*** | | -.02 | .07 | -.02 | |
| Step III | | | | 0.8 | | | | 1.2 |
| SI at T1 | | | | | .66 | .07 | .55*** | |
| Depression (T1) | .30 | .07 | .33*** | | -.04 | .08 | -.04 | |
| ST (T1) | .03 | .03 | .09 | | .03 | .03 | .07 | |
| Research group | .01 | .05 | .01 | | -.12 | .06 | -.13* | |
| Step IV | | | | 3.6** | | | | 0.0 |
| SI at T1 | | | | | .66 | .07 | .55*** | |
| Depression (T1) | .30 | .07 | .32*** | | -.04 | .08 | -.04 | |
| ST (T1) | .11 | .04 | .29** | | .02 | .04 | .05 | |
| Research group | -.08 | .06 | -.11 | | -.11 | .07 | .11 | |
| ST* research group | -.23 | .07 | -.25*** | | .02 | .08 | .02 | |
| R^2 | | 19.3*** | | | | | 30.5*** | |

Note. ST = secondary traumatization; SI = suicidal ideation. Note that the second analysis examines changes over time.

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

the study group and ST symptoms to examine whether ex-POWs' wives with ST symptoms will report higher levels of SI compared to the other groups. To allow easier interpretation of results and to avoid multicollinearity, ST and depression variables were transformed into z scores before inclusion in the regression.

As can be seen in Table 2, the results show that with higher levels of depressive symptoms, the level of SI increases. Furthermore, it was found that as the level of ST symptoms increased (independent of the study group), the level of SI was higher, even after controlling for depression. Importantly,

we found a significant interaction between the study group and ST symptoms. To probe the interaction we used the Preacher et al. (2006) procedure. Contrary to what we hypothesized, we found that, among ex-POWs' wives, ST symptoms did not contribute to the explanation of SI ($b = -0.001, p = .98$). In contrast, among control wives, the more ST symptoms that were reported, the higher the level of SI ($b = .24, p = .001$).

The second analysis examined the contribution of study variables to the change in SI level from T1 to T2. To do so, we entered the SI variable in T1 in the first step of the analysis. This allowed examination of the change in the level of this variable relative to the SI outcome variable in T2. The following steps were the same as the first hierarchical regression. To allow easier interpretation of results and to avoid multicollinearity, ST and depression variables were transformed into z scores before inclusion in the regression. As can be seen in Table 2, results show a significant contribution of SI in T1 to the explanation of SI at T2, thus pointing to stability of SI over time. However, above and beyond the contribution of SI in T1, only the research group contributed significantly to the explanation of the change in SI between T1 to T2. In general, there was a tendency toward a slight increase in SI throughout the study, from 0.44 to 0.50. It was found that among ex-POWs' wives this increase was more moderate than in the control wives.

Bidirectional Associations Between ST Symptoms and SI Over Time Among Ex-POWs' Wives and Control Wives

Our second aim was to examine the bidirectional association between ST and SI over time from T1 to T2 by research group. To this end, we employed a multigroup ARCL modeling strategy (e.g., Anderson, 1960), which allowed for simultaneous assessment as to whether earlier measures of ST predict changes in levels of SI between T1 to T2, and whether earlier measures of SI predict changes in levels of ST between T1 to

T2. As noted, the model was tested by Mplus, Version 6, software (Muthén & Muthén, 1998–2010), which is operated in a structural equation model (SEM) environment. We estimated the model's fit by using the comparative fit index (CFI), Tucker-Lewis index (TLI), and the root mean square error of approximation (RMSEA). A model is judged as reasonably fitting the data when CFI and TLI are larger than .95 (Bollen & Curran, 2006) and RMSEA is less than 0.05.

Figure 1 presents the bidirectional relations between ST and SI over time, by research group. The model had an excellent fit for the observed data, $\chi^2(2) = 1.54, p = .46, CFI = 1, TLI = 1, RMSEA = .00$. The analysis revealed that the stability of ST over time, as well as the stability of SI, were noticeably high for both groups. Wives with high levels of ST or SI at T1 tended to have correspondingly high levels of either ST or SI at T2. Furthermore, contrary to the hypothesis, among ex-POWs we did not find a mutual contribution of ST and SI. Thus, the level of ST did not contribute to the explanation of the change in SI and, alternatively, SI did not contribute significantly to the explanation of the change in ST. However, among the control wives, it was found that if the SI level in T1 was higher, the increase in ST level between T1 to T2 was higher (on average the ST level rose from 1.87 at T1 to 5.16 at T2). In contrast, ST did not contribute significantly to changes in SI.

Dyadic Effects of PTSD and ST Symptoms to the Change in SI Over Time by Research Group

Our third aim was to examine the effects of PTSD and ST symptoms of husbands and wives on the change in SI from T1 to T2 for both husbands and wives. To do so, we computed an APIM. The APIM estimates two kinds of effects: actor effects and partner effects. In our case, actor effects were the effects of the husbands' PTSD or SI (T1) on his SI (T2) and the effects of the wives' ST or SI (T1) on her SI (T2).

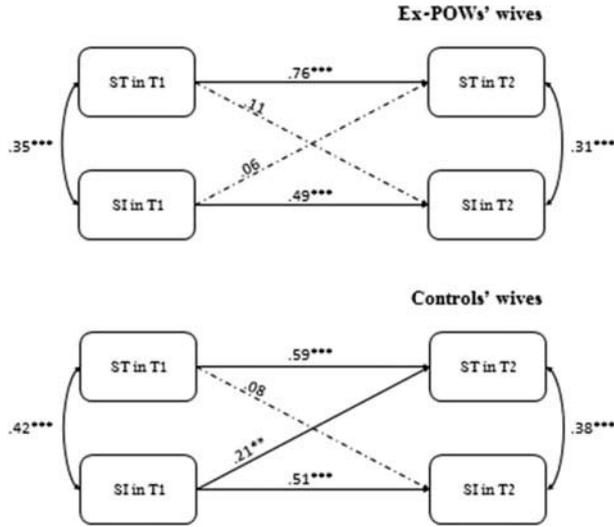


FIGURE 1. Multigroup ARCL model to examine the long-term interdependence between secondary traumatization and suicidal ideation by research group.

Partner effects were the effects of the husbands' PTSD or SI (T1) on the wives' SI (T2) and the effects of the wives' ST or SI (T1) on the husbands' SI (T2). That is, the APIM provides separate, statistically independent tests of actor and partner paths, in which each of the paths' effects is estimated while controlling for the other path. With this approach, the dyad is treated as the unit of analysis, and actor and partner effects are tested with the proper degrees of freedom (see Kenny, Kashy, & Cook, 2006).

As can be seen in Figures 1 and 2, the multigroup APIM model showed reasonable fit for the observed data, $\chi^2(4) = 5.99$, $p = .20$, CFI = .99, TLI = .91, RMSEA = .06. The model shows that for both groups, actor effects of the husbands' PTSD symptoms positively contributed to the increase of his SI over time, and that wives' SI positively contributed to her increase in SI over time. Among ex-POWs' wives, but not among control wives, husbands' SI positively contributed to his increase in SI over time. As for the partner's effects, significant differences were found among the processes of research groups. Among ex-POWs' wives,

but not among control wives, the more the husband suffered from PTSD symptoms and SI, the more moderate the increase in his wife's SI. Thus, an increase in ex-POWs' psychopathology was associated with better outcomes among their wives in terms of SI.

DISCUSSION

This study aimed to shed light on the longitudinal associations between ex-POWs' PTSD and SI and their wives' ST and SI. At the individual level, our findings showed that while ex-POWs' wives suffer from higher levels of ST compared to control wives, there were no significant differences between the groups in SI. Moreover, while among control wives there was a significant positive association between ST and SI, among ex-POWs' wives ST symptoms did not contribute to the explanation of SI. While these results may emphasize that these wives tend to be less vulnerable to SI, even when dealing with a difficult emotional situation, it can also be accounted for by the statistical procedure of controlling for depression,

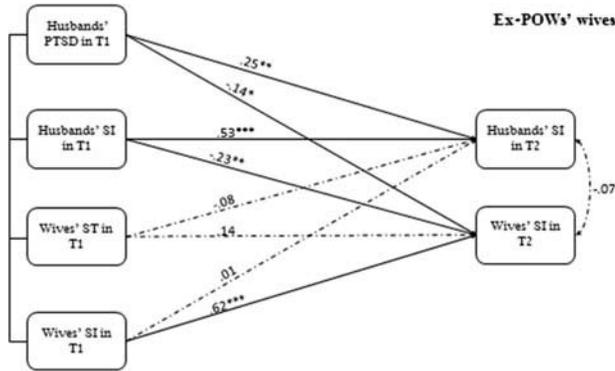


FIGURE 2. The APIM model for the dyadic effects of husbands' PTSD and wives' secondary traumatization to change in suicidal ideation among ex-POWs' wives.

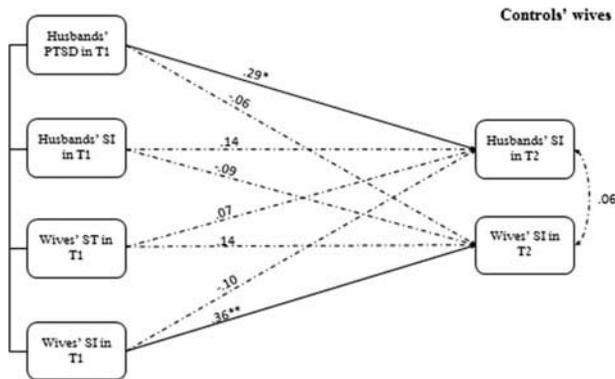


FIGURE 3. The APIM model for the dyadic effects of husbands' PTSD and wives' secondary traumatization to change in suicidal ideation among controls' wives.

given the high significant correlation between depression and SI in our sample and in the literature (Nock, 2014; Nock et al., 2008).

In general, while some studies found significant differences in several emotional symptoms between veterans' wives and control wives (e.g., Klarić et al., 2012), our results are in line with studies that found no differences between ex-POWs' wives and non-ex-POWs' wives in these variables (e.g., Dent et al., 1998). Yet, to our knowledge, our study is the first to show low levels of SI among ex-POWs' wives.

At the dyadic level, the actor-partner effects emphasized that ex-POWs wives' SI

level is related to the husbands' distress. Indeed, few studies have documented elevated levels of SI among wives of veterans with PTSD (e.g., Manguno-Mire et al., 2007). However, we found that, compared to control wives, among ex-POWs' wives the more the husbands suffered from PTSD symptoms and SI, the more moderate the increase in the wives' SI. It seems that the wives' SI is greatly influenced by the PTSD symptom severity of the ex-POWs. Surprisingly enough, the influence is of a negative direction—meaning that as husbands become psychologically symptomatic and more suicidal, their wives reported less SI.

A large body of research indicates that an emotional crisis, such as captivity, experienced by a family member often brings about a major threat to the family's structure, functioning, satisfaction, and cohesion (e.g., Dekel & Monson, 2010). This is especially true for ex-POWs' wives, as they likely serve as the central source of support for their spouses upon their return home (Zerach & Solomon, 2015). In other studies, wives of ex-POWs have reported higher levels of ST and lower levels of marital adjustment compared to wives of comparison veterans (e.g., Hall & Simmons, 1973). One can assume that SI is another psychological factor that increases in the face of the harsh reality of living with an ex-POW. However, our study highlights that the psychological distress that characterizes ex-POWs' wives is not reflected in suicidality. These results raise a question regarding the explanations for such unexpected exceptional findings.

A possible explanation for these results is related to the wives' perception of their roles in the marital relations with their husbands. Previous studies have shown that ex-POWs' SI is closely related to their captivity and PTSD (Levi-Belz et al., 2015). It could be that being married to an ex-POW with PTSD and, at times, SI, demands consistent intervention and intensive care, which is typically provided by the wife. Indeed, findings have indicated that ex-POWs' wives saw themselves as responsible for their husbands' well-being, often at the expense of their marital relations and their personal needs (Dekel, Goldblatt, Keidar, Solomon, & Polliack, 2005). Such a major burden might put wives at risk for role change from wife to mother or caregiver (Beckham, Lytle, & Feldman, 1996). These women are in a constant state of readiness to help their spouses and sometimes serve as a safety net in matters of life and death. In this atmosphere of responsibility and maternal caregiving, it is possible that wives cannot let themselves become suicidal, attempt suicide, or even begin to think about suicide. Due to the

wives' commitment and responsibility, they do not even contemplate it. From this perspective, suicide may be viewed by them as a symbol of an ultimate desertion of the relationship.

The theory of ambiguous loss (Boss, 2007) explains that the most severe stressors are ambiguous and their resolution is not always possible. When an ex-POW suffers from ambiguous loss as well as PTSD, he may no longer function effectively as a family member and might be less involved with the family compared to his precaptivity or pre-PTSD involvement. This increases the probability for boundary ambiguity regarding roles and functions in the family. Indeed, Bernstein (1998), found that ex-POWs' wives experienced feelings of abandonment, role ambiguity, and suppressed anger. It is suggested that ex-POWs' wives might have been compelled to take on the role of their husbands (i.e., child support, main provider) and thereby denied their own needs. This chain of reactions may not only have possible long-term negative psychological consequences in ST symptoms but also increase the possibility for overresponsibility for the family unit that inhibits wives' expression of SI. It is thus recommended that clinicians treating ex-POWs' wives have an awareness that no reports of SI are by no means an indication of no psychological distress, and it still calls for further investigation, particularly in consideration of the arduous situation of burden and demand these wives are experiencing.

Another line of thought is that wives' psychological deterrence for suicide ideation is magnified by the cultural perception of POWs in Israel and the sanctified value they hold in society: the idea that you do not abandon a wounded soldier. The husband was sent to defend Israeli society and as a result was injured, and now he is in need of society's support. The wife, as part of the society, is therefore expected to stay with him and help him (Lieblich, 1997). This cultural mission is also extended to their offspring. Hence, in situations of "ambiguous

loss,” in which the father is physically present but psychologically absent (Boss, 1991), thinking about suicide is not seen as a legitimate option.

Yet another possible explanation for the negative correlation between the ex-POWs' levels of SI and wives' SI is the reluctance of the wives to report SI due to their specific family situation. In other words, when the husband is experiencing SI and PTSD, and confronting high levels of depression, it may be difficult for the wives to admit their own SI, even if it is there. This line of thought emphasizes that although the wives did not show high levels of SI, they may still need to be considered an at-risk group for suicidal thoughts and behavior.

This study has number of methodological issues that should be noted. First, due to the attrition of participants between measurements, the sample may be somewhat selective. Furthermore, our sampling criterion was that there must have been at least one report on the main study variables regarding wives at either T1 or T2. This approach might bias results on account of including participants who did not have two complete measurements of data. Second, the use of self-report measures, although very common in trauma studies, entails the risk of a reporting bias (e.g., social desirability), and this is especially true when addressing the sensitive issue of SI. Future studies should consider gathering data from multiple

informants, such as the participants' therapists, and use objective measures, such as observation of actual functioning. Third, the lack of precombat assessment of personal and interpersonal functioning strongly limits our ability to infer causality. Thus, one cannot negate the contention that the current report of SI of husbands and wives could be related to pretrauma conditions that may have contributed to the results, above and beyond captivity experiences. Last, our assessments did not cover the entire span of the first 18 years since the end of the war. Therefore, we were unable to monitor changes in the course of ST and SI, as well as changes in dyadic adjustment, between 1973 and 1991.

To conclude, despite the limitations, this study yielded several important findings. This is the first study to report on long-term and enduring SI among ex-POWs' wives. The findings suggest that while wives of ex-POWs are susceptible to ST, they are less vulnerable to SI over the years since captivity, as compared to control wives. Moreover, this study found that the SI of ex-POWs' wives is associated with the mental state of the husbands. This may reflect that the wives' SI is an interpersonal characteristic that responds to the husbands' condition. In addition, the findings suggest that ex-POWs' wives personally taking on a maternal role that makes them feel as if they are “on a mission” but also creates an attunement to the ex-POWs' needs.

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