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Exploring the Association between Posttraumatic Growth and PTSD: A National Study of Jews and Arabs Following the 2006 Israeli-Hezbollah War

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Abstract

Posttraumatic Growth (PTG) – deriving benefits following potentially traumatic events – has become a topic of increasing interest. We examined factors that were related to self-reported PTG, and the relationship between PTG and symptoms of posttraumatic stress (PTS) following the 2006 Israel-Hezbollah. Drawing from a national random sample of Israel, data from 806 terrorism-exposed Israeli adults were analyzed. PTG was associated with being female, lower education, greater recent terrorism exposure, greater loss of psychosocial resources, greater social support, and greater self-efficacy. PTG was a consistent predictor of PTS across hierarchical linear regression models that tested whether demographic, stress, or personal resources moderated the relationship between PTG and PTS. PTG did not relate to PTS differently for people who differed by age, sex, ethnicity, education, religiosity, degree of terrorism exposure, self-efficacy, non-terrorism stressful life events, and loss of psychosocial and economic resources. PTG was not related to well-being for any of these subgroups.

Keywords

posttraumatic stress disorder; posttraumatic growth; war; terrorism

During the *Al Aqsa Intifada* more than 1023 Israeli civilians had been killed and 5238 injured as a result of terrorist violence at the time of this study (National Security Studies Center Terrorism Database, 2005). The *Intifada* continued, and in the summer of 2006, Israelis were confronted with the Israel-Hezbollah war. Northern Israel was struck by over 3970 missiles, resulting in 41 civilian and 119 military deaths (Israeli Ministry of Foreign

Affairs, 2006). Attacks brought life to a standstill, and people began to lose faith that the Israeli Defense Forces could protect the nation (Gambill, 2006). Disruption to life was extreme; over 300,000 Israelis were evacuated, and over 1 million others lived in air-raid shelters during the month-long conflict (Israeli Ministry of Foreign Affairs, 2006).

Studies have demonstrated the clear negative psychological impact of terrorism (Bleich et al., 2003; Bleich et al., 2006; Galea et al., 2002; Hall et al., in press; Schlenger et al., 2002) and war (Lomranz et al., 1994; Palmieri et al., 2008). But an important question that needs to be considered is why and to what degree symptoms of post-traumatic stress (PTS) vary among people exposed to terrorism. One potential explanation lies in posttraumatic growth (PTG). The ability to derive benefit from the darkness of ongoing terrorism and war may have a protective value (Hall et al., 2008; Tedeschi & Calhoun, 1995; Tedeschi & Calhoun, 2004; Linley & Joseph, 2004). The current study was the first to examine predictors of PTG and its relationship to psychological well-being in a national sample exposed to ongoing terrorism and recent war. We tested various predictors of PTG and the relationship between PTG and PTS symptoms along with various mechanisms through which PTG and PTS symptoms may be related.

Posttraumatic Growth and Factors that Predict PTG

PTG is defined as “positive psychological change experienced as a result of the struggle with highly challenging life circumstances,” (Tedeschi & Calhoun, 2004, pg. 1). PTG is also conceptualized as more than a return to pre-trauma levels of functioning following a traumatic event, but is instead related to achieving an enhanced level of functioning, sense of meaning or spirituality, and closer relationships that were not present before the event occurred (Linley & Joseph, 2004). PTG is not an expression of resiliency (Bonanno, 2005), nor does it speak to the capacity to resist developing psychological disorder (Layne et al., 2007; Hobfoll et al., 2009).

With relatively few people experiencing posttraumatic stress disorder (PTSD) following trauma (Kessler et al., 1995), PTG offers an alternative perspective on post-trauma adaptation and functioning. Although investigations into the negative consequences of trauma are important to ameliorate the significant suffering that some experience following a potentially traumatic event (PTE), preoccupation with disorder may obfuscate important information about the potential for a positive legacy that trauma may leave in its wake (Linley & Joseph, 2004).

Few studies have examined factors that predict terrorism- and war-related PTG (Dekel, 2007). Past studies of populations exposed to terrorism and war have linked reports of PTG to being female (Dekel, 2007; Val & Linley, 2006), being a member of an ethnic minority group (Maguen et al., 2006), reporting greater social support (Maguen et al., 2006), experiencing greater stress (Hobfoll et al., 2006), and reporting greater perceived threat during the traumatic event (Maguen et al., 2006).

According to conservation of resources theory (COR; Hobfoll, 1989), stress results from the loss or threat of loss to valued resources. Studies have shown a direct link between the trauma of terrorism (Hobfoll et al., 2006) and war (Lomranz et al., 1994) to losses of psychosocial and economic resources; resource loss being a strong predictor of symptoms of PTS and major depression (e.g., Hall et al., 2008). Theorists believe that situations of greater stress encourage people to seek meaning, closeness with others, and spirituality (Tedeschi & Calhoun, 2004). Therefore it follows that greater resource loss and stressful life events would relate to greater PTG.

Self-efficacy may also be associated with PTG following terrorism. People who have greater self-efficacy believe they can affect change in their environments. They may also conceive their traumatic experiences as providing them opportunities to grow, and to develop greater strengths, and have greater ability to translate thoughts into actions (Hall et al., 2008).

Posttraumatic Growth and its Relationship to PTSD

Initially, theorists suggested that PTG was unrelated to psychological distress, and it was treated solely as a positive outcome following PTE exposure (Tedeschi & Calhoun, 1995). Theorists have recently begun to evaluate the possibility that some accounts of PTG may be illusory (Hobfoll et al., 2007; Zoellner & Maercker, 2006). Hobfoll and colleagues (2007) drew the distinction that some growth may represent cognitive attempts to reduce the impact of trauma. True growth, according to their model, follows putting growth cognitions into practice, or what they termed *action focused growth*. Zoellner and Maercker (2006) similarly posited that PTG could have a self-deceptive or illusory side associated with psychological distress, and a transcendent side that would relate to less psychological distress. In order to account for the relationship between intrusive trauma-related cognitions and PTG, Calhoun and Tedeschi (2006) recently revised their earlier model of PTG and incorporated “constructive rumination.” They specified that in order to reach PTG, a trauma memory would be recalled until incorporated into a new life schema at which point, PTSD and PTG would be unrelated.

As empirical investigations of PTG have continued, researchers began to examine the relationship between PTG and PTS symptoms to assess whether PTG serves a protective function against PTSD. Some studies have demonstrated that greater PTG was related to greater PTS symptoms (Hall et al., in press; Lehman et al., 1993; Park et al., 1996; Tomich & Helgeson, 2004; Wild & Paivio, 2003). In some studies, greater PTG was related to fewer PTS symptoms (Ai et al., 2005; Frazier et al., 2001; Hall et al., 2008; McMillen et al., 1997). Few studies supported the viewpoint that PTG and psychological distress are unrelated (Cordova et al., 2007; Val & Linley, 2006; Widows et al., 2005). The results of a recent meta-analysis of 77 cross-sectional studies (Helgeson et al., 2006) indicated that PTG was related to greater trauma-related avoidance and intrusive thoughts.

Studies have examined PTG and PTS symptoms in a variety of trauma contexts, but few were conducted following terrorism exposure. Several prior nationally representative studies in Israel reported that PTG was directly related to PTS symptoms (Hall et al., in press; Laufer & Solomon, 2006; Solomon & Dekel, 2007) and greater symptoms of PTS and depression (Hobfoll et al., 2006; Hobfoll et al., 2008). It is questionable whether PTG is related to positive outcomes for people exposed to terrorism and war-related trauma.

Factors Interacting with PTG to Predict Psychological Well-Being

It has been argued that the varied findings for PTG and psychological well-being may be due to other factors that interact with the PTG process (Helgeson et al., 2006). Hence, it has been suggested that PTG is more beneficial for members of ethnic minority groups and for men (Helgeson et al., 2006). Although not previously examined, it is also possible that PTG relates to less PTS symptoms for those with greater self-efficacy, given that it is a central management resource and people who are high in self-efficacy can optimize the use of other resources to translate their resources into actions that help them achieve their goals (Hall et al., 2008; Hobfoll et al., 2007). This study adds to the literature exploring the associations between PTG and PTS symptoms by evaluating mechanisms that can account for their relationship.

The Current Study

The current study sought to accomplish two goals. The first goal was to extend previous research regarding constructs that are related to PTG. Our second goal was to explore the relationship between PTG and PTS symptoms to examine if certain subgroups, as prior research suggested, derive greater benefit from PTG and manifest the same benefit in the context of terrorism and war. This paper makes an important contribution to the literature as it is this is virtually the first study ever conducted with a national sample just days after the cessation of war, and the first study to examine PTG in such contexts. Furthermore, few studies have measured the relationship between PTG and PTS symptoms within the context of terrorism and war.

We tested the following hypotheses:

1. Female gender would be directly related to PTG.
2. Ethnic minority status (i.e., Palestinian Citizens of Israel; PCI) would be directly related to PTG.
3. Social support would be directly related to PTG.
4. Greater stress, measured by stressful life events in the past year, loss of resources, and terrorism exposure would be directly related to PTG.
5. Greater self-efficacy would be directly related to PTG.
6. PTG would be directly related to PTS Symptoms.
7. For those low in self-efficacy, as PTG increased, so would PTS symptoms and for those high in self-efficacy as PTG increased, PTS symptoms would decrease.

We also conducted a series of exploratory moderation analyses that were informed by previous research, in order to determine if PTG may be inversely related to PTS symptoms for certain subgroups. We explored whether demographic variables or stress in the form of stressful life events occurring during the past year, psychosocial or economic resource loss, and recent terrorism exposure moderated the relationship between PTG and PTS symptoms.

Method

Data Collection and Sampling

A nationally representative sample of Israeli adults was randomly surveyed during the period of August 20th 2006 to September 28th 2006 immediately following the cessation of hostilities in the Israel-Hezbollah war. Phone interviews were conducted by the B. I. and Lucille Cohen Institute for Public Opinion Research in Israel using a structured questionnaire that was carefully pilot-tested and used in prior studies (Hobfoll et al., 2006). All scales were translated and back translated by language experts. Interviewers were trained in telephone survey methodology and conducted interviews in their native language of Arabic, Hebrew or Russian, making five attempts to contact an adult at each telephone number. Oral informed consent was obtained before the interview was begun. Mental health referrals were made if needed. The research ethics committee of the University of Haifa and Kent State University approved this study.

Of the 3,788 phone numbers dialed, 927 of the numbers were considered “not eligible” for participation, and were not included in response rate calculations, because they were either disconnected (678), business (140) or fax lines (109). Five hundred and sixty nine were considered “non-contact” because of language problems (179) and non-answer after repeated attempts (390). Actual responses totaled 2,292; 1,092 people refused to participate,

or did not complete the entire interview, leaving 1,200 interviewees (a response rate of 42%). This rate compares favorably with studies in the United States (Schuster et al., 2001) and in Israel (Hall et al., in press).

Instruments

A structured questionnaire included measures of demographic characteristics (age, sex (1 = male, 2 = female), ethnicity (1 = Jew, 2 = PCI), educational attainment, income, and religiosity), exposure to terrorism and rocket attacks within recent months of terrorism and war, stressful life events experienced within the past year, PTS symptoms, PTG, self-efficacy, social support, and psychosocial and economic resource loss. It was completed by most participants in 20 minutes.

Exposure to terrorism and war was assessed by asking participants whether they had been exposed to various terrorism and war-related events during the recent months prior to assessment (no = 0 and yes = 1). Exposure items were prefaced “As a result of terrorism and war, have you experienced...” and individual items included: “a death of a family member or a friend,” “injury of yourself, a family member or a friend,” “a period of time when you feared for the life of someone close to you,” “a rocket attack or a terrorist attack or been present at a site where there were injuries or fatalities?” Exposure items were summed. Internal reliability is not calculated for this scale as each event is discrete, and not expected to relate to others (Bollen & Lennox, 1991).

Past stressful life events were measured by asking participants to identify whether they experienced any of these six events within the past year: “a serious illness or injury diagnosed or worsen,” “you or anyone in your household unemployed for longer than 3 months,” “serious financial problems,” “someone close to you die,” “family or relationship problems.” Items were chosen based on their covering a broad spectrum of the most significant stressful life events (Holmes & Rahe, 1967). Items were summed to create a total score. Internal reliability is not reported for this scale as each stressful life event is discrete.

PTG was assessed with six items, rated from 0 *not at all* to 3 *extremely* from the Conservation of Resources-Evaluation (Hobfoll & Lilly, 1993). To assess changes experienced since the war, items were all prefaced with “To what extent, as a result of the recent rocket attacks and the recent terrorist attacks in Israel has...” “your feeling of intimacy with your family increased,” “your feelings of closeness increased with at least one person based on what they said or did,” “your relations with your friends have become closer,” “your feeling of hope has increased,” “your feeling that your life has meaning has increased,” “your confidence in your ability to do things has increased.” Cronbach’s alpha for the scale was .75. This short scale captures growth in the three domains of self-perception, interpersonal relationships, and philosophy of life posited by Tedeschi and Calhoun (1995). A recent reliability and validity study (Hall & Hobfoll, 2008) demonstrated that this scale was highly correlated ($r = .85$) with Tedeschi and Calhoun’s (1996) Posttraumatic Growth Inventory (PTGI) indicating that these two scales measure highly similar constructs.

PTS symptoms was measured using the PTSD symptom scale, interview format (PSS-I; Foa et al., 1993). Participants reported symptoms relating to experiences involving a terrorist attack or war-related event. The scale contains 17 items that assess PTSD symptom criteria of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, text revision* (American Psychiatric Association, 2000). Items were answered on a 4-point scale ranging from 0 *not at all* to 3 *very much* and summed to create a total scale score. Cronbach’s alpha was .91.

Perceived self-efficacy was measured using the General Self-Efficacy scale (Schwarzer et al., 1997). This 10 item scale measures the self-perception that one can perform novel or difficult tasks, or cope with adversity in various domains of human functioning. Items were scored on a 4-point scale from 1 *not at all true* to 4 *exactly true* and were summed. Cronbach's alpha for the scale was .87.

Social support satisfaction was measured using three items from the Support Satisfaction Questionnaire rated from 0 (not at all satisfied) to 3 (very satisfied) (Sarason et al., 1987). Each item was prefaced "How satisfied are you with the social support you receive from your..." and the following three domains were assessed: spouse/partner, family, and friends. Scale items were summed to represent a total support score. Cronbach's alpha for the scale was .64.

Psychosocial Resource loss due to terrorism and war related exposure was assessed using 7-items based on COR theory that were previously used in studies of terrorism (Hobfoll et al., 2006; Norris, 2001). Items were rated from 0 *no loss* to 3 *a great deal of loss*. Items were prefaced "To what extent have you lost any of the following things as a result of the terror or rockets attacks?" Example items include "There is at least one person whom you know that you like less than you used to because of things that occurred between you;" "You became less confident in your own abilities to cope with major crises." Items were summed to represent a total loss score.

Economic loss suffered as a result of terrorism and war-related events was measured by summing two items, answered yes or no (e.g., "As a result of the rocket attacks...have you suffered economically?" have you suffered property damage?").

Analyses

Of the 1,200 participants, 806 reported recent terrorism exposure. In order to assess the relationship between PTG and PTS symptoms, only those who reported recent terrorism exposure were selected for analysis. Results of t-tests and chi-square analyses indicated no demographic differences between the exposed and non-exposed groups. Therefore, the current terrorism-exposed subsample was treated as a nationally representative sample. Correlation and hierarchical linear regression analyses were conducted to test our hypotheses regarding the factors related to self-reported PTG and the relationship between PTG and PTS symptoms. Interactions were calculated using centered variables (Aiken & West, 1991). Non-centered results are presented to ease interpretation as the results did not differ when the models were tested using the centered and non-centered variables.

To assess the relative contribution of theoretically and empirically derived predictors of self-reported PTG, the following variables were entered simultaneously in one regression model: age, sex, ethnicity, education, income, religiosity, stressful life events in the past year, recent terrorism exposure, economic and psychosocial resource loss, social support, and self-efficacy.

To evaluate the relationship of PTG to PTS symptoms after controlling for other predictors, and for certain subgroups, we conducted three hierarchical regression analyses. In each of the models, we entered the following variables in the first three blocks: (1) age, sex, ethnicity, education, income, and religiosity, (2), stressful life events in the past year, and (3) recent terrorism exposure.

In the first model, we examined the possible interaction between PTG and demographic variables in predicting PTS symptoms. In step 4 we entered PTG, and in step 5, we entered the interaction between each of the demographic variables and PTG. The second model

tested whether PTG was related differently to PTS symptoms depending on the degree of stress exposure. We entered psychosocial and economic resource loss in step 4, PTG in step 5, and the interaction between PTG and each of the stress variables in step 6. The third and final model examined whether PTG was related differently to PTS symptoms depending on levels of personal resources. In step 4 of the model we entered self-efficacy and social support, in step 5 we entered PTG, and in step 6 we entered the interaction between PTG and each of the resource variables.

Results

There were no statistical differences between the current sample and the 2003 Census in terms of gender, ethnicity, age, and education for both Jews and PCIs. The sample consisted of 655 Jewish adults and 151 adult PCI. Of those individuals, 431 were women (53.5%). The mean age was 43.64 (SD = 15.95). In terms of reported highest level of education, 12.5% finished elementary school, 42.8% finished high school, 20.3% completed some college, and 24.3% had a college degree. Annual household income was 50.3% below average (i.e., 8,000 New Israeli Shekel), 26.3% average, and 23.4% above average. In terms of religiosity, 5.0% reported being secular, 15.9% traditional, 38.1% religious, and 40.6% strictly religious.

Nearly two-thirds of the sample (60.8%) reported recently experiencing at least one type of terrorist- or rocket-related traumatic event; 39.2% reported more than one type. A little more than one-third of the sample (34.0%) reported no exposure to past stressful life events and roughly one-third of the sample (31.1%) reported one event. Of the remaining participants, 19.4% reported 2 events, and 15.5% reported 3 or more events. Participants reported a mean level of 8.97 (SD = 4.55) for PTG, 12.24 (SD = 11.07) for PTS symptom severity, 22.29 (SD = 5.31) for self-efficacy, 7.9 (SD = 1.81) for perceived social support, and 9.14 (SD = 4.40) for psychological resource loss. The majority of participants in this sample (72.2%) reported no economic loss, 22.5% one type of economic loss, and 5.3% two types of economic loss.

Factors related to Self-Reported Growth Following Terrorism

Correlation analysis results indicated that PTG was correlated with income level ($r = .07$, $p = .04$), recent terrorism exposure ($r = .16$, $p < .001$), psychosocial resource loss ($r = .32$, $p < .001$), and self-efficacy ($r = .25$, $p < .001$). PTG was inversely related to age ($r = -.08$, $p = .02$) and educational level ($r = -.16$, $p < .001$).

The regression model predicting PTG explained 21.2% of the variance in PTG, $F(12, 793) = 17.78$, ($p < .001$). Being female ($\beta = .08$, $p < .05$), having lower education ($\beta = -.14$, $p < .001$), greater recent terrorism exposure ($\beta = .08$, $p < .05$), greater loss of psychosocial resources ($\beta = .31$, $p < .001$), greater social support ($\beta = .07$, $p < .05$), and greater self-efficacy ($\beta = .20$, $p < .001$) were significant predictors of PTG in the model.

The Relationship between Posttraumatic Growth and Psychological Distress

PTS symptoms were correlated with being female ($r = .25$, $p < .001$), ethnic minority status ($r = .09$, $p = .008$), stressful life events in the past year ($r = .35$, $p < .001$), recent terrorism exposure ($r = .12$, $p = .001$), psychological resource loss ($r = .40$, $p < .001$), economic resource loss ($r = .13$, $p < .001$), and PTG ($r = .24$, $p < .001$). PTS symptoms were significantly and inversely correlated with education ($r = -.26$, $p < .001$), income ($r = -.17$, $p < .001$), self-efficacy ($r = -.08$, $p = .02$), and social support ($r = -.16$, $p < .001$).

We first tested for possible interactions between demographic variables and PTG in the prediction of PTS symptoms. In step one, being older ($\beta = .08$, $p < .05$), being female ($\beta = .$

24, $p < .001$), being a PCI ($\beta = .07$, $p < .05$), having lower educational attainment ($\beta = -.23$, $p < .001$), and lower income ($\beta = -.07$, $p < .05$) were significant. Together they explained 13.9% of the variance in PTS symptoms, $F(6, 799) = 21.55$, ($p < .001$). In the next model step, greater stressful life events in the last year ($\beta = .30$, $p < .001$) contributed an additional 7.9% of the variance, $F(1, 798) = 80.64$, ($p < .001$). Step 3 indicated that greater recent terrorism exposure ($\beta = .13$, $p < .001$) accounted for an additional 1.5% of the variance explained, $F(1, 797) = 15.59$, ($p < .001$). In step 4, adding PTG ($\beta = .19$, $p < .001$) to the model accounted for an additional change in R^2 , $F(1, 796) = 37.55$, ($p < .001$), indicating that 3.5% of the variance in PTS symptoms was accounted for solely by this step. The final step with the interaction terms between PTG and demographic variables was not significant (p value for the model step was $> .10$). Overall, this model, explained 26.8% of the variance in PTS symptoms severity $F(9, 796) = 32.35$, ($p < .001$).

In the next model, we evaluated the possible interaction between PTG and stress variables. The results of the first three model steps are reviewed in the previous demographic model and are not reported for this, or the following analysis. In step four of the model, greater psychological resource loss ($\beta = .36$, $p < .001$) was a significant predictor of PTS symptoms and contributed an additional 12.4% of the variance explained, $F(2, 795) = 76.72$, ($p < .001$). Adding PTG ($\beta = .10$, $p < .01$) in step 5 of the model accounted for an additional R^2 change of .08% $F(1, 794) = 9.48$, ($p = .002$). The final step including the interaction terms between PTG and stress variables was not significant (p value for the model step was $> .65$). Overall, this model explained 37.0% of the variance in PTS symptom severity, $F(11, 794) = 41.47$, ($p < .001$).

We next evaluated the role of personal resource variables and their potential interaction with PTG in predicting PTS symptoms. The results of the first three model steps are described above. Step four of the model was significant and indicated that less social support ($\beta = -.08$, $p < .05$) was a significant predictor of PTS symptoms. This step explained an additional .09% of the variance, $F(2, 795) = 4.84$, ($p = .008$). In the fifth step, adding PTG ($\beta = .22$, $p < .001$) to the model accounted for an additional R^2 change of 4.3% $F(1, 794) = 47.53$, ($p < .001$). The final step including the interaction terms between PTG and resource variables was not significant (p value for the model step was $> .58$). Overall, this model explained 28.5% of the variance in PTS symptom severity, $F(11, 794) = 28.81$, ($p < .001$).

In a final analysis, we tested for a curvilinear relationship between PTG and PTS symptoms, that was found by Butler et al. (2005). We conducted an additional hierarchical regression analysis where we entered PTG in the first step and the quadratic term for PTG (i.e., PTG^2) in the second step. We did not enter other covariates in this model given the largely exploratory nature of this analysis, and the power needed to detect curvilinear trends. After controlling for PTG in the first step, the quadratic PTG term was not significant in the second model step ($p > .10$), which indicated that a significant curvilinear relationship did not exist in this study.

Discussion

We sought to evaluate predictors of PTG and the relationship between PTG and PTS symptoms including factors that may moderate this relationship in a large national sample of Israelis facing war. The results of this investigation have theoretical implications for understanding the coping process of a population exposed to war and terror.

Evaluating Predictors of PTG

In support of our first hypothesis, and consistent with previous research, women reported experiencing greater PTG (Dekel, 2007; Maguen et al., 2006; Val & Linley, 2006). This

finding may be related to the tendency of women to seek and provide social support thereby gaining increased closeness with others (Taylor et al., 2000). Contrary to our second hypothesis, ethnic minority group status was not related to PTG. The lack of ethnic differences in relationship to PTG suggests that it may not be ethnic minority status per se that is related to PTG. The majority of studies that have found a relationship between ethnicity and PTG have taken place in the United States and minority status has largely been defined as being either Latino or African American (Helgeson et al., 2006). Although minorities in the United States and PCI may both be similar in terms of being underprivileged (Canetti-Nisim et al., 2008), these groups may be quite disparate in terms of how they interpret PTG. Unlike past studies, education was a significant predictor of PTG. For those with less education, PTG may be an emotion-focused alternative to discerning other more instrumental ways of coping.

Our third hypothesis was supported; those who reported having more social support reported experiencing greater PTG. Expressing feelings of greater closeness with others, a key element of PTG, is consistent with reports of having loved ones to rely on in times of stress.

In accordance with our fourth hypothesis, stress was directly related to PTG. In particular, our finding related to loss of psychosocial resources adds support to previous theoretical assertions that the greater a persons' view of themselves and the world is challenged by a trauma, the greater PTG the person will report (Tedeschi & Calhoun, 2004). Recent war-related trauma exposure and stressful life events were both associated with greater PTG. As the number of stressors increased, so did self-reported PTG, even in a sample of people who have all been trauma-exposed.

Self-efficacy was also shown to relate to greater PTG, consistent with our fifth hypothesis. It may be that those who perceive themselves as able to change their environments perceive that they have made changes consistent with PTG (Hall et al., 2008). A person high in self-efficacy may also appraise trauma differently, seeing themselves as able to overcome their problems (Benight & Bandura, 2004).

Evaluating the Relationship between PTG and PTSD Symptom Severity and Potential Moderators

Consistent with our sixth hypothesis, PTG was directly related to PTS symptoms. In each of our regression models, PTG accounted for a significant increase in the variance explained in PTS symptoms above and beyond other independent variables. No significant interactions emerged between sample demographic characteristics and PTG. Our results suggest that a linear relationship between PTG and PTS symptoms existed such that as PTG increased in our sample, the report of PTS symptom distress also increased, contrary to previous research (Butler et al., 2005).

Stress was not shown to moderate the relationship between PTG and psychological distress. Although people reported more PTG when they were confronted with greater stress, PTG was not related to experiencing lesser PTS symptoms for these individuals.

Contrary to our seventh hypothesis, self-efficacy did not moderate the relationship between PTG and PTS symptoms. However, PTG and self-efficacy were positively and significantly correlated. This association indicated that PTG and self-efficacy shared variance, but the results of the hierarchical regressions showed that they differentially predicted PTS symptoms. The correlation between self-efficacy and PTS symptoms was consistent with it being a protective factor, but the association of PTG in light of self-efficacy suggests that PTG may be a vulnerability factor. In situations of intense war and ongoing terror self-

efficacy may not be sufficient to realize the benefits of PTG when taking action is not possible (Hobfoll et al., 2007).

Our findings do not mean that the beneficial impact of PTG that has been found in many studies (Helgeson et al., 2006) is not also meaningful. Rather, seen together, they suggest that PTG may be associated with lower psychological distress only in certain contexts. This is consistent with the meta-analysis by Helgeson et al. (2006) and our prior studies on PTG and terrorism that suggest the two faces of PTG (Zoellner & Maercker, 2006) may have different weight at different times (Hall et al., 2008; Hobfoll et al., 2006). When a crisis is chronic and the threat is ongoing, as was the case during the *Al Aqsa Intifada* (Hall et al., in press; Hobfoll et al., 2009) and in this current study of another war in a series of wars, PTG may alternatively represent a failed attempt to make sense of a traumatic event that makes no sense. When PTG is measured in people who are able to take action to overcome a threat, as was the case with the settlers resisting forced evacuation from Gaza (Hall et al., 2008), PTG may serve its theorized protective function. Further for people exposed to the pressure of ongoing life threat, there may be little chance of entering the resolution phase – one relatively free from pathology – that Tedeschi and Calhoun (2006) theorize occurs, wherein PTG is unrelated to PTS symptoms.

In certain circumstances, and coping with ongoing war may be such a circumstance, PTG may represent retrospective reattribution where people try to justify their pain by stating that they have grown through their exposure to adversity (McFarland & Alvaro, 2000). Ross and colleagues (Wilson & Ross, 2001) also suggested that individuals may derogate past selves through a process of self-enhancement in order to maintain positive views of their current selves. Certainly, studies have shown that people may find it adaptive to seek positive illusions following major life stress (Taylor & Brown, 1988).

This study has several notable strengths. To our knowledge, no other study has examined multiple factors contributing to the prediction of PTG and the association between PTG and PTSD symptom severity in a single investigation of people who faced community-wide exposure to terrorism and war. Our large sample size allowed for ample statistical power to test our study hypotheses and the several exploratory questions we analyzed. Moreover, most studies in the literature have relatively small sample sizes and therefore lack the statistical power to examine interactions reliably. Finally, although not generalizable to all situations, many regions of the world face ongoing war and terrorism, and so our results may be important for other war-torn regions of the globe.

Our study also has several limitations. The study design was cross-sectional so we cannot speak to causal direction. Also, as we studied people immediately on war's cessation, there might not have been enough time for salutogenic aspects of PTG to occur (Frazier et al., 2001). Further, using phone survey methodology, our measures are necessarily brief and so may not capture the fullest nature of the variables of interest. Our findings may also have limited generalizability beyond the study of war and terrorism in places that have experienced these as ongoing processes. Of particular note, the participants in this study reported relatively low mean levels of PTSD symptomatology. It may be that populations who have lower mean levels of PTG demonstrate this linear relationship between PTG and PTSD. In addition, we had no data on differential response rate between Jews and PCIs. It is possible that differential non-response bias in the two groups may have contributed to some of the results observed in this study.

Future studies could add to the literature by including multiple assessments of PTG through self-report, informant report, and in-person interviews. Clinician assessment of PTG could also aid in making direct linkages between pre- and post-trauma selves (e.g., assess changes)

and their relationship to a potentially traumatic event. Predictors of PTG should also be evaluated utilizing a longitudinal perspective so casual relationships can become better understood. Furthermore, studies that examine PTG and its relationship to PTSD or other psychological outcomes can be better informed by a longitudinal design as well. Future research can also examine how PTG relates to psychological functioning following a variety of traumatic events, and in a variety of contexts. Because it is not entirely clear whether people who report PTG have actually grown following trauma, research should also examine other factors that may account for describing oneself as having experienced PTG (e.g., self-enhancement).

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