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Publisher: Routledge

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## Psychiatry: Interpersonal and Biological Processes

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/upsy20>

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Published online: 13 Jul 2015.



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To cite this article: Talya Greene, Yael Lahav, Yaniv Kanat-Maymon & Zahava Solomon (2015) A Longitudinal Study of Secondary Posttraumatic Growth in Wives of Ex-POWs, *Psychiatry: Interpersonal and Biological Processes*, 78:2, 186-197

To link to this article: <http://dx.doi.org/10.1080/00332747.2015.1051451>

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## A Longitudinal Study of Secondary Posttraumatic Growth in Wives of Ex-POWs

Talya Greene, Yael Lahav, Yaniv Kanat-Maymon, and Zahava Solomon

*Objective:* The current study aimed to investigate (a) “secondary” posttraumatic growth (PTG) in wives of former prisoners of war (ex-POWs) and its association to husbands’ captivity, husbands’ posttraumatic stress disorder (PTSD), and husbands’ PTSD trajectories; and (b) the bidirectional relationships over time between wives’ posttraumatic stress symptoms (PTSS) and PTG. *Method:* The study compared 116 wives of Israeli ex-POWs from the 1973 Yom Kippur War with 56 wives of a matched control group of non-POW combat veterans. Wives were divided into groups according to husbands’ captivity status, husbands’ PTSD status, and husbands’ PTSD trajectories; and ANOVAs and MANOVAs were conducted to assess group differences in PTSS and PTG, both cross-sectionally and longitudinally. Autoregressive cross-lag modeling was also used to assess bidirectional relationships between wives’ PTSS and PTG over time. *Results:* Wives of ex-POWs with PTSD reported significantly higher PTG compared with wives of ex-POWs without PTSD and wives of controls. While PTG and PTSS remained stable over time, importantly, the Time 1 (T1) level of PTG predicted avoidance symptoms at Time 2 (T2); the higher the wives’ PTG at T1, the higher their avoidance symptoms at T2, but not vice versa. *Conclusions:* These findings support the notion that “secondary PTG” exists. They also strengthen the theory that growth and distress can co-occur. Finally, the finding that PTG predicted subsequent avoidance symptoms suggests that PTG does not prevent the future development of distress.

In the past two decades there has been growing interest in the notion that, alongside negative effects, trauma exposure can also result in positive gains or transformations, characterized as posttraumatic growth (PTG; Tedeschi & Calhoun, 1996). Individuals who endorse PTG after a traumatic experience may report a newfound appreciation for life,

improved interpersonal relationships, an awareness of new possibilities, greater sense of personal strength, and spiritual growth. PTG has been observed among individuals who have experienced various traumatic events including disasters, war, sexual assault, and illness (for reviews, see Calhoun & Tedeschi, 2006; Linley & Joseph, 2004).

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Despite growing interest in the PTG construct, there remain many unanswered questions about its nature. A central question is this: Do individuals need to directly experience traumatic events to develop PTG? The *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5), has recently expanded the scope of those affected by trauma, positing that posttraumatic stress disorder (PTSD) can develop in family members of trauma survivors and in professionals working with trauma survivors (American Psychiatric Association [APA], 2013). In line with this, there is some emerging evidence that people who are vicariously exposed to traumatic events may also experience growth. Most of this research focuses on professionals working with trauma survivors such as therapists (e.g., Arnold, Calhoun, Tedeschi, & Cann, 2005), health care workers (e.g., Shoji et al., 2014), and emergency service workers (e.g., Paton, 2005). These studies describe ways in which these professionals view their lives as having been enriched by their work.

A handful of studies have identified PTG among family members of trauma survivors. These include husbands of breast cancer survivors (e.g., Manne et al., 2004), mothers of children with acquired disabilities (Konrad, 2006), and spouses of myocardial infarction patients (Şenol-Durak & Ayvaşık, 2010). A phenomenological study of wives of traumatized Australian Vietnam veterans revealed that these women reported a greater sense of gratitude and empathy as a result of the difficulties associated with living with a traumatized husband (McCormack, Hagger, & Joseph, 2011). Secondary PTG is not yet well, however, and more investigation is required to understand the ways in which positive outcomes of trauma may ripple out to family members of trauma survivors.

Much of the research on PTG has attempted to clarify its relationship with PTSD, with mixed results (for reviews, see Helgeson, Reynolds, & Tomich, 2006;

Linley & Joseph, 2004). Some studies found a negative correlation between these two phenomena (e.g., Frazier, Conlon, & Glaser, 2001), with the lowest levels of distress associated with the greatest growth. In contrast, other studies have found positive associations between PTSD and PTG (Dekel, Eindor, & Solomon, 2012), or a curvilinear relationship between trauma and PTG, with those with intermediate levels of trauma exposure (Fontana & Rosenheck, 1998) and posttraumatic stress symptoms (PTSS) (Butler et al., 2005) reporting the highest growth. Finally, a number of studies indicate that distress and PTG occur independently of each other (Linley & Joseph, 2004), without one being the source of the other.

These mixed findings may be due to a tendency to investigate the PTSD–PTG relationship using cross-sectional study designs. It is likely that the relationship between PTSD and PTG would change over time (Park & Helgeson, 2006). For example, it is possible that PTSD either reduces or triggers subsequent growth. It may also be that growth ameliorates or exacerbates PTSD over time. Investigating the bidirectional associations between PTSD symptom clusters and specific aspects of PTG over time could shed light on whether any of these hypothetical associations exist.

In the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR), PTSD was characterized as consisting of three symptom clusters (avoidance, numbing, and hyperarousal) (APA, 2000). In DSM-5, four symptom clusters of PTSD are described (reexperiencing, avoidance, negative cognitions and mood, and arousal) (APA, 2013). These different clusters describe different aspects of PTSD. For example, avoidance symptoms include avoiding reminders of the traumatic event, while arousal/hyperarousal describes increased reactivity to stimuli. Dekel and colleagues (2012) found that initial PTSD predicted subsequent PTG, with hyperarousal PTSD symptoms

specifically predicting PTG levels five years later. This study did not find that PTG predicted PTSD, suggesting that growth is a response to distress, rather than a cause of distress. To date, no such longitudinal analysis has been conducted regarding bidirectional relations between PTSS and PTG in people indirectly exposed to traumatic events.

The current prospective longitudinal study assessed PTG in wives of former prisoners of war (ex-POWs). War captivity is known to be a highly traumatogenic experience, with POWs facing brutal torture, repeated humiliation, and severe deprivation, in addition to the stress of combat (Herman, 1992). It has been well documented that ex-POWs have high rates of psychopathology and health problems after they return home, the most common of which is PTSD (e.g., Dikel, Engdahl, & Eberly, 2005). Moreover, wives of ex-POWs have also been identified as a group at risk for psychiatric symptoms (Dekel & Solomon, 2006) and poor health outcomes (Zerach, Greene, & Solomon, 2015). To the best of our knowledge, only one study has investigated secondary PTG in wives of ex-POWs (Dekel, 2007), finding that wives of ex-POWs reported higher rates of both distress and PTG compared to a control group of wives of non-POW combat veterans, with husbands' PTSD symptomatology playing a role in wives' PTG. The current study constitutes a follow-up to this earlier study, investigating the impact of husbands' captivity and husbands' PTSD symptoms on wives' PTSS and PTG over time.

The current study also investigates whether husbands' PTSD trajectories are associated with wives' PTG. Various studies have identified a number of PTSD trajectories, including chronic PTSD (PTSD at multiple time points), delayed PTSD (PTSD endorsed but not in the initial phases), recovery (initial PTSD followed by recovery), and resilience (no PTSD at any point) (e.g., Bonanno & Mancini, 2012; Solomon & Mikulincer, 2006). A study on the current sample found that husbands' PTSD

trajectory was implicated in wives' PTSS, with wives of ex-POWs with a chronic PTSD trajectory reporting the highest PTSS (Greene, Lahav, Bronstein, & Solomon, 2014). However, studies have not yet explored the relationship between spouses' PTSD trajectories and secondary PTG. Examining the role of trajectories may help shed some light on the long-term experiences of being married to a former POW.

In this study we hypothesize that (a) there will be differences in the levels of PTG reported by wives of ex-POWs with PTSD, wives of ex-POWs without PTSD, and wives of non-POW combat veterans; and (b) there will be differences in the level of PTG reported by wives according to their husbands' PTSD trajectories. We also propose three alternative hypotheses regarding the relationship between wives' PTSS and PTG over time: (c) that wives' PTSS predict their PTG over time; (d) that wives' PTG predicts their PTSS over time; and (e) that there is no relationship between wives' PTSS and PTG over time.

## METHODS

### Procedure

This study constitutes part of a larger longitudinal study assessing the impact of war captivity on ex-POWs and their wives (for more details, see Solomon et al., 2014; Zerach et al., 2015). Data on PTSD symptoms were collected from two groups of combat veterans from the 1973 Yom Kippur War (YKW): (a) ex-POWs and (b) a matched control group of non-POW combat veterans at three time points (1991, 2003, and 2008). The husbands' PTSD trajectory groups were derived from husbands' self-reports at all three of the husbands' measurement waves. Data on wives' PTSD symptoms and wives' PTG were collected from these veterans' wives at two time points (Time 1: 2003; Time 2: 2011). Finally, wives' ratings of husbands' PTSD symptoms were collected at T2.

Ethics approval was granted by the Tel Aviv University Ethics Committee.

### Participants

*Ex-POWs' wives.* This group consisted of wives of Israel Defense Forces (IDF) veterans who were captured during the YKW and held in Egypt or Syria for one to eight months. Of the 124 ex-POWs who took part in the 2003 measurement wave, 111 were married; 82 of their wives participated at T1 (74% response rate). Of the 183 ex-POWs who participated in 2008, 147 were married; 116 of their wives participated at T2 (79%) response rate.

*Control wives.* This group consisted of wives of combat veterans of the YKW who were not captured but were exposed to battlefield stressors including encounters with injured people and dead bodies, active fighting, and exposure to life-threatening events. These control veterans were sampled from the IDF database and matched to the ex-POWs for personal and military background characteristics. Of the 106 control veterans who participated in 2003, 102 were married; 74 of their wives participated. Of these, two were excluded from the analyses because their husbands met PTSD criteria, leaving a total of 72 who participated at T1 (71% response rate). Of the 118 control veterans who took part in 2008, 103 were married; 56 of these spouses participated in the second wave (54% response rate).

*Background variables.* No significant differences between wives of ex-POWs ( $n = 116$ ) and wives of control veterans ( $n = 56$ ) were found in the following background variables for the wives: country of birth, age ( $M = 58.28$ ,  $SD = 5.79$ ), years of marriage ( $M = 34.20$ ,  $SD = 9.19$ ), timing of marriage (before/after YKW), number of children ( $M = 3.23$ ,  $SD = 3.00$ ), employment status (47.7% of the women were working in full-time jobs, 20.9% had part-time jobs, and 31.4% were not working), and history of

life events. The only significant differences were indicated for religiosity [ $\chi^2(2) = 6.43$ ,  $p < .05$ ] and level of education [ $t(165) = 2.62$ ,  $p < .01$ ]. A higher number of wives of ex-POWs defined themselves as religious (44%) as compared with control veterans' wives (28.6%). Wives of ex-POWs also reported fewer years of education ( $M = 14.16$ ,  $SD = 3.20$ ) than control wives ( $M = 15.50$ ,  $SD = 2.92$ ). In addition, we compared wives of ex-POWs married before the war with wives of ex-POWs married after the war and found no significant differences in background variables.

The wives were then divided into three groups according to their husbands' current PTSD status as rated by wives. We excluded those with missing data regarding wives' ratings of husbands' symptoms. Less than 1% ( $n = 1$ ) of the husbands from the control group were rated as having PTSD and thus omitted from the analyses, leaving three groups: wives of ex-POWs with PTSD ( $n = 66$ ; 38.4%), wives of ex-POWs without PTSD ( $n = 36$ ; 20.9%), and wives of controls ( $n = 46$ ; 26.7%). No significant differences were found in sociodemographic variables among these three groups.

No significant differences were found among these groups in background variables. The wives were then divided into four groups according to their husbands' self-reported PTSD symptoms at all three of the husbands' measurement waves (1991, 2003, 2008): chronic PTSD, if the ex-POW met criteria for PTSD in all three waves ( $n = 22$ ; 17.3%); delayed PTSD, if the ex-POW did not endorse PTSD criteria in the first wave but did in subsequent waves ( $n = 51$ ; 40.2%); recovered PTSD if PTSD criteria was endorsed in either of the first two waves but not in the third ( $n = 2$ ; 1.7%); and resilient, if the ex-POW never endorsed criteria for PTSD ( $n = 9$ ; 7.1%). The recovered group was omitted from our analyses due to the small group size. An additional group was included in the comparisons: wives of control veterans who did not endorse PTSD criteria in any of the

measurement waves ( $n = 45$ ; 35.4%). Wives whose husbands had missing data regarding their PTSD symptoms in any of the three waves of data collection were excluded from the analyses. No significant differences were found in sociodemographic variables among these groups other than in education,  $F(3, 71) = 3.31, p < .05$ , with wives of resilient controls reporting more years of education than wives of ex-POWs with chronic PTSD.

### Measures

**Posttraumatic stress symptoms.** PTSS were measured via the PTSD Inventory (PTSD-I), a well-validated, 17-item, self-report questionnaire (Solomon et al., 1993). The items on the PTSD-I correspond to DSM-IV-TR PTSD criteria (APA, 2000). The PTSD-I was used to assess wives' secondary PTSS, husbands' PTSD in 2008, and husbands' PTSD trajectories. Respondents rated symptoms experienced in the previous month on a scale ranging from 1 (*Not at all*) to 4 (*Almost always*). Wives' secondary PTSS scores were obtained by asking wives to rate their own PTSS 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 was obtained by wives' ratings of their husbands' PTSS in the preceding month related to their combat or captivity experiences. The number of positively endorsed symptoms was calculated by counting the items in which the respondents answered with a 3 or a 4. The husbands' scores were dichotomized (*PTSD/No PTSD*) using DSM-IV-TR PTSD criteria: a respondent was considered to have PTSD if he endorsed at least one intrusive, three avoidant, and two arousal symptoms. Husbands' PTSD trajectories were derived from husbands' PTSD status (*PTSD/No PTSD*) in each of the three waves of data collection (as outlined in the Method section). The PTSD-I has high test-retest reliability

(Schwarzwald, Solomon, Weisenberg, & Mikulincer, 1987) and concurrent and convergent validity (Solomon et al., 1993). Cronbach's alphas were 0.91 for wives' PTSS and 0.95 for husbands' PTSD in 2008.

**Posttraumatic growth.** PTG was measured using the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). This is a 21-item, self-report questionnaire comprised of five subscales: relating to others, new possibilities, personal strength, spiritual changes, and appreciation of life. Items are scored on a four-point rating scale from 1 (*I did not experience this change at all*) to 4 (*I experienced this change to a very great degree*). The PTGI has previously been used in Israel with reported high internal consistency ( $\alpha = .86$ ) (e.g., Dekel et al., 2012). In this study, the internal consistency was also high ( $\alpha = .86$ ).

## RESULTS

This section presents several sets of results. The first set of results concerns the comparison of PTG among (a) wives of ex-POWs and wives of controls and (b) wives of ex-POWs with PTSD, wives of ex-POWs without PTSD, and wives of controls. The second set of analyses compares wives' PTG according to their husbands' PTSD trajectories (chronic PTSD, delayed PTSD, resilient, controls). The third set of analyses examines changes in PTG and PTSS over time. The fourth and final analyses are autoregressive cross-lagged (ARCL) panel correlations examining the effects of each variable at T1 and its association with the second variable at T2. Specific statistical methods are described in the sections that follow.

### Wives' PTG as a Function of Study Group and the Husbands' PTSD

Multivariate analysis of variance (MANOVA) showed a significant difference between the two groups (wives of ex-POWs,

TABLE 1. Means (*M*s) and Standard Deviations (*SD*s) of Posttraumatic Growth Scores According to Two Study Groups and Time of Measurement

| Posttraumatic Growth | Wives of Ex-POWs<br><i>M</i> ( <i>SD</i> ) | Wives of Controls<br><i>M</i> ( <i>SD</i> ) | <i>F</i>                 | $\eta^2$ |
|----------------------|--|---|--------------------------|----------|
| Total score          | 2.39 (.83)                                 | 1.86 (.90)                                  | $F(1, 145) = 12.02^{**}$ | .08      |
| Subscales            |  |   |                          |          |
| Relating to others   | 2.24 (.92)                                 | 1.75 (.86)                                  | 9.13**                   | .06      |
| New possibilities    | 2.28 (.90)                                 | 1.86 (1.00)                                 | 6.58*                    | .04      |
| Personal strength    | 2.70 (1.02)                                | 1.99 (1.11)                                 | 14.66***                 | .09      |
| Spiritual change     | 1.96 (1.01)                                | 1.63 (.97)                                  | 3.54                     | .02      |
| Appreciation of life | 2.79 (1.03)                                | 2.13 (1.20)                                 | 11.54**                  | .08      |

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

wives of controls) with respect to wives' PTG, Pillai's trace  $F(6, 138) = 2.69$ ,  $p < .05$ , partial eta squared = .11. As can be seen in Table 1, wives of ex-POWs report significantly higher scores on the PTG total score and all PTG subscales, apart from spiritual change.

MANOVA showed a significant difference among the three groups (wives of ex-POWs with PTSD, ex-POWs without PTSD, wives of controls) with respect to wives' PTG, Pillai's trace  $F(12, 268) = 4.24$ ,  $p < .001$ , partial eta squared = .16. As can be seen in Table 2, wives of ex-POWs with PTSD reported significantly greater scores on the PTG total score and all PTG subscales compared with wives of ex-POWs without PTSD and wives of the control group.

Nonsignificant differences were found between wives of ex-POWs without PTSD and wives of the control group.

### Wives' PTG and Husbands' PTSD Trajectories

Analysis of variance (ANOVA) and MANOVA analyses showed a significant difference among the four groups (wives of ex-POWs with chronic PTSD, wives of ex-POWs with delayed PTSD, wives of resilient ex-POWs, wives of the control group) with respect to wives' PTG total score,  $F(3, 72) = 6.34$ ,  $p < .01$ , as well as all PTG subscales, Pillai's trace  $F(15, 207) = 2.55$ ,  $p < .01$ , partial eta squared = .16. As can be seen in Table 3, on all of the PTG subscales, as

TABLE 2. Means (*M*s), Standard Deviations (*SD*s), and Univariate *F* Results of Outcome Variables for Wives of Ex-POWs With PTSD, Wives of Ex-POWs Without PTSD, and Wives of Control Group

| Posttraumatic Growth | Wives of Ex-POWs With PTSD<br><i>M</i> ( <i>SD</i> ) | Wives of Ex-POWs Without PTSD<br><i>M</i> ( <i>SD</i> ) | Wives of Controls<br><i>M</i> ( <i>SD</i> ) | <i>F</i>                 | $\eta^2$ | Significant Group Comparisons |
|----------------------|--|---|---|--------------------------|----------|-------------------------------|
| Total score          | 2.82 (.67)   | 1.97 (.76)  | 1.84 (.89)                                  | $F(2, 141) = 2.45^{***}$ | .25      | a > c                         |
| Subscales            |  |   |   |                          |          |                               |
| Relating to others   | 2.67 (.85)   | 1.82 (.79)  | 1.73 (.86)                                  | 18.29***                 | .21      | a > b, c                      |
| New possibilities    | 2.61 (.79)   | 1.96 (.91)  | 1.84 (1.00)                                 | 10.18***                 | .13      | a > b, c                      |
| Personal strength    | 3.21 (.72)   | 2.20 (1.03)   | 1.95 (1.09)                                 | 23.15***                 | .25      | a > b, c                      |
| Spiritual change     | 2.35 (1.00)  | 1.63 (.88)  | 1.63 (.99)                                  | 8.95***                  | .12      | a > b, c                      |
| Appreciation of life | 3.32 (.71)   | 2.27 (1.05)   | 2.09 (1.18)                                 | 21.44***                 | .24      | a > b, c                      |

Note. a = wives of ex-POW with PTSD; b = wives of ex-POW without PTSD; c = wives of control group.

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

TABLE 3. Means (*M*s), Standard Deviations (*SD*s), and Univariate *F* Results of Outcome Variables for Wives of Ex-POWs With Chronic PTSD, Ex-POWs With Delayed PTSD, Resilient Ex-POWs, and Controls

| Posttraumatic Growth | Groups According to Husbands' PTSD Trajectories |  |                                     |                                   | <i>F</i> ( <i>df</i> 1, <i>df</i> 2) | $\eta^2$ | Significant Post Hoc Group Comparisons |
|----------------------|---|--|-------------------------------------|-----------------------------------|--------------------------------------|----------|--|
|                      | Chronic PTSD<br><i>M</i> ( <i>SD</i> )          | Delayed PTSD<br><i>M</i> ( <i>SD</i> ) | Resilient<br><i>M</i> ( <i>SD</i> ) | Control<br><i>M</i> ( <i>SD</i> ) |                                      |          |  |
| Total score          | 2.61 (.82)                                      | 2.53 (.72)                             | 2.37 (.92)                          | 1.68 (.75)                        | 6.340** (3,72)                       | .21      | d < a*, b*                             |
| Relations            | 2.43 (1.0)                                      | 2.32 (.88)                             | 2.43 (.94)                          | 1.60 (.74)                        | 3.783* (3, 73)                       | .138     | d < a*, b*                             |
| New possibilities    | 2.46 (.86)                                      | 2.56 (.83)                             | 1.92 (.93)                          | 1.67 (.83)                        | 5.225** (3, 73)                      | .181     | d < a*, b**                            |
| Personal strength    | 2.97 (.98)                                      | 2.95 (.92)                             | 2.92 (1.02)                         | 1.89 (1.08)                       | 5.677** (3, 73)                      | .193     | d < a*, b**                            |
| Spiritual change     | 2.38 (1.13)                                     | 1.79 (.84)                             | 1.90 (1.34)                         | 1.48 (.83)                        | 2.909* (3, 73)                       | .109     | d < a*                                 |
| Appreciation of life | 3.16 (.88)                                      | 2.94 (.96)                             | 2.60 (1.16)                         | 1.77 (1.01)                       | 8.116*** (3, 73)                     | .255     | d < a***, b**                          |

Note. The group comparisons column compares the mean level of the variable in each group; a = wives of ex-POWs with chronic PTSD; b = wives of ex-POWs with delayed PTSD; c = wives of resilient ex-POWs; d = wives of control group.

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

well as PTG total score, the control group reported lower scores compared with chronic and delayed groups, apart from the spiritual change subscale, in which the control group reported lower scores compared to the chronic but not the delayed group. No differences were found between the control and resilient groups.

### Longitudinal Changes in PTG

To examine changes in PTG between the two waves of measurement by study groups, we conducted two-way ANOVAs. First, we conducted a two-way ANOVA with two study groups (wives of ex-POWs, wives of controls) and time of measurement (T1, T2) as factors. Second, we conducted a two-way ANOVA with three study groups (wives of ex-POWs with PTSD, wives of ex-POWs without PTSD, wives of controls) and time of measurement (T1, T2) as factors. In both of the analyses, time of measurement was treated as a within-subject repeated factor. The dependent variables were the PTG scales.

The ANOVA conducted on PTG total score with two study groups (wives of ex-POWs, wives of controls) and time of measurement (T1, T2) as factors revealed only a significant main effect for group,  $F(1, 75) = 5.86$ ,  $p < .05$ , partial eta squared = .07. No significant effect was found for time  $F$

(1, 75) = .43, n.s., partial eta squared = .01; and no significant effect was found for time  $\times$  group interaction,  $F(1, 75) = .46$ , n.s., partial eta squared = .01.

The ANOVA conducted on PTG total score with three study group (wives of ex-POWs with PTSD, wives of ex-POWs without PTSD, controls) and time of measurement (T1, T2) as factors revealed only a significant main effects for group,  $F(2, 72) = 10.52$ ,  $p < .001$ , partial eta squared = .23. No significant effect was found for time,  $F(1, 72) = .92$ , n.s., partial eta squared = .01. No significant effect was found for time  $\times$  group interaction,  $F(2, 72) = 1.37$ , n.s., partial eta squared = .04.

In addition, ANOVAs were conducted on the PTG subscales, which did not reveal any significant effects for time.

### Bidirectional Relations Between PTSS and PTG Over Time

We examined the bidirectional relations between PTG and PTSS over time using ARCL modeling. Figure 1 presents the bidirectional relations between spouses' PTG total score and the three DSM-IV-TR clusters of PTSS (intrusion, avoidance, hyperarousal) across time.

The model fits the data fairly well,  $\chi^2(13) = 18.68$ , n.s., comparative fit index (CFI) = .98, normed fit index (NFI) = .95, Tucker Lewis index (TLI) = .05, root mean square error of

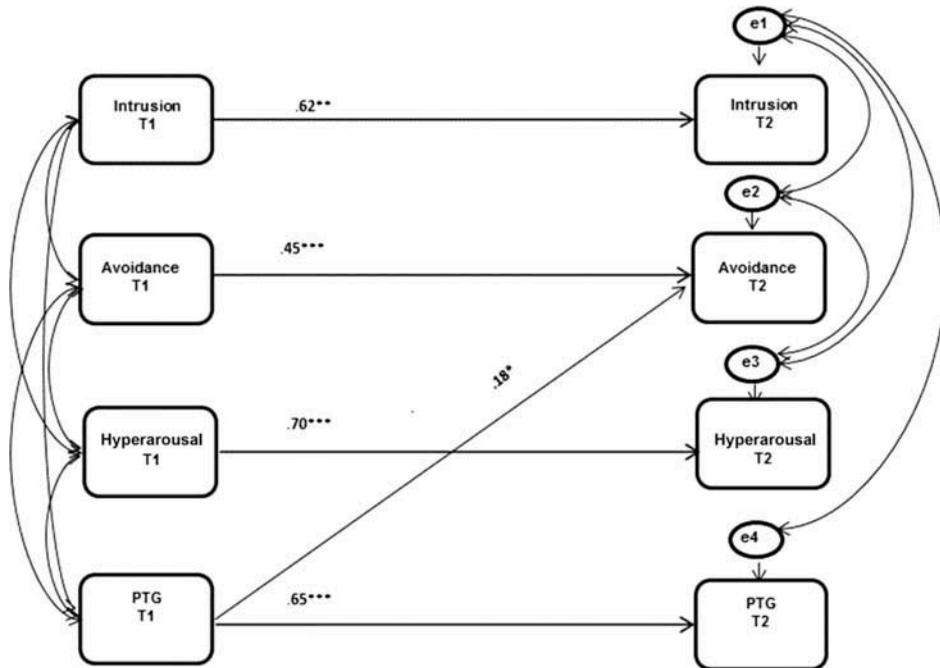


FIGURE 1. Autoregressive Cross-Lag Modeling of PTG and PTSS Clusters Across Time.  
Note: \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ . 'e' stands for error.

approximation 1-root mean square error of approximation (RMSEA) = .92. Analyses revealed a high stability of PTSS and PTG: Wives reporting high scores for intrusion, avoidance, and hyperarousal at T1 tended to report high scores again at T2. In the same manner, wives reporting high PTG total score at T1 tended to report high scores again at T2.

More important, the analyses revealed that the initial level of PTG total score at T1 predicted avoidance symptoms at T2, above and beyond the avoidance symptoms' stability, but not vice versa: the higher the wives' PTG total score at T1, the higher their avoidance symptoms in the subsequent wave of measurement at T2. Other paths of prediction were not significant.

## DISCUSSION

The current study investigated PTG in spouses of ex-POWs, with findings indicating

that wives' PTG is associated with husbands' distress. We found that wives of ex-POWs with PTSD reported significantly higher PTG compared with wives of ex-POWs without PTSD and wives of controls. Wives of husbands with chronic and delayed PTSD trajectories reported the highest PTG. Wives' levels of both PTG and PTSS remained stable over time. Importantly, we found that the initial level of PTG at T1 predicted avoidance symptoms at T2; the higher the wives' PTG at T1, the higher their avoidance symptoms at T2, but not vice versa.

The current findings have a number of implications. First, they suggest individuals do not need to directly experience trauma to develop PTG, supporting the notion that "secondary PTG" exists. Ochoa, Castejon, Sumalla, and Blanco (2013) view secondary PTG through the lens of a contagion model, in which spouses are "infected" with the traumatic experience and, through their

struggle to make sense of this experience, develop PTG. They differentiate between that and vicarious PTG, which they view as a learned, imitative behavior. However, the results of the current study indicate another model: The finding that wives of ex-POWs with PTSD reported higher PTG than wives of ex-POWs without PTSD and wives of the control group suggests that secondary PTG arises through coping with the difficulties of living with someone who has PTSD, rather than through coping with the knowledge that a loved one has been through a traumatic experience.

Our finding that wives of ex-POWs with PTSD endorsed the highest levels of PTG, despite their increased reporting of distress (Greene et al., 2014), strengthens the hypothesis that growth and distress can co-occur. Interestingly, our findings suggest that wives' PTG at T1 predicted their PTSS at T2, specifically avoidance symptoms. There are a number of ways in which these findings can be understood. It could be that PTG and PTSS share the same causal mechanism, namely, secondary trauma or distress, but are independent of each other, without one being the source of the other (Linley & Joseph, 2004).

Alternatively, it may be that some aspects of PTG and distress are related to each other (Snape, 1997; Dekel, et al., 2012). While being married to someone who suffers from PTSD entails distress, there may be some silver linings. An earlier qualitative study suggested that ex-POWs' wives believed that their husbands' traumatic experiences actually increased their husbands' sensitivity and therefore strengthened the marriage (Dekel, Goldblatt, & Solomon, 2005). It was also noted that ex-POWs' wives reported a sense of empowerment that resulted from their caregiving actions. While caregiving is often considered in terms of the burden it entails (Beckham, Lytle, & Feldman, 1996), it may also be that wives go through a process of making meaning of their caregiving actions (Ayres, 2000), which can lead to a sense of pride or strength.

It may even be the case that PTG fuels distress. It is possible to hypothesize that a wife copes with her husband's traumatic experience and her exposure to his PTSD symptoms by focusing on how much he means to her and developing a strengthened sense of intimacy—factors which are associated with the PTG relations subscale. However, to achieve this, she may avoid discussing his war captivity experiences to prevent upsetting her husband (Ein-Dor, Doron, Solomon, Mikulincer, & Shaver, 2010). This chronic “walking on eggshells” behavior can be stressful (Maloney, 1988). Moreover, while it may successfully prevent an immediate emotional response in the husband, it could also maintain traumatic reactions, thus prolonging the distressing situation.

It is important to note that we included only couples who stayed married in these assessments. It is possible that the choice to stay married among those whose husbands suffer with PTSD entails some cognitive dissonance (Festinger, 1962): On one hand, the women are committed to their husbands and are heavily invested in their marriages; on the other hand, they experience distress related to their husbands' symptoms or behaviors (Greene et al., 2014). One possible hypothesis is that some of these wives employ “positive illusions” (Taylor, 1989) in which they develop overly optimistic beliefs regarding their personal growth in order to overcome this dissonance. In other words, despite their reports of PTG, they do not experience genuine growth. This relates to the debate as to whether PTG is a “real” phenomenon (Frazier et al., 2009; Sumalla, Ochoa, & Blanco, 2009), with some suggesting that PTG may reflect an illusory or self-deceptive coping mechanism, at least in part (e.g., Maercker & Zoellner, 2004). The current findings do not allow us to provide an answer to this debate, nor to understand the mechanisms by which PTG and PTSS are related to each other. They do suggest, however, that PTG is not a buffer to future distress.

This study has a number of limitations. First, alongside trajectory groups, which were

based on husbands' self-reports, we used wives' reports of husbands' current PTSD symptoms. It is possible that this led to some misrepresentation of husbands' actual psychopathology. However, as our primary aim was to explore wives' experiences of their husbands' symptoms, we preferred to use the wives' reports rather than those of their husbands. Second, we do not have any baseline reports of wives' PTSS or PTG prior to the marriage, nor any reports of PTSS that were not specifically anchored to the husbands' wartime experiences, so we are not able to ascertain the extent to which these phenomena result from exposure to ex-POWs, or indeed to individuals with PTSD, and how much is a result of the wives' primary traumatic experiences. Finally, this study investigated secondary PTG only in wives of traumatized husbands, and so caution should be exercised in generalizing these results to husbands, parents, or children of other traumatized individuals.

We recommend that future research on wives' secondary trauma and secondary PTG

should clarify the extent to which wives were personally exposed to traumatic events. Second, we recommend further longitudinal research on PTG to clarify the ways in which PTG and PTSS are related to each other over time. Finally, we recommend that studies addressing indirect trauma exposure and PTG also conduct research with family members of traumatized individuals other than wives—including husbands, parents, and children—and consider the associations between the primary trauma survivor's PTG and the family member's PTG.

Nevertheless, this study has some important implications. First of all, it provides support for the existence of secondary PTG among wives of husbands with PTSD. It also strengthens the theory that growth and distress can co-occur. Finally, the study found that PTG predicted subsequent avoidance symptoms, suggesting that PTG does not prevent the future development of distress. These findings suggest that indirect trauma exposure should be seen to have both maladaptive and positive aspects.

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