
Posttraumatic Growth After War: A Study with Former Refugees and Displaced People in Sarajevo

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Research carried out with survivors of a variety of different traumata indicates that a large proportion of them perceive positive changes in themselves after the trauma. This study investigated whether posttraumatic growth also could be found among people who had been exposed to particularly severe traumata over a period of several years (1991 to 1995) during the war in the area of the former Yugoslavia. Included in the study were two representative samples of adult former refugees and displaced people who lived anywhere in former Yugoslavia before the war and were currently living in Sarajevo, Bosnia and Herzegovina, three and a half years after the war. The main instrument was a new Bosnian translation of the Posttraumatic Growth Inventory. Results indicated some differences in the factor structure as compared with the original instrument. The overall means for the scale were considerably lower than reported in most studies

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on other kinds of trauma. Younger people reported considerably more growth than older people. © 2003 Wiley Periodicals, Inc. *J Clin Psychol* 59: 71-83, 2003.

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Survivors of a wide variety of different traumata, besides suffering from psychological and medical symptoms, often also perceive positive changes in themselves after the event. Following an overview of the literature on theoretical, practical, and empirical approaches to understanding posttraumatic changes of this kind, Tedeschi and Calhoun (1996) identified three relevant dimensions: changes in self-perception, changes in interpersonal relationships, and a changed philosophy of life. On the basis of this overview, they developed the Posttraumatic Growth Inventory (PTGI), which consists of 21 items on five scales: New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life. Tedeschi, Park, and Calhoun (1998) conceptualized posttraumatic growth as "... a significant beneficial change in cognitive and emotional life that may have behavioral implications as well" (p. 3). Further, it involves "such fundamental changes or insights about living that it does not appear to be merely another coping mechanism" (p. 3).

So far, to our knowledge, no previous study has systematically assessed posttraumatic growth among the general population after an accumulation of traumatic events in wartime. This study investigated posttraumatic growth among former refugees and displaced people currently living in Sarajevo, Bosnia, and Herzegovina. As reported in Rosner, Powell, and Butollo (this issue), the majority of these people experienced, during the years of the war in former Yugoslavia, a considerable number of traumatic events. Yet, life goes on in Sarajevo. Are at least some of the people thriving, or are they all merely surviving?

The PTGI was selected as the main measure of posttraumatic growth for this study because although there are other measures covering this and similar constructs the PTGI has the most differentiated factor structure.

Results From the Literature

Factor Validity of the PTGI

Can the original five factors of the PTGI be identified in different cultural and historical contexts? In their small sample, Polatinsky and Esprey (2000) did not find sufficient evidence to support the five original factors. To date, only one translation of the PTGI has been made, a translation into German by Maercker and Langner (in press). A factor analysis was able to reproduce the original factors to a limited extent. The cultural surroundings in Sarajevo in 1999 were sufficiently different from those of the original factorization that some differences in the factor structure can be expected in the present study.

Age and Sex Differences in Positive Changes After Traumatic Events

Differences in posttraumatic growth according to age at the time of event are often not tested; when they are tested, there is usually no effect of age on growth (Collins, Taylor, & Skokan, 1990; Krizmanic & Kolesaric, 1996; Lehman et al., 1993; Maercker, Herrle, & Grimm, 1999; Polatinsky & Esprey, 2000; Tedeschi & Calhoun, 1996). However, as the majority of studies either involve students or focus on particular kinds of events such as heart attack (which tend to be associated with particular age groups), the age range covered in most studies is fairly limited, leaving the question open as to what to expect in the present study (see Hypothesis 3).

Sex differences have been reported, with women indicating more growth than men (Lehman et al., 1993; Park, Cohen, & Murch, 1996; Tedeschi & Calhoun, 1996). Polatinsky and Esprey (2000) and Collins et al. (1990) reported no difference between the sexes.

Relation Between Posttraumatic Growth and PTSD Symptomatology

In most theoretical work on posttraumatic growth, it is conceived of as being a separate outcome independent of symptom scores. All surveyed studies reported either a moderate positive correlation between growth and symptom scores (Maercker & Langner, 2001; Park et al., 1996) or no significant correlation (Lehman et al., 1993; Maercker et al., 1999).

"Dose-Response" Relationship for Posttraumatic Growth

Evidence for a "dose-response" relationship between posttraumatic growth and exposure to traumatic events can be sought in two places: within studies or between studies.

Within some studies, there is a moderate positive correlation between growth and the severity of exposure to traumatic events, either measured via objective characteristics of the event in self-report (Maercker et al., 1999) or via the subjects' own ratings of subjective stressfulness (Park et al., 1996). Elder and Clipp (1989) used qualitative and quantitative measures to study positive and negative changes reported by U.S. veterans of World War II and the Korean War as a function of the degree of their exposure to combat. Although participants in the heaviest combat had more cases of significant psychosocial dysfunction, they also reported more positive changes in themselves. Posttraumatic growth with convenience samples of civilian survivors of the war in former Yugoslavia was investigated by Krizmanic and Kolesaric (1996). The refugees and displaced people interviewed in their study reported more positive changes, but also more negative changes, than citizens of Zagreb less affected by the war.

The studies reported in the previous section, reporting a moderate positive correlation between growth and the severity of exposure to traumatic events, focus largely on one kind of traumatic event such as the loss of a child, victimization, and so on. However, each individual study can be seen as covering a small slice of a much broader scale of severity, giving rise to the question of the nature of the dose-response relationship over this broader range. Table 1 summarizes mean PTGI scores reported in various contexts over the whole range of severity between studies. An inverted-U relationship between severity and growth can be discerned according to which medium stress produces the highest average growth.

Most of the people in the present study had experienced not one but several traumatic events—moreover, in a particularly stressful and threatening war and postwar environ-

Table 1
Mean Overall Scores on the PTGI in Different Studies

Study	Subjects	Presumed level of stress in comparison to other studies	Scoring system if not standard PTGI scoring (0,1,2,3,4,5); mean	Mean PTGI score (transformed from nonstandard scale where necessary ^a)
Tedeschi & Calhoun (1996), third study	Students with no stressful events	low		$M = 69.75$
Tedeschi & Calhoun (1996), third study	Students who had experienced a stressful event (events such as relationship break-up and motor vehicle accidents)	medium		$M = 83.16$
Calhoun, Cann, Tedeschi, & McMillan (2000)	Students who had experienced a major traumatic event	medium		$M = 76.5$
Tedeschi & Calhoun (1996), first study	Students who stated they had experienced a significant negative life event	medium		$M = 75.18$ for women; $M = 67.77$ for men
Maercker & Langner (2001)	Dresden bombing night victims 50 years later	high	Three-point scoring (1,2,3) ^b $M = 48.7$	$M = 69.3$
Polatinsky & Esprey (2000)	Parents who had lost a child	high	6-point scale scored from 1 to 6. $M = 83.5$ for mothers; 79.3 for fathers	$M_s = 62.5$ and 58.3 , respectively.
Peltzer (2000)	Criminal victimization in an urban community in South Africa	high	6-point scale scored from 1 to 6. $M = 61.3$	$M = 40.3$

Note. PTGI = Posttraumatic Growth Inventory.

^aTransformations of this kind should be treated with caution.

^bPersonal communication, January 2001.

ment over a period of several years. This would place them well on the downward slope of an inverted-U, leading to a specific hypothesis for the present study not only of lower overall growth compared to other studies (Hypothesis 4b) but also to the expectation of a negative correlation between growth and traumatic events within the present samples (Hypothesis 4a), due to the hypothesized downward gradient at this part of the inverted-U.

Aim of This Study

The overall aim of the study was to assess whether and to what extent posttraumatic growth is found among people exposed to particularly severe stress during the war in former Yugoslavia.

Hypotheses

The following hypotheses were formulated.

Hypothesis 1: A five-factor solution similar to that for the original can be found.

Hypothesis 2: Women have higher overall scores. Age has no effect on posttraumatic growth.

Hypothesis 3: The factors of posttraumatic growth have a weak positive relation to posttraumatic symptoms.

Hypothesis 4: "Dose-response" relationship between amount of trauma and post-traumatic growth

- a) The factors of posttraumatic growth are negatively correlated with exposure to stressful events within this study.
- b) The mean overall score for the PTGI is rather low compared to those reported in studies with survivors of other types of extreme stress.

Method

Instruments

PTSD Symptomatology. For the assessment of current PTSD-symptomatology, a translation of the Posttraumatic Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997; German version by Steil & Ehlers, in preparation) in the self-report version was applied. The PDS is described in greater detail in Rosner et al. (this issue). Part 3 of the PDS includes 17 items covering the symptoms of PTSD, which together form a global PDS symptom scale. This scale has good characteristics in this sample: The smallest item-total correlation to the whole scale = .58, and standardized item α = .94. The range of possible scores is from a minimum of 0 to a maximum of 51.

Traumatic Events. The Checklist for War Related Experiences (CWE; Powell, Rosner, Kruessmann, & Butollo, 1998) replaced the section on traumatic events in the original PDS, which was not suitable for postwar application. Forty-nine of the CWE items cover traumatic events, such as "Did you eyewitness a loved one being killed during the war?" that are scored as either "more than once," "once," "no," or for certain items simply "yes" or "no." These 49 items are grouped into ten categories: injury to self; sexual violence to self; traumatic threat to self; torture to self; other witnessed traumatic events: loved ones; witnessed traumatic events: others; traumatic losses, nuclear family; traumatic losses, other loved ones; traumatic threat, violence, injury to loved ones; and other pre- and postwar traumatic events

A measure of the total number of all traumatic events experienced in all categories was established by summing the z -transformed scores on each of the aforementioned event category variables. The range of possible scores is a minimum of 0 to a maximum of 98. It was necessary to z -transform the category scores prior to further analysis because the standard deviations and both the theoretical and empirical ranges were quite different for each category.

Sociodemographic Information. Sociodemographic information was assessed with a separate questionnaire. Only sex, age (expressed as a three-level variable reflecting the three levels of age described later), and education (a three-level variable reflecting hav-

ing finished elementary, secondary, or higher education) were analyzed for the present study.

PTGI. The original version of the instrument developed and used by Tedeschi and Calhoun (1996) explicitly states that the respondents are to answer about changes which occurred "in your life as a result of your crisis." However, as the "crisis" in the present study could have been as wide as the whole complex situation of war and refuge, each item was adapted to include a reference to changes "since April 1992" or "in comparison with the period before the war." The adapted instrument then went through three cycles of translation, pilot administration with small groups, adaptation, and back-translation.

Many of the respondents in the pilot studies had difficulties understanding some of the items in which the aspect of change was not explicitly mentioned. Such items were altered accordingly. For example, Item 4, "A sense of closeness with others," was changed to read "I feel more closeness to others in comparison with the period before the war." As nearly all the other questionnaires in the package used a 5-point Likert scale and our respondents had difficulty understanding and adapting to the scales, a 5-point scale, ranging from 1 (*not at all*) to 4 (*very strongly*), was retained for this study rather than the 6-point scale in the original. The range of possible scores in our instrument is a minimum of 0 to a maximum of 84. As the item scores are corrected by multiplying by $\frac{5}{4}$ in subsequent analyses to make them comparable with the original instrument, the range of possible transformed scores was 0 to 105. The Bosnian items and instruction are available from the first author.

Sample and Data Gathering

The data for the present study were extracted from data collected for a larger project conducted by our Institute in 1998 and 1999. More details of the 1999 phase of the study and the sample definitions and data-gathering methodology are given in Powell, Rosner, and Butollo (2000). Inclusion criteria were: Adults between 16 and 65 years old who lived in former Yugoslavia for most of 1980 to 1991, living at the time of interview (1999) in Sarajevo, but who had lived outside Sarajevo for more than 12 months between 1991 and 1995, not suffering from a psychotic disorder or other serious crisis, and literate enough to answer the questionnaire with some help. Current and former military personnel were not excluded.

The PTGI was administered as part of an additional, larger package of instruments which, due to financial constraints, could not be administered to all the respondents. Two subgroups of 75 each were randomly selected for these longer packages from two samples of 97 former refugees and 104 displaced (or former displaced) adults, providing the data analyzed in the present study. The original samples of 97 and 104 persons were stratified to ensure an approximately equal number of each sex in three age groups: 16 to 30, 31 to 45, and 46 to 65 years.

The terms "refugee" and "internally displaced person" (in this study, the latter are referred to just as "displaced persons") both refer to those who have been forced or obliged to leave their homes, e.g., as a result of war or persecution (see Cohen & Deng, 1998, pp. 15–39); refugees are those who subsequently cross an international border—in this case, that of former Yugoslavia. Accordingly, the first sample consisted of 75 former refugees who had taken refuge in countries outside former Yugoslavia for more than 12 months between 1991 and 1995; the second sample consisted of 75 displaced (or formerly displaced) adults now living in Sarajevo who did not take refuge outside former

Yugoslavia. Many of the former refugees are still not able or willing to return to their pre-war accommodation. The sample of internally displaced persons includes some who were displaced by the war, but who have now returned to their pre-war accommodation. Both groups had experienced a wide range of war events. Although the former refugees in the first sample had spent an average of $M = 4.02$ years outside former Yugoslavia, most also had experienced severe war stress ($M = 17.42$ months in a war zone) before they left the country. In most cases, they lost family members in the area of former Yugoslavia while they were abroad.

People targeted for inclusion in the study were selected at random from lists prepared by 16 Local Councils ("Mjesne Zajednice") of all those registered with them who could meet the inclusion criteria for either of the two samples. These Local Councils had themselves previously been selected at random from all the local councils in Sarajevo.

Those interested in cooperating with the survey were informed of the aims and conditions of participation, given guarantees of confidentiality, and asked to sign an informed consent form. Interviewers were pairs of final-year and third-year students of psychology. The respondents were paid for their cooperation. It is rather difficult to define a responder rate since the original names and addresses from the Local Councils were not always reliable. A rate of 80.90% was calculated; details are available from the first author.

Sample Characteristics. Some data were missing for the PTGI, leaving a total of 136 valid questionnaires. The samples are described in Table 2. Chi-square tests reveal that the sample was approximately evenly distributed across sex and age group (for the whole sample, Pearson $\chi^2 = 2.30$, $df = 2$, n.s.). A Mann-Whitney U test for the level of education between the samples revealed a significant value of 1739.5 (asymptotic two-sided significance, $p < .05$) in the sense that the former refugees were somewhat better educated.

Minimum Age of Respondents. The minimum age according to the inclusion criteria was 16 years; however, coincidentally no respondents were between 16 and 17 years of age, and thus the minimum age in the sample is 17. This means that they were being asked to compare themselves with how they were when the youngest respondent was only 10 years old. The ability of young people to distinguish the influence of traumatic and unusually challenging events from normal maturation is questionable (Cohen, Hettler, & Pane, 1998, p. 39). A t test was conducted within only the younger age group (16–30

Table 2
Sample Description

Sample	Sex	Age Group (years)			Total
		16–30	31–45	46–65	
Former refugees from outside former Yugoslavia	female	15	12	12	39
	male	11	10	4	25
	Total	26	22	16	64
Displaced or formerly displaced	female	12	13	13	38
	male	17	7	10	34
	Total	29	20	23	72

years) to check whether the overall score on the PTGI for those who had not yet reached the age of 15 in 1992 ($M = 41.74$, $SD = 18.06$) differed from those who had ($M = 37.86$, $SD = 16.92$). As this difference was not significant, $t = .791$, $df = 49$, n.s., these very young respondents were not excluded from the analysis.

Results

Basic Data

PDS Symptom Scores. The mean level of PDS symptoms for the whole sample was 9.98 ($SD = 11.13$). There were no significant differences for subsample (former refugees: $n = 63$, $M = 9.11$, $SD = 8.84$; displaced: $n = 72$, $M = 10.74$, $SD = 12.83$), for unequal variances, $df = 126.35$, $t = .87$, n.s., or sex (female: $n = 77$, $M = 10.16$, $SD = 10.69$; male: $n = 58$, $M = 9.74$, $SD = 11.78$), $df = 133$, $t = .213$, n.s.

Traumatic Events. The mean total number of traumatic events for the whole sample was 19.23 ($SD = 13.32$). Analyses were conducted for the standardized total number of traumatic events. Former refugees had experienced significantly fewer traumatic events than displaced people (former refugees: $n = 64$, $M = -1.24$, $SD = 5.33$; displaced persons: $n = 72$, $M = 1.55$, $SD = 6.65$), two-tailed t test (unequal variances): $t = -2.72$, $df = 132.64$, $p < .005$.

Women had experienced significantly fewer traumatic events than men (female $n = 77$, $M = -1.59$, $SD = 5.129$; male: $n = 59$, $M = 2.63$, $SD = 6.70$), two-tailed t test (unequal variances): $t = -4.02$, $df = 105.56$, $p < .001$. The number of traumatic events experienced did not differ significantly according to age (16–30 years: $n = 55$, $M = -.56$, $SD = 5.68$; 31–45 years: $n = 42$, $M = -.06$, $SD = 6.02$; 46–65 years: $n = 39$, $M = 1.69$, $SD = 6.95$), ANOVA: $F = 1.590$, $p = .20$.

Hypothesis 1: A Five-Factor Solution Similar to That for the Original Can Be Found

The PTGI total score had an acceptable distribution, very symmetrical although somewhat flat, with a mean of 35.82 ($SD = 18.09$). Item scores were corrected by multiplying by 5 or 4 in all subsequent analyses to make them comparable with the original instrument, which used a 6-point Likert scale rather than our 5-point scale. For the whole scale of 21 items, standardized item $\alpha = .93$. The item means are acceptable, varying between 1.31 and 2.76. Only Item 1 ("My aims in life changed in comparison with before the war.") gives cause for concern. While all other corrected item-total correlations were above .51, Item 1 had a correlation of .24. Item 1 also had the highest mean score.

The five original factors had acceptable alpha and item-total correlations, with the exception of Item 1, which is assigned to Factor 5, and which had an item-total correlation of .09. The pairwise intercorrelations between the factors were high; every one was significant at the .005 level, ranging between .48 and .75. Item 1 correlated very low with its intended subscale and with all other items (The maximum correlation with any other item was .31.) As the translation of this item also was problematic, it was deleted from further analyses.

An exploratory principal components¹ analysis was conducted with the remaining 20 items, with criterion for extraction = eigenvalue > 1 , followed by a varimax rotation.

¹The results of the Principal Components Analysis are referred to here as "factors."

Table 3
Loadings on the Three New Factors of the PTGI

Item Number and Text	Number of Factor in Original Factorization	New Factor 1: Changes in Self/Positive Life attitude	New Factor 2: Philosophy of Life	New Factor 3: Relating to Others
14 <u>I have new opportunities which would not have been available otherwise</u>	<u>2</u>	<u>.703</u>		
12 <u>I accept better the way things turn out</u>	<u>3</u>	<u>.691</u>		
11 <u>I can do more good with my life</u>	<u>2</u>	<u>.690</u>	<u>.332</u>	
10 <u>I know that I can deal with problems better</u>	<u>3</u>	<u>.677</u>		<u>.417</u>
19 <u>I discovered that I am stronger than I thought I was</u>	<u>3</u>	<u>.615</u>		<u>.520</u>
7 <u>I established a new path for my life</u>	<u>2</u>	<u>.605</u>	<u>.440</u>	
4 <u>I have more self-confidence</u>	<u>3</u>	<u>.579</u>	<u>.553</u>	
5 <u>I understand spiritual matters better</u>	<u>4</u>	<u>.509</u>	<u>.440</u>	
9 <u>I am more willing to express my feelings</u>	<u>1</u>	<u>.446</u>	<u>.396</u>	<u>.422</u>
2 <u>I appreciate the value of my life more</u>	<u>5</u>		<u>.741</u>	
13 <u>I appreciate each new day more</u>	<u>5</u>		<u>.675</u>	
16 <u>I try to have the best relationships to others</u>	<u>1</u>		<u>.589</u>	<u>.547</u>
3 <u>I developed new interests</u>	<u>2</u>	<u>.547</u>	<u>.577</u>	
6 <u>I know that I can count more on people when I am in trouble</u>	<u>1</u>		<u>.535</u>	
15 <u>I have more compassion for others</u>	<u>1</u>		<u>.496</u>	<u>.464</u>
17 <u>I try more to change things which need changing</u>	<u>2</u>		<u>.494</u>	<u>.471</u>
21 <u>I accept more that I need other people</u>	<u>1</u>			<u>.783</u>
20 <u>I learned a lot about how wonderful people are</u>	<u>1</u>			<u>.767</u>
18 <u>I believe more strongly in God</u>	<u>4</u>			<u>.615</u>
8 <u>I feel closer to others</u>	<u>1</u>	<u>.394</u>	<u>.342</u>	<u>.524</u>

Note. Only item loadings greater than .3 are shown. Item 1 is excluded from this analysis. The item texts all ended with the additional comparison "... in comparison to the period before the war."

The resulting solution produced three factors which explain 21.23, 18.64, and 18.06% of the variance, respectively, totaling 57.93%.

Factor scores on these three factors were saved for further analysis using the regression method. To facilitate interpretation, items were allocated to a rotated factor if its loading on the factor was greater than .5 and at least .1 greater than its next-highest loading. These items are underlined in Table 3. The factor structure is not very clear, with many items loading highly on more than one factor.

All items on Factor 1 stem from the original factors "new possibilities" and "personal strengths." Three of the items allocated to Factor 3 stem from the factor "relating to others" in the original, and the other one comes from "spiritual change." However, although two of the items on Factor 2 come from "appreciation of life," the third comes again from "relating to others." Thus, although the rotated factor solution is roughly interpretable in the terms of the original, it is very far from reproducing it.

The three broad categories of posttraumatic growth originally identified by Tedeschi and Calhoun (1995) and mentioned earlier give a more plausible interpretation to our

factors than do the five factors which they found in their study. "A changed sense of relationship to others" is a good title for Factor 3, providing one accepts that a stronger belief in God fits under this heading. "Changed philosophy of life" fits our Factor 2 adequately. However, although the items of Factor 1 do seem to be relatively coherent, "perceived changes in self" only covers part of their meaning. This factor is therefore given the title "changes in self/positive life attitude" in the rest of this article.

Hypothesis 2: Women Have Higher Overall Scores. Age Has No Effect on Posttraumatic Growth

In the following analyses, to facilitate comparison with other studies, the overall scores were further scaled by $\frac{21}{20}$ to allow for the deletion of Item 1. The means of the overall score on the PTGI, together with the scores on the three PTGI factors (which are expressed in standardized units, $M = 0$), were compared in two one-way analyses of variance with age and sex as factors. There was no significant sex difference (Table 4). Inspection of scatter plots did not reveal any strong nonlinear relation between age and posttraumatic

Table 4
Mean Posttraumatic Growth Score Broken Down According to Age and Sex

		PTGI Overall Score	New Factor 1: Changes in Self/Positive Life attitude	New Factor 2: Philosophy of Life	New Factor 3: Relating to Others
Total	<i>M</i>	44.10	.00	.00	.00
	<i>SD</i>	23.24	1.00	1.00	1.00
Age Group (years)					
16–30	<i>M</i>	49.49	.38	.18	-.19
	<i>SD</i>	22.48	.96	.90	.89
31–45	<i>M</i>	45.50	.12	-.07	.07
	<i>SD</i>	19.99	.94	.93	1.12
46–65	<i>M</i>	35.00	-.64	-.18	.19
	<i>SD</i>	25.31	.79	1.17	.99
Between-groups $df = 2$					
Within-groups df^a		133	129	129	129
<i>F</i>		4.80	14.77	1.60	1.86
<i>p</i>		.010	.000	.208	.160
Sex					
Female	<i>M</i>	43.89	-.05	.01	.02
	<i>SD</i>	23.04	.94	1.01	.91
Male	<i>M</i>	44.38	.06	-.01	-.03
	<i>SD</i>	23.70	1.08	1.00	1.12
Between-groups $df = 1$					
Within-groups df		134	130	130	130
<i>F</i>		.015	.373	.009	.085
<i>p</i>		.904	.543	.924	.771

Note. PTGI = Posttraumatic Growth Inventory.

^aAs four respondents had at least one item on the PTGI scale with a missing value and the principal components analysis was carried out excluding cases listwise, the degrees of freedom are smaller for the factor scores than for the total scale score.

growth or its factors. Scores were lower for the oldest age group, in particular on the factor "changes in self/positive life attitude." Post hoc comparisons using Tukey's HSD to reveal homogenous subsets indicate that (a) for the total scale score, the youngest and the medium age groups taken together were significantly different from the medium and the older age groups taken together; and (b) that for Factor 1, the youngest and the medium age groups taken together were significantly different from the older age group.

Hypothesis 3: Factors of Posttraumatic Growth Are Negatively Correlated With Posttraumatic Symptoms

Inspection of scatter plots does not reveal any strong nonlinear relation between posttraumatic growth and posttraumatic symptoms, even when analyzing each age group and sex separately. Table 5 shows the correlations. The total score for PTGI was not related to PDS symptom score, but the first factor was negatively correlated with symptoms, contrary to hypothesis.

Hypothesis 4a: Factors of Posttraumatic Growth Are Negatively Correlated With Exposure to Stressful Events Within This Study

Inspection of scatter plots revealed no strong nonlinear relation between exposure to traumatic events and growth, even when analyzing each age group and sex separately. In fact, there appears to be very little relation at all. Remarkably, there are individuals reporting both high levels of growth even after the most extreme exposure to traumatic events. Table 5 gives the Pearson correlations. The overall posttraumatic growth score and the first two factors were not correlated with events. Only the third factor, "relating to others," had a weak but significant positive correlation, contrary to expectations.

Hypothesis 4b: The Mean Overall Score for the PTGI Is Rather Lower Than Those Reported in Studies With Survivors of Other Types of Extreme Stress

The overall mean of 44.10 (excluding the problematic Item 1, corrected by $\frac{21}{10}$ and converted into the units of the original, i.e., corrected again by 5 or 4) is much lower than reported in most other studies. Former refugees ($n = 64$) reported significantly more

Table 5

Pearson Correlations Between Posttraumatic Growth, Traumatic Events, and PTSD Symptoms ($n = 131$)

	1	2	3	4	5	6
1. Corrected Total PTGI	1.000	.610**	.571**	.547**	.046	.001
2. Factor 1: Changes in Self/Positive Life Attitude		1.000	-.002	.000	-.092	-.197*
3. Factor 2: Philosophy of Life			1.000	-.001	.004	.050
4. Factor 3: Relating to Others				1.000	.179*	.163
5. Total traumatic events					1.000	.334**
6. PTSD symptoms						1.000

Note. PTGI = Posttraumatic Growth Inventory; PTSD = Posttraumatic Stress Disorder.

*Correlation is significant at the .05 level (two-tailed). **Correlation is significant at the .01 level (two-tailed).

growth ($M = 48.54$, $SD = 23.00$) as opposed to displaced persons ($n = 72$, $M = 40.16$, $SD = 22.90$), $t = 2.127$, $df = 134$, $p = .03$.

Discussion and Conclusions

While the factor structure of the original instrument could not be adequately reproduced, the factor solution for this sample could at least be interpreted in the terms of literature in this area. As the total number of respondents was rather low for a factor analysis and as the scoring methods used in the different versions of the PTGI reported here varied, comparisons between studies reported in the literature and the results of the present study should be treated with caution. The mean score of around 1.7 on the 5-point scale used in the present study corresponds to a mean answer rather closer to "moderately" than "a little," so on average our respondents were not rejecting out of hand the idea of posttraumatic growth. However, the overall corrected means are nevertheless very low in comparison with other studies. As this study used a single instrument to measure growth, which was directly adapted from an American original, further work is necessary to validate the concept of posttraumatic growth for the area of former Yugoslavia after the war. However, it seems unlikely that these low scores can be purely ascribed to cultural differences existing before the war. Rather, it seems plausible that the process of adaptation to terrible events has been hindered in the population studied not only because of the unusual accumulation of traumatic events but also because the individuals themselves as well as the micro- and macrosystems surrounding them have been shaken, changed, or destroyed. In short, these low scores seem to provide further support for the inverted-U hypothesis.

With some rather weak exceptions, there was no connection between posttraumatic growth and either the number of stressful events or posttraumatic symptoms. However, the former refugees, who spent a considerable amount of time abroad, did report significantly more growth than the internally displaced persons. In this case, sample membership was a better predictor of growth than the total number of stressful events experienced. Presumably, sample membership is an indicator not only of shared traumatic history but also more generally of shared world-view and collective coping strategies. The fact that Factor 1 ("changes in self/positive life attitude") is negatively associated with PTSD symptoms gives some support to findings published elsewhere (e.g., Ehlers, Maercker, & Boos, 2000) that a perceived permanent change for the worse predicts PTSD symptoms.

There was a strong age effect, especially for the first factor. Although the large age span allows conclusions to be drawn about growth in the life span which is contrary to most other published results, it also involves asking quite young people to assess the influence of events which occurred in their childhood. A speculative interpretation of this latter result would be that it is only unusual or exceptional older individuals who are in a position to perceive significant benefit from further traumata after having already come to terms with their "fair share" of other lifetime stressors and traumatic events. Another possible interpretation concerns the evaluation of the future: The older cohorts are less likely to be able to make significant adaptive changes in the new and changed society, such as starting a new family after the old family ties were destroyed or learning a new profession.

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