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Does Escaping a War Zone Feel Worse Than Being There? War and Coping by Ukrainian Civilians in Ukraine and Poland

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Objective: While the factors facilitating and compromising stress coping by civilians in an active war zone and those who have fled it are critical to the experiences of trauma, they are underexplored, which the current article aims to address. ***Method:*** Between March 23 and May 15, 2023, 122 Ukraine-based and 132 Poland-based Ukrainian participants completed a survey measuring different aspects of trauma, social beliefs, and coping. ***Results:*** Compared to the war zone civilians, the Poland-based refugees scored significantly higher in terms of *general war repercussions*, *peritraumatic experiences*, *posttraumatic stress disorder symptoms*, *loneliness*, *anxiety about the loved ones*, and *chemical/biological/missile/drone attack anxiety.* While no differences between them were found in terms of other factors, regression and structural equation model analyses suggest that the general well-being was compromised in both samples by lower *sensation seeking*, higher *loneliness*, *higher fantasy proneness*, lower *expected support from the West*, and higher *expected Chinese and Iranian support for Russia*. *Religiosity* did not play a role. ***Conclusions:*** While the role of perceived social support (at the levels of friends and family) turned out to be limited, the (broader) expected support (from the West) played a more significant role. Additionally, our exploratory *Civilian War Trauma Structural Equation Model* suggests that anxiety interacts with the individual's overall vulnerability, thus exacerbating the psychological impact of war.

Clinical Impact Statement

Popular culture often portrays fantasy-related confabulations as fostering resilience by directing attention away from circumstantial negativity toward nurturing thoughts that supposedly help overcome adverse conditions and allow for detachment from the grim reality. Our data, however, suggest that fantasy proneness is more likely to exacerbate peritraumatic experiences, tying in with the research showing its positive association with maladaptive coping strategies, such as self-blame, rumination, and catastrophizing (Bacon & Charlesford, 2018). Thus, one insight derived from the current research is that intervention providers may consider helping war victims (especially those in the war zone) reduce (negative) fantasy-related confabulations.

Keywords: coping, Ukraine, refugee, trauma, war

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continued

By the time the data for this article were started to be collected, the full-scale war in Ukraine, which began on February 24, 2022, had already been raging for 14 months. While some studies show negative psychological consequences of the Russia–Ukraine war among Ukrainian civilians (Bryant et al., 2022; Palace et al., 2024; Xu et al., 2023), other studies point out differences between people who were internally displaced and those who left Ukraine (Ben-Ezra et al., 2023; Rizzi et al., 2022). Kurapov et al. (2023), for example, found that those who stayed in Ukraine had significantly lower anxiety, depression, stress, and trauma-related symptoms when compared to those who fled abroad. Lushchak et al. (2024) also observed that individuals who were not displaced reported low scores of stress, anxiety, and posttraumatic stress disorder symptoms (PTSD). They also found that internally displaced civilians reported significantly higher scores of stress, anxiety, and PTSD symptoms while those civilians who moved abroad as refugees reported the highest scores.

Such differences could be due to significant loss of social support through family, peers, and community (Kimhi et al., 2023) and exposure to additional stressors, such as socioeconomic adversities and change in family dynamics (Kostenko et al., 2024). Relatedly, lower perceived social support has been found to be associated with paranoia (Freeman et al., 2011). In addition to these challenges, forced displacement and relocation expose individuals to new cultures (Lushchak et al., 2024). This process of cross-cultural transition, otherwise known as *acculturation*, may pose significant challenges for refugees (Andersson & Øverlien, 2023) for whom loneliness (the felt lack of adequate social connections) is one of the key predicaments (Kordel et al., 2024). Loneliness can make refugees feel more vulnerable and fearful (Petrenko et al., 2024), especially when faced with major existential threats. Loneliness can also increase anxiety and stress as individuals may feel isolated and unsupported (Cacioppo & Hawkley, 2009).

Keeping this in mind, the present study examines a range of factors potentially related to the well-being of those in an active war zone and those who fled it as refugees, namely, social (e.g., loneliness), temperamental (e.g., sensation seeking), cognitive (e.g., fantasy proneness), and personality (e.g., resilience) factors. Early reactions to trauma are referred to as *peritraumatic*, covering a spectrum of reactions (during or immediately after experiencing trauma), including depersonalization, dissociative amnesia, altered time perceptions, and emotional numbing (Cyniak-Cieciura et al., 2022). Such reactions can manifest in emotional and cognitive changes (e.g., a sense of threat to one's life or a sense of helplessness). As peritraumatic distress turns to be a positive predictor of PTSD, depression, and anxiety symptoms (Megalakaki et al., 2021), studying the health of those experiencing war is likely to be insightful (Charny et al., 2023).

Although loneliness is a risk factor associated with increased PTSD (e.g., Solomon et al., 2015), war refugees with PTSD symptoms have been found to isolate themselves so to avoid painful memories (e.g., Miller et al., 2002). Other studies have found loneliness to be associated with paranoia (Bell et al., 2023; Lamster et al., 2017), PTSD symptoms, depression, and peritraumatic distress (Fox et al., 2021). Such an association seems particularly salient when the available social support system is compromised (Zhang & Dong, 2022). This ties in with *social support theory*, highlighting the perceived help from others as a stress buffer (Carpiniello, 2023).

Resilience (the ability to recover and deal with adversities) has been associated with reduced PTSD symptoms by facilitating adaptability and coping (Ye et al., 2020). When resilience is lower, it suggests that a person has a harder time managing the psychological impact of threats, leading to more anxiety. Relatedly, a systematic review and meta-analysis of observational studies found a moderate positive relationship between resilience and religiosity/spirituality (Schwalm et al., 2022).

Positively correlated with religiosity/spirituality and paranormal beliefs is fantasy proneness—the tendency to immerse oneself in imagination (Sánchez-Bernardos et al., 2015). Although fantasy proneness may be a by-product of confusion, dissociation, or other trauma-related responses, this dimension has not been explored in the context of civilian war experiences despite being already linked to dissociative symptoms, magical ideation, and, to some extent, trauma (Merckelbach et al., 2022), along with exaggerations (Lynn & Kirsch, 1996), confabulations (Boskovic et al., 2021), paranoia (Rauschenberger & Lynn, 2003), and counterfactual thinking (Bacon & Charlesford, 2018). While fantasy proneness may have benefits, such as facilitating the vividness and intensity of fictional narratives (Sánchez-Bernardos et al., 2015), it has been found to positively correlate with rates of psychopathology, confabulation, and vivid imagination (Merckelbach et al., 2022) and to negatively influence psychological outcomes in the presence of maladaptive coping (Bacon & Charlesford, 2018). This, in turn, opens the question about its role as a risk factor to civilian well-being. Interestingly, fantasy proneness has also been found to predict meaning at high levels of depression (Maffly-Kipp & Vess, 2024).

Previously, sensation seeking was directly and indirectly positively associated with the *psychological resilience* markers of *life satisfaction*, positive affect, and (lower) *perceived stress* through problem-focused coping in those who had experienced trauma (McKay et al., 2018), which was found to disproportionately affect female civilians in Ukraine (Wang et al., 2024). While we do not refer to any war victims as sensation-seekers, which would be ethically unacceptable, the inclusion of this temperamental dimension is

Marek Palace played a lead role in conceptualization, formal analysis, investigation, methodology, project administration, supervision, visualization, writing–original draft, and writing–review and editing. Lukasz Szwejka played a lead role in formal analysis and an equal role in writing–original draft and writing–review and editing. Malgorzata Kossowska played a lead role in funding acquisition and an equal role in conceptualization, writing–original draft, and writing–review and editing. Brandon May played an equal role in writing–original draft and writing–review and editing. Yuliia Tretyakova played a supporting role in methodology and an equal role in data curation. Anna Karolczak played a supporting role in data curation and an equal role in writing–original draft. Pawel Strojny played a supporting role in data curation. Dominika Gurbisz played a supporting role in data curation. Tomasz Besta played a supporting role in data curation. Nataliia Cherkas played an equal role in data curation. Beata Krzywosz-Rynkiewicz played an equal role in writing–original draft. Lee Smith played a supporting role in writing–review and editing. Anna Bokszczanin played a supporting role in writing–review and editing. Malgorzata Adams Tukiendorf played a supporting role in data curation. Wenping Jiang played a supporting role in writing–review and editing. Ashwanthicka Raj played a supporting role in writing–original draft.

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based on related previous research. Such research found sensation seeking as supporting resilience through active stress coping (McKay et al., 2018), acting as a key stress-buffering personal resource (Solomon et al., 1995), especially in military contexts (Breivik et al., 2019). This is borne out by research showing that decorated war veterans were found to score higher on sensation seeking and lower on war-related thought intrusion and PTSD symptoms than other soldiers exposed to combat stress (Neria et al., 2000), opening a question about the protective role of sensation seeking in war-affected civilians.

Gender differences were already noticed in the patterns of migration and displacement in response to the Russia–Ukraine war. Women with children were prioritized and almost compelled to migrate, citing their childcare responsibilities (Tarkhanova & Pyrogova, 2024). In addition, the Ukrainian children who have migrated abroad as refugees face stark challenges of adapting to the new culture and fitting into the schools of the host countries (Lewis, 2023).

Building on such above-covered research, the present study is focused on other factors related to the well-being of Ukrainian civilians in an active war zone and those who found refuge in neighboring Poland. While previous studies include research on the differences in the psychological health outcomes of Ukrainian civilians who were internally displaced and those who moved abroad, the factors facilitating and compromising these individuals' coping are understudied (Huțul et al., 2024). The present study aims to advance such research by examining the underlying factors behind stress coping in war-experiencing Ukrainian civilians in Ukraine and those who found refuge in neighboring Poland, where around 3 million war refugees arrived between February and April 2022 (Duszczyk & Kaczmarczyk, 2022). Historically, war zone experiences were the factors identified as contributing heavily to the development of both PTSD and general psychiatric symptoms (Fontana & Rosenheck, 1993). In research on war trauma, five types of stress-coping strategies by Ukrainian refugees have been identified, each of which can facilitate individual resilience: avoidance, emotion-focused, problem-focused, religion-based strategies, and strategies related to a sense of belonging (Rizzi et al., 2023).

Although most research on social support and factors associated with coping is focused on the disaster aftermath, the relatively uncommon studies on coping during the live disaster paint a complex picture. This can be encapsulated by the war stress sharing deterioration effect, whereby the social support provided by one's circle of family and friends could likely entail greater exposure to war stressors through the mutual sharing of ongoing war experiences (Palace et al., 2024). Intrigued by such complexity and the above-covered literature, the following hypotheses have been formed:

Hypothesis 1 (H1): Peritraumatic experiences would be predicted by lower *perceived social support*, lower *resilience*, higher *fantasy proneness*, higher *loneliness*, and lower *sensation seeking*.

Hypothesis 2 (H2): PTSD symptoms would be predicted by lower *perceived social support*, higher *fantasy proneness*, lower *resilience*, and higher *loneliness*.

Hypothesis 3 (H3): Depression would be predicted by lower *perceived social support*, *lower religiosity*, lower *resilience*, higher *fantasy proneness*, and higher *loneliness*.

Hypothesis 4 (H4): Anxiety about Russian use of nuclear, *biological*, and *chemical weapons* would be predicted by higher *loneliness* and lower *resilience* and *expected military support from the West.*[1]

Hypothesis 5 (H5): *Anxiety about the loved ones* and *chemical/biological/missile/drone attack anxiety* would be predicted by higher *expected Chinese support for Russia* and *expected Iranian support for Russia* (Footnote 1).

Hypothesis 6 (H6): General war repercussions (i.e., compromised *well-being*) would be predicted by higher *loneliness*, higher *perceived social support*, higher *fantasy proneness*, and lower *resilience*.

Hypothesis 7 (H7): *Paranoia* would be predicted by higher *loneliness*, higher *fantasy proneness*, and lower *perceived social support.*

Hypothesis 8 (H8): War stress effects (WSE) would be predicted by higher *war victimization anxiety* (WVA) and lower *resilience* (to be explored in structural equation model [SEM]).

Methodology

Participants and Procedure

The study received the approval from the institutional Ethics Research Committee. All materials, scripts, and anonymized data facilitating the replication of our results can be made available by the first author. Only adults who gave informed consent to participate took part in the sensitive survey (whose mean completion time was 14 min), and they could withdraw at any time without any consequences.

Between March 23 and May 15, 2023, 254 participants, who were recruited through carefully considered online ads calling for volunteers willing to share their war experiences at two Ukrainian universities (in central and Western Ukraine) and four Polish universities (in Southwestern, Southcentral, Northeastern, Northcentral Poland) completed the full survey, using their desktop computers/laptops (28%) and smartphones (72%). The partially completed responses (11%) were not analyzed. Thus, the data were collected before the Ukrainian counteroffensive that started in early June 2023. Ukraine-based (M_{age} = 18.73; SD_{age} = 1.71; 111 women and 11 men) participants and 132 (M_{age} = 20.20; SD_{age} = 4.77; 108 women and 24 men) Poland-based Ukrainian participants provided their informed consent, confirmed their current country of residence, and completed a Ukrainian language cross-sectional survey that was translated from English into Ukrainian and corrected by two Ukrainian native speakers who are fluent in English. The exclusion criterion was no current student status. Whereas the data from Poland were collected in the cities of Krakow, Gdansk, Opole, and Bialystok, the data from Ukraine were collected in Kiev and Lviv, which came under intense Russian air attacks involving Iranian-made Shahed drones and cruise missiles in March, April, and May 2023, resulting in civilian casualties and fatalities.

[1] Based on the likely anticipated anxiety about the war escalation and the related research by Palace et al. (2024).

Measures

Like in the related research on war stress coping by civilians in Western Ukraine (Palace et al., 2024), the scales were adapted to an anchored 1–7 Likert scale, and high scorers were identified as those scoring 5, 6, and 7. The online survey comprised predictor factors based on the shortened and adapted scales, such as *Fantasy Proneness Scale* (three items; α = .78; Merckelbach et al., 2022), *Connor–Davidson Resilience Scale* (three items; α = .74), Zuckerman's *Abbreviated Sensation Seeking Scale* (five items; α = .73), *Expected Support From the West* (four items; α = .87), *Expected Chinese Support for Russia* (three items; α = .96), *Expected Iranian Support for Russia* (three items; α = .96),[2] and *Multidimensional Scale of Perceived Social Support* (13 items; α = .87; Zimet et al., 1988). Importantly, our Eastern European project team members were in full agreement on the cultural validity of the used *Abbreviated Sensation Seeking Scale* (Zuckerman, 1996).

The survey also comprised *war consequence factors* based on the following shortened and adapted scales: *General War Repercussions* (based on the *War Events Questionnaire*; Karam et al., 1999; eight items; α = .87); *Peritraumatic Dissociative Experiences Questionnaire* (Marshall et al., 2002; six items; α = .77); *Mississippi Scale* for measuring change in combat-related PTSD (Norris & Perilla, 1996; 19 items; α = .89); *Brief Depression Scale* (Keltikangas-Järvinen & Rimon, 1987; six items; α = .80); *Dimension of Religiosity Scale* (Joseph & DiDuca, 2007; five items; α = .96); *Anxiety* (adapted scale based on *War Anxiety Scale* by Surzykiewicz et al., 2022); *About Nuclear Attack* (three items; α = .82); *About Chemical Attack* (three items; α = .89); *About Biological Attack* (three items; α = .91); *About Missile Attack* (three items; α = .90); *About Drone Attack* (three items; α = .91); *About Loved Ones* (seven items; α = .84); *Loneliness* (five items; α = 70; de Jong-Gierveld & Kamphuls, 1985); and *Paranoia* (five items; α = .72; Barreto Carvalho et al., 2017).

Results

All participants confirmed being students in Poland or Ukraine; 77 reported having left Ukraine after the war started; 88 confirmed being employed; 87 reported having been internally displaced in Ukraine; 55 reported that someone close to them died in the war; 30 participants reported that someone close to them had gone missing in the war.

Comparisons Between the Two Samples

Mann–Whitney *U* tests[3] revealed statistically significant differences between the two groups in terms of *general war repercussions* ([Ukrainian, *Ukr. Mdn* = 110.40; Polish, *Pol. Mdn* = 143.31], U = 5,909, $z = -3.583$, $p < .001$, $r = .22$), *peritraumatic experiences* ([*Ukr. Mdn* = 115.36; *Pol. Mdn* = 138.72], $U = 6{,}571$, $z = -2.533$, $p = .01$, $r = .16$), *PTSD symptoms* ([*Ukr. Mdn* = 111.73; *Pol. Mdn* = 142.08], $U = 6{,}128$, $z = -3.289$, $p = .001$, $r = .21$), *chemical attack anxiety* ([*Ukr. Mdn* = 114.43; *Pol. Mdn* = 139.58], $U = 6{,}457$, $z = -2.741$, $p = .001$, $r = .17$), *biological attack anxiety* ([*Ukr. Mdn* = 116.74; *Pol. Mdn* = 137.45], $U = 6{,}739$, $z = -2.251$, $p = .02$, $r = .14$), *drone attack anxiety* ([*Ukr. Mdn* = 110.16; *Pol. Mdn* = 143.53], $U = 5{,}936$, $z = -3.648$, $p < .001$, $r = .23$), *missile attack anxiety* ([*Ukr. Mdn* = 110.16; *Pol. Mdn* = 143.53], $U = 4{,}848$, $z = -5.530$, $p < .001$, $r = .35$), *anxiety about loved ones* ([*Ukr. Mdn* = 101.23; *Pol. Mdn* = 151.78], $U = 4{,}847$, $z = -5.482$, $p < .001$, $r = .34$), and *loneliness* ([*Ukr. Mdn* = 117.80; *Pol. Mdn* = 136.47], $U = 6{,}868$, $z = -2.026$, $p = .04$, $r = .13$).

No statistically significant differences between the two groups were found in terms of *nuclear attack anxiety* ([*Ukr. Mdn* = 135.62; *Pol. Mdn* = 118.72], $U = 6{,}980$, $z = -1.836$, $p = .07$), *paranoia* ([*Ukr. Mdn* = 121.27; *Pol. Mdn* = 133.26], $U = 7{,}291$, $z = -1.302$, $p = .19$), *expected Western support for Ukraine* ([*Ukr. Mdn* = 127.76; *Pol. Mdn* = 127.26], $U = 8{,}020$, $z = -.056$, $p = .96$), *expected Chinese support for Russia* ([*Ukr. Mdn* = 120.51; *Pol. Mdn* = 133.96], $U = 7{,}199$, $z = -1.565$, $p = .12$), *expected Iranian support for Russia* ([*Ukr. Mdn* = 120.13; *Pol. Mdn* = 134.31], $U = 7{,}152$, $z = -1.651$, $p = .10$), *perceived social support* ([*Ukr. Mdn* = 133.25; *Pol. Mdn* = 122.19], $U = 7{,}351$, $z = -1.199$, $p = .23$), *resilience* ([*Ukr. Mdn* = 131.02; *Pol. Mdn* = 124.24], $U = 7{,}622$, $z = -.737$, $p = .46$), *sensation seeking* ([*Ukr. Mdn* = 130.81; *Pol. Mdn* = 124.44], $U = 7{,}648$, $z = -.691$, $p = .49$), *fantasy proneness* ([*Ukr. Mdn* = 130.23; *Pol. Mdn* = 124.97], $U = 7{,}718$, $z = -.571$, $p = .57$), *depression symptoms* ([*Ukr. Mdn* = 124.25; *Pol. Mdn* = 130.50], $U = 7{,}655$, $z = -.678$, $p = .50$), and *religiosity* ([*Ukr. Mdn* = 133.17; *Pol. Mdn* = 121.36], $U = 7{,}303$, $z = -1.300$, $p = .19$; Table 1).

Ukraine-Based Sample Regression Models

General War Repercussions

The total variance explained by the model as a whole was 21.2%; $F(8, 113) = 5.079$, $p < .001$, adjusted $R^2 = .212$. The strongest predictor was higher *loneliness* (β = .213; $p = .04$), followed by higher *fantasy proneness* (β = .196; $p = .03$).

Peritraumatic Experiences

The total variance explained by the model as a whole was 10.5%; $F(8, 113) = 2.766$, $p = .008$, adjusted $R^2 = .105$. The only factor that came close to statistical significance was higher *fantasy proneness* (β = .181; $p = .06$).

PTSD Symptoms

The total variance explained by the model as a whole was 33.3%; $F(8, 113) = 8.546$, $p < .001$, adjusted $R^2 = .333$. The strongest predictor was higher *loneliness* (β = .433; $p = .04$), followed by higher *expected Chinese support for Russia* (β = .331; $p = .04$), lower resilience (β = −.170; $p = .05$), and higher *fantasy proneness* (β = .166; $p = .04$).

Depression Symptoms

The total variance explained by the model as a whole was 38.3%; $F(8, 113) = 10.403$, $p < .001$, adjusted $R^2 = .383$. The strongest predictor was higher *loneliness* (β = .472; $p < .001$), followed by lower *resilience* (β = −.228; $p = .007$) and higher *fantasy proneness* (β = .226; $p = .005$).

[2] Classical anchors were used (e.g., 1 = *not at all*; 7 = *completely*; 1 = *very unlikely*; 7 = *very likely*; 1 = *strongly disagree*, 7 = *strongly agree*).

[3] Based on the violation of parametric assumptions.

Table 1
Mean, Median, Mode, and High Scores for Both Samples

Factor	*Pol. M*	*Ukr. M*	*Pol. Mdn*	*Ukr. Mdn*	Pol. mode	Ukr. mode	Pol. high scorer	Ukr. high scorer
General war repercussions	5.45	5.00	5.44	5.00	5.25	4.25	82.8%	54.0%
Peritraumatic experiences	4.84	4.44	6.00	4.50	5.00	3.67	50.8%	36.9%
PTSD symptoms	3.88	3.37	3.81	3.37	3.05	3.89	21.7%	8.8%
Depression symptoms	3.94	3.77	3.83	3.92	3.33	4.67	27.1%	23.1%
Nuclear attack anxiety	3.98	3.60	4.00	3.83	4.00	4.67	31.0%	18.1%
Missile attack anxiety	5.63	4.45	6.00	4.33	7.00	7.00	75.5%	46.1%
Anxiety about loved ones	5.20	4.31	5.28	4.42	7.00	4.43	62.0%	31.0%
Biological attack anxiety	4.01	3.50	4.00	3.33	7.00	2.00	35.7%	26.2%
Chemical attack anxiety	5.03	4.46	5.00	4.33	7.00	7.00	56.0%	39.3%
Paranoia	4.00	3.84	4.00	4.00	3.40	4.00	26.6%	19.5%
Loneliness	4.03	3.72	4.00	3.40	3.40	2.20	23.6%	21.4%
Fantasy proneness	4.36	4.47	4.33	4.33	4.00	7.00	38.5%	44.3%
Sensation seeking	4.11	4.20	4.20	4.20	4.20	5.00	24.4%	34.6%
Trust in the Ukrainian news about the war	5.33	5.17	5.00	5.00	5.00	5.00	73.5%	72.2%
Trust in the Western news about the war	4.23	4.16	4.00	4.00	4.00	4.00	37.1%	39.3%
Expected Chinese support for Russia	5.97	5.63	7.00	6.67	7.00	7.00	80.3%	71.2%
Expected Iranian support for Russia	5.88	5.61	7.00	7.00	7.00	6.00	77.3%	71.2%
Religiosity	3.36	2.29	2.40	2.10	1.00	1.00	29.7%	20.5%
Expected support from the West	5.47	5.48	5.75	5.75	5.00	7.00	68.9%	68.9%
Perceived social support	4.76	4.97	4.77	5.04	5.08	7.00	48.6%	36.7%

Note. Pol. = Polish; Ukr. = Ukrainian; PTSD = posttraumatic stress disorder.

Nuclear Attack Anxiety

The total variance explained by the model as a whole was 27.2%; $F(8, 113) = 6.654$, $p < .001$, adjusted $R^2 = .272$. The strongest predictor was higher *loneliness* ($\beta = .205$; $p = .04$), followed by lower *support from the West* ($\beta = -.205$; $p = .012$).

Drone Attack Anxiety

The total variance explained by the model as a whole was 14.6%; $F(8, 113) = 3.587$, $p < .001$, adjusted $R^2 = .146$. The only predictor was higher *expected Iranian support for Russia* ($\beta = .497$; $p = .008$).

Missile Attack Anxiety

The total variance explained by the model as a whole was 18.7%; $F(8, 113) = 4.473$, $p < .001$, adjusted $R^2 = .187$. The only predictor was higher *expected Iranian support for Russia* ($\beta = .676$; $p < .001$).

Anxiety About Loved Ones

The total variance explained by the model as a whole was 17.5%; $F(8, 113) = 4.204$, $p < .001$, adjusted $R^2 = .175$. The only predictor was higher *expected Iranian support for Russia* ($\beta = .358$; $p = .05$) followed by higher *loneliness* ($\beta = .226$; $p = .04$).

Biological Weapons Anxiety

The total variance explained by the model as a whole was 24.7%; $F(8, 113) = 5.964$, $p < .001$, adjusted $R^2 = .247$. The only predictor was higher *expected Iranian support for Russia* ($\beta = .476$; $p = .007$).

Chemical Weapons Anxiety

The total variance explained by the model as a whole was 15.5%; $F(8, 113) = 3.775$, $p < .001$, adjusted $R^2 = .155$. The only predictor was higher *expected Iranian support for Russia* ($\beta = .393$; $p = .03$).

Paranoia

The total variance explained by the model as a whole was 28.1%; $F(8, 113) = 6.901$, $p < .001$, adjusted $R^2 = .281$. The only predictor was higher *loneliness* ($\beta = .338$; $p < .001$), followed by higher *fantasy proneness* ($\beta = .272$; $p = .002$) and lower *support from the West* ($\beta = -.169$; $p = .04$; Table 2).

Poland-Based Sample Regression Models

General War Repercussions

The total variance explained by the model as a whole was 23.5%; $F(8, 123) = 6.037$, $p < .001$, adjusted $R^2 = .235$. The strongest predictor was lower *sensation seeking* ($\beta = -.316$; $p = .001$), followed by higher *expected Chinese support for Russia* ($\beta = .302$; $p = .04$), higher *loneliness* ($\beta = .276$; $p = .006$), and lower *support from the West* ($\beta = -.157$; $p = .05$).

Peritraumatic Experiences

The total variance explained by the model as a whole was 11.3%; $F(8, 131) = 3.086$, $p = .003$, adjusted $R^2 = .113$. The only significant predictor was higher *loneliness* ($\beta = .233$; $p = .03$).

PTSD Symptoms

The total variance explained by the model as a whole was 31.7%; $F(8, 123) = 8.617$, $p < .001$, adjusted $R^2 = .317$. The strongest significant predictor was higher *loneliness* ($\beta = .535$; $p < .001$), followed by lower *sensation seeking* ($\beta = -.168$; $p = .05$).

Table 2
Regression Results for Ukraine-Based Ukrainians

Response variable/predictor	Standardized β	*p*	Response variable/predictor	Standardized β	*p*
War repercussions			Loneliness	.173	.10
Support from the West	.010	.91	Expected Chinese support for Russia	−.297	.10
Perceived social support	.197	.07	Expected Iranian support for Russia	.676	.001
Resilience	−.151	.11	Fantasy proneness	.002	.98
Sensation seeking	−1.00	.28	Anxiety about loved ones		
Loneliness	.213	.04	Support from the West	−.129	.13
Expected Chinese support for Russia	.053	.76	Perceived social support	.189	.09
Expected Iranian support for Russia	.284	.11	Resilience	.024	.81
Fantasy proneness	.196	.03	Sensation seeking	.076	.42
PTSD symptoms			Loneliness	.226	.04
Support from the West	−.122	.11	Expected Chinese support for Russia	.018	.92
Perceived social support	.130	.19	Expected Iranian support for Russia	.358	.05
Resilience	.170	.05	Fantasy proneness	−.023	.80
Sensation seeking	.098	.25	Paranoia		
Loneliness	.433	.001	Support from the West	−.169	.04
Expected Chinese support for Russia	.331	.04	Perceived social support	−.077	.45
Expected Iranian support for Russia	−.076	.64	Resilience	.048	.60
Fantasy proneness	.166	.04	Sensation seeking	.108	.22
Depression			Loneliness	.338	.001
Support from the West	−.107	.15	Expected Chinese support for Russia	.161	.34
Perceived social support	.082	.39	Expected Iranian support for Russia	−.095	.60
Resilience	−.228	.007	Fantasy proneness	.272	.002
Sensation seeking	.114	.16	Biological weapons anxiety		
Loneliness	.472	.001	Support from the West	−.072	.38
Expected Chinese support for Russia	.015	.92	Perceived social support	−.193	.08
Expected Iranian support for Russia	.106	.50	Resilience	.169	.07
Fantasy proneness	.226	.005	Sensation seeking	−.042	.64
Nuclear attack anxiety			Loneliness	.183	.08
Support from the West	−.205	.01	Expected Chinese support for Russia	.022	.90
Perceived social support	.130	.21	Expected Iranian support for Russia	.476	.007
Resilience	.037	.69	Fantasy proneness	.007	.93
Sensation seeking	.002	.98	Chemical weapons anxiety		
Loneliness	.205	.04	Support from the West	−.036	.68
Expected Chinese support for Russia	.257	.13	Perceived social support	−.050	.65
Expected Iranian support for Russia	.243	.16	Resilience	.009	.93
Fantasy proneness	−.013	.88	Sensation seeking	−.015	.87
Drone attack anxiety			Loneliness	.137	.21
Support from the West	−.094	.28	Expected Chinese support for Russia	.008	.96
Perceived social support	.052	.64	Expected Iranian support for Russia	.393	.03
Resilience	.042	.67	Fantasy proneness	.102	.27
Sensation seeking	−.025	.79	Peritraumatic experiences		
Loneliness	.086	.43	Support from the West	−.102	.25
Expected Chinese support for Russia	−.086	.64	Perceived social support	.131	.25
Expected Iranian support for Russia	.497	.008	Resilience	−.148	.14
Fantasy proneness	.006	.95	Sensation seeking	.080	.42
Missile attack anxiety			Loneliness	.195	.08
Support from the West	−.075	.37	Expected Chinese support for Russia	−.091	.63
Perceived social support	.114	.29	Expected Iranian support for Russia	.268	.16
Resilience	−.003	.97	Fantasy proneness	.181	.06
Sensation seeking	−.018	.84			

Note. PTSD = posttraumatic stress disorder.

Depression Symptoms

The total variance explained by the model as a whole was 32%; $F(8, 123) = 8.701$, $p < .001$, adjusted $R^2 = .320$. The strongest predictor was higher *loneliness* (β = .494; $p < .001$), followed by lower *sensation seeking* (β = −.173; $p = .04$).

Nuclear Attack Anxiety

The total variance explained by the model as a whole was 18.8%; $F(8, 123) = 4.802$, $p < .001$, adjusted $R^2 = .188$. The strongest predictor was higher *expected Chinese support for Russia* (β = .380; $p = .01$), lower *support from the West* (β = −.295; $p < .001$), higher *perceived social support* (β = .275; $p = .01$), and higher *loneliness* (β = .258; $p = .01$).

Drone Attack Anxiety

The total variance explained by the model as a whole was 10.5%; $F(8, 123) = 2.926$, $p = .005$, adjusted $R^2 = .105$. No factor was statistically significant.

Missile Attack Anxiety

The total variance explained by the model as a whole was 15.9%; $F(8, 123) = 4.098$, $p < .001$, adjusted $R^2 = .159$. The only predictor was lower *support from the West* ($\beta = -.164$; $p = .05$), likely linked with the support of air defense systems.

Anxiety About Loved Ones

The total variance explained by the model as a whole was 9.7%; $F(8, 123) = 2.751$, $p = .008$, adjusted $R^2 = .097$. The only predictor was higher *expected Chinese support for Russia* ($\beta = .324$; $p = .05$).

Biological Weapons Anxiety

The total variance explained by the model as a whole was 14.7%; $F(8, 123) = 3.827$, $p < .001$, adjusted $R^2 = .147$. The strongest predictor was higher *loneliness* ($\beta = .415$; $p < .001$), followed by higher *expected Chinese support for Russia* ($\beta = .331$; $p = .04$), higher *perceived social support* ($\beta = .290$; $p = .01$), and lower *sensation seeking* ($\beta = -.196$; $p = .04$).

Chemical Weapons Anxiety

The total variance explained by the model as a whole was 20.4%; $F(8, 123) = 5.187$, $p < .001$, adjusted $R^2 = .204$. The strongest predictor was higher *expected Chinese support for Russia* ($\beta = .303$; $p = .05$), followed by higher *fantasy proneness* ($\beta = .208$; $p = .02$), lower *sensation seeking* ($\beta = -.177$; $p = .05$), and lower *support from the West* ($\beta = -.166$; $p = .04$).

Paranoia

The total variance explained by the model as a whole was 30.1%; $F(8, 123) = 8.045$, $p < .001$, adjusted $R^2 = .301$. The only predictor was higher *loneliness* ($\beta = .414$; $p < .001$), followed by higher *fantasy proneness* ($\beta = .271$; $p < .001$) and lower *support from the West* ($\beta = -.263$; $p = .001$; Table 3).

SEM

Based on the related literature covered above and our data, an exploratory *Civilian War Trauma Structural Equation Model* was examined with a view to capturing the more complex multipath interrelations between the examined factors (not just between the "war consequence" and "buffer" factors) that go beyond the standard multiple regression. The SEM parameters indicate that the default model had 22 parameters. The key SEM indices suggested a satisfactory model fit (Sathyanarayana & Mohanasundaram, 2024). The ratio of chi-square to degrees of freedom was 1.570, indicating an excellent fit. Regarding the model fit indices, the normed fit index, relative fit index, incremental fit index, Tucker–Lewis index, and comparative fit index are reported as .942, .922, .978, .970, and .978, respectively.

The fitting function values, function minimum fit function and model fit index, are .205 and .074, respectively. A value of .205 is relatively low, indicating that the model's implied covariance matrix aligns closely with the observed data. A value of .074 is quite small, reflecting minimal discrepancy between the hypothesized model and the population. This reinforces the idea that the model provided an excellent representation of the underlying data structure. The root-mean-square error of approximation for the default model was .047, with a 90% confidence interval ranging from .019 to .071. This value suggested an excellent model fit, showing that the model closely approximates the observed data with minimal error. In summary, the model fit can be considered satisfactory (Figure 1 and Table 4).

The SEM results include standardized parameter estimates for direct and total effects, along with significance levels. *Sensation seeking* positively predicted *resilience* ($\beta = .382$; $p < .001$). This suggests that higher levels of *sensation seeking* are associated with higher *resilience*. *Fantasy proneness* positively predicts WVA ($\beta = .184$; $p < .05$). This indicates a weak positive relationship between *fantasy proneness* and WVA. The strongest relation has been identified between WVA and WSE ($\beta = .451$; $p < .001$). This indicates that higher levels of WVA are associated with greater WSE. *Resilience* negatively predicts WSE ($\beta = -.219$; $p < .001$). This suggests that higher *resilienc*e might slightly reduce WSE. The R^2 for WSE is .248, meaning that 24.8% of the variance in WSE is explained by the model.

Discussion

The purpose of this research was to examine the underlying factors behind stress-coping mechanisms and psychological outcomes among Ukrainian civilians affected by the ongoing Russian–Ukraine war, comparing those who remained in Ukraine with those who found refuge in neighboring Poland. It is possible that the apparent lower mental health scores of the Ukrainians in Poland could be down to them feeling more vulnerable, and thus seeking refuge abroad.

The related previous research results are complex. Whereas higher levels of anxiety and depression were found in Ukrainian war refugees staying abroad than those left behind in their homeland (Boiko et al., 2024; Kurapov et al., 2023), another study found no significant differences in resilience, PTSD symptoms, or use of avoidance coping strategies between these two groups (Khailenko & Bacon, 2024). In the present study, the differences between the two groups may be down to factors not controlled for, such as differences in access to resources and support systems or different stages of trauma, which further (including qualitative) research may disambiguate.

Our data partially supported *H1*. In the Poland-based sample, the only significant predictor of *peritraumatic experiences* was *loneliness*, which ties in with research showing that it is indeed the key life situation theme of Ukrainian refugees (Racko & Mikulcová, 2024). In the Ukraine-based sample, on the other hand, it was *fantasy proneness*, the implication being that the presence in an active war zone may facilitate exaggerations (Lynn & Kirsch, 1996) and confabulations (Boskovic et al., 2021).

H2 was partially supported, with higher *loneliness* emerging as the strongest positive predictor of *PTSD symptoms* in both samples. Additionally, whereas in Poland-based sample, lower *sensation seeking* was a positive predictor (McKay et al., 2018), in the Ukraine-based sample, *expected Chinese support for Russia*, lower *resilience*, and higher *fantasy proneness* (Maffly-Kipp & Vess, 2024) were also significant.

H3 was partially supported, with findings indicating that higher *loneliness* was the strongest predictor of *depression* symptoms in both samples (Fox et al., 2021). In the Ukraine-based sample, this

Table 3
Regression Results for Poland-Based Ukrainians

Response variable/predictor	Standardized β	*p*	Response variable/predictor	Standardized β	*p*
War repercussions			Loneliness	.132	.10
Support from the West	−.157	.05	Expected Chinese support for Russia	.230	.14
Perceived social support	.021	.84	Expected Iranian support for Russia	.140	.38
Resilience	.076	.41	Fantasy proneness	.099	.22
Sensation seeking	−.316	.001	Anxiety about loved ones		
Loneliness	.276	.006	Support from the west	−.013	.88
Expected Chinese support for Russia	.302	.04	Perceived social support	−.098	.39
Expected Iranian support for Russia	−.052	.73	Resilience	.082	.41
Fantasy proneness	.144	.09	Sensation seeking	−.103	.29
PTSD symptoms			Loneliness	.191	.08
Support from the West	−.079	.29	Expected Chinese support for Russia	.324	.05
Perceived social support	.008	.94	Expected Iranian support for Russia	−.096	.56
Resilience	−.019	.82	Fantasy proneness	−.023	.28
Sensation seeking	−.168	.05	Paranoia		
Loneliness	.535	.001	Support from the West	−.263	.001
Expected Chinese support for Russia	.038	.78	Perceived social support	.009	.93
Expected Iranian support for Russia	.070	.62	Resilience	.006	.94
Fantasy proneness	−.038	.63	Sensation seeking	.064	.45
Depression			Loneliness	.414	.001
Support from the West	.024	.75	Expected Chinese support for Russia	−.099	.49
Perceived social support	−.048	.63	Expected Iranian support for Russia	.183	.205
Resilience	−.046	.60	Fantasy proneness	.271	.001
Sensation seeking	−.173	.04	Biological weapons anxiety		
Loneliness	.494	.001	Support from the West	−.095	.26
Expected Chinese support for Russia	.257	.07	Perceived social support	.290	.01
Expected Iranian support for Russia	−.141	.32	Resilience	.072	.46
Fantasy proneness	.095	.23	Sensation seeking	−.196	.04
Nuclear attack anxiety			Loneliness	.415	.001
Support from the West	−.295	.001	Expected Chinese support for Russia	.331	.04
Perceived social support	.275	.01	Expected Iranian support for Russia	−.191	.23
Resilience	−.100	.29	Fantasy proneness	.116	.19
Sensation seeking	−.010	.91	Chemical weapons anxiety		
Loneliness	.258	.01	Support from the West	−.166	.04
Expected Chinese support for Russia	.380	.01	Perceived social support	.124	.25
Expected Iranian support for Russia	−.114	.46	Resilience	−.025	.79
Fantasy proneness	.048	.57	Sensation seeking	−.177	.05
Drone attack anxiety			Loneliness	.193	.06
Support from the West	−.133	.12	Expected Chinese support for Russia	.303	.05
Perceived social support	.088	.44	Expected Iranian support for Russia	.009	.95
Resilience	−.047	.64	Fantasy proneness	.208	.02
Sensation seeking	−.046	.63	Peritraumatic experiences		
Loneliness	.096	.37	Support from the West	−.072	.40
Expected Chinese support for Russia	.170	.29	Perceived social support	−.053	.64
Expected Iranian support for Russia	.166	.31	Resilience	−.041	.68
Fantasy proneness	.099	.27	Sensation seeking	−.095	.32
Missile attack anxiety			Loneliness	.233	.03
Support from the West	−.164	.05	Expected Chinese support for Russia	.238	.14
Perceived social support	.020	.86	Expected Iranian support for Russia	−.032	.84
Resilience	−.084	.39	Fantasy proneness	−.116	.20
Sensation seeking	.024	.79			

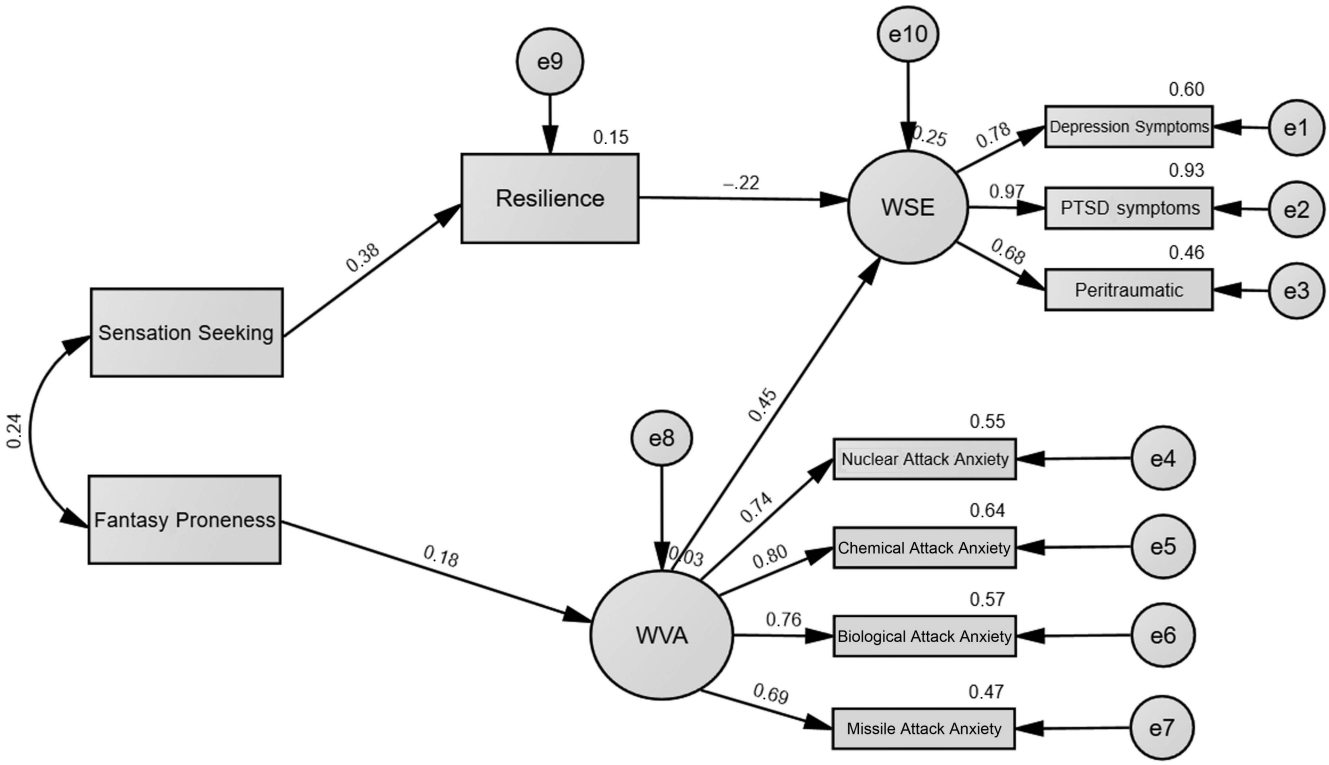
Note. PTSD = posttraumatic stress disorder.

was also followed by lower *resilience* and higher *fantasy proneness* (Maffly-Kipp & Vess, 2024). In the Poland-based sample, lower *sensation seeking* was also a positive predictor (McKay et al., 2018).

H4 and *H5* were partially supported, in the Ukraine-based sample the consistent predictor of *anxiety about drone*, *missile*, *biological*, and *chemical attack*, *about loved ones* being higher *expected Iranian support for Russia.* This is borne out by Iran actually smuggling its weapons into Russia using drones and boats. The reason why *expected Chinese support for Russia* was such a consistent significant predictor could be attributed to the more covert and unofficial support that China provides Russia with (Hawkins, 2023). In the Poland-based sample (outside the war zone at the time of writing this article), the role of foreign powers supporting Russia was a much less consistent predictor. The (less consistent) roles of higher *loneliness* and lower *resilience* in increased anxiety about these types of weapons tie in with the related research on Ukrainian refugees (Palace et al., 2024). Thus, the war context likely exacerbated *loneliness* (because of social fragmentation), challenging people's *resilience* through stressors like displacement, loss, and uncertainty.

H6 was partially supported. While in both samples, *loneliness* was a significant predictor (Bell et al., 2023; Fox et al., 2021; Lamster et al., 2017), *fantasy proneness* was significant only in the

Figure 1
Civilian War Trauma Structural Equation Model



Note. WSE = war stress effects; WVA = war victimization anxiety.

Ukraine-based sample, lending credence to its abovementioned apparently more prominent role in the war zone. While the role of perceived social support is well-established, one insight that intervention providers may thus consider is helping war victims (especially those in the war zone) reduce negative fantasy-related confabulations, which might be examined in greater depth in further research.

H7 was (almost) fully supported, meaning that in both samples *paranoia* was predicted by higher *fantasy proneness* (Rauschenberger & Lynn, 2003) and higher *loneliness* (Bell et al., 2023; Lamster et al., 2017). However, a nuanced caveat turned up—although *perceived social support* (from family and friends) was not a significant predictor, (lower) *expected support from the West* was in both samples, highlighting its importance regardless of displacement status.

Table 4
Standardized Parameter Estimates for SEM Effects

Direct effect	β	*p*
Sensation seeking → resilience	.382	<.001
Resilience → WSE	−.219	<.001
Fantasy proneness → WVA	.184	<.05
WVA → WSE	.451	<.001

Note. Total variance explained: R^2 for WSE = .248. SEM = structural equation model; WSE = war stress effects; WVA = war victimization anxiety.

H8 was fully supported. The strongest relation was observed between WVA and WSE, indicating that anxiety related to war victimization has a significant impact on mental health. It should also be noted that WVA is influenced by a fantasy proneness. The model's implications are further supported by research on how daily stressors mediate the relationship between war exposure and mental health outcomes. For instance, Miller and Rasmussen (2010) suggested that an integrative approach to intervention (one that addresses both trauma and psychosocial factors) may be necessary to effectively mitigate the impact of war on mental health. Relatedly, research on Israeli students during the Israel–Lebanon war found that personal mastery had direct positive effects on well-being, while intimate relationships served as a buffer against the impact of war-related stressors (Blow et al., 2019).

This relationship between WVA, and WSE is theoretically grounded in the cognitive vulnerability model (Armfield, 2006) explaining how individuals with certain cognitive biases or maladaptive thought patterns are more likely to perceive ambiguous or threatening situations as catastrophic. Notably, path analysis revealed a positive relationship between sensation seeking and resilience, which, in turn, is negatively associated with the WSE. This may suggest that resilience may play a protective, albeit modest, role in buffering the impact of WVA on WSE.

Finally, the model's significant path coefficients for the effects of WVA on specific anxieties related to different types of attacks highlights the differentiated nature of war-related anxiety. Specifically, each type of attack (i.e., nuclear, chemical, biological, drone, and

missile) was associated with varying levels of anxiety, suggesting that individuals may have experienced specific anxieties depending on their perceptions of the threats posed by different types of warfare. Critically, while the model provides valuable insights into the factors contributing to war stress among civilians, it raises important questions about the role of resilience. The small path coefficient between *resilience* and WSE is particularly noteworthy here, implying that *resilience* may not have played as substantial a role in mitigating the impact of *war-related stress*. This finding is somewhat counterintuitive, given the apparent protective function of resilience in safeguarding against various forms of psychological distress during the Russia–Ukraine war (Oviedo et al., 2022).

One possible interpretation is that resilience in this model was too narrow and thus did not account for the broader social and contextual factors. Moreover, the small coefficient allows for the possibility that resilience may operate differently across conditions of war stress. For instance, in chronic, prolonged exposure to war, the protective effects of resilience may diminish over time as individuals grow fatigued and their resources get depleted (Hobfoll et al., 2011), which may incline them to engage in mutual exchanges of negative perspectives and other stressors, thus potentially compromising the (apparently lower) role of social support from those around them via the war stress sharing deterioration effect (Palace et al., 2024).

As anticipated, the SEM model demonstrated that greater resilience tends to reduce clinical symptoms of peritraumatic stress, PTSD and depression symptoms, although no direct relationship between the feeling of various types of warfare-related fears and resilience was found. The anxieties related to war and its possible variants (e.g., bio and nuclear) are intensified by factors related to personal susceptibility (PS) other than resilience. The greater sense of threat to life and loneliness were both directly related to war anxiety, which may partially stem from likely family separation.

The expectation regarding the protective role of perceived social support for mental health was partially confirmed. The perception of external support (i.e., support from Western countries when it comes to the issue of anxiety about nuclear, biological, or missile attacks) turns out to be a significant factor when it comes to the Ukrainian refugees. Thus, whereas the Ukraine-based participants probably counted on their own army more than on any external help, the Poland-based participants likely formed their beliefs shaped by the people helping them in Poland and available (supportive) media reports from around the world, including the European Union, whose majority members support Ukraine.

As for the methodological limitations, the survey was conducted during the full-scale war, meaning that only its online version was practical, meaning that it was difficult to control for factors such as gender, age, or preexisting health conditions or history of support that was already received. Also, some potential respondents were likely unable to join the study due to limited internet access and high levels of stress or PTSD symptoms. Moreover, the cross-sectional nature of the study prevents inferences about causality and the dynamic nature of psychological responses over time. Follow-up studies might consider face-to-face interviews, nonstudents, different age ranges, and surveys completed by friends and relatives (thus increasing generalizability and reducing the self-reporting and social desirability biases), as well as better controlled settings (e.g., support centers for war refugees).

Additionally, the dominant female gender, student status, and cross-sectional design limit inferences, highlighting the need for longitudinal research to capture the evolving dynamics of psychological responses to war over time. Finally, it is important to recognize the temporal variability—it is possible that single events on a given day may have affected some responses. Consequently, the results might reflect participants' psychological states at specific moments rather than within the covered time window. However, as in neither sample did trust in the news (or religiosity) turn out to play a significant role, this concern is mitigated, although the role might be less direct or moderated by other factors, such as hope or community and social resilience (Kimhi et al., 2023; Kimhi et al., 2024), which our scales did not capture.

While in the present study, the differences between the two groups are manifest only across the few factors we examined, they may also differ across other dimensions, especially those related to the assistance system available to refugees in Poland, which for many may not have been sufficient as the organized aid for Ukrainian refugees lacked good management in the first phase of the war. Also, factors related to adaptation to the new country's culture, such as the Polish language, could have played a significant role. The adaptation to the country's culture where refugees have arrived can be lengthy and stressful, particularly given the differences in language, cultural, and legal system. Relatedly, experiences of discrimination and limited access to resources facilitate psychopathology, including the emergence of PTSD symptoms (Anczyk & Grzymała-Moszcyńska, 2021). Our results offer new insights into associations between war trauma and resilience, social support, and mental health, revealing that their complex nature requires group-specific (rather than general) interventions. Investigating the relations between individual and social factors, as well as effective stress coping at home and abroad, seems particularly important for developing effective support programs for war refugees, their families, and entire communities affected by different war experiences.

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