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Cognitive predictors of students' perception of environmental and epidemic health threats during wartime

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Abstract. The aim of the study was to examine the influence of cognitive predictors on students' perception of environmental and epidemic health threats during wartime. The following methods were used to identify cognitive predictors: the "Questionnaire on Worldview Plasticity", the "Post-traumatic Cognitions Questionnaire", and the short version of the "Sense of coherence" questionnaire. A specialised diagnostic framework was developed to investigate specific structural components of the psychological readiness of participants in the educational process to counter environmental and epidemic threats. The study sample consisted of 502 respondents, with a mean age of 20 years: women (80.3%), men (18.1%), and other genders (1.6%). Data collection was conducted using Google Forms during the spring-autumn period of 2025. Regression analysis was applied for statistical data processing. It was found that worldview and cognitive-emotional predictors play a significant role in shaping students' attitudes towards environmental and epidemic challenges. The results of the regression analysis demonstrated that negative beliefs about the world are the dominant factor affecting mental health ($R^2 = 0.46$; $t = 0.51$; $p < 0.001$), whereas a sense of coherence ($t = -0.04$; $p = 0.026$) functions as a protective factor. The perception of environmental threats is more strongly mediated by such cognitive predictors as critical thinking and plasticity. The leading role of additional cognitive filters through which students assess the level of danger posed by epidemic challenges is played by worldview predictors such as idealism and principledness. The resulting regression model demonstrated the complex dynamics of interaction between cognitive and resource-related parameters of students' psychological resilience to global challenges. A tendency towards self-reproach may act as a mediator that intensifies anxiety concerning one's physical condition in adverse environmental and epidemic circumstances. It was established that negative beliefs about the world are a key factor increasing the vulnerability of young people's mental health to environmental challenges, while a sense of coherence serves as a "protective" factor in counteracting environmental and epidemic threats among participants in the educational process

Keywords: cognitive beliefs; worldview; individual psychological readiness; worldview plasticity; post-traumatic cognitions

INTRODUCTION

The prolonged experience of war among the Ukrainian population inevitably transforms the entire structure of an individual's inner world, including their beliefs about the world and about themselves. Coping with the losses caused by war exhausts both the physical and psychological resources of the individual. One of the most vulnerable groups within the population is young people, who are experiencing and constructing their own life paths under conditions of resistance, struggle, and the relentless drive for survival. The deconstruction of the fundamental foundations of safety, which has become increasingly apparent in

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the fifth year of the Russian-Ukrainian war, is shaping a new perception of uncertainty. Individuals continue to strive for a sense of security, which is increasingly becoming an echo of memories of the past, a life that was understandable and more or less stable; yet the reality of the present, as F. Hahn (2024) emphasised, is a culture of "uncertainty".

An alarmingly high level of uncertainty regarding oneself and the surrounding world has a destructive impact on the cognitive sphere of the individual, giving rise to cognitive biases and patterns of paradoxical and lateral thinking. Traumatic negative cognitive beliefs and biases regarding oneself and the world in general can affect the criticality of self-awareness, research and creative commitment, and resilience to uncertainty. In exploring the possibilities of constructive engagement with hazardous living conditions, J. Foster (2011) focused on the model of environmental responsibility as a tool for responsible behaviour towards future generations, at the level of everyday life and environmental consequences. Thus, studying the role of students' cognitive predictors in shaping the younger generation's mental resilience to counter unstable environmental and epidemic conditions of survival during wartime is highly relevant.

Research by A. Kuzmina (2024) demonstrated that it is of the utmost importance to foster the younger generation's sustainable competencies in combating the effects of climate change, a deeper understanding of environmental issues, an understanding of the interconnection between natural processes and human activity, responsibility for the environment, and the development of critical, problem-solving and global thinking. Education, as the leading instrument in a young person's development on the path to their formation and personal fulfilment, often acts as a driving force for change. Consequently, in the research on the characteristics of the perception of environmental issues and attitudes towards nature, M. Bonnett (2019) emphasised the need to develop pathways for the "ecologisation" of education. Author emphasised that the development of a receptive and sensitive relationship with nature, and the cultivation of a value-based attitude towards the environment in people's thinking, is key to human well-being. However, under wartime conditions, when implementing changes within the education system, it is necessary to take into account the traumatic factor associated with the experiences of Ukrainian youth in coping with the disruption of stable forms of life and the satisfaction of basic needs for protection.

Despite a wide range of studies on preparing young people to take a responsible approach to their own survival in the face of global environmental and epidemic threats, the cognitive predictors shaping students' attitudes towards environmental challenges have not been sufficiently explored. The aim of this article was to investigate how cognitive predictors influence students' perceptions of environmental and epidemic threats to health during wartime.

MATERIALS AND METHODS

The theoretical and conceptual basis for this empirical study was the concept of an individual's psychological readiness to counter environmental and epidemic threats, developed by O. Kredentser (2025) as part of the planned research project "Social and psychological technologies for promoting the readiness of participants in the educational process to counter environmental and epidemic threats to human health" (2025-2026). Within this concept, an individual's psychological readiness to counter environmental and epidemic threats is viewed as a system of cognitions, motives, values, skills and personal qualities that ensure a person's psychological ability to adequately perceive and assess threats and act effectively in the face of environmental and epidemic risks. Cognitive resilience is one of the five structural components of preparedness, reflecting the level of awareness, intellectual flexibility and an individual's ability to adequately process information about environmental and epidemic threats. Cognitive resilience ensures a rational perception of crisis events, the ability to think critically and to form well-founded decisions in situations of heightened uncertainty (Kredentser, 2025).

The following methods were used to identify cognitive predictors: the "Questionnaire on Worldview Plasticity" (Hruzynova, 2022), the "Post-traumatic Cognitions Questionnaire" (Zlyvkov *et al*., 2016), and the short version of the "Sense of Coherence" questionnaire (Khomulenko & Hres, 2023). A special diagnostic complex has been developed to investigate specific structural components of the psychological readiness of participants in the educational process to counter environmental and epidemic threats; it was approved by the Commission on Research Ethics of the Institute of Social and Political Psychology of the National Academy of Pedagogical Sciences of Ukraine (Minutes No. 07/25, dated 28 April 2025). The study sample comprised 502 respondents, students of various specialisations from different higher education institutions in Ukraine, predominantly from Kyiv (73.1%), Rivne (16.3%) and other cities (10.6%). The respondents' ages ranged from 17 to 44 years, with an average age of 20 years; women (80.3%), men (18.1%), and other genders (1.6%). The majority of respondents were studying at bachelor's level (83.5%), master's level (15.5%) and postgraduate level (1%). Data collection was carried out using Google Forms during the spring and autumn of 2025. Regression analysis using the jamovi software (version 2.3.28) was employed for statistical processing. Respondents' participation in the empirical stages of the study was based on the principles of voluntariness, confidentiality and anonymity. The ethical principles

of the study were in line with those of the American Psychological Association (2017).

RESULTS AND DISCUSSION

According to the results of the constructed linear regression model ($R^2 = 0.28$), which explains 28% of the variance in the subjective perception of the impact of environmental threats on physical health, it was established that "worldview plasticity" ($t = 0.1$; $p = 0.001$) and "worldview criticality" ($t = 0.12$; $p = 0.011$) are positive predictors of constructive interaction with hazardous living conditions. In contrast, "self-criticism" exhibits the highest coefficient of influence ($t = 0.2$; $p = 0.017$) among all variables. This indicates that a tendency towards internal autoaggression and excessive self-criticism intensifies the subjective sense of physical health vulnerability to external environmental factors (Table 1).

Table 1. Results of the regression analysis of the influence of students' worldview sphere and cognitive-emotional self-regulation on the perception of environmental threats to physical health

Predictors	Estimate (B)	SE	t	p
Intercept / Constant	1.8	0.73	2.46	0.014
Worldview plasticity	0.1	0.03	3.2	0.001
Worldview criticality	0.12	0.05	2.56	0.011
Self-criticism	0.2	0.08	2.39	0.017

Source: author's own work

Analysis of the regression model shows that worldview and cognitive-emotional predictors play a significant role in shaping students' attitudes towards environmental challenges. Thus, the perception of environmental threats is, on the one hand, mediated by such cognitive predictors as criticality and plasticity, and on the other, by a tendency towards self-criticism and self-blame. In particular, a tendency towards self-criticism may act as a mediator that intensifies anxiety regarding one's own physical condition in adverse environmental conditions.

The regression model for predictors of the perception of the impact of epidemic threats on physical health ($R^2 = 0.34$) explains 34% of the variation in how students assess the impact of epidemics on their physical health. In the constructed model, the indicator "self-criticism" ($t = 0.31$; $p < 0.001$) demonstrated the highest level of statistical significance, indicating that students' tendency towards self-blame and auto-aggression intensifies the subjective perception of vulnerability to epidemic threats. In other words, students transfer their internal psychological discomfort onto their perception of external biological risks. It was found that greater commitment to one's own moral, ethical and worldview attitudes, "worldview principledness" ($t = 0.10$; $p = 0.036$), generates greater anxiety among students regarding the impact of epidemics on health. This may indicate that, among students, principledness correlates with a greater sense of responsibility for one's own life and physical condition. Such a predictor as "worldview idealism" also demonstrated a statistically significant influence ($t = 0.07$; $p = 0.043$). A tendency towards an idealistic perception of the world is a factor that increases students' sensitivity to epidemics, which disrupt their idealised image of safe and harmonious existence (Table 2).

Table 2. Results of the regression analysis of the influence of students' worldview sphere and cognitive-emotional self-regulation on the perception of epidemic threats to physical health

Predictors	Estimate (B)	SE	t	p
Intercept / Constant	3.03	0.65	4.66	<0.001
Worldview idealism	0.07	0.04	2.03	0.043
Worldview principledness	0.10	0.04	2.01	0.036
Self-criticism	0.31	0.08	3.64	<0.001

Source: author's own work

Comparing these two models, it can be concluded that epidemic threats are perceived by students as more sensitive and more closely connected with internal psychological states, particularly with the level of self-criticism. Thus, in the cognitive assessment of epidemic threats, the most significant factor is self-criticism, which in some way intensifies anxiety regarding students' somatic condition. At the same time, such worldview predictors as idealism and principledness function as additional cognitive filters through which students assess the level of danger posed by epidemic challenges. At the next stage of the empirical data analysis, regression models of the subjective perception of the impact of environmental and epidemic threats on students' mental health were constructed.

According to the results of the constructed linear regression model ($R^2 = 0.41$), which explains 41% of the variability in students' subjective perception of the impact of environmental threats on mental health, it was established that "negative beliefs about

the world" (t = 0.45; p < 0.001) constitute the strongest predictor within the model. This indicates that a pessimistic perception of surrounding reality and expectations of global threats intensify concerns regarding one's own mental well-being. Thus, general cognitive biases concerning the hostility of the surrounding world form the foundation for the development of environmental anxiety. A negative statistically significant relationship was also identified for the sense of coherence (t = -0.04; p = 0.02). The higher the sense of coherence (the capacity to perceive the world as comprehensible, manageable, and meaningful), the lower the perception of the negative impact of environmental factors on students' mental state. In this context, coherence functions as a resource of cognitive resilience that mitigates anxiety. A tendency towards idealistic cognitive beliefs, namely "worldview idealism" (t = -0.09; p = 0.02), increases students' sensitivity to environmental adversities, since such adversities are perceived as the destruction of a harmonious world order and negatively affect the mental state of young people (Table 3).

Table 3. Results of the regression analysis of the influence of students' worldview sphere and cognitive-emotional self-regulation on the perception of environmental threats to mental health

Predictors	Estimate (B)	SE	t	p
Intercept / Constant	3.93	0.79	4.96	<0.001
Worldview idealism	0.09	0.04	2.32	0.021
Negative beliefs about the world	0.45	0.11	4.14	<0.001
Sense of coherence	-0.04	0.02	-2.33	0.020

Source: author's own work

Thus, unlike the previous models, the combination of negative beliefs about the world and sense of coherence explains attitudes towards mental health considerably better than attitudes towards physical health. The resulting regression model demonstrates the complex dynamics of interaction between cognitive and resource-related parameters of students' resilience to global challenges. It was established that negative beliefs about the world are a key factor increasing the vulnerability of young people's mental health to environmental challenges. At the same time, the identified role of sense of coherence as a negative predictor demonstrates that students' capacity to interpret and structure life experience performs a buffering function, reducing their level of environmental stress. This model introduces the indicator of coherence as a "protective" factor in counteracting environmental and epidemic threats among participants in the educational process.

The following regression model identifies cognitive predictors of students' subjective perception of the impact of epidemic threats on their own mental health (R^2 = 0.46). It explains 46% of the variability in how university students assess the impact of epidemics on their mental health. The dominant indicator is "negative beliefs about the world" (t = 0.51; p < 0.001). Thus, attitudes characterised by negative perceptions of epidemic threats and expectations of catastrophic events most strongly determine students' sense of psychological vulnerability in the face of epidemics. Sense of coherence, as in the previous model, demonstrates a statistically significant negative effect (t = -0.04; p = 0.026). This confirms the role of coherence as an anti-stress buffer. Students' capacity to integrate difficult experiences and perceive meaning in events helps reduce the destructive impact of epidemic threats on their mental health. Worldview idealism correlates with heightened sensitivity among young people to epidemic challenges (t = 0.10; p = 0.01). The disruption of the usual order of things caused by illness is perceived by idealists as a substantial threat to their internal psychological balance (Table 4).

Table 4. Results of the regression analysis of the influence of students' worldview sphere and cognitive-emotional self-regulation on the perception of epidemic threats to mental health

Predictors	Estimate (B)	SE	t	p
Intercept / Constant	3.35	0.77	4.37	<0.001
Worldview idealism	0.10	0.04	2.59	0.010
Negative beliefs about the world	0.51	0.10	4.88	<0.001
Sense of coherence	-0.04	0.02	-2.24	0.026

Source: author's own work

Thus, the results of the regression analysis indicate that the perception of epidemic threats as a factor influencing mental health is largely determined by the cognitive schema of the "world as a threat". At the same time, sense of coherence may be regarded as a key coping resource for students, contributing to their psychological stabilisation under conditions of epidemiological instability. Thus, negative beliefs and coherence are most strongly manifested in the increase of students' concerns regarding their own mental state. It should be

noted that this model demonstrates the highest explanatory power among all previously identified parameters, indicating the critical importance of these cognitive factors specifically within the context of epidemics.

Similarly, researchers such as M. Błaszczyk *et al.* (2025) investigated students' psychological and educational resilience during wartime and demonstrated that wartime destruction and stress become integrated with everyday academic difficulties, generating a "complex failure" that students are compelled to overcome. H. Meshko (2026), in a quantitative study, found that resilience and peer social support are significant predictors of students' psychological well-being, with internal adaptive resources exerting a stronger influence, while peer group support further enhanced the effect. Researchers such as F. Giordano *et al.* (2024) revealed how internal resources (positive thinking, emotional regulation, sense of control) and external support (social connections and communities) contribute to adaptation and the maintenance of students' mental well-being under wartime conditions. In studies dedicated to the psychosocial experiences of Ukrainians living through the war, researchers M. Mezhenska *et al.* (2015) emphasised that prolonged war trauma acts as a distinct factor in the disruption of core beliefs, worldview and identity. According to the study by I. Bloshchynskyi *et al.* (2025), the specific nature of the situational impact of war lies in the fact that in extreme crisis situations, people primarily rely on past experience, their worldview and value systems, which do not always correspond to reality. Thus, the findings of these international studies are consistent with the present research, confirming that cognitive resources and social support are key factors determining students' resilience and psychological well-being under conditions of war and environmental-epidemic threats, thereby substantiating the necessity for the further development of cognitive and socio-psychological technologies to support young people.

CONCLUSIONS

It was established that worldview and cognitive-emotional predictors play a significant role in shaping students' attitudes towards environmental and epidemic challenges. It was found that negative beliefs about the world are a key factor increasing the vulnerability of students' mental health to environmental and epidemic threats ($R^2 = 0.46$; $t = 0.51$; $p < 0.001$). The perception of environmental threats is more strongly mediated by such cognitive predictors as criticality and plasticity ($t = 0.1$; $p = 0.001$; $R^2 = 0.28$). Epidemic threats, however, are perceived by students as more sensitive and more closely associated with internal psychological states, particularly with the level of self-criticism ($t = 0.2$-0.31; $p < 0.05$). Such worldview predictors as idealism and principledness play a leading role as additional cognitive filters through which university students assess the level of danger posed by epidemic challenges. It was determined that a tendency towards self-criticism may function as a mediator that intensifies anxiety regarding one's physical condition under adverse environmental circumstances, as well as during the cognitive assessment of epidemic threats, thereby further intensifying concerns regarding students' somatic condition.

The resulting regression model demonstrates the complex dynamics of interaction between cognitive and resource-related parameters of students' psychological resilience to global challenges. It was established that negative beliefs about the world are a key factor increasing the vulnerability of young people's mental health to environmental challenges. At the same time, the identified role of sense of coherence as a negative predictor demonstrates that students' capacity to interpret and structure life experience performs a buffering function, reducing their level of environmental stress ($t = -0.04$; $p = 0.026$). Thus, sense of coherence functions as a "protective" factor in counteracting environmental and epidemic threats among participants in the educational process.

The results of the regression analysis indicate the critical importance of cognitive factors within the context of epidemics. The perception of epidemic threats as a factor influencing mental health is largely determined by the cognitive schema of the "world as a threat". Meanwhile, sense of coherence may be regarded as a key coping resource for students, contributing to their psychological stabilisation under conditions of epidemiological instability. Prospects for further research include the development of cognitive technologies aimed at enhancing the psychological readiness of participants in the educational process to counter environmental and epidemic threats to health.

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CONFLICT OF INTEREST

None.

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Когнітивні предиктори сприйняття студентами екологічних та епідемічних загроз здоров'ю під час війни

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Анотація. Метою дослідження було вивчення впливу когнітивних предикторів сприйняття студентами екологічних та епідемічних загроз здоров'ю під час війни. Для визначення когнітивних предикторів використовувались наступні методи: «Опитувальник світоглядної пластичності особистості», «Опитувальник посттравматичних когніцій», коротка версія опитувальника «Почуття когерентності». Розроблено спеціальний діагностичний комплекс, спрямований на дослідження окремих структурних компонентів психологічної готовності учасників освітнього процесу протидіяти екологічним та епідемічним загрозам. Вибірку дослідження склали 502 респонденти, середній вік респондентів – 20 років, жінки (80,3 %), чоловіки (18,1 %), інший гендер (1,6 %). Збір даних проводився за допомогою Google Forms протягом весни-осені 2025 року. Для статистичної обробки даних було застосовано регресійний аналіз. Було з'ясовано, що світоглядні та когнітивно-емоційні предиктори відіграють значущу роль у формуванні ставлення студентів до екологічних та епідемічних викликів. Результати регресійного аналізу показали, що негативні думки щодо світу є домінуючим чинником для психічного здоров'я ($R^2 = 0,46$; $t = 0,51$; $p < 0,001$), тоді як почуття когерентності ($t = -0,04$; $p = 0,026$) виступає захисним фактором. Сприйняття екологічних загроз більшою мірою опосередковується такими когнітивними предикторами як критичність та пластичність. Провідну роль додаткових когнітивних фільтрів, крізь які студентська молодь оцінює рівень небезпеки епідемічних викликів відіграють таки світоглядні предиктори, як ідеалізм та принциповість. Отримана регресійна модель продемонструвала складну динаміку взаємодії когнітивних та ресурсних параметрів психологічної стійкості студентів до глобальних викликів. Схильність до самоїдства може виступати медіатором, який посилює тривогу щодо власного фізичного стану в несприятливих екологічних та епідемічних умовах. Встановлено, що негативні думки стосовно світу є ключовим чинником, що посилює вразливість психічного здоров'я молоді до екологічних викликів, а почуття когерентності виступає «захисним» фактором протидії екологічним та епідемічним загрозам у учасників освітнього процесу

Ключові слова: когнітивні переконання; світогляд; психологічна готовність особистості; світоглядна пластичність; посттравматичні когніції