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FROM TRAUMA TO TRANSFORMATION: PREDICTORS OF POST-TRAUMATIC GROWTH IN UKRAINIANS AFFECTED BY WAR IN AN ONGOING CONFLICT SETTING

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Abstract

This research focuses on the assessment of post-traumatic growth (PTG) in an ongoing crisis situation – namely, the war in Ukraine. This research was designed as a cross-sectional correlational study and was conducted 6 months after the beginning of the Russian invasion of Ukraine. The authors focused on the following sociodemographic aspects: gender, age, marital status, number of children, place of current residence (either within or outside Ukraine), subjective evaluation of financial state, satisfaction with current living conditions, and current employment status. Personal life-experiences of traumatic events were assessed using the Life Events Checklist (LEC-5); PTG was assessed using the Post-Traumatic Growth Inventory (PTGI). The study included 706 participants (age M = 32.1); 155 males and 541 females. Using one- and two-way ANOVA, we answered the following research questions: To what extent do individuals living in war-torn areas exhibit indications of PTG? Can sociodemographic variables serve as reliable predictors of PTG? How do levels of PTG differ between individuals residing in Ukraine and those living abroad? What is the relationship between PTG and war-related trauma? It was found that people living in war-torn areas exhibit moderate levels of PTG. Women are more prone to PTG than men; younger and older participants show higher levels of PTG, while middle-aged participants exhibit lower levels; and financial security increases PTG. Presence in Ukraine increases personal strength, while living outside of Ukraine increases the possibilities for new PTG strategies. Trauma exposure during the war does not increase levels of PTG.

Keywords: *post-traumatic growth, war in Ukraine, Russian aggression, predictors of post-traumatic growth.*

Introduction

The problem of the well-being and mental health of societies during a period of crisis – in particular, war – is currently viewed and reported on in a vast body of literature from a variety of perspectives. Specific attention is addressed towards physical well-being (Cheung et al., 2020; Jahanshahi et al., 2020; Osiichuk & Shepotylo, 2020), mental well-being (Jahanshahi et al., 2020; Kurapov et al., 2022c; Mohd Saleem et al., 2021; Pavlenko et al., 2022; Rizkalla & Segal, 2018), financial well-being (Osiichuk & Shepotylo, 2020), and social well-being (Barchielli et al., 2022; Bragin et al., 2021; Jahanshahi et al., 2020; Kurapov et al., 2022; Kurapov et al., 2022a). As reported, physical well-being has two dimensions: physical welfare (Cheung et al., 2020) and physical health (Jahanshahi et al., 2020). In particular, it has been found that public access to physical goods, such as housing, food, etc., significantly declines during war-related crises, as has been confirmed by exploring the welfare and quality of life of those affected by the Syrian conflict (Cheung et al., 2020). The impact of military conflicts on physical health is evident but not comprehensively covered in the literature, even though researchers highlight the negative re-

lationship between these variables (Jahanshahi et al., 2020; Osiichuk & Shepotylo, 2020). Much attention is dedicated to the adverse impact of war and other related crises on overall well-being and metal health – in particular, financial health, which suffers significantly. Researchers outline the general deterioration of the financial well-being of citizens in short- and long-term perspectives (Osiichuk & Shepotylo, 2020), and the lack of proper access to regular social benefits (Hendrickx et al., 2019). Other negative consequences of war include the deterioration of general social well-being (Bragin et al., 2021; Jahanshahi et al., 2020), the reduction of social support (Cheung et al., 2020), the inability to maintain previously-established social relationships, the use of habitualized behavioral coping strategies (Kurapov et al., 2022a), and the emergence and further maintenance of discrimination against social minorities and other vulnerable social groups (Mohd Saleem et al., 2021).

However, the largest volume of research literature is devoted to the issues of mental well-being associated with war, military conflicts, or crises. The results of studies by different authors can be distilled into the idea that the mental health of society deteriorates significantly during a war and in the post-war period, being mainly expressed in the decreased level of general life satisfaction (Cheung et al., 2020), the increase in levels of addiction to psychoactive substances (Pavlenko et al., 2022), the worsening of psychoemotional states (Kurapov et al., 2022c), increased psychological stress (Osiichuk & Shepotylo, 2020), the increase in the number of mental disorders (Barchielli et al., 2022; Mohd Saleem et al., 2021; Rizkalla & Segal, 2018), and various communication problems (Kurapov et al., 2022b). The prevailing mental health issue during the post-war period is prost-traumatic stress disorder (PTSD). Eventually, this should be followed by post-traumatic growth (PTG), which refers to the positive psychological changes that can occur after experiencing a traumatic event (Jin et al., 2014). Most studies on PTG have focused on its occurrence after the cessation of the traumatic situation, or when individuals are no longer constantly affected by the trauma (Rizkalla & Segal, 2018; Lindstrom & Triplett, 2010; Romeo et al., 2022). Only a limited number of studies have examined PTG when the traumatic event is still ongoing (Laufer & Solomon, 2006; Magambo & Lett, 2004; Marotta-Walters, Choi, & Shaine, 2015; Paul et al., 2010). That is why we focus our current research on the assessment of PTG in a crisis situation that is not over yet – namely, the war in Ukraine. Specifically, it is important to understand whether aspects of PTG, such as finding new meaning or personal growth, could be utilized as adaptive strategies to facilitate resilience and recovery in the face of ongoing adversity; thus, we attempt to answer the following research questions:

1. To what extent do individuals living in war-torn areas exhibit indications of PTG despite being exposed to ongoing traumatic events?
2. Can sociodemographic variables, such as age, gender, and socioeconomic status, serve as reliable predictors of PTG, and how do these factors interact with ongoing traumatic experiences in shaping individuals' abilities to experience growth following adversity?

3. How do levels of PTG differ between individuals residing in Ukraine and those living abroad, and to what degree are these differences statistically significant?
4. What is the relationship between PTG and war-related trauma, and to what extent is PTG driven by the traumatic experiences associated with ongoing conflict?

1. Literature Review

1.1. War and Mental Disorders

As per the findings of various academic publications, it has been established that the impact of war on mental health and well-being is notably negative, resulting in the manifestation of a range of psychological disorders such as PTSD, depression (Charlson et al., 2019; Gonçalves Júnior et al., 2022; Hendrickx et al., 2019; Osokina et al., 2022; Perkins et al., 2018), and suicidal ideation (Gonçalves Júnior et al., 2022). There is also evidence that military conflicts can lead to the onset or exacerbation of psychosis, bipolar disorder, and schizophrenia (Charlson et al., 2019). In particular, according to Hendrickx et al. (2019), who explored the mental health status of the Syrian population affected by the war, the likelihood of PTSD under the influence of traumatic war experiences ranged from 16% to 84%. Another study with a sample of Syrian residents found that the percentage of PTSD in the population was 35%, and this is the most common type of mental disorder in military conflicts (Perkins et al., 2018). In terms of long-term consequences, estimates by Charlson et al. (2019) suggested that the prevalence of PTSD among those who have faced protracted military conflicts is 22%.

Military conflicts have also been identified as potential predictors of depression, indicating the complex and far-reaching impact of such events on individuals' mental health. In particular, according to Hendrickx et al. (2019), the incidence of depression among the conflict-affected Syrian population ranges from 11% to 49%. Findings from the study by Perkins et al. (2018) which focused on Syrian refugees and internally displaced persons show that 32% of these people have experienced depression. Studies of the health of Ukrainian children and adolescents have confirmed that the risk of developing symptoms of depression exists both during the war and in the post-war period (Gonçalves Júnior et al., 2022; Osokina et al., 2022).

An important contribution to understanding the impact of war on the occurrence of mental disorders, and the condition of individuals who already suffer from mental illness, was made by Charlson et al. (2019). In particular, the authors showed that the prevalence of mental illness during military conflicts reaches 22%, and its most pronounced consequences affect people with bipolar disorder and schizophrenia. In addition, the risks of the spread of psychosis and mild, and the frequency of severe forms of depression increases. According to Gonçalves Júnior et al. (2022), military conflicts also worsen the psycho-emotional state of war-affected populations, resulting in negative feelings such as sadness, anger, guilt, or loneliness. The likelihood of suicidal thoughts also increases.

In this regard, war and mental disorders have a pronounced relationship since military conflicts act as predictors of the onset of PTSD, depression, anxiety, suicidal ideation, and obsessive negative emotions. As such, war worsens pre-existing mental disorders such as schizophrenia, bipolar disorder, and psychosis.

1.2. Risk Factors for PTSD

Risk factors for PTSD in individuals who have had traumatic war experiences are considered by researchers in terms of the following aspects: sociodemographic factors (Catani, 2018; Kurapov et al., 2022a; Rizkalla & Segal, 2018), psychological conditions (Rybinska et al., 2022), mental disorders present (Rizkalla & Segal, 2018; Kakaje et al., 2021), place of residence (Tekeli-Yesil et al., 2018), and psychological flexibility (Meyer et al., 2018). In particular, sociodemographic factors that may increase the risk of PTSD include variables such as gender, age, language, marital status, education level, and income (Catani, 2018; Kurapov et al., 2022a; Rizkalla & Segal, 2018). According to a study by Kurapov et al. (2022a), groups more vulnerable to the impact of military conflict on resilience include Ukrainians who communicate in Russian and those who are married. It has also been found that higher income negatively correlates with PTSD risk (Rizkalla & Segal, 2018). In turn, younger people are most affected by adverse effects on their mental health (Catani, 2018). In addition, a low degree of frustration may increase mental vulnerability and the risk of PTSD (Rybinska et al., 2022), while psychological flexibility, on the contrary, may reduce vulnerability (Meyer et al., 2018).

Another significant risk factor is the presence of concomitant mental disorders in individuals. According to Rizkalla & Segal (2018) and Kakaje et al. (2021), the likelihood of developing PTSD due to war experiences is increased in those with affective disorders and other types of mental disorders. Some researchers have also shown that refugees and internally displaced persons who have been forced to leave their places of residence are more likely to develop PTSD when confronted with military conflicts (Kakaje et al., 2021; Tekeli-Yesil et al., 2018). In this regard, the risks of PTSD during a war and after the end of military conflicts increase for younger people, those who are married, those with low levels of frustration, and those with insufficient psychological flexibility. Although PTSD symptoms are frequently reported among individuals affected by war, it is important to recognize that the experience of PTG is a complex phenomenon that may be present across diverse populations, regardless of their specific vulnerabilities or risk factors.

1.3. Post-Traumatic Growth During and After War

PTG refers to the positive psychological changes that can occur after experiencing a traumatic event. While trauma can be a devastating experience, it is important to recognize that it can also be an opportunity for growth and transformation. PTG is often associated with the concept of resilience, which refers to the ability to bounce back from

adversity. While resilience is an important trait to have, PTG takes it one step further by suggesting that individuals can actually benefit from traumatic experiences in unexpected ways (Dell'Osso et al., 2022; Jin et al., 2014). There are a number of factors that can influence the likelihood of experiencing PTG, including the severity of the trauma, the individual level of resilience, and the social support network (Bhushan & Hussain, 2007). It is also important to note that not all trauma is equal, and some types of trauma may be more likely to lead to negative outcomes, especially when the symptoms of PTSD are present (Lindstrom & Triplett, 2010). It is possible to facilitate healing and promote growth and transformation among individuals and communities affected by trauma by acknowledging the potential for PTG. Through the provision of support and resources tailored to the unique needs of individuals who have experienced traumatic events, it is possible to help them cultivate the resilience and skills required not only to survive, but to thrive in the face of adversity. This is particularly critical in the context of war, where the effects of trauma can be especially severe and long-lasting.

The existing research literature addresses aspects of PTG during and after military conflicts in less detail. However, there is a body of research that focuses on the predictors of PTG (Abraham et al., 2018; Cárdenas Castro et al., 2016; Cengiz et al., 2019; Kurapov et al., 2022a; Mark et al., 2018; Ochu et al., 2018; Rybinska et al., 2022; Vogt et al., 2020). In particular, according to a study by Mark et al. (2018), the PTG of military personnel who served in Afghanistan or Iraq was driven by high levels of social support and spirituality. Vogt et al. (2020) and Abraham et al. (2018) came to similar conclusions, arguing that PTG is associated with communication, support, and ethnic identity. At the same time, difficulties in ethnic identity might slow down or even prevent PTG, as Kurapov et al. (2022a) noted. Abraham et al. (2018) also highlighted the importance of positive thinking in stimulating PTG. The predictors of PTG may also include a positive reassessment of traumatic events and psychological resilience, as confirmed by Cárdenas Castro et al. (2016) and Cengiz et al. (2019). In particular, populations that faced the military dictatorship in Chile in 1973 and used a reframing strategy coped with PTSD more quickly (Cárdenas Castro et al., 2016). In turn, according to Rybinska et al. (2022) and Ochu et al. (2018), another factor driving PTG may be purposefulness. These researchers noted that a high level of frustration and the ability to give meaning to life and set goals allow individuals who have faced military experience to achieve PTG.

2. Materials and Methods

Data collection. Data was collected in one phase. The collection process started on August 2, 2022, and lasted until October 16, 2022. For this study, we used a snowball online questionnaire (with the use of Google Forms) which participants were asked to share among their family members and friends. All questions were presented in the Ukrainian language. The questionnaire form included questions that concerned sociodemographic information, trauma exposure, and PTG.

Measures. This research was designed as a regular cross-sectional correlational study. The sociodemographic questionnaire consisted of items that pertained to the respondents' gender, age, and marital status, the number of children living with them (if applicable), their place of current residence (either within or outside Ukraine), their subjective financial state (including the ability to cover basic needs and afford additional expenses), their satisfaction with their current living conditions, and their current employment status (whether online, offline, or unemployed). Participants' exposure to trauma was assessed by asking them to report the most traumatic event that they had experienced in their lives and to specify when it occurred; the personal life-experience of the traumatic event was assessed using the Life Events Checklist (LEC-5; Weathers et al., 2013). PTG was assessed using the Post-Traumatic Growth Inventory (PTGI), which comprises scales measuring Personal Strength, New Possibilities, Improved Relationships, Spiritual Growth, and Appreciation of Life (Tedeschi & Calhoun, 1996). The PTGI had previously been adapted for use in Ukrainian and required no translation. We used a custom function, *sten*, to convert the raw scores of our variables into standard ten (*sten*) scores (see Appendix, Supplement 1A). The *sten* function scales the data using the scale function, and then transforms the scaled data into *sten* scores, which range from 1 to 10. The function was applied to all PTGI scales.

3. Results

The data collected during the study were subjected to statistical processing using parametric and non-parametric methods of analysis. Statistical analysis was performed using Jamovi (version 2.3.21) and R (version 2022.07.1). The study included 706 participants (age $M = 32.1$) – 155 males and 541 females. For estimating the size of the effect of age, we outlined the following age groups: youth ($N = 120$, M = 18.9, age range 18–20), young adults ($N = 114$, $M = 22.9$, age range 21–25), adults ($N = 253$, M = 32.5, age range 26–40), and middle-aged ($N = 126$, $M = 49.5$, age range 41–64). Quantitative indicators were assessed for compliance with normal distribution by applying the non-parametric Kolmogorov–Smirnov test: distribution did not differ from normal ($p > 0.05$).

3.1. Degree of PTG Across the Sample

For the entire sample, the average scores for each scale of PTGI were almost identical: Personal Strength ($M = 5.98$, $SD = 1.33$, min = 3, max = 8), New Possibilities ($M = 5.95$, $SD = 1.29$, min = 3, max = 8), Improved Relationships ($M = 6.02$, $SD = 1.29$, min = 3, max = 9), Spiritual Growth ($M = 5.95$, $SD = 1.33$, min = 4, max = 8), Appreciation of Life ($M = 5.87$, $SD = 1.19$, min = 3, max = 7), and total PTG score ($M = 6.00$, $SD = 1.28$, min = 3, max = 9).

3.2. PTG and Fixed Sociodemographic Effects

An independent samples t-test was conducted to compare the mean scores of PTGI scales between males and females. The results show statistically significant differences in Improved Relationships ($t(704) = -3.36$, $p < 0.001$, Cohen's $d = -0.31$, 95%) between males ($M = 5.72$, $SD = 1.42$) and females ($M = 6.11$, $SD = 1.24$); Spiritual Growth ($t(704) = -5.00$, $p < 0.001$, Cohen's $d = -0.46$, 95%) between males ($M = 5.49$, $SD = 1.28$) and females ($M = 6.08$, $SD = 1.31$); Appreciation of Life ($t(704) = -4.62$, $p < 0.001$, Cohen's $d = -0.42$, 95%) between males ($M = 5.48$, $SD = 1.28$) and females ($M = 5.97$, $SD = 1.31$); and total PTG score ($t(704) = -3.08$, $p = 0.002$, Cohen's $d = -0.28$, 95%) between males ($M = 5.72$, $SD = 1.31$) and females ($M = 6.08$, $SD = 1.26$).

A one-way ANOVA was performed to compare the relations among age groups and PTG. There was a statistically significant effect of age groups on: Personal Strength [$F(3, 273) = 3.72$, $p = 0.012$, $\omega^2 = 0.013$], in particular, youth ($M = 6.20$, $SD = 1.41$), young adults ($M = 5.98$, $SD = 1.38$), adults ($M = 5.74$, $SD = 1.22$), and middle-aged ($M = 6.01$, $SD = 1.38$); Spiritual Growth [$F(3, 284) = 4.25$, $p = 0.006$, $\omega^2 = 0.016$] in particular, youth ($M = 6.04$, $SD = 1.23$), young adults ($M = 5.75$, $SD = 1.31$), adults ($M = 5.74$, $SD = 1.33$), and middle-aged ($M = 6.20$, $SD = 1.37$); and PTG total score [$F(3, 277) = 3.13$, $p = 0.026$, $\omega^2 = 0.01$] in particular, youth ($M = 6.13$, $SD = 1.35$), young adults ($M = 5.95$, $SD = 1.26$), adults ($M = 5.77$, $SD = 1.21$), and middle-aged ($M = 6.12$, $SD = 1.28$). We used 2-way ANOVA to identify the effects of the interaction of age and gender on PTG and did not obtain statistically-significant results for any PTGI scales. However, with age, men tended to show higher scores of PTG (Figure 1).

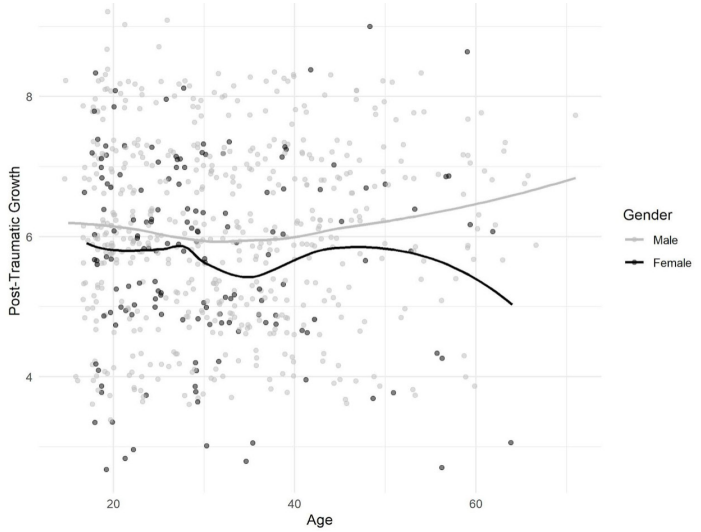

Fig. 1. *Dependency of PTG on age and gender*

A one-way ANOVA was performed to evaluate mean differences according to the respondents' satisfaction with their current living conditions as a fixed effect. There was a statistically significant effect of living conditions on: Improved Relationships [$F(4, 80.3) = 4.42$, $p = 0.003$, $\omega^2 = 0.018$], in particular, very unsatisfactory ($M = 5.33$, $SD = 1.08$), unsatisfactory ($M = 5.77$, $SD = 1.36$), good enough ($M = 5.82$, $SD = 1.26$), satisfactory ($M = 6.07$, $SD = 1.26$), very satisfactory ($M = 6.34$, $SD = 1.36$); New Possibilities [$F(4, 80.7) = 11.11$, $p < 0.001$, $\omega^2 = 0.048$], in particular, very unsatisfactory ($M = 4.78$, $SD = 1.11$), unsatisfactory ($M = 5.07$, $SD = 1.17$), good enough ($M = 5.84$, $SD = 1.22$), satisfactory ($M = 6.05$, $SD = 1.26$), very satisfactory ($M = 6.26$, $SD = 1.34$); Personal Strength [$F(4, 79.8) = 3.99$, $p = 0.005$, $\omega^2 = 0.017$], in particular, very unsatisfactory ($M = 5.33$, $SD = 1.28$), unsatisfactory ($M = 5.33$, $SD = 1.32$), good enough ($M = 5.85$, $SD = 1.33$), satisfactory ($M = 6.07$, $SD = 1.29$), very satisfactory ($M = 6.14$, $SD = 1.41$); Spiritual Growth [$F(4, 79.8) = 3.05$, $p = 0.022$, $\omega^2 = 0.012$], in particular, very unsatisfactory ($M = 5.28$, $SD = 1.27$), unsatisfactory ($M = 5.33$, $SD = 1.35$), good enough ($M = 5.95$, $SD = 1.42$), satisfactory ($M = 6.00$, $SD = 1.30$), very satisfactory ($M = 6.05$, $SD = 1.36$); Appreciation of Life [$F(4, 78.8) = 3.58$, $p = 0.010$, $\omega^2 = 0.019$], in particular, very unsatisfactory ($M = 5.11$, $SD = 1.53$), unsatisfactory ($M = 5.30$, $SD = 1.18$), good enough ($M = 5.79$, $SD = 1.25$), satisfactory ($M = 5.95$, $SD = 1.13$), very satisfactory ($M = 5.96$, $SD = 1.16$); and PTG total score [$F(4, 80.7) = 7.98$, $p < 0.001$, $\omega^2 = 0.018$], in particular, very unsatisfactory ($M = 5.17$, $SD = 1.10$), unsatisfactory ($M = 5.20$, $SD = 1.16$), good enough ($M = 5.84$, $SD = 1.22$), satisfactory ($M = 6.10$, $SD = 1.25$), very satisfactory ($M = 6.24$, $SD = 1.42$).

A one-way ANOVA was used to evaluate the mean differences of PTG according to the current employment status as a fixed effect, and statistically significant differences were obtained [$F(6, 61.2) = 3.62$, $p = 0.004$, $\omega^2 = 0.006$], in particular: unemployed ($M = 5.84$, $SD = 1.29$), governmental worker ($M = 6.15$, $SD = 0.96$), regular employee ($M = 6.02$, $SD = 1.31$), freelancer/self-employed/entrepreneur ($M = 5.91$, $SD = 1.23$), retired ($M = 6.75$, $SD = 0.62$), and student ($M = 6.12$, $SD = 1.33$). Statistically significant differences were also obtained for mean differences in PTG and working conditions as a fixed factor [$F(2, 428) = 3.28$, $p = 0.039$, $\omega^2 = 0.006$], in particular: online workers ($M = 5.85$, $SD = 1.26$), offline workers ($M = 6.17$, $SD = 1.31$), and unemployed ($M = 6.02$, $SD = 1.28$).

To identify the degree of relationship between subjective satisfaction with living conditions and current employment status, between living conditions and current financial status, and between current employment status and financial status, we used a chi-squared test on a contingency table. The results obtained allowed us to state that satisfaction with living conditions and current employment status are related ($\chi^2(24) = 38.9$, $p = 0.028$) with no evident dependency pattern. The same concerns living conditions and current financial status ($\chi^2(16) = 95.4$, $p < 0.001$), with better financial status referring to higher satisfaction with living conditions. Current employment status and financial status are related ($\chi^2(24) = 63.6$, $p < 0.001$), meaning that employed/actively working participants have better financial status.

3.3. PTG and Proximity to the War

Proximity to the war (being within or outside Ukraine) as a fixed factor allowed us to obtain statistically significant differences using one-way ANOVA for the PTGI scales of: New Possibilities [$F(1, 290) = 12.43$, $p < 0.001$, $\omega^2 = 0.016$], in particular, inside Ukraine ($M = 5.86$, $SD = 1.28$), outside Ukraine ($M = 6.25$, $SD = 1.29$); and Spiritual Growth [$F(1, 309) = 5.51$, $p = 0.020$, $\omega^2 = 0.006$], in particular, inside Ukraine ($M = 5.89$, $SD = 1.34$) and outside Ukraine ($M = 6.15$, $SD = 1.26$) (see Figure 2).

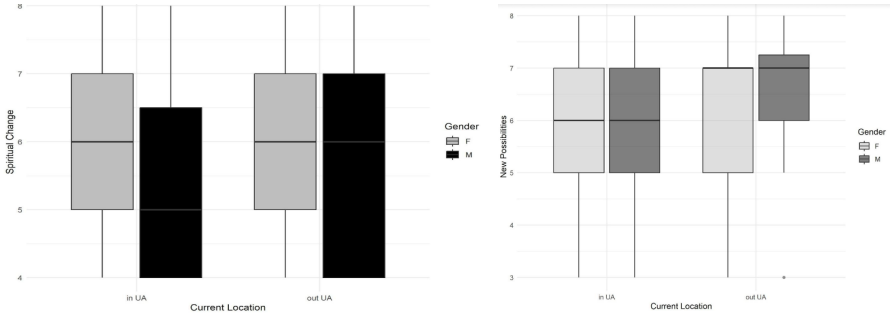

Fig. 2. *Dependency of PTG on presence in Ukraine and gender*

3.4. PTG and Trauma Exposure

Almost half of the respondents reported direct exposure to different types of trauma.

Table 1. *Reported direct exposure to traumatic events*

Type of trauma exposure	not about me		not sure		got to know		work		witnessed		happened with me	
	N	%	*N*	%	*N*	%	*N*	%	N	%	*N*	%
Physical violence	311	44.1	55	7.8	72	10.2	6	0.8	81	11.5	181	25.6
Military actions	161	22.8	35	5	127	18	7	1	86	12.2	290	41.1
Severe human suffering	262	37.1	101	14.3	88	12.5	20	2.8	101	14.3	134	19
Any other stressful event	162	22.9	76	10.8	33	4.7	13	1.8	53	7.5	369	52.3

The results of one-way ANOVA showed that statistically significant differences in PTG with trauma exposure as a fixed factor were only present for Personal Strength [$F(5, 57) = 4.21$, $p = 0.003$, $\omega^2 = 0.014$] and Spiritual Growth [$F(5, 83.4) = 2.37$, $p = 0.043$, $\omega^2 = 0.011$]. For the details of mean difference, see Table 2.

Table 2. *Mean differences of PTG in accordance with trauma exposure*

Reported trauma exposure		*N*	Mean	*SD*
Spiritual Change	not about me	162	6.15	1.340
	not sure	76	5.80	1.155
	got to know	33	6.09	1.259
	work	13	6.23	1.423
	witnessing	53	6.28	1.364
	happened with me	369	5.83	1.336
Personal Strength	not about me	161	6.02	1.348
	not sure	35	5.69	1.471
	got to know	127	5.68	1.234
	work	7	7.00	0.816
	witnessing	86	6.01	1.315
	happened with me	290	6.09	1.330
PTG	not about me	162	6.26	1.434
	not sure	76	5.78	1.312
	got to know	33	6.00	0.968
	work	13	6.23	1.166
	witnessing	53	6.38	1.259
	happened with me	369	5.87	1.212

Conclusions

Gender and Age

Women are more prone to increased levels of PTG, especially in interaction with age: older women show overall higher levels of PTG in general. Young respondents (aged 18–20) show the highest levels of PTG, especially in Personal Strength and Spiritual Growth, meaning that they have higher levels of resilience, self-reliance, and self-confidence. The same concerns middle-aged (41–64) participants, regardless of gender. Most of the studies that concern PTG in crisis areas were mainly conducted in the post-war period (Feder et al., 2008; Powell et al., 2003; Kimhi et al., 2010; Kılıç et al., 2016), and they confirm that women are more prone to increased levels of PTG despite their direct exposure to traumatic events. Kimhi et al. (2010) stated that age is the main predictor of PTG during the post-war period: younger people show higher levels of PTG than older people, and we observe that younger (aged 18–20) and older (aged 41–61) Ukrainians during the war showed higher levels of PTG, while middle-aged (aged 21–40) respondents showed lower levels of PTG. Such results do not align with any other findings during the post-war period – in particular, those of Kimhi et al. (2010) and Kılıç et al. (2016). Such findings align with the dependency of personal control on age (Ross & Mirowsky, 2002), meaning that older participants have stronger personal control that leads to increased levels of PTG.

This aligns with findings of Dekel et al. (2011), where self-controllability predicted PTG, while age did not. We also assume that younger and older people have similar attitudes towards life in terms of resources: for younger participants, life seems to be long and they believe that anything can change for the better; for older participants, most of their life is over and future years seem somewhat predictable; while for middle-aged participants, this aspect remains relatively unknown and unpredictable, especially considering that before the war they had specific life plans, a vision of their future life, expectations, etc. Overall, we can conclude that age and gender predict PTG, especially Personal Strength and Spiritual Growth.

Satisfaction With Living Conditions

Subjective satisfaction with living conditions significantly defines the level of PTG – in particular, there is a linear dependency: the better the living conditions, the higher the level of PTG. Kimhi et al. (2010) stated that economic conditions predicted stress symptoms and PTG, which aligns with our findings. In particular, unemployed or retired respondents tended to show higher levels of PTG in comparison to employed participants, while employment was related to current financial status, even though no statistically significant differences in PTG mean scores were obtained with financial status being a fixed factor. Overall, financially secure participants with satisfactory accommodation showed higher levels of PTG, meaning that they had a better chance of overcoming a traumatic experience even when the war is not yet over. This is because their current economic status is directly linked to their ability to establish future life plans and predict their personal activities in the nearest future (i.e., having a sufficient amount of savings to survive through an unemployment period) – even in the unpredictable situation in Ukraine caused by the war. We can also assume that the sufficient satisfaction of basic needs based on current satisfactory living conditions and financial security predicts higher levels of PTG, making it easier to overcome a traumatic experience.

War Proximity and Trauma Exposure

Respondents outside of Ukraine found more possibilities for themselves – in particular, new interests, new perspectives, adaptability, and openness to new ways of living and working, which is equally relevant for both men and women. At the same time, women both inside and outside of Ukraine developed deeper beliefs and philosophies of life and a clearer sense of purpose than men in Ukraine. This means that proximity to the war triggers only certain aspects of PTG, but what is more surprising is that participants who reported direct exposure to traumatic events did not show increased levels of PTG in comparison to participants who did not report direct trauma exposure. In particular, respondents who witnessed or reported not having direct exposure to a traumatic event showed the highest levels of Personal Strength. Those who reported experiencing severe

human suffering showed higher levels of Spiritual Growth. Even though the majority of the respondents reported exposure to 'another stressful event', which is likely war-related, as fixed factor, this trauma exposure did not show statistically significant differences in mean PTG scores. Such results do not align with the post-war PTG findings of Feder et al. (2008) or Powell et al. (2003), who stated that people exposed to serious and severe traumatic events during war show significantly higher levels of PTG in comparison to people who do not have such experience of trauma exposure. This might mean that PTG, together with direct exposure to traumatic events, requires more time to increase the degree of severity, since overall Ukrainians do not report high levels of PTG and mean differences according to specific conditions remain within the 40%–80% range of the measurement scale, suggesting the absence of severe cases. Notably, there were no outliers that would shift the variance, which allows us to conclude that this tendency is common for all Ukrainians. Simply put, it is too early to talk about PTG in its full scale, and participants who escaped from direct exposure to war trauma (i.e., left Ukraine) show higher levels of adaptability and openness to new ways of living and working. Meanwhile, Ukrainians who are still exposed to the war show higher levels of resilience, self-reliance, and confidence.

Limitations

A major limitation of this study is the inability to include the Ukrainian population that has directly suffered from the impact of war – i.e., individuals living in occupied territories, those who were forcibly relocated to the Russian Federation, and those who experienced physical or sexual violence. The findings of this study are only applicable to the general population of Ukraine who live in territories that were never occupied, who fled during the first few months of the conflict, or who returned to previously occupied territories. In addition, the number of women significantly outweight the number of men, which is also a limitation of the study. It is important to distinguish between civilian and military Ukrainians: the current study focuses only on civilians.

Ethics approval and informed consent

The study received approval from the Ethics Committee of the Hellenic Mediterranean University (87/17-10-2022). Informed consent was obtained from each participant.

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FROM TRAUMA TO TRANSFORMATION: PREDICTORS OF POST-TRAUMATIC GROWTH IN UKRAINIANS AFFECTED BY WAR IN AN ONGOING CONFLICT SETTING

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Summary

The prevailing mental health issue during the post-war period is post-traumatic stress disorder that eventually should be followed by post-traumatic growth (PTG), which refers to the positive psychological changes that can occur after experiencing a traumatic event. Current research focuses on the assessment of PTG in the situation of crises that is not over yet, namely, the war in Ukraine.

This research was designed as a cross-sectional correlational study and was conducted 6 months after the beginning of the Russian invasion into Ukraine. We focused on sociodemographic aspects (gender, age, marital status, number of children, place of current residence (either within or outside Ukraine), subjective evaluation of financial state, satisfaction with current living conditions, and current employment status). Participants' exposure to trauma was assessed by asking them to report the most traumatic event they had experienced in their lives and to specify when it occurred; personal life-experience of traumatic event was assessed using Life Events Checklist (LEC-5; Weathers et al., 2013). PTG was assessed using the Post-Traumatic Growth Inventory (PTGI), which comprises scales measuring Personal Strength, New Possibilities, Improved Relationships, Spiritual Growth, and Appreciation of Life (Tedeschi & Calhoun, 1996). The PTGI had previously

been adapted for use in Ukrainian and required no translation. The study included 706 participants (age M = 32.1), 155 males and 541 females.

Using one and two-way ANOVA we answered the following research questions: To what extent do individuals living in war-torn areas exhibit indications of PTG? Can sociodemographic variables serve as reliable predictors of PTG? How do levels of PTG differ between individuals residing in Ukraine and those living abroad? What is the relationship between PTG and war-related trauma?

Individuals living in war-torn areas exhibit moderate levels of PTG. Women are more prone to PTG than men; younger and older participants show higher levels of PTG while middle-aged participants – lower; financial security increases PTG. Presence in Ukraine increases personal strength while living outside of Ukraine increases new possibilities as PTG strategies. Trauma exposure during the war does not increase levels of PTG. Those who reported experiencing severe human suffering show higher levels of Spiritual Growth. Even though the majority of the respondents reported exposing to 'other stressful events', which should be war-related, as a fixed factor, this trauma exposure did not show statistically significant differences in mean scores of PTG. It might mean that PTG, together with the direct exposure to traumatic events, requires more time to increase the degree of severity since overall Ukrainians do not report high levels of PTG and mean differences according to specific conditions remain within the range of 40%–80% of the measurement scale meaning the absence of severe cases. So, it is too early to talk about PTG in its full scale and participants who escaped from the direct exposure to the war trauma (left Ukraine) show higher levels of adaptability and openness to new ways of living and working while Ukrainians who are still exposed to the war show higher levels of resilience, self-reliance, and confidence.

Keywords: *post-traumatic growth, war in Ukraine, Russian aggression, predictors of post-traumatic growth.*

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