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Oleg Kokun

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# The Ukrainian Population's War Losses and Their Psychological and Physical Health

Oleg Kokun 

G.S. Kostiuik Institute of Psychology of National Academy of Educational Sciences of Ukraine,  
Kyiv, Ukraine

## ABSTRACT

The negative impact on the psychological and physical health of the civilian population is one of the most significant consequences of war. This study was performed during the fourth to fifth months of the war in Ukraine and involved 1,243 respondents aged 18–61+ years. This study identified a pronounced trend, showing a significant deterioration in the indicators of psychological and physical health in the Ukrainian population that is aggravated by employment, financial, or housing losses caused by the war. Our findings indicate that there is a high need for psychological support for the Ukrainian population and show the direction of possible interventions.

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All wars have numerous negative consequences for society. Importantly, one of the most significant negative consequences is the impact on the psychological and physical health of the civilian population (Hoffman et al., 2017; Johnson et al., 2022; Liebling-Kalifani et al., 2011; Opaas et al., 2022).

Traumatic experiences that the civilian population has because of war include terrorist attacks, witnessing extreme violence, torture, kidnappings, forced migration, and separation from one's family (Johnson & Thompson, 2008; Li et al., 2016; Shoib et al., 2022). The natural consequences of these traumatic disorders are somatic disorders and functional disability occurring in the affected population (Schlechter et al., 2021; Somasundaram & Sivayokan, 1994), post-traumatic stress disorders (PTSD) and dissociative disorders, anxiety, hostility, and depressive reactions (Bogic et al., 2015; Cardozo et al., 2004; Schlechter et al., 2021; Shoib et al., 2022), relationship problems, and alcohol and drug misuse (Farmy, 2017; Somasundaram & Sivayokan, 1994). Murthy and Lakshminarayana (2006) specifically emphasized the catastrophic war effect on the health and well-being of nations in general.

However, in addition to the direct negative impact of traumatic experiences on the civilian population's psychological and physical health, which has been studied in numerous works, wars can also have an indirect negative impact. In particular, employment, financial and housing losses caused by the war can result in additional psychological trauma. Precisely in the context of the current war in Ukraine, Alibudbud (2022) attributed the loss of property, income, businesses and homes to trauma-related losses capable of causing PTSD in the affected population. In the context of other wars of the twenty-first century, various researchers (Alcock, 2003; Adi & Segal, 2020; Eltanamly et al., 2022; Swaroop & DeLoach, 2015), based on their empirical data, identified employment, financial and other material losses along with other stressors (experiences of terror and exposure to personal and community violence, etc.) as stressors capable of causing negative psychological consequences in the population. However, as of yet, no studies have examined the differences in the psychological and physical health of the population depending on the presence and magnitude of material losses caused by war, in particular employment, financial, or housing losses.

It was determined that the use of positive mental health indicators, for example, resiliency and self-efficacy, in addition to the psychopathological indicators mentioned above, such as PTSD symptoms and somatic disorders, would assist the understanding of the overall psychological consequences of the conflict. The importance of resiliency for successful coping with war adversities by the civilian population was proven in the works of Eshel et al. (2020), Gagne et al. (2017), and Mao and Agyapong (2021). The works of Ghosn et al. (2021), and Slone et al. (2013) showed analogue results for self-efficacy.

It is well-known that Russia invaded Ukraine on February 24, 2022, and this invasion has become the most serious military conflict in Europe since 1945. Russia's annexation of Crimea in 2014 and the subsequent local military conflict in the eastern region of the country between the separatists, who were supported and controlled by Russia, and the Ukrainian army can be considered the beginning of this Russia-Ukraine war (Kurapov et al., 2022). From February 24, 2022, to September 11, 2022, 14,248 civilian casualties were recorded in Ukraine, with 5827 killed and 8421 injured (Office of the High Commissioner for Human Rights, 2022). In addition to civilian casualties, the war has also resulted in numerous employment, financial, and housing losses for the Ukrainian population. In particular, by the end of August, 2022, at least 15,300 apartments and 115,900 private houses had been damaged, destroyed, or seized in Ukraine (Kyiv School of Economics, 2022), and the number of refugees from Ukraine recorded only across Europe reached 7,007,381 people (Operational Data Portal, 2022).

Therefore, the present exploratory cross-sectional study aims to determine the possible differences in indicators of psychological and physical health in the Ukrainian population depending on the degree of employment, financial, and housing losses caused by the war.

Accordingly, we formulated two research questions (RQ) for our study as follows:

RQ1. Do the indicators of psychological and physical health of the Ukrainian population differ depending on the presence or absence of employment, financial, or housing losses caused by the war?

RQ2. Do the indicators of psychological and physical health of the Ukrainian population differ with various degrees of employment, financial, or housing losses caused by the war?

## Materials and methods

### *Participants and Procedure*

An online survey was conducted using Google Forms at the address <https://docs.google.com/forms/d/1wMMQuqFlJtVRUg7Rp0oZxdalYDQPvIt5Ol2nUMFyS4w>. The investigation was performed in June–July, 2022, which is during the fourth to fifth months after the start of the war in Ukraine. The participants were recruited through Facebook tools, and they were encouraged to participate in the study in order to gain access to their results. From the total number of respondents who completed the questionnaires, the data of 1243 respondents from all regions of Ukraine were selected (respondents who lost their place of study [not their jobs] were excluded).

The sample included 404 men (32.5%) and 839 women (67.5%) aged 18–61+ years; 138 (11.1%) of the respondents were 18–30 years old, 359 (28.9%) were 31–40 years old, 415 (33.4%) were 41–50 years old, 233 (18.7%) were 51–60 years old, and 98 (7.9%) were 61 years old or older. From the total of 1243 respondents, 330 (26.5%) *lost their jobs as a result of the war without being able to find a new one*, 136 (10.9%) *were forced to accept another job or position*, and 777 (62.6%) *did not experience employment losses*. The financial situation *worsened significantly* as a result of the war for 460 (37.0%) respondents, 549 (44.2%) noted that their financial situation *worsened to some extent*, and 234 (18.8%) *did not have financial losses*. Housing was *lost, destroyed or seriously damaged* for 85 (6.9%) respondents, housing was *partially damaged* for 117 (9.4%) respondents, and 1041 (83.7%) *did not have housing losses*. Moreover, only 43 (3.5%) respondents did not experience any of the three named losses.

### **Ethical Statement**

The author declares 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 Declaration of Helsinki of 1975, as revised in 2008. The study was conducted with the participants' consent. All the 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 Accessibility Statement**

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

### **Measures**

The participants' *psychological health* indicators were assessed using the Ukrainian adaptations of three measures. The first measure, 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 for 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, and a score of 4 or higher is predictive of a diagnosis of PTSD.

The second measure, 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 an individual's resilience. For this scale, the participants rate 10 statements on a five-point Likert scale (0 = *never* to 4 = *almost always*), and the total scores range from 0 to 40. All the items in the scale are positively worded, including statements such as "Under pressure I stay focused," "Deal with whatever comes my way," and "Bounce back after illness or injury." Cronbach's alpha for the measure in the present sample was .89.

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*), and the total possible GSE scores range from 10 to 40. Examples of the statements 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 participants’ *physical health* indicators were assessed using the Ukrainian adaptation of the Giessen Subjective Complaints List (GBB-24; Brähler et al. 2008). The GBB-24 is a standardized scale that quantifies 24 physical complaints grouped into four subscales: exhaustion, gastric, joint, and heart (six questions each). The 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 physical complaints,” which ranges from 0 to 96 points. In order to avoid oversaturation with additional quantitative data, the article presents and analyzes only the general complaints score, which fully represents the four subscales of this measure. The GBB-24 includes physical complaints such as “Pain in the joints and limbs,” “Increased sleepiness,” “Dizziness,” “Breathlessness,” “Stomach pain,” “Heart attacks,” and “Feeling of pressure in the head.” Cronbach’s alpha for the total measure in the present sample was .93.

Thus, the four measures used in the study covered the two most frequently mentioned in the literature groups of negative war consequences for the civilian population’s psychological and physical health—PTSD and somatic symptoms, as well as two positive mental health indicators, the most important, according to various authors, for successful coping by the civilian population with war adversities—resiliency and self-efficacy.

### **Statistical analysis**

The Statistical Package for the Social Sciences (SPSS) version 22.0.0.0 was used for the statistical analysis in this study. Descriptive statistics (mean, median, standard deviation, range, skewness, and kurtosis), Spearman’s correlation coefficient and one-way ANOVA with Bonferroni correction were used to analyze the data.

### **Results**

The descriptive statistics for all indicators examined in the study are presented in [Table 1](#).

**Table 1.** Descriptive statistics for all variables.

Psychological and physical health indicators	<i>M</i>	<i>Me</i>	<i>SD</i>	<i>Range</i>	<i>Skewness</i>	<i>Kurtosis</i>
PTSD symptoms	3.54	4	1.88	0–7	0.04	–0.86
Resilience	22.88	23	7.91	0–40	–0.29	–0.40
Self-efficacy	29.11	30	5.79	10–40	–0.47	0.07
Pressure of physical complaints	33.06	32	18.55	0–91	0.46	–0.29

**Table 2.** Bivariate correlations among the study variables.

Variables	Age	PTSD symptoms	Resilience	Self-efficacy
Age	–			
PTSD symptoms	–0.09*	–		
Resilience	0.05	–0.45**	–	
Self-efficacy	0.05	–0.31**	0.67**	–
Pressure of physical complaints	–0.02	0.49**	–0.30**	–0.18**

\* $p < .01$ , \*\* $p < .001$ .

These general results can also be useful for comparing the psychological and physical health indicators of the groups of respondents formed according to the degree of their employment, financial, or housing losses. The results revealed that all the variables were approximately normally distributed based on the degree of skewness and kurtosis, as both values were less than 1. Additionally, we should note the high level of PTSD symptoms ( $M = 3.54$ ) and the significant number of physical complaints ( $M = 33.06$ ) observed in the sample (for more details, see the first and second paragraphs of the discussion). In particular, a score of 4 or higher on the Short Screening Scale for DSM–IV PTSD, which is predictive of a diagnosis of PTSD, was found in 50.2% of the respondents.

The bivariate correlations among the study variables presented in Table 2 showed that the psychological and physical health indicators used in the study were not related to age. Naturally, negative indicators (PTSD symptoms and the pressure of physical complaints;  $r = .49$ ;  $p < .001$ ) and positive indicators (resilience and self-efficacy;  $r = .67$ ;  $p < .001$ ) correlated strongly. Moreover, these two opposite groups of indicators have a reliable negative correlation ( $r = -.18$ – $-.45$ ;  $p < .001$ ). The correlation between PTSD symptoms and resilience ( $r = -.45$ ;  $p < .001$ ) was the strongest.

To address RQ1 and RQ2, we compared the psychological and physical health indicators in the groups of respondents formed according to the degree of their employment, financial, or housing losses caused by the war. The comparison of the respondent groups according to their *employment* losses is given in Table 3.

The results presented in the table show that there were significant differences on all four indicators for respondents who lost their jobs compared to those who did not experience employment losses ( $F = 4.81$ – $19.01$ ;  $p < .01$ – $.001$ ;  $\eta^2 = .010$ – $.031$ ). Those who lost their jobs without the possibility of finding a new one, compared to those who did not experience

**Table 3.** Psychological and physical health indicators of the Ukrainian population depending on employment losses caused by the war.

Employment losses	Psychological and physical health indicators							
	PTSD symptoms		Resilience		Self-efficacy		Pressure of physical complaints	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. Loss of a job without the possibility of finding a new one ( <i>n</i> = 330)	4.04	1.8	21.34	8.2	28.35	6.2	36.84	19.7
2. Forced transfer to another job or position ( <i>n</i> = 136)	3.71	1.9	22.65	8.3	28.78	5.7	31.62	18.4
3. No employment losses ( <i>n</i> = 777)	3.30	1.9	23.58	7.6	29.50	5.6	31.71	17.9
One-way ANOVA ( <i>F</i> ; <i>p</i> )	19.01; < .001		9.41; < .001		4.81; .008		9.45; < .001	
Bonferroni Post Hoc Test ( <i>p</i> )	<.001 <sub>1-3</sub>		<.001 <sub>1-3</sub>		.008 <sub>1-3</sub>		.016 <sub>1-2</sub> <.001 <sub>1-3</sub>	
Eta squared ( $\eta^2$ )	.031		.015		.010		.017	

employment losses had higher levels of negative indicators such as PTSD symptoms and pressure of physical complaints ( $p < .001$ ) and lower levels of two positive indicators—resilience ( $p < .001$ ) and self-efficacy ( $p = .008$ ). The group of respondents who were forced to accept another job or position had lower pressure of physical complaints ( $p = .016$ ) compared to those who lost their job without any opportunity to find a new one.

Table 4 presents the comparison of the psychological and physical health indicators of the groups of respondents according to their *financial* losses. This comparison revealed the largest number of significant differences between the three groups of respondents ( $F = 4.98\text{--}44.51$ ;  $p < .01\text{--}.001$ ;  $\eta^2 = .014\text{--}.067$ ).

Specifically, the group of respondents with a significantly worsened financial situation had higher negative indicators, including PTSD symptoms and pressure of physical complaints ( $p < .001$ ), along with lower positive indicators, including resilience ( $p < .001$ ) and self-efficacy ( $p = .011$ ), compared to the group without financial losses. Additionally, those with a significantly worsened financial situation had higher PTSD symptoms and pressure of physical complaints ( $p < .001$ ) and lower resilience ( $p < .001$ ) and self-efficacy ( $p = .047$ ) compared to the group who noted that their financial situation “simply” worsened. The latter group, in turn, had higher PTSD symptoms ( $p = .003$ ) and pressure of physical complaints ( $p = .044$ ), along with lower resilience ( $p < .027$ ), than those who did not suffer financial losses.

The comparison of the psychological and physical health indicators for the groups of respondents formed according to their *housing* losses is presented in Table 5. There were significant differences between the groups



for three indicators out of four—PTSD symptoms, pressure of physical complaints and resilience ( $F = 4.45\text{--}6.44$ ;  $p < .05\text{--}.01$ ;  $\eta^2 = .010\text{--}.014$ ). In particular, both groups of respondents whose housing was damaged, including those whose housing was lost, destroyed, or seriously damaged and those whose housing was partially damaged, had higher pressure of physical complaints ( $p = .034$  and  $p = .018$ ), compared to the respondents who did not experience housing losses. Also, respondents who did not experience housing losses had lower PTSD symptoms ( $p = .013$ ), compared to the respondents whose housing was lost, destroyed, or seriously damaged, and higher resilience ( $p = .048$ ), compared to the respondents whose housing was partially damaged.

## Discussion

Firstly, we should note that the total sample of the adult population studied during the fourth to fifth months of the war in Ukraine showed significantly high levels of PTSD symptoms and physical complaints. This can be considered a natural consequence of the war exposure experienced by the Ukrainian population (Kyiv School of Economics, 2022; Office of the High Commissioner for Human Rights, 2022). In particular, the vast majority of researchers who have conducted research in various countries suffering from military operations (Alpak et al., 2015; Acarturk et al., 2021; Cardozo et al., 2004; Dietrich et al., 2019; Ibrahim & Hassan, 2017; and others) have reported lower scores for PTSD symptoms in the adult populations; specifically, in their studies, between 17% and 38% of respondents were found to have a probable PTSD diagnosis.

However, we should note that there are difficulties in comparing the results from the above-mentioned studies with ours due to the different methods used for diagnosing PTSD and, most importantly, the fact that the previous studies were all conducted after the wars ended, whereas our study was conducted during the acute phase of the war. We believe that these differences between the studies also explain why the scores for the pressure of complaints and PTSD symptoms obtained in this study were significantly higher than those obtained with the same methods in 2017 with a sample of Ukrainian military personnel (Kokun et al., 2022) who had deployment experience at key front lines in eastern Ukraine. Indeed, in that study, the scores for pressure of complaints and PTSD symptoms were significantly lower ( $M = 17.97$  and  $M = 1.55$ , respectively) than in the current study.

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

RQ1. The respondents who had the most severe employment, financial, or housing losses caused by the war (loss of a job without the possibility of finding a new one,

**Table 4.** Psychological and physical health indicators of the Ukrainian population depending on financial losses caused by the war.

	Psychological and physical health indicators							
	PTSD symptoms		Resilience		Self-efficacy		Pressure of physical complaints	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Financial losses								
1. Financial situation significantly worsened ( <i>n</i> = 460)	4.13	1.9	21.34	8.4	28.48	6.3	38.58	19.9
2. Financial situation worsened ( <i>n</i> = 549)	3.33	1.8	23.37	7.5	29.34	5.6	30.83	16.6
3. No financial losses ( <i>n</i> = 234)	2.86	1.9	24.77	7.3	29.83	5.1	27.44	17.5
One-way ANOVA ( <i>F</i> ; <i>p</i> )	44.61; <.001		16.79; <.001		4.98; .007		37.17; <.001	
Bonferroni Post Hoc Test ( <i>p</i> )	<.001 <sub>1-2</sub>		<.001 <sub>1-2</sub>		.047 <sub>1-2</sub>		<.001 <sub>1-2</sub>	
	<.001 <sub>1-3</sub>		<.001 <sub>1-3</sub>		.011 <sub>1-3</sub>		<.001 <sub>1-3</sub>	
	.003 <sub>2-3</sub>		.049 <sub>2-3</sub>				.044 <sub>2-3</sub>	
Eta squared ( $\eta^2$ )	.067		.027		.014		.057	

**Table 5.** Psychological and physical health indicators of the Ukrainian population depending on housing losses caused by the war.

	Psychological and physical health indicators							
	PTSD symptoms		Resilience		Self-efficacy		Pressure of physical complaints	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Housing losses								
1. Housing lost, destroyed, or seriously damaged ( <i>n</i> = 85)	4.07	1.6	21.34	7.6	28.69	5.9	37.52	20.7
2. Housing suffered partial damage ( <i>n</i> = 117)	3.88	1.9	21.38	8.6	29.02	5.7	37.19	19.3
3. No housing losses ( <i>n</i> = 1041)	3.46	1.8	23.18	7.8	29.16	5.8	32.23	18.2
One-way ANOVA ( <i>F</i> ; <i>p</i> )	5.35; .005		4.45; .012		.27; –		6.44; .002	
Bonferroni Post Hoc Test ( <i>p</i> )	.013 <sub>1-3</sub>		.048 <sub>2-3</sub>		–		.034 <sub>1-3</sub>	
							.018 <sub>2-3</sub>	
Eta squared ( $\eta^2$ )	.014		.010		.0004		.011	

significant deterioration in their financial situation, or loss, destruction, or serious damage to their housing) demonstrated significantly higher levels of both *negative* indicators, including PTSD symptoms and pressure of physical complaints, and lower levels of the *positive* indicator of resilience compared to the respondents without such losses. Furthermore, the respondents with the most severe employment and financial losses demonstrated significantly lower levels of the other positive indicator, self-efficacy, compared to the respondents without losses. The respondents with lesser employment, financial, or housing losses differed somewhat from the respondents without identified losses.

RQ2. Differences in the psychological and physical health indicators between the groups of respondents with different degrees of employment, financial, or housing

losses caused by the war were less significant compared to those described for RQ1. The differences were most pronounced in the groups formed by the degree of financial losses; specifically, those whose financial situation deteriorated significantly had higher levels of PTSD symptoms and pressure of physical complaints and lower resilience and self-efficacy compared to those whose financial situation “simply” worsened.

Overall, in the context of the study goal, we can confirm a pronounced trend, namely a significant deterioration in the psychological and physical health of the Ukrainian population related to the aggravating factors of employment, financial, and housing losses caused by the war. Among these three types of losses, this trend toward deterioration in psychological and physical health was the strongest in the case of financial losses. This trend may be explained by the fact that such losses may be the most painful for the Ukrainian population as a result of the war. Indeed, 83.7% of respondents did not experience housing losses, and 62.6% did not experience employment losses, whereas only 18.8% of the studied sample did not experience financial losses.

Helplessness in the population caused by the war can be considered as an important mediating factor deteriorating the Ukrainian population’s psychological and physical health as a result of employment and, especially, financial and housing losses. After all, firstly, war-related hopelessness is quite closely related to mental health deterioration, as discussed in the works of Diab et al. (2020), Miller et al. (2018) and Shirom and Shperling (1996). Secondly, such war-induced helplessness naturally reduces a person’s ability to effectively search for work and earn money in new, unfavorable conditions, as well as his/her ability to minimize possible financial losses. This conclusion, in particular, follows from the results of a systematic review made by da Silva Rebelo et al. (2018).

The conclusions formed on the basis of the obtained data can, to some extent, be considered tentative and require further verification in large-scale research projects. Indeed, it is possible that there are gender differences in the psychological and physical reactions to various types of losses, as indicated by Hamama-Raz et al. (2015), Laufer and Shechory Bitton (2021), and Silove et al. (2017). Moreover, in addition to employment, financial, and housing losses, the obtained results may have been influenced by respondents’ individual reactions to the danger to their lives and the lives of their close relatives and friends that they experienced during the war (Kokun et al., 2020; Zasiiekina et al., 2022).

The identified associations between employment, financial, or housing losses caused by the war and a deterioration in psychological and physical health indicators in the Ukrainian population can be used to determine the population groups that need psychological assistance as a priority and the directions for such assistance. In particular, the affected population groups

need help in increasing their resilience and self-efficacy as a way to overcome PTSD and somatic symptoms. In particular, the idea that resilience may prevent negative health consequences after severe stress, including physical complaints and PTSD symptoms, is based on the results presented by Bartone et al. (2008), Escolas et al. (2013), Pitts et al. (2016), and others.

### Limitations

Our study has limitations because of the cross-sectional nature of the study design, the danger to life and other possible factors that could also cause the deterioration of psychological and physical health, the current situation of the respondents, the methods applied, as well as the specific characteristics of the participants recruited, such as not considering the effect of gender. Despite these limitations, the present study's findings expand our understanding of the war-related outcomes for the psychological and physical health of the population and outline directions for further research on this topic.

### Disclosure statement

No potential conflict of interest was reported by the author.

### Notes on contributor

**Oleg Kokun**, Ph.D., is a Deputy Director for research and innovation of the G.S. Kostyuk Institute of Psychology of the National Academy of Educational Sciences (NAES) of Ukraine. He is also a Chief Researcher at the Research Center for Humanitarian Problems for the Armed Forces of Ukraine. His research interests focus on psychological and physical health, work and military psychology.

### ORCID

Oleg Kokun  <http://orcid.org/0000-0003-1793-8540>

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