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## **Differences in mental health outcomes for the adult population depending on their personal experience during the first months of the war in Ukraine: A cross-sectional study**

**Abstract:** We aimed to determine differences in mental health outcomes for the adult population depending on their personal experience during the first months of the war in Ukraine. The study involved 1,257 respondents (32.3% male and 67.7% female, aged 18–61+ years). We used the Brief Resilience Scale, the Professional Hardiness Questionnaire, the General Self-Efficacy Scale, the Posttraumatic Growth Inventory—Expanded, the Short Screening Scale for DSM–IV post-traumatic stress disorder (PTSD), and the Giessen Subjective Complaints List. The obtained data showed high pressure of physical complaints and high levels of PTSD symptoms in adult Ukrainians. We found that positive mental health outcomes were significantly higher in adults with ‘Active’ personal experience during the first months of the war in Ukraine, which was shown by their significantly higher levels of four positive mental health indicators (resilience, general level of professional hardiness, self-efficacy and level of post-experience change). Negative mental health outcomes were significantly higher in adults with ‘Passive’ experience, which was shown by their significantly higher levels of two negative indicators (pressure of physical complaints and manifestations of PTSD symptoms). Our findings indicate a high need for psychological support and assistance for the Ukrainian population and show the direction of possible interventions.

**Keywords:** *adult population, mental health, physical complaints, consequences of war, post-traumatic stress disorders*

Armed conflicts between warring states or groups within a state are considered a major cause of poor health and mortality across human history (Murray et al., 2002). Among the numerous consequences of war, the negative impact on the mental health of the civilian population is one of the most significant outcomes (Johnson et al., 2022; Murthy & Lakshminarayana, 2006; Shoib et al., 2022).

War can cause a range of traumatic experiences for the civilian population, such as witnessing extreme violence, terrorist attacks, kidnappings, torture, separation from one’s family and forced migration (Borho et al., 2022; Johnson & Thompson, 2008; Shoib et al., 2022). Additionally, the negative mental health consequences of these war-related traumatic events are well-documented in

the current psychological literature (Ibrahim & Hassan, 2017). Specifically, hopelessness, fear and worries are the most frequent emotional consequences of war (Renner et al., 2020). Furthermore, the most commonly mentioned and widespread negative mental health outcomes of war for the civilian population include significantly increased rates of depression, anxiety, post-traumatic stress disorders (PTSD) and dissociative disorders (Acarturk et al., 2021; Bogic et al., 2015; Cardozo et al., 2004; Schlechter et al., 2021; Shoib et al., 2022; Somasundaram & Sivayokan, 1994), as well as somatisation, hostility, relationship problems, alcohol and drug misuse and functional disability (Farmy, 2017; Somasundaram & Sivayokan, 1994). Of these issues, the most common psychological compli-



cation among war trauma victims is PTSD (Al-ghzawi et al., 2014). Therefore, the present exploratory cross-sectional study aims to determine possible differences in mental health outcomes in the adult population depending on their personal experience during the first months of the war in Ukraine.

In general, war destroys not only bodies but also minds, as it destroys the roots of human well-being, rips the fabric of human communities and severs the bonds between people and the places they inhabit (Sheather, 2022). Overall, war has a catastrophic effect on the health and well-being of nations (Murthy & Lakshminarayana, 2006). At the national level, war conflict causes health consequences from the displacement of populations, the breakdown of health and social services and the heightened risk of disease transmission (Murray et al., 2002). The effects of war include long-term physical and psychological harm to children and adults, as well as reductions in material and human capital (Murthy & Lakshminarayana, 2006).

Despite the scale of the health consequences of war, military conflict has not received the same attention from public health research and policy as many other causes of illness and death (Murray et al., 2002). In this context, Murthy and Lakshminarayana (2006) rightly noted that only through a greater understanding of the myriad mental health problems arising from armed conflicts can coherent and effective programmes for addressing such problems be developed. In particular, Shoib et al. (2022) attributed to such programmes organising support groups to share wartime experiences, resilience promotion, psychosocial support for healthcare providers, religious identification, integral management and accommodation and educational support. Additionally, Renner et al. (2020) stated social networks are the most important source of psychological support for affected populations.

It is well-known that on February 24, 2022, Russia invaded Ukraine, provoking the most serious military conflict in Central Europe since 1945. The present Russia-Ukraine war was preceded by Russia's annexation of Crimea in 2014 and ongoing local military conflict between pro-Russian separatists and the Ukrainian army in the eastern region of the country (Kurapov et al., 2022). Ukraine suffered 12,584 civilian casualties from February 24, 2022, to July 31, 2022; 5,327 people were killed and 7,257 were injured (Office of the High Commissioner for Human Rights, 2022). By the end of August 2022, the number of refugees from Ukraine recorded only across Europe reached 7,007,381 people (Operational Data Portal, 2022). According to the forecast of Sheather (2022), the mental health impacts of Russia's invasion on Ukrainian people are likely to be extreme, serious and enduring, and these effects will also heavily influence the well-being of future generations.

Considering the above, in our opinion, it is necessary to study the mental health outcomes of the Ukrainian population depending on their personal experience during this war. In particular, this research aim is consistent with the results of Cardozo et al. (2000), which showed

significant linear changes in mental health status and social functioning with increasing numbers of traumatic events, as well as the opinion of Schlechter et al. (2021) regarding the importance of understanding symptom constellations among different populations of war survivors. In addition, we should note that almost all the studies mentioned above were conducted long after the beginning or even after the end of previous military conflicts, and large-scale studies on mental health outcomes of populations in the first months of the war have not yet been conducted.

The definition of mental health given by the World Health Organization (2022) is as follows: 'Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community. It is an integral component of health and well-being that underpins our individual and collective abilities to make decisions, build relationships and shape the world we live in'. Therefore, both positive and negative mental health outcomes exist, and these can be evaluated via positive and negative mental health indicators.

For this reason, the present cross-sectional exploratory study aims to determine possible differences in mental health outcomes for the adult population depending on their personal experience during the first months of the war in Ukraine. In line with this objective, we formulated two research questions (RQs):

RQ1. Do the positive mental health outcomes of the adult population differ from depending on their personal experience during the first months of the war in Ukraine?

RQ2. Do the negative mental health outcomes of the adult population differ from depending on their personal experience in the first months of the war in Ukraine?

## METHODS

### Participants and Procedure

An online survey was conducted using Google Forms at the address <https://docs.google.com/forms/d/1wMMQuqFIJtVRUg7Rp0oZxdalYDQPvIt5OI2nUM-FyS4w>. Participants were recruited through Facebook tools (announcements with an invitation to participate in the study were distributed as a social advertisement among Ukrainian Facebook users aged 18 and over). They were encouraged to participate in the study in order to gain access to their results. The respondents who wanted to receive their results were asked to enter a valid e-mail address, and those who did not express a desire to receive feedback were offered to fill in the e-mail field with the standard invalid e-mail 'aaa@aa.aa'. Only 33 respondents (2.63%) refused to obtain their results. Data collection was performed from June 7, 2022, to July 10, 2022. In total, 1,257 respondents from all regions of Ukraine fully completed the survey. All of them were included in the data analysis. The sample included 406 men (32.3%) and 851 women (67.7%) aged 18–61+ years; 144 (11.5%) of the respondents were 18–30 years old, 365 (29.0%) were 31–40 years old, 416 (33.1%) were 41–50 years old, 234

(18.6%) were 51–60 years old and 98 (7.8%) were 61 years old or older. The vast majority of the respondents hold bachelor's or master's degrees (70.4%;  $n=885$ ), and 9.5% ( $n=120$ ) had completed post-graduate studies or hold PhD degrees; 18.6% ( $n=235$ ) had secondary education or secondary special education.

### **Ethical Statement**

The authors declare that all procedures contributing to this work complied with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. The study was conducted with the participants' consent. All participants were informed that their participation in the study was voluntary and that they could refuse to participate or withdraw from the study at any time. The participants were informed that there were no right or wrong answers and were encouraged to respond honestly. Complete confidentiality was assured, and only deidentified data were used in the statistical analysis. We recorded only general demographic data about the respondents, such as gender, age and level of education.

### **Data Availability Statement**

The data for this study are available from the author upon reasonable request.

## **MEASURES**

### **Personal Experience**

The respondents' personal experience during the first months of the war in Ukraine was evaluated with eight options, which we presented in order depending on the likely degree of trauma and the intensity of the experience. The respondents were asked to rate their experience during the war by choosing one of eight answer options (if several options applied to the respondent, they were asked to choose the one closer to the top of the list): 1) personal participation in hostilities; 2) personal participation in other activities in the combat zone; 3) staying in the occupied territories; 4) service in the Armed Forces of Ukraine and other law enforcement agencies; 5) volunteer work; 6) forced relocation abroad; 7) forced relocation within Ukraine; 8) place of residence did not change.

### **Positive Mental Health Indicators**

The participants' positive mental health indicators were assessed using the Ukrainian adaptations of four measures. The first, the Connor-Davidson Resilience Scale, 10-Item Version (10-item CD-RISC; Campbell-Sills & Stein, 2007) is a 10-item self-report measure that evaluates a person's resilience. The participants rated the 10 statements on a five-point Likert scale (0 = *never* to 4 = *almost always*), and total scores ranged from 0 to 40. All the items in the scale are positively worded, including statements such as 'Deal with whatever comes my way', 'Bounce back after illness or injury' and 'Under pressure I stay focused'. Cronbach's alpha for the measure in the present sample was .89.

The second measure was the Professional Hardiness Questionnaire (PHQ) (Kokun, 2021), which assesses general levels of professional hardiness consisting of three components: professional commitment, professional control and professional challenge acceptance. The PHQ is a 24-item self-report measure, and all questions are directly related to employee occupational activities. In the PHQ version for Google Forms, the respondents are asked to rate each question on a five-point Likert scale (0 = *no*, 1 = *probably not*, 2 = *hard to say*, 3 = *probably yes* and 4 = *yes*). All questions on the scale are positively worded, and professional commitment, professional control and professional challenge acceptance are assessed using eight questions each. The sum of all the item scores represents the individual's general level of professional hardiness, with scores ranging from 0 to 96. The PHQ includes questions such as 'Do you like to be constantly aware of your work?', 'Do you notice a decreased desire to work in the case of increased responsibility for end work results?', 'Do you think clear work planning is needed?' and 'Do you feel praised when you solve non-standard work tasks?'. Cronbach's alpha for the total measure in the present sample was .86.

The third measure, the General Self-Efficacy Scale (GSE) (Schwarzer & Jerusalem, 1995) evaluates individuals' perceptions of their competence in effectively managing various stressful situations. The instrument consists of 10 statements that are rated using a five-point Likert scale (1 = *completely wrong* to 4 = *completely correct*). Possible GSE scores range from 10 to 40. Examples include 'If I am in trouble, I can usually think of a solution', 'If someone opposes me, I can find the means and ways to get what I want' and 'I can always manage to solve difficult problems if I try hard enough'. Cronbach's alpha for the GSE in the present sample was .91.

The fourth measure used was the Posttraumatic Growth Inventory—Expanded (PTGI-X; Tedeschi et al., 2017). This inventory comprises 25 items designed to measure relations to others, new possibilities, personal strengths, spiritual and existential changes and appreciation of life. The participants were asked to indicate the degree to which each statement reflected their experience during the war on a six-point Likert scale (0 = *I did not experience this change after February 24, 2022* to 5 = *I really strongly experienced this change after February 24, 2022*), with possible post-experience change scores ranging from 0 to 125 and higher scores indicating higher levels of post-experience growth. The PTGI-X includes statements such as 'I have changed my priorities about what is important in life', 'I have a greater appreciation for the value of my own life', 'I have established a new path for my life' and 'I can better appreciate each day'. Cronbach's alpha for the PTGI-X in the present sample was .95.

### **Negative mental health indicators**

The participants' negative mental health indicators were assessed using the Ukrainian adaptations of two measures. The first, the Short Screening Scale for DSM–

IV PTSD (Breslau et al., 1999) is a seven-item self-report measure used to assess whether an individual who has experienced trauma has 1) avoided places, people or activities associated with the trauma; 2) lost interest in important or enjoyable activities; 3) felt isolated or distant from others; 4) found it hard to receive love or affection from others; 5) had a sense of a foreshortened future; 6) had sleep difficulties and 7) become jumpy or easily startled. The scale is scored by counting the number of positive answers to these items. A score of 4 or higher is predictive of a diagnosis of PTSD.

The Giessen Subjective Complaints List (GGB-24; Brähler et al. 2008) is a standardised scale that quantifies 24 physical complaints grouped into four subscales: exhaustion, gastric, joint and heart (six questions each). Participants rate their impairment for each complaint on a five-point Likert scale (0 = *not at all*, 1 = *hardly*, 2 = *somewhat*, 3 = *considerable*, or 4 = *yes, absolutely*). The sum of all the subscales yields the general complaints score 'pressure of complaints', which ranges from 0 to 96 points. The GGB-24 includes physical complaints such as 'Increased sleepiness', 'Pain in the joints and limbs', 'Dizziness', 'Stomach pain', 'Breathlessness', 'Feeling of pressure in the head', and 'Heart attacks'. Cronbach's alpha for the total measure in the present sample was .93.

### Statistical Analysis

The Statistical Package for the Social Sciences (SPSS) version 22.0.0.0 was used for statistical analysis. Descriptive statistics (mean, standard deviation, skewness and kurtosis), independent samples *t*-tests and Multivariate analysis of variance (MANOVA) were used to analyse the data.

## RESULTS

Table 1 presents the descriptive statistics for all the mental health indicators examined in the study. The results revealed that all the variables were approximately normally distributed based on the degree of skewness and kurtosis, as both were less than 1. We should note the high pressure of physical complaints ( $M = 33.09$ ) and high level of PTSD symptoms ( $M = 3.55$ ) observed in the studied sample. Concurrently, a score of 4 or higher that is predictive of a diagnosis of PTSD was found in 50.4% of the respondents.

**Table 1** Descriptive statistics for all variables

Mental health indicators	Min	Max	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
Resilience	0	40	22.86	7.93	-.30	-.40
General level of professional hardiness	0	95	63.48	12.88	-.60	.78
Self-efficacy	10	40	29.08	5.82	-.49	.11
Post-experience changes	0	125	58.93	30.05	.01	-.90
Pressure of complaints	0	91	33.09	18.58	.45	-.31
PTSD symptoms	0	7	3.55	1.89	.03	-.86

To address RQ1 and RQ2, we firstly performed a preliminary analysis of the mental health indicators in the different groups of respondents formed depending on their personal experience during the war (Table 2).

First of all, this analysis highlighted the clear differences in both positive and negative mental health indicators between the four groups of respondents characterized by 'active' personal experience during the war (personal participation in hostilities; personal participation in other activities in the combat zone; service in the Armed Forces of Ukraine and other law enforcement agencies; and volunteer work) and the four groups with 'passive' personal experience (staying in the occupied territories; forced relocation abroad; forced relocation within the borders of Ukraine; and an unchanged place of residence).

In particular, mean (*M*) resilience in the groups with 'active' experience was in the range of 24.4–27.9, while in the groups with 'passive' experience, resilience was significantly lower, in the range of 20.5–22.3. In general, this trend was also observed for three other *positive* mental health indicators (general level of professional hardiness, self-efficacy and post-experience changes). The only notable exception was for the post-experience change indicator ( $M = 48.8$ ), which was lower in the group with personal combat participation experience than that in the other groups.

Conversely, in groups with 'passive' experience, significantly higher the *negative* mental health indicators were observed:  $M = 33.1$ – $35.6$  for pressure of complaints (*vs.* 22.1–31.8 for the 'active' experience group), and  $M = 3.5$ – $3.9$  for PTSD symptoms (*vs.* 2.5–3.3 for the 'active' experience group).

In view of such results, we decided not to overload our analysis by not presenting the reliability of the differences between all eight groups separately for the obtained indicators but comparing the combined results for two generalized groups: 'Active experience' (four groups with 'active' personal experience during wars) and 'Passive experience' (four groups with 'passive' experience). We should also note that although men's and women's results were significantly different for five out of six indicators ( $p < .05$ – $.001$ ; Table 3), but the *Effect Size* reached the 'Small' level (*Cohen's d* slightly exceeded 0.2) only for two out of six indicators. Therefore, we compared the two generalized groups ('Active experience' and 'Passive experience') without taking into account gender

**Table 2** Mental health indicators depending on personal experience during the war

Personal experience during the war	Positive mental health indicators						Negative mental health indicators					
	Resilience		General level of professional hardiness		Self-efficacy		Level of post-experience change		Pressure of complaints		PTSD symptoms	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Personal participation in hostilities ( <i>n</i> =31)	27.9	7.1	63.8	11.3	30.8	4.0	48.8	27.6	31.8	21.2	3.1	2.1
Personal participation in other activities in the combat zone ( <i>n</i> =48)	24.4	8.0	65.0	12.1	29.7	6.0	61.1	26.0	30.8	20.8	3.2	1.9
Staying in the occupied territories ( <i>n</i> =179)	22.3	7.9	65.6	12.9	29.6	5.9	60.0	29.2	35.6	17.9	3.8	1.8
Service in the Armed Forces and other law enforcement agencies ( <i>n</i> =38)	27.0	6.2	66.6	11.4	30.3	5.8	68.5	29.5	22.1	17.4	2.5	2.0
Volunteer work ( <i>n</i> =234)	25.4	7.1	65.0	11.8	30.3	5.4	64.0	30.9	31.6	18.6	3.3	1.9
Forced relocation abroad ( <i>n</i> =56)	21.1	8.3	63.1	14.3	28.4	5.4	60.6	31.2	34.6	17.7	3.7	1.8
Forced relocation within Ukraine ( <i>n</i> =211)	20.5	7.6	63.0	13.2	28.0	5.8	58.5	27.9	35.0	19.3	3.9	1.8
Unchanged place of residence ( <i>n</i> =460)	22.2	8.0	61.7	13.1	28.5	6.0	55.6	30.9	33.1	17.9	3.5	1.9

**Table 3** Comparison of the mental health indicators of men and women

Mental health indicators	Results				<i>t</i> <sup>a</sup>	<i>p</i>	Cohen's <i>d</i>
	Men ( <i>n</i> =406)		Women ( <i>n</i> =851)				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Resilience	23.91	8.21	22.36	7.75	3.25	< .001	0.19
General level of professional hardiness	62.32	13.70	64.04	12.44	-2.21	.032	0.13
Self-efficacy	29.14	6.25	29.06	5.61	0.23	–	0.01
Post-experience changes	53.69	31.32	61.43	29.12	-4.30	< .001	0.25
Pressure of complaints	28.62	17.64	35.22	18.64	-5.98	< .001	0.36
PTSD symptoms	3.32	1.96	3.66	1.84	-2.99	.003	0.12

<sup>a</sup>An independent samples *t*-test (equal variances not assumed).

effects. The validity of this approach was confirmed by the used MANOVA, which results showed that the model of Active experience/Passive experience\*Men/Women was not significant for any of the six indicators (*Eta squared* = 0.003 – 0.0002).

The comparison of the groups with 'Active' and 'Passive' personal experience during the war, presented in Table 4, showed that the respondents from the 'Active experience' group had significantly higher levels of all four *positive* mental health indicators: resilience ( $p < .001$ ; *Cohen's d* = 0.52), general level of professional hardiness ( $p = .004$ ; *Cohen's d* = 0.18), self-efficacy ( $p < .001$ ; *Cohen's d* = 0.30) and post-experience changes ( $p = .005$ ;

*Cohen's d* = 0.18). In turn, the respondents from the 'Passive experience' group had significantly higher levels of both *negative* mental health indicators: pressure of physical complaints ( $p = .002$ ; *Cohen's d* = 0.20) and PTSD symptoms ( $p < .001$ ; *Cohen's d* = 0.26).

## DISCUSSION

In terms of characterizing the whole sample of the adult Ukrainian population examined in this during the war, we should note, first of all, rather high levels of physical complaints ( $M = 33.09$ ) and PTSD symptoms ( $M = 3.55$ ; 50.4% of the respondents scored 4 or higher,

**Table 4** Comparison of the groups with ‘Active’ and ‘Passive’ personal experience during the war

Mental health indicators	Experience during the war				<i>t</i> <sup>a</sup>	<i>df</i>	<i>p</i>	Cohen's <i>d</i>	95% Confidence interval of the difference	
	‘Active’ (n=351)		‘Passive’ (n=906)						Lower	Upper
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>						
Resilience	25.67	7.17	21.77	7.95	8.38	700.8	< .001	0.52	2.98	4.81
General level of professional hardiness	65.09	11.73	62.86	13.25	2.91	713.7	.004	0.18	0.72	3.73
Self-efficacy	30.29	5.38	28.62	5.92	4.80	695.9	< .001	0.30	0.98	2.35
Post-experience changes	62.76	30.09	57.45	29.92	2.81	633.5	.005	0.18	1.60	9.02
Pressure of complaints	30.46	19.17	34.11	18.25	-3.07	609.7	.002	0.20	-5.98	-1.31
PTSD symptoms	3.19	1.97	3.69	1.84	-4.11	600.9	< .001	0.26	-0.738	-0.26

<sup>a</sup>An independent samples *t*-test (equal variances not assumed).

which is predictive of a diagnosis of PTSD). Generally, researchers have reported lower scores for PTSD symptoms in adult populations in various countries where military operations have taken place. For example, a study performed by Cardozo et al. (2000) revealed that 17.1% of respondents had a probable PTSD diagnosis, Dietrich et al. (2019) reported 19.4%, Acarturk et al. (2021) reported 19.6%, Somasundaram and Sivayokan (1994) reported 27%, Alpak et al. (2015) reported 33.5% and Ibrahim and Hassan (2017) showed percentages between 35 and 38%. Only Ahmad et al. (2000) reported a larger proportion of the adult population (60%) with a PTSD diagnosis than that found in our sample. Furthermore, the scores for pressure of complaints and PTSD symptoms obtained in our study were found to be significantly higher than those obtained with the same methods by Kokun et al. (2022) in 2017 on a sample of Ukrainian military personnel who had deployment experience at key front lines in eastern Ukraine; in that study, scores for pressure of complaints and PTSD symptoms were significantly lower, at  $M = 17.97$  and  $M = 1.55$ , respectively.

In terms of the observed significantly higher pressure of complaints and PTSD symptoms in women, this finding is consistent with the data of other researchers. For example, Murthy and Lakshminarayana (2006) noted the greater vulnerability of women than men to mental disorders during war, and Cardozo et al. (2004) and Wittchen et al. (2009) indicated that females were more likely to develop PTSD.

To achieve the research goal and to address the two RQs, we firstly analysed the mental health indicators in eight groups formed depending on the respondents' personal experience during the first months of the war in Ukraine. This preliminary comparison highlighted the differences in all mental health indicators between the four groups whose personal experience during the war could be characterized as ‘active’ (personal participation in hostilities; personal participation in other activities in the combat zone; service in the Armed Forces Ukraine and other law enforcement agencies; and volunteer work) and

the four groups characterized by relatively ‘passive’ personal experience (staying in the occupied territories; forced relocation abroad; forced relocation within Ukraine; and an unchanged places of residence). Since our study was exploratory, the logic of the further analysis of the obtained data was guided by this particular feature found in the previous comparison. Accordingly, we decided that it would be appropriate to compare the combined data of the generalized groups including respondents with ‘active’ versus ‘passive’ personal experiences during the war instead of conducting comparisons among all eight groups.

The obtained results allowed us to convincingly address both RQs as follows:

RQ1. Positive mental health outcomes were significantly higher in the adult population with ‘Active’ personal experience during the first months of the war in Ukraine. This finding was demonstrated by their significantly higher ( $p < .01-.001$ ) scores for all four *positive* mental health indicators examined in the study (resilience, general level of professional hardiness, self-efficacy and post-experience changes) compared to the adult population with ‘Passive’ experience.

RQ2. Negative mental health outcomes were significantly higher in the adult population with ‘Passive’ personal experience during the first months of the war in Ukraine. This finding was demonstrated by their significantly higher ( $p < .01-.001$ ) scores for both *negative* mental health indicators (pressure of physical complaints and PTSD symptoms) compared to the adult population with ‘Active’ experience.

The only exception was the lower post-experience change indicator in the group with experience of personal participation in hostilities. We assume that this result was due to the continuing intensity and specificity of such an experience, meaning that such people could not quickly understand their post-experiential growth in the present conditions; firstly, the main stress factor should end, and a relatively longer time should pass compared the time needed following other experiences.

In our opinion, it is quite difficult to unambiguously determine the cause-and-effect relations for the dependencies identified, since there is likely to be a simultaneous influence of several factors on mental health indicators. For example, it is reasonable to assume that the group with 'Active' personal experience during the war may have had higher levels of resilience, general level of professional hardiness and self-efficacy even before the war started compared to the second group. At present, it is impossible to determine whether or not these indicators increased during the war in that sample. However, initially higher indicators in the first group may be related to not only higher post-experience changes and lower manifestations of physical complaints and PTSD symptoms but also, importantly, to their personal experience during the first months of the war in Ukraine being 'Active' rather than 'Passive'. In particular, higher levels of certain positive mental health indicators may be manifested in voluntarily joining to Armed Forces of Ukraine or the Territorial Defence Forces, other volunteering, etc.

In particular, the first part of the mentioned assumption is based on research on the idea that resilience and hardiness may prevent negative health consequences, including physical complaints and PTSD symptoms, after severe stress (e.g., Bartone, 1999; Bartone et al., 2008; Escolás et al., 2013; Manning et al., 1988; Pitts et al., 2016; Thomassen et al., 2015). Moreover, reliable negative associations between self-efficacy and PTSD symptoms were determined in the studies of Keeling et al. (2020) and Yang et al. (2022), as well as between self-efficacy and physical complaints in the works of Capone and Petrillo (2020), Daniilidou et al. (2020) and Schwerdtfeger, et al. (2008).

All the above conclusions can largely be considered tentative. Furthermore, the high physical complaints and PTSD symptoms revealed in our study for the adult Ukrainian population indicate the significant need for psychological support and assistance for the Ukrainian population. This need will only grow as the duration of the war in Ukraine increases and will be relevant for many years after the cessation of hostilities.

The revealed dependence between mental health outcomes for the adult population and their personal experience during the first months of the war in Ukraine can be used to determine the direction of psychological support and assistance; specifically, support should focus on the development of resilience, hardiness and self-efficacy and training awareness of one's own post-traumatic growth as a way to overcome PTSD and somatic symptoms.

### LIMITATIONS AND DIRECTIONS OF FUTURE RESEARCH

The limitations of the study are connected with the specific participants recruited, the methods applied, a conditional distribution of respondents into groups with 'active' and 'passive' personal experience during the war, and the cross-sectional nature of the study design. The

obtained results require further verification in large-scale and longitudinal research projects. Despite these limitations, the present study's findings expand our understanding of the war-related outcomes for the mental health of adult populations and outline directions for further research on this topic.

As an important direction of future research, the author plans to obtain longitudinal data using the sample from this study (after 6 months, 1 year and possibly even further time intervals). Another important future research direction is the development of effective interventions to develop resilience, hardiness and self-efficacy and training awareness of one's own post-traumatic growth. These will not only increase the population's opportunities for successful life activity in wartime but can also effectively prevent negative mental health consequences.

### DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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