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BRIEF REPORT



## Gender differences in posttraumatic stress symptoms among former prisoners of wars' adult offspring

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### ABSTRACT

**Objectives:** The lifetime risk for posttraumatic stress disorder (PTSD) and PTSD symptoms (PTSS) among primary and secondary female victims is known to be higher than for male. This study assessed gender differences in PTSS among former prisoners of war's (ex-POWs) adult offspring and the associations with their fathers' and mothers' PTSS and the parental bonding with them.

**Design:** A correlative study.

**Methods:** A sample of 79 Israeli father–mother–offspring ex-POW triads from the 1973 Yom Kippur War completed self-report measures. Fathers were assessed in 2008, mothers were assessed in 2011 and their adult offspring took part in 2014.

**Results:** Sons of ex-POWs reported higher levels of PTSS as compared to daughters of ex-POWs. However, fathers' PTSS was positively related to daughters' PTSS, but not significantly related to sons' PTSS. Daughters' PTSS were also associated with both parents' lower care and higher overprotection, while sons' PTSS were associated only with fathers' lower care and higher overprotection.

**Conclusions:** Among adult offspring of ex-POWs, sons are at greater risk for psychological distress in the form of PTSS. Nevertheless, the intergenerational transmission of captivity-related PTSS from both fathers and spouses to their offspring is more prominent among daughters of ex-POWs.

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## Introduction

One of the recurrent findings in the psycho-traumatology literature is the gender differences in post-traumatic stress disorder (PTSD) and PTSD symptoms (PTSS) (Tolin & Foa, 2006). There is extensive evidence, across different nations, range of traumatic events and assessment instruments, for higher rates of PTSD and stronger intensity of PTSS among women than men (e.g. Chapman et al., 2012). Moreover, even though men experience higher rates of potentially traumatic events (PTEs), women have about a twofold higher risk of being diagnosed with PTSD (Pietrzak, Goldstein, Southwick, & Grant, 2011). Specifically, a recent meta-analysis found that, among others, female gender is a significant risk factor of combat-related PTSD among military veterans and personnel (Xue et al., 2015).

The Fifth edition of *The Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013) noted that beside direct exposure to PTE, a repeated or extreme indirect exposure to aversive details of a PTE can potentially lead to PTSD. Thus, as previously suggested by the concept of “secondary traumatization” (ST), family members who come into close contact with a

traumatized victim may indirectly display PTSD-like responses similar to those exhibited by the primary victim (Diehle, Brooks, & Greenberg, 2016). Nevertheless, the present study aims to explore whether secondary victims of traumatic events will endorse higher levels of PTSD and PTSS among women than men, similar to the pattern of findings that has been observed in primary victims.

Only a limited number of studies have examined gender differences in PTSD or PTSS among family members of primary victims. A recent review (Baum, 2014) and a meta-analysis (Baum, Rahav, & Sharon, 2014) concluded that, without having experienced the traumatic event itself, females in the family have higher susceptibility for PTSS than the males. Among the reviewed studies, even fewer focused on gender differences among traumatized victims' offspring (e.g. Yehuda, Bell, Bierer, & Schmeidler, 2008). The results of these studies also show higher rates of PTSD and higher levels of PTSS among daughters as compared to sons (e.g. O'Toole et al., 2016). However, these studies are characterized by substantial diversity in terms of offspring age, sample size and the referred index trauma. In the present study we aim to explore possible gender differences in former prisoners of wars (ex-POWs)' adult offsprings' indirect PTSS and its associations with their fathers' and mothers' PTSS and parental bonding.

Another important and related area of inquiry is the role of parent gender vis-à-vis offspring gender, in the intergenerational transmission of trauma. As parents may have more significant influence on same-sex offspring (e.g. Burgess-Proctor, Huebner, & Durso, 2016; Deater-Deckard & Dodge, 1997; Kosty et al., 2015), father-son dyads might be more profoundly associated as compared to opposite-sex offspring (e.g. father-daughter). However, does this pattern of association still apply when veterans are the primary victims and the partner (i.e. offspring's mother) also suffers from secondary PTSS? A recent study among Australian Vietnam veterans' families found that PTSD in a veteran father, but not mother, was linked to PTSD in his offspring. The odds for sons' PTSD (due to various PTEs) were a bit higher than daughters in the face of their fathers' PTSD (O'Toole et al., 2016). Other studies found the opposite. For example, Yehuda et al. (2008) found that among Holocaust survivors' families, the presence of maternal, not paternal, PTSD was associated with their PTSD in adult offspring. While there was no discrepancy in the effect of maternal PTSD for sons' and daughters' PTSD, paternal PTSD increased the risk for PTSD in daughters compared to sons.

These differences in study findings might be explained by the nature of parents' traumatic experiences, but also by the role of both parents as primary victims (Yehuda et al., 2008) as compared to parents with one primary and a spouse as a secondary victim (O'Toole et al., 2016). The ex-POWs' wives are known themselves as secondary victims who experienced high levels of distress and PTSS (Solomon, Dekel, Zerach, & Horesh, 2009). Yet, they retain their parental and spousal roles, regardless of their victimization and the sharing of the burden and the pain of the primary survivor (Ein-Dor, Doron, Solomon, Mikulincer, & Shaver, 2010). Given the notion that parents may have more significant influence on same-sex offspring, mothers who are secondary victims might provide a model of vulnerability to their daughters, that might be more easily identified with her.

Some scholars raised the possibility that the associations between parent-offspring dyads' PTSS within the traumatized family may also be accounted for by the differential effects of PTSS on maternal, versus paternal and parenting behavior (e.g. Leen-Feldner et al., 2013). A complementary relevant theoretical framework for examination of parenting behavior is the perception of parental bonding by offspring (Parker, Tupling, & Brown, 1979). This framework defines good parenting as parental response to the child's wishes for love and protection on the one hand, and respect for the child's wishes to explore, on the other hand (Parker, 1979). For example, according to a study among adolescent offspring of PTSD veterans, children's externalizing symptoms were associated with paternal overprotection, and low maternal and paternal care (Maršanić, Margetić, Jukić, Matko, & Grgić, 2013). For example, one study show that these results of parental bonding dimensions are related to personality traits of healthy subjects, especially for harm avoidance and self-directedness, with sex specificity in parents and recipients (Oshino, Suzuki, Ishii, & Otani, 2007). Another study also exemplified that the effects of parenting on stress-related manifestations such as telomere length were gender-specific. There is evidence that multiple adverse or traumatic

events in childhood and adolescence are associated with short age-adjusted leukocyte telomere length, a marker of accelerated cellular aging, and thus increased risk for age-related morbidity and mortality (O'Donovan et al., 2011). Thus, telomere length in males was correlated with paternal care, while that in females was correlated with maternal care (Enokido et al., 2014). To our knowledge, no study has examined differential associations between parental bonding and offspring's PTSS according to gender in war and captivity-related traumatized families.

War captivity is considered one of the most brutal man-made traumas implicated in elevated rates of PTSD among ex-POWs (e.g. Port, Engdahl, & Frazier, 2001). Family members who spend considerable time witnessing ex-POWs' posttraumatic reactions and learning of their horrific experiences are at risk for PTSS (Shalev & Ben-Asher, 2011). Indeed, adult offspring of ex-POWs have reported higher levels of PTSS than comparable veterans' offspring (e.g. Zerach & Aloni, 2015). A recent study by our team also revealed that both ex-POWs' and their spouses' PTSS mediated the link between captivity and offspring's PTSS (Zerach, Levin, Aloni, & Solomon, 2016). Moreover, PTSS tend to undermine the father's ability to maintain close, meaningful and supportive interactions with his children (Zerach & Solomon, 2016), which in turn can lead to an experience of low paternal care and higher levels of PTSS by ex-POWs' offspring (Zerach & Aloni, 2015).

Based on the literature review, we hypothesize that: (1) daughters of ex-POWs will report higher levels of PTSS than sons; (2) fathers' PTSS, but not mothers' PTSS, will be positively associated with offspring's PTSS, with stronger magnitude of associations among same-sex dyads; (3) Parents' parenting will be associated with offspring's PTSS. Parents' care dimension will be negatively associated with offspring's PTSS, while parents' overprotection dimension will be positively associated with offspring's PTSS, with a stronger magnitude of associations among same-sex dyads.

## Method

### Participants

This study is part of a long-term prospective study of the intergenerational transmission of captivity trauma (for full details, see Zerach et al., 2016). The sample consisted of 79 Israeli father–mother–adult offspring triads in which the father was an ex-POW from the Israeli Defense Forces land-forces during the 1973 Yom Kippur War. Data were collected from fathers at three time points: 1991, 2003 and 2008, from mothers at two time points: 2004 and 2011, and from their adult offspring at 2013–2014. In an attempt to maintain as close a temporal proximity as possible, in this study we focused on the later points of measurement for both partners [i.e. 2008 for fathers and 2011 for mothers].

Among ex-POWs' adult offspring 37 (47%) participants were male and 42 (53%) were female, whose ages ranged from 22 to 53 ( $M = 35.19$ ,  $SD = 6.44$ ). We contacted 92 adult offspring and the response rate in this group was 87%, meaning that 79 participated and 12 declined to participate. The adult offspring male and female groups did not differ in age, years of education, birth order, marital status, military service, level of religiosity, place of birth, employment or income (See Table 1).

### Handling missing data

Triads were included in the sample only if both veterans and their partners participated in at least one wave of measurement, with complete participation of their offspring in the 2013–2014 wave. The valid data for offspring was  $n = 78$  (1 missing, 1.3%); for fathers  $n = 75$  (3 missing, 3.8%), and for mothers  $n = 53$  (25 missing, 32.1%). Little's missing completely at random analysis revealed random missing data,  $\chi^2(108) = 94.88$ ,  $p = .81$ . Accordingly, missing data were replaced with full information maximum likelihood (FIML) estimations when running models in Structural Equation Models (SEM). Compared to conventional methods such as list-wise or pairwise deletion, ML methods were recommended as the optimal method for handling missing data. This study utilized data measured for veterans, partners and offspring as well as information across waves to increase the likelihood for

**Table 1.** Socio-demographic characteristics of ex-POWs' offspring by gender.

Offspring's variables		Daughters (n = 43)	Sons (n = 35)	
Age		M = 35.21 (SD = 7.18)	M = 35.50 (SD = 5.60)	t (76) = 2.38
Education (years)		M = 15.21 (SD = 3.05)	M = 14.49 (SD = 2.46)	t (76) = .21
Marital status	Single	14 (32.6%)	13 (37.1%)	$\chi^2_{(3)} = 1.10$
	Married	23 (53.5%)	19 (54.3%)	
	Divorced	5 (11.6%)	3 (8.6%)	
	Other	1 (2.3%)	0 (0%)	
Military service	Complete	31 (72.1%)	31 (88.6%)	$\chi^2_{(3)} = 4.83$
	Partial	2 (4.7%)	2 (5.7%)	
	National	2 (4.7%)	0 (0%)	
	Other	8 (18.6%)	0 (5.7%)	
Level of religiosity	Secular	29 (69%)	25 (71.4%)	$\chi^2_{(4)} = 2.87$
	Traditional	8 (19%)	5 (14.3%)	
	Religious	3 (7.1%)	5 (14.3%)	
	Orthodox	1 (2.41%)	0 (0%)	
Place of birth	Other	1 (2.4%)	0 (0%)	$\chi^2_{(2)} = 4.90$
	Israel	39 (92.9%)	33 (94.3%)	
	America	0 (0%)	1 (2.9%)	
	Europe	3 (7%)	1 (2.9%)	
Employment	Not working	2 (4.9%)	2 (5.7%)	$\chi^2_{(2)} = 3.62$
	Part time job	12 (29.3%)	4 (11.4%)	
	Full time job	27 (65.93%)	29 (82.9%)	
Income	Well below average	3 (7.1%)	1 (3%)	$\chi^2_{(4)} = 2.53$
	Below average	8 (19%)	6 (18.2%)	
	Average	14 (33.3%)	9 (27.3%)	
	Above average	19 (25.3%)	9 (27.3%)	
Birth order	Well above average	4 (9.5%)	7 (21.2%)	$\chi^2_{(4)} = 5.53$
	Firstborn	19 (44.2%)	23 (65.7%)	
	Second born	11 (25.6%)	8 (22.9%)	
	Third born	7 (16.3%)	2 (5.7%)	
	Fourth born	4 (9.3%)	2 (5.7%)	
	Fifth born	2 (4.7%)	0 (0%)	

Note: \* $p < .05$ ; \*\* $p < .01$ .

optimal estimations (Collins, Schafer, & Kam, 2001). This method uses all the available relevant data for each participant, as missing information can then be partially recovered from earlier or later waves<sup>1</sup>. Longitudinal modeling by ML of missing responses is very effective if it is conducted for a longitudinal model that borrows information across waves and across partners that can serve as auxiliary variables (Schafer & Graham, 2002).

## Measures

*PTSD inventory* (Solomon et al., 1993). Fathers', mothers' and offspring's PTSS were assessed by using a self-report scale corresponding to the PTSD symptom criteria listed in DSM-IV-TR (American Psychiatric Association, 2013). Participants were asked to indicate on a 4-point scale ranging from 1 (*never*) to 4 (*almost always*), the frequency with which they experienced the described symptom in relation to their experience of captivity or in relation to their partners' or fathers' experience of captivity. The total count of PTSS could range from 0 to 17. There are no known cut-off scores for this scale. The scale was found to have good psychometric properties (Solomon et al., 1993). The reliability was high for fathers (Cronbach's  $\alpha = .92$ ), mothers (Cronbach's  $\alpha = .92$ ) and offspring (Cronbach's  $\alpha = .86$ ).

*The parental bonding instrument* (PBI; Parker et al., 1979). This is a 25-item self-report measure of a child's recollection of parents' care as opposed to emotional rejection (12 items), and overprotection as opposed to encouraging autonomy (13 items), during his or her first 16 years. Participants rated each item on a 4-point scale ranging from 0 (*very like*) to 3 (*very unlike*). The sum total of domain items could range from 0 to 36 for parental care, and 0–39 for parental overprotection. According

to cutoff points established by Parker et al. (1979), scores below 27/24 indicate low maternal/paternal care (i.e. emotional neglect, mal-attunement or apathy, and emotional distancing), while scores above 13.5/12.5 indicate high maternal/paternal overprotection (i.e. over control, intrusiveness and impingement of the child's autonomy). The PBI has been shown to be a reliable instrument over time, and to measure actual, not just perceived, parenting (e.g. Wilhelm, Niven, Parker, & Hadzi-Pavlovic, 2005). The Cronbach's alphas of the care scale were .92 for fathers and .91 for mothers, while the overprotection scale was .89 for fathers and .88 for mothers.

*Life events checklist* (Gray, Litz, Hsu, & Lombardo, 2004). This questionnaire is comprised of 17 potential traumatic events that can lead to PTSS or psychological distress (e.g. work or car accident). This questionnaire was used for the purpose of statistical control. The sum of negative life events that participants were personally exposed to was used for analysis. The LEC has shown good psychometric properties (Gray et al., 2004).

*Socio-demographic measurements.* All family members were assessed regarding the demographic characteristics of age, level of education, country of origin, religiosity, marital status, military service and income level.

### **Procedure**

The procedure for research conducted with the fathers (Solomon, Horesh, Ein-Dor, & Ohry, 2012), mothers (Greene, Lahav, Bronstein, & Solomon, 2014) and offspring (Zerach et al., 2016) was described thoroughly in previous studies. The names of ex-POWs were passed on by the IDF authorities as part of the periodic examination of veterans after their military service. We contacted participants by telephone and, after explaining the purpose of our study, asked them to take part. Questionnaires were administered in participants' homes or in other locations of their choice. Before filling out the questionnaire, participants signed a written informed consent form. The wives' samples were located through their husbands, who had participated in a previous study conducted by our research group. We used our former contact information records of those participants in order to contact their spouses. We sent the potential participants a letter in which we introduced the study and informed them that research assistants (licensed social workers enrolled in graduate studies) would contact them in the following days. After receiving an explanation of the study's aim, 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. Before filling out the questionnaires, each participant signed a written informed consent form. Some possible ethical problems might have risen and have been treated. First, when interviewing ex-POWs and their spouses about their experiences, we have tried to adapt and apply the procedure to the specific traumatized individuals. Throughout the decades that the study was conducted, it has been aided and supported by the Israeli ex-POWs' NGO, "Awake at Night", which includes most of the Israeli ex-POWs. Concomitantly, before each wave of measurement some representatives of the ex-POWs were consulted as to the primary issues that should be investigated, and the sensitivities of the studied participants were highlighted again. Second, interviewing veterans, some of whom may still be recipients of governmental aid and services, poses another challenge regarding possible pressure some might feel to participate in this study. We note that all potential participants were promised at the outset that completing questionnaires is completely anonymous, and no personal identifying information would be collected. Moreover, participants were told that answering the questionnaire items should not cause any known harm to them, and that refusing to participate or quitting prior to completion would have no impact on them in any way. Offspring were located through the contact information records of their fathers. After receiving an explanation of the aim of the present study, the offspring who agreed to participate were offered the option of filling out the research questionnaires either in their homes or at a location of their choice. Our first referral was made to the oldest child, and if he or she could not or did not want to participate, we turned to the next oldest child who agreed to participate. No significant differences in the main outcome variables were found among the

offspring in relation to their birth order. Data from only one offspring from each family has been used for this study. Approval for this study was given by both (removed for blind review) Universities' Ethics Committees.

## Results

We began with examination of gender differences with a MANCOVA analysis for the PTSS and its four DSM-IV clusters (intrusion, avoidance, numbing and hyper-arousal), with the number of negative life events as covariate. The sum of negative life events has been statistically controlled because of its possible link to PTSS not accounted for by gender. We found no significant difference between the two groups with respect to offspring's PTSS general factor: *Pillai's Trace*  $F(4, 69) = 2.34, p = .07$ , Partial  $\eta^2 = .12$ . However, as can be seen in Table 2, contrary to what we would have expected, separate ANCOVA analyses revealed that sons reported a higher total number of PTSS and numbing symptoms as compared to daughters, with medium to large effect sizes, respectively. We did not find group differences in the intrusion, avoidance and hyper-arousal symptoms, and effect sizes were small (Cohen, 1988).

Next, we performed two MANOVA analyses for parental bonding with the father and mother, separately. In the first analysis we found no significant difference between the two groups with respect to offspring's parental bonding with the father: *Pillai's Trace*  $F(2, 75) = 2.94, p = .06$ , Partial  $\eta^2 = .09$ . As can be seen in Table 2, sons did not differ significantly from daughters in fathers' care dimension. However, sons reported lower levels of fathers' care as compared to daughters, with small to medium effect sizes. Furthermore, we did not find group differences in the overprotection dimension. In the second analysis we found no significant differences between the groups in offspring's parental bonding with the mother: *Pillai's Trace*  $F(2, 75) = .56, p = .57$ , Partial  $\eta^2 = .02$ . All these effect sizes were small (Cohen, 1988).

Following the group differences, we examined the interrelations between the study variables separately for sons and daughters. As seen in Table 3, among daughters, but not among sons, results revealed significant positive relations between fathers' PTSS in 2008 and daughters' PTSS in 2013. The results revealed no significant relations between mothers' PTSS in 2011 and both sons' and daughters' PTSS in 2013. For daughters, we found positive relations between PTSS and fathers' and mothers' overprotection and negative relations with fathers' and mothers' care. However, for sons the results show positive relations between PTSS and fathers' overprotection and negative relations with fathers' care. The associations with mothers' overprotection and care were not significant.

It is worth noting that probably due to the low number of participants in the two groups, the stabilization of correlation coefficients is questionable, and a moderation analysis (Hayes, 2013) with gender as a moderating variable between fathers' and mothers' PTSS and offspring's PTSS

**Table 2.** Means, SD and Univariate *F* results of ex-POWs' adult offspring's PTSS and parental bonding by gender.

	Male ( <i>n</i> = 35)		Female ( <i>n</i> = 44)		<i>F</i>	Cohen's <i>d</i>	95% CI (LL,UL)
	<i>M</i>	SD	<i>M</i>	SD			
Total number of PTSS	3.78	3.53	2.28	2.54	$F(1, 75) = 3.63^\dagger$	0.5	(.06,2.81)
Intrusion symptoms	0.36	0.85	0.23	0.69	0.78	0.2	(-23,.45)
Avoidance symptoms	0.18	0.46	0.1	0.29	1.42	0.2	(-.09,.25)
Numbing symptoms	1.6	1.41	0.64	1.24	7.39**	0.7	(.38,1.59)
Hyper-arousal symptoms	1.63	1.51	1.3	1.61	0.46	0.21	(-.47,.99)
Paternal overprotection	9.91	7.16	11.28	8.73	$F(1, 75) = .55$	0.2	(-.50,2.30)
Paternal care	18.91	7.78	22.21	8.43	3.13	0.4	(-7.01,.41)
Maternal overprotection	12.17	7.54	10.76	8.19	$F(1, 75) = .71$	0.2	(-2.19,5.01)
Maternal care	26.14	6.07	27.4	6.03	0.8	0.2	(-4.04,1.47)

Note:  $^\dagger p < .06$ ;  $*p < .05$ ;  $**p < .01$ ;  $***p < .001$ . CI = Confidence Interval for difference with Bonferroni adjustment for multiple comparisons.

**Table 3.** Pearson correlation coefficients of ex-POWs fathers' PTSS (2008), mothers' PTSS (2011) and their offspring PTSS and parental bonding (2013).

	1	2	3	4	5	6	7
1. Offspring PTSS (2013)	–	.38**	.23	–.58***	.32*	–.34*	.46**
2. Fathers' PTSS (2008)	.19	–	.45**	–.35*	.41**	–.07	.39**
3. Mothers' PTSS (2011)	.03	.14	–	–.06	.22	–.30*	.41**
4. Paternal care	–.48***	–.05	.1	–	–.43**	.22	–.22
5. Paternal overprotection	.33*	.12	–.19	–.37*	–	.08	.39**
6. Maternal care	–.03	.23	.14	.44**	–.25	–	–.37**
7. Maternal overprotection	.26	.01	.15	–.32†	.49***	–.28	–
Mean	3.06	9.54	4.89	20.71	10.66	26.82	11.33
Standard deviation	3.1	5.15	4.01	8.26	8.03	6.01	7.85
Possible range	0–17	0–17	0–17	0–36	0–39	0–36	0–39

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . Male offspring correlations are presented below the diagonal and female offspring correlations are presented above the diagonal.

could not reach significance due to low test power (Kelley & Maxwell, 2003; Schönbrodt & Perugini, 2013). Furthermore, using the Fisher  $r$ -to- $z$  transformation, the significance of the difference between two correlation coefficients also could not be obtained. Keeping this caveat in mind, we performed two, three-step hierarchical regression analyses for sons' and daughters' PTSS. As can be seen in Table 4, in the final model only fathers' care significantly predicts PTSS, for both sons and daughters. For daughters only, the significant contribution of fathers' PTSS (2008) in the second step has been deleted following the inclusion of parental bonding in the third step.

## Discussion

This study examined whether sons and daughters of ex-POWs differ in their levels of secondary PTSS and in the patterns of associations with their parents' PTSS and parental bonding. Contrary to expectation, results showed that sons reported higher levels of PTSS as compared to daughters' PTSS. These results suggest that adult sons of ex-POWs suffer from a higher magnitude of secondary PTSS than ex-POWs' daughters. However, sons' distress might not be closely related to their parents' PTSS.

A note should be made before interpreting the results. Due to the rareness of the studied population, this study relied on a very low number of participants. This caveat might have biased our results and limited the possibility of some results – such as the differences between correlation coefficients of sons and daughters of ex-POWs – to reach significance. Our results should be generalized to families of other Israeli ex-POW from the same war as well as other wars, and families of ex-POWs from other countries. However, the pattern of associations found in this study should be further validated in future prospective studies among offspring of veterans' samples, using more comprehensive measures.

Contrary to the main body of literature regarding war-related primary victims (Xue et al., 2015) and secondary victims (Baum, 2014), our results show that sons of ex-POWs endorsed higher levels of secondary PTSS, as compared to daughters of ex-POWs. How can we explain these surprising findings? First, special consideration should be given to methodological differences that exist between the current study and the previous literature that might explain this unexpected result. Unlike other studies (e.g. O'Toole et al., 2016) among veterans' offspring that defined the "A" criteria as the most traumatic life event, our definition pointed to indirect exposure to fathers' captivity residues. Second, as a recent review (Baum, 2014) shows, in the sparse literature regarding secondary PTSS among offspring, most studies among offspring of veterans were conducted on rather young children or adolescents. Third, regarding our sample characteristics, our sample focused on offspring of ex-POWs. We are familiar with the horrific experiences Israeli ex-POWs went through in captivity (e.g. Solomon et al., 2012). Thus, it is possible that, beyond fathers' struggle with PTSS, sons of

**Table 4.** Summary of hierarchical regression coefficients of offspring's PTSD symptoms by fathers' and mothers' PTSS and parental bonding.

Variables	Males' PTSD symptoms (2013)									Females' PTSD symptoms (2013)								
	Model 1			Model 2			Model 3			Model 1			Model 2			Model 3		
	<i>B</i>	S.E.	$\beta$	<i>B</i>	S.E.	$\beta$	<i>B</i>	S.E.	$\beta$	<i>B</i>	S.E.	$\beta$	<i>B</i>	S.E.	$\beta$	<i>B</i>	S.E.	$\beta$
Negative life events	-0.20	0.44	-0.08	-0.25	0.45	-0.10	-0.30	0.41	-0.12	0.37	0.25	0.32	0.39	0.24	0.23	0.13	0.23	0.07
Fathers' PTSS (2008)				0.20	0.15	0.25	0.12	0.13	0.15				0.17	0.09	0.39**	0.07	0.07	0.17
Mothers' PTSS (2011)				-0.02	0.16	-0.02	-0.02	0.15	-0.02				-0.03	0.09	-0.06	-0.07	0.08	-0.13
Paternal care							-0.25	0.08	-0.56***							-0.13	0.05	-0.40**
Paternal overprotection							0.07	0.09	0.14							0.05	0.01	0.01
Maternal care							0.21	0.11	0.35							-0.07	0.07	-0.15
Maternal overprotection							0.04	0.09	0.09							0.09	0.05	0.28
<i>R</i> <sup>2</sup>		1%			6.7%			40.8%*			5%			19.1%*			43.7%**	
<i>F</i> change		<i>F</i> (1, 31) = .20			<i>F</i> (2, 29) = 0.94			<i>F</i> (4, 25) = 3.59**			<i>F</i> (1, 40) = 2.15			<i>F</i> (2, 38) = 3.28*			<i>F</i> (4, 34) = 3.70**	

Note: \**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

ex-POWs were relatively more sensitive to reminders of captivity in their fathers' behavior, and reacted to fathers' stress-related behaviors with more distress. Specifically, as males have been suggested to be more at risk for internalizing symptoms (e.g. Schleider, Chorpita, & Weisz, 2014), the symptomatic expression that mostly differentiates sons from daughters in our sample, with medium to large effect size, was emotional numbing symptoms, which are closely related to depressive or "negative" posttraumatic symptoms.

Another finding of this study is that PTSS in sons were not significantly correlated with fathers' PTSS, while those in daughters were correlated with fathers' PTSS. It is possible that daughters tended to be receptive to their fathers' PTSS and behaviors that stem from them. Moreover, as females are socialized to be sensitive to and identify with others' emotions (Baum, 2014), they might experience their fathers' PTSS as more distressing. This sensitivity can also contribute to higher levels of "caregiving burden" that might be part of relationships with a traumatized fathers. Thus, daughters might have been at risk for a role-change from offspring to caregiver of the victim (Beckham, Lytle, & Feldman, 1996).

Our results also provide evidence for PBI paternal care to be a significant predictor of both sons' and daughters' PTSS. This finding is in line with a previous study by our team (Zerach & Aloni, 2015). However, it is worth examining the finding in which daughters' PTSS is related to both parents' care and overprotection, while sons are only related to fathers' care and overprotection. It is possible that ex-POWs' PTSS tend to undermine the fathers' ability to create and maintain close, meaningful and supportive interactions with his children (Zerach & Solomon, 2016). However, among daughters, the same-sex relations with their mothers might buffer some of the fathers' stressful behaviors for them. In the same vein, sons' distress might be rooted in their identification with their fathers' vulnerability, which might be specifically mediated by his lack of care and higher levels of overprotection.

This study has several limitations. First, due to the attrition of participants between measurements, the sample may be somewhat selective. Second, we note that the present sample might suffer from non-representativeness of mothers in the study. Third, the use of self-report measures, although very common in trauma studies, entails the risk of reporting bias. Fourth, the lack of pre-combat assessment of fathers' PTSD limits our ability to infer causality. Fifth, our measurements did not cover the entire span of 40 years since the war. Therefore, we were unable to monitor changes in the course of posttraumatic symptoms during the gap between the war and later measurement periods. Sixth, it is possible that adult offsprings' personality and mental health also affect their fathers' PTSS, and not only vice versa. Sixth, as in other studies of veterans, our study is inherently limited in its ability to shed light on gender effects, as soldiers are almost always men.

To conclude, the findings of this study suggest that 40 years after the end of the war sons of ex-POWs experience higher levels of PTSS as compared to daughters' PTSS. Moreover, the intergenerational transmission of parents' PTSS is more salient for daughters as compared to sons. PTSS, but not significantly related to sons' PTSS. Our findings highlight the necessity to screen and treat ex-POWs' offspring, with special reference to sons of ex-POWs, who might be negatively impacted by their father's captivity residues and his parenting practices.

## Note

1. A correlations analysis from the original data (without imputation) strengthens our assumption that the data were indeed missing at random. In fact, the completed data reduced the magnitude of correlations between daughters of ex-POWs' PTSS and their mothers' PTSS.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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