Ibolya Kotta – Eszter Enikő Marschalkó –
Kinga Kálcza-Jánosi – Kinga Kanyaró

Predicting Fear of War:
The Predictive Role of Transdiagnostic Vulnerability Factors

Abstract

The fear related to war and war-like circumstances is rarely analysed and literature lacks studies on this topic. The purpose of the present study was to investigate the sociodemographic and psychological vulnerability-related predictors of fear of war in the context of the outbreak of the Ukraine–Russia war. Transdiagnostic vulnerability factors, namely intolerance of uncertainty, neuroticism and stress–tense were examined in the context of war-related fear in a non-clinical Hungarian speaking sample from the warzone neighbouring countries. Data were collected through an online survey. A sample of N = 1,460 participants (aged M = 43.67, SD = 13.54, 92.1% female) completed the Fear of War Scale (FOWARS), the Stress subscale of the Depression, Anxiety and Stress Scale (DASS-21), the Neuroticism subscale of the Big Five Inventory and the Intolerance of Uncertainty Scale (IUS-12). Hierarchical multiple regression analysis was performed for predictor weight calculations related to demographical variables, and psychological vulnerability factors with fear of war as the outcome variable. The models were statistically significant. From the sociodemographic variables, female gender and age were found to be predictors of fear of war; females and younger individuals presenting higher levels of fear. The most influential psychological factors that predicted fear of war were the participants' stress level (β = .38, p < .01) and the intolerance of uncertainty (β = .34, p < .01). The results show that in times of war-related crises transdiagnostic vulnerability traits are associated to fear of war, and younger women are particularly at risk.

Keywords: fear of war, intolerance of uncertainty, neuroticism, stress, transdiagnostic vulnerability

Introduction

The pandemic and the Russia–Ukraine war have disrupted feeling of security in Europe. Neighbouring countries faced fear and anxiety in the early weeks of the Russia–Ukraine war. On hearing news of refugee masses, numerous individuals experienced fear, anxiety and worry. Citizens of Romania and Hungary showed fear of war right after the armed conflict began and this fear has persisted (Pricop 2023; Árpási 2022). Stress vulnerability and stress susceptibility are important factors that influence individual responses in stressful situations, as discussed by Schmidt et al. (2010) and Ebner and Singewald (2017). Extended dread in settings where control is limited can lead to chronic or toxic stress (Murray 2017; Shern et al. 2016). The uncertainty of the situation is a trigger to stress response and distress among individuals (Mazloomzadeh et al. 2022; Satici et al. 2020). The level of distress is moderated by individual vulnerability factors. According to the Hierarchical Taxonomy of Psychopathology (HiTOP) by Kotov et al. (2017), neuroticism is a primary vulnerability component, but intolerance to uncertainty is classified as a secondary vulnerability factor in the development of anxiety disorders and fear reactions as proposed by van der Heiden et al. (2010). Research has demonstrated that a low tolerance for uncertainty plays a moderating function in the connection between advanced personality traits and anxiety disorders (Yang et al. 2015).

According to Carleton et al. (2007), intolerance of uncertainty (IU) is described as an individual's inability to tolerate the unpleasant feelings caused by the lack of important, crucial, or adequate knowledge, which is intensified by the feeling of ambiguity. IU contributes to catastrophic misinterpretations, anxiety and worry reactions (Hebert–Dugas 2018). Neuroticism, as a personality trait, increases the likelihood of anxiety and the prevalence of main negative affect in persons in a transdiagnostic framework (Kotov et al. 2010). Neuroticism is linked to heightened responsiveness to ambiguous threats and concern acts as a mediator in the relationship between neuroticism and anxiety. Neuroticism associates also fear in unpredictable situations (Zhang et al. 2022).

Aim

The study aimed to investigate how transdiagnostic variables (stress reaction, IU, neuroticism) affect fear of war in the days following the start of an armed conflict between Russia and Ukraine. Literature is scarce on knowledge in such specific events and with the present study we obtained data on a seldomly analysed socio-cultural context.

Measurements and methods

Participants

A total of N = 1,460 participants completed the scale, most of them female, mostly from Hungary, fewer from Romania (Transylvania). All participants' mother tongue was Hungarian, and they were adults aged 18 and over. The sample was heterogeneous in terms of age, education and place of residence. Sociodemographic characteristics of the participants and descriptive statistics for other measured variables are presented in Table 1.

Table 1: *Descriptive data of the participants*

		(*N* = 1,460)
Age (M ± SD)		18–83 (43.67 ± 13.54)
Gender	Female	1,344 (92.1%)
	Male	116 (7.9%)
Country	HU	1,162 (79.6%)
	RO	298 (20.4%)
Education level	10 grades/grade 10 or less	51 (3.5%)
	High school/baccalaureate	387 (26.5%)
	College, university	690 (47.3%)
	Master's degree	289 (19.8%)
	Doctor's degree	43 (2.9%)
Residency	Capital city	528 (36.2%)
	City	642 (44.0%)
	Village	290 (19.9%)
FOWARS (M ± SD)	Fear of war	1–5 (2.80 ± 0.95)
DASS (M ± SD)	Stress subscale	0–21 (7.10 ± 5.87)
Big Five Inventory (M ± SD)	Neuroticism subscale	8–40 (22.78 ± 7.17)
IUS-12 (M ± SD)	Intolerance of uncertainty	12–60 (33.25 ± 11.17)

Note: Values represent frequency and percentage,
unless indicated otherwise. M: mean, SD: standard deviation.
Source: Compiled by the authors.

Measurements

Fear of War Scale
(FOWARS)

The Fear of War Scale (FOWARS) (Kálcza-Jánosi et al. 2023) is a self-report 16 item scale designed to measure fear of war. Respondents indicate how typical the statements on the scale are for them on a 5-point Likert scale ranging from 1 (not at all typical of me) to 5 (very typical of me). The total score is calculated as the average of the item scores, with higher scores indicating greater fear of war. In this article, the internal validity of the full scale is excellent, with Cronbach's alpha = .94.

Stress – Depression,
Anxiety and Stress Scale
(DASS-21)

The Depression, Anxiety and Stress Scale (DASS-21) (Lovibond–Lovibond 1995) is a self-report scale designed to measure symptoms of three negative emotional states – depression, anxiety and stress. Individuals were asked to indicate the symptoms they had experienced in the previous week. Each item is scored from 0 (did not apply to me at all over the last week) to 3 (applied to me very much or most of the time over the past week). Higher scores indicate higher levels of anxiety. The stress subscale was used in this study, the Hungarian version being adapted from Szabó (2010). The Cronbach's alpha value of the stress subscale was .91.

Neuroticism – Big Five Inventory

The Big Five Inventory (John–Srivastava 1999; John et al. 2008) is one of the most widely used scales for assessing personality traits. Neuroticism was assessed using 8 items from this inventory. Participants indicated the extent to which they agreed or disagreed with each statement on a 5-point Likert scale (0–4). The internal consistency of the scale was good (Cronbach's alpha = .87).

Intolerance of Uncertainty Scale-12 (IUS-12)

The Intolerance of Uncertainty Scale-12 (CARLETON et al. 2007), in its shortened form, was used to test the propensity to consider or respond negatively to unknown circumstances. Respondents are asked to rate the extent to which each statement applies to them on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (very characteristic of me). In this study the scale shows good internal consistency (Cronbach's alpha = .92).

Procedure

An online cross-sectional study was carried out between 10–20 March 2022, at the outbreak of the Russia-Ukraine war. Convenience sampling method was applied. Informed consent was obtained, and anonymity was assured. Inclusion criteria were: age 18 or above, Hungarian speaking Romanian and Hungarian citizens (two neighbouring countries with a history of Russian occupation in the past).

Data analysis

Multiple hierarchical regression models were conducted to assess the predictors for the dependent variable of fear of war, with a threshold for the selection of $p < 0.05$. In the first model independent variables were demographical information such as age, gender, education level, country where the participant lives and the type of settlement. The second model contains in addition to demographical variables three transdiagnostic vulnerability factors, namely intolerance of uncertainty (IUS-12), neuroticism (Big Five Inventory) and stress–tense (DASS-21). All assumptions for the multivariate hierarchical regression were fulfilled.

Results

Multiple hierarchical regression analysis was performed for demographical variables, transdiagnostic vulnerability factors and fear of war (see Table 2). The first model was

Table 2: *Hierarchical multiple regression models with fear of war as dependent variable*

	Model 1			Model 2		
	B	SEB	β	B	SEB	β
(Constant)	3.482	.166		1.340	.148	
Age	−.022	.002	−.297**	−.004	.002	−.058**
Sex_male	−.549	.088	−.156**	−.311	.064	−.088**
Education	.014	.029	.013	−.002	.021	−.002
Country_HU	.273	.069	.115**	.092	.050	.039
Type_settlement_big city	.076	.054	.038	.057	.039	.029
Type_settlement_village	−.045	.065	−.019	.019	.046	.008
Stress				.061	.004	.377**
Neuroticism				.008	.004	.059*
Intolerance of uncertainty				.029	.002	.341**
adjR^2	.094**			.536**		
$F_{(df)}$	26.258$_{(6.1453)}$**			188.465$_{(9.1450)}$**		
ΔR^2	−			.441**		

Note: *p <.05. **p <.01; categorical variables were introduced in the model
as dummy variables; dependent variable: fear of war (FOWARS).
Source: Compiled by the authors.

statistically significant ($F(6,1453) = 26.25$, $R^2 = .94$, $p < .01$), demographical variables explained 9% of the variance of fear of war.

Younger age is responsible for 30.0%, the female gender is responsible for 16.0% and Hungarian citizenship is responsible for 11.0% of the change in fear of war scores.

The second model was also statistically significant ($F(9,1450) = 188.46$, $R^2 = .53$, $p < .01$) and all added variables were statistically significant positive predictors of the fear of war. The most influential factors were the participants' stress level ($β = .38$, $p < .01$) and the intolerance of uncertainty ($β = .34$, $p < .01$) (Table 2).

Discussions and conclusions

With a sense of security already shaken by the pandemic around the world, the outbreak of the war between Russia and Ukraine has once again challenged belief in

security (Pricop 2023; Árpási 2022). In such times of uncertainty and crisis in society fear appears and for survival, the ability to distinguish between danger and safety is essential. Considering the military conflicts related to the Russia–Ukraine war, the objective of our study as to identify psychological vulnerabilities as predictors of fear of war in a non-clinical sample from warzone neighbouring countries immediately after the outbreak of the war.

The fear of war is activated in people as a normal reaction to a real threat, but some of them are more affected. Certain psychological vulnerability factors may lead to stronger fear reactions at physiological, emotional and behavioural levels, adversely affecting well-being and mental health (Satici et al. 2020). Prolonged fear in low-control situations may result in chronic or toxic stress (Murray 2017; Shern et al. 2016). Hajek et al. (2023) found that fear of war was associated with higher likelihood of depressive and anxiety related symptoms. Moreover, the costs of increased fear of war should be considered also on a societal level because it has an impact on politics and economy.

Neuroticism, intolerance of uncertainty and general stress reaction as transdiagnostic vulnerability factors were the main object of our investigation as they were consistently found to be related to fear expression to threat. Beyond these psychological variables, several sociodemographic variables were also included in the model to determine the most vulnerable sociodemographic subgroups.

Our results revealed that in line with existing literature showing gender-specific and age-related differences in fear reactions (Boehnke–Schwartz 1997), the phenomenon of the fear of war was indeed present in the sample, particularly in younger women.

The present study highlighted that stress response and intolerance of uncertainty strongly and positively predicted fear of war, while the effect of neuroticism on fear of war was also significant.

Intolerance of uncertainty compromises fear extinction, while extinction-resistant fear is a central feature of pathological anxiety and an important transdiagnostic dimension in mental health disorders (e.g. Morriss et al. 2021; Morriss et al. 2016). Previous research consistently found that fear of Covid-19 was associated with intolerance of uncertainty (Mazloomzadeh et al. 2022; Satici et al. 2020).

In the context of the pandemics Mazloomzadeh et al. (2022) suggested that individuals with high neuroticism have stronger emotional reactions and fewer resources to cope with stressful circumstances beyond their personal control. Previous research consistently found that fear of Covid-19 was associated with neuroticism (Mazloomzadeh et al. 2022; Troisi et al. 2021; Caci et al. 2020; Zhang et al. 2022).

Similarly to the context of the Covid-19, the outbreak of a nearby war created threat and situational uncertainty with low levels of control over the course of events.

People vary in their ability to handle difficulties and challenges, as well as in the amount of distress they experience (Lazarus–Folkman 1984). According to Selye (1956, 1964), stress is the organism's non-specific response to a stimulus that disrupts its natural condition of balance and requires adaptation. War-related events hold a high risk for mental health risk and the unfavourable outcomes are usually stress related (Murthy–Lakshminarayana 2006; Rozanov et al. 2018). Our data suggest that immediate stress reaction of individuals was predictive for the level of war-related fear they declared. The potential explanation can be found in individual stress vulnerability (Schmidt et al. 2010) and stress susceptibility (Ebner–Singewald 2017) which are transdiagnostically relevant variables.

In conclusion, it appears to be plausible that transdiagnostically vulnerable individuals – mostly young women – who have high levels of uncertainty intolerance and neuroticism with elevated stress reactions are the most vulnerable to expressing war-related fear reactions.

The results of the present study regarding the predictive role of transdiagnostic vulnerabilities, neuroticism, intolerance of uncertainty and stress on the fear of war are worthy of reflection and require further studies. The identification of vulnerable subgroups allows the selective implementation of prevention programs based on psychological support and counselling. Our results confirm the legitimacy of interventions to promote the development of uncertainty tolerance. Personal vulnerability characteristics like high neuroticism and elevated stress reactions may also be taken into consideration for a better prioritisation of interventions.

Limitations

The current study markedly extends the limited knowledge on the phenomenon of the fear of war. However, several limitations are worth bearing in mind. Even though a suitable and relatively large sample was used for the current study, one drawback is the use of cross-sectional data collecting and the other is the design of the study which has clear limits regarding assumptions of causality. Therefore, employing a longitudinal research design to test the relationships described here would yield more valid findings. Another limitation in generalising the results lies in the fact that only indirectly

affected regions and civilians were targeted in the present study. Studies on Ukraine or Russian civilians or refugees could nuance the results. In addition, a non-clinical sample was used for this study. Professionals applying the findings of the study to the clinical population should be cautious.

References

Árpási, Bence (2022): Egyelőre nem fenyeget világégés, a magyarok fele mégis szorong a háború miatt – van alapja a zsigeri félelmeinknek? *Népszava,* 20 November 2022. Online: https://nepszava. hu/3176036_egyelore-nem-fenyeget-vilageges-a-magyarok-fele-megis-szorong-a-haboru-miatt-van-alapja-a-zsigeri-felelmeinknek

Boehnke, Klaus – Schwartz, Shalom H. (1997): Fear of War: Relations to Values, Gender, and Mental Health in Germany and Israel. *Peace and Conflict: Journal of Peace Psychology,* 3(2), 149–165. Online: https://doi.org/10.1207/s15327949paco0302_3

Caci, Barbara – Miceli, Silvana – Scrima, Fabrizio – Cardaci, Maurizio (2020): Neuroticism and Fear of Covid-19. The Interplay between Boredom, Fantasy Engagement, and Perceived Control Over Time. *Frontiers in Psychology,* 11, 1–10. Online: https://doi.org/10.3389/fpsyg.2020.574393

Carleton, Nicholas R. – Norton, Peter M. – Asmundson, Gordon J. (2007): Fearing the Unknown: A Short Version of the Intolerance of Uncertainty Scale. *Journal of Anxiety Disorders,* 21(1), 105–117. Online: https://doi.org/10.1016/j.janxdis.2006.03.014

Ebner, Karl – Singewald, Nicolas (2017): Individual Differences in Stress Susceptibility and Stress Inhibitory Mechanisms. *Current Opinion in Behavioral Sciences,* 14, 54–64. Online: https://doi.org/10.1016/j.cobeha.2016.11.016

Hajek, André – Kretzler, Benedikt – König, Hans-Helmut (2023): Fear of War and Mental Health in Germany. *Social Psychiatry and Psychiatric Epidemiology,* 58(7), 1049–1054. Online: https://doi.org/10.1007/s00127-022-02394-9

Hebert, Elisabeth A. – Dugas, Michel J. (2018): Behavioral Experiments for Intolerance of Uncertainty: Challenging the Unknown in the Treatment of Generalized Anxiety Disorder. *Cognitive and Behavioral Practice,* 26(2), 421–436. Online: https://doi.org/10.1016/j.cbpra.2018.07.007

John, Oliver P. – Srivastava, Sanjaj (1999): The Big-Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives. In John, Oliver P. – Robins, Richard W. (eds): *Handbook of Personality. Theory and Research.* London: The Guilford Press, 102–138.

John, Oliver P. – Naumann, Laura P. – Soto, Christopher J. (2008): Paradigm Shift to the Integrative Big-Five Trait Taxonomy: History, Measurement, and Conceptual Issues. In John, Oliver P. – Robins, Richard W. (eds.): *Handbook of Personality. Theory and Research.* London: The Guilford Press, 114–158.

Kálcza-Jánosi, Kinga – Kotta, Ibolya – Marschalkó, Eszter Enikő – Szabó, Kinga (2023): The Fear of War Scale (FOWARS): Development and Initial Validation. *Social Sciences,* 12(5). Online: https://doi.org/10.3390/socsci12050283

Kotov, Roman – Gamez, Wakiza – Schmidt, Frank – Watson, David (2010): Linking "Big" Personality Traits to Anxiety, Depressive, and Substance Use Disorders: A Meta-Analysis. *Psychological Bulletin,* 136(5), 768–821. Online: https://doi.org/10.1037/a0020327

Kotov, Roman – Krueger, Robert F. – Watson, David – Miller, Joshua D. (2017): The Hierarchical Taxonomy of Psychopathology (HiTOP): A Dimensional Alternative to Traditional Nosologies. *Journal of Abnormal Psychology,* 126(4), 454–477. Online: https://doi.org/10.1037/abn0000258

Lazarus, Richard S. – Folkman, Susan (1984): *Stress, Appraisal, and Coping.* New York: Springer.

Lovibond, Harold S. – Lovibond, Peter F. (1995): *Manual for the Depression Anxiety Stress Scales.* Sydney: Psychology Foundation of Australia.

Mazloomzadeh, Mohhamadreza – Mashhadi, Ali – Hosseini, Seyed R. (2022): Prediction of Death Anxiety through Fear of Covid-19, Neuroticism, Behavioral Inhibition System and Uncertainty Intolerance. *Journal of Fundamentals of Mental Health,* 24(6), 371–381. Online: https://doi.org/10.22038/jfmh.2022.21439

Morriss, Jayne – Christakou, Anastasia – van Reekum, Carien M. (2016): Nothing Is Safe: Intolerance of Uncertainty Is Associated with Compromised Fear Extinction Learning. *Biological Psychology,* 121, 187–193. Online: https://doi.org/10.1016/j.biopsycho.2016.05.001

Morriss, Jayne – Zuj, Daniel V. – Mertens, Gaëtan (2021): The Role of Intolerance of Uncertainty in Classical Threat Conditioning: Recent Developments and Directions for Future Research. *International Journal of Psychophysiology,* 166, 116–126. Online: https://doi.org/10.1016/j.ijpsycho.2021.05.011

Murray, John S. (2017): Toxic Stress and Child Refugees. *Journal for Specialists in Pediatric Nursing,* 23(1). Online: https://doi.org/10.1111/jspn.12200

Murthy, Srinivasa R. – Lakshminarayana, Rashmi (2006): Mental Health Consequences of War: A Brief Review of Research Findings. *World Psychiatry,* 5(1), 25–30.

Pricop, Sebastian (2023): Sondaj IRES, la un an de război în Ucraina: Trei sferturi dintre români se tem de o posibilă invazie. Încrederea în NATO, la cea mai înaltă cotă. *Libertatea,* 24 February 2023. Online: www.libertatea.ro/stiri/sondaj-un-an-de-razboi-romanii-se-tem-de-o-invazie-4458860

Rozanov, Vsevolod – Frančišković, Tanja – Marinić, Igor – Macarenco, Maria-Magdalena – Letica-Crepulja, Marina – Mužinić, Lana – Jayatunge, Ruwan – Sisask, Merike – Vevera, Jan – Wiederhold, Brenda – Wiederhold, Mark – Miller, Ian – Pagkalos, Georgios (2019): Mental Health Consequences of War Conflicts. In Javed, Afzal – Fountoulakis, Kostas N. (eds.): *Advances in Psychiatry.* New York: Springer, 281–304. Online: https://doi.org/10.1007/978-3-319-70554-5_17

Satici, Begum – Sariçali, Mehmet – Satici, S. Ahmet – Griffiths, Mark D. (2020): Intolerance of Uncertainty and Mental Wellbeing: Serial Mediation by Rumination and Fear of Covid-19. *International Journal of Mental Health and Addiction,* 20(5), 2731–2742. Online: https://doi.org/10.1007/s11469-020-00305-0

Selye, Hans (1956): *The Stress of Life.* New York: McGraw-Hill.

Selye, János (1964): *Életünk a stressz.* Budapest: Akadémiai Kiadó.

Shern, David L. – Blanch, Andrea K. – Steverman, Sarah M. (2016): Toxic Stress, Behavioral Health, and the Next Major Era in Public Health. *American Journal of Orthopsychiatry,* 86(2), 109–123. Online: https://doi.org/10.1037/ort0000120

Schmidt, Mathias V. – Trümbach, Dietrich – Weber, Peter – Wagner, Klaus – Scharf, Sebastian H. – Liebl, Datson C. – Namendorf, Christian – Kühne, Claudia – Uhr, Manfred – Deussing, Jan M. – Wurst, Wolfgang – Binder, Elisabeth B. – Holsboer, Florian – Müller, Marianne B. (2010): Individual Stress Vulnerability Is Predicted by Short-Term Memory and AMPA Receptor Subunit Ratio in the Hippocampus. *The Journal of Neuroscience,* 30(50), 16949–16958. Online: https://doi.org/10.1523/JNEUROSCI.4668-10.2010

Szabó, Marianna (2010): The Short Version of the Depression Anxiety Stress Scales (DASS-21): Factor Structure in a Young Adolescent Sample. *Journal of Adolescence,* 33(1), 1–8. Online: https://doi.org/10.1016/j.adolescence.2009.05.014

Troisi, Alfonso – Nanni, Roberta Croce – Riconi, Alessandra – Carola, Valeria – Di Cave, David (2021): Fear of Covid-19 among Healthcare Workers: The Role of Neuroticism and Fearful Attachment. *Journal of Clinical Medicine,* 10(19), 1–8. Online: https://doi.org/10.3390/jcm10194358

Van der Heiden, Colin – Melchior, Kim – Muris, Peter – Bouwmeester, Samantha – Bos, Arjan E. R. – van der Molen, Henk T. (2010): A Hierarchical Model for the Relationships between General and Specific Vulnerability Factors and Symptom Levels of Generalized Anxiety Disorder. *Journal of Anxiety Disorders,* 24(2), 284–289. Online: https://doi.org/10.1016/j.janxdis.2009.12.005

Zhang, Donghuan – Fan, Min – Meng, Lingyi – Zheng, Xifu (2022): Neuroticism and Fear of Covid-19 during the Covid-19 Pandemic: Testing the Mediating Role of Intolerance of Uncertainty and Sense of Control among Chinese High School Students. *Frontiers in Psychology,* 13, 1–10. Online: https://doi.org/10.3389/fpsyg.2022.1010767

Yang, Li – Sumaiya, Bashiru Danwana – Fadilul-lah, Yassaanah Issahaku – Sundas, Matloob – Zhu, Jungi (2022): Investigating the Effects of Personality on the Safety Behavior of Gold Mine Workers: A Moderated Mediation Approach. *International Journal of Environmental Research and Public Health*, 19(23), 16054–16054. Online: https://doi.org/10.3390/ijerph192316054