War exposure, posttraumatic stress disorder, and complex posttraumatic stress disorder among parents living in Ukraine during the Russian war

Karatzias, T., Shevlin, M., Ben-Ezra, M., McElroy, E., Redican, E., Vang, M. L., Cloitre, M., Ho, G. W. K., Lorberg, B., Martsenkovskyi, D., & Hyland, P. (2023). War exposure, posttraumatic stress disorder, and complex posttraumatic stress disorder among parents living in Ukraine during the Russian war. *Acta Psychiatrica Scandinavica*, *147*(3), 276-285. https://doi.org/10.1111/acps.13529

Link to publication record in Ulster University Research Portal

Published in:
Acta Psychiatrica Scandinavica

Publication Status:
Published (in print/issue): 31/03/2023

DOI:
10.1111/acps.13529

Document Version
Publisher's PDF, also known as Version of record

Document Licence:
CC BY-NC-ND

For Author Accepted Manuscripts (AAM) published under Ulster University's Rights Retention Policy for Scholarly Works (RRPSW)

When citing an AAM published under Ulster University's RRPSW please use the following citation structure:

Author, A. A. (Year). Title of article. Journal Name, [Accepted Author Manuscript]. PURE Portal URL. Licensed under CC BY 4.0.

General rights
The copyright and moral rights to the output are retained by the output author(s), unless otherwise stated by the document licence.

Unless otherwise stated, users are permitted to download a copy of the output for personal study or non-commercial research and are permitted to freely distribute the URL of the output. They are not permitted to alter, reproduce, distribute or make any commercial use of the output without obtaining the permission of the author(s).

If the document is licenced under Creative Commons, the rights of users of the documents can be found at https://creativecommons.org/share-your-work/cclicenses/.

Take down policy
The Research Portal is Ulster University's institutional repository that provides access to Ulster's research outputs. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact pure-support@ulster.ac.uk

Download date: 15/10/2026

Received: 1 October 2022 | Revised: 19 December 2022 | Accepted: 21 December 2022

DOI: 10.1111/acps.13529

Acta Psychiatrica Scandinavica WILEY

ORIGINAL ARTICLE

War exposure, posttraumatic stress disorder, and complex posttraumatic stress disorder among parents living in Ukraine during the Russian war

Thanos Karatzias[1] | **Mark Shevlin**[2] | **Menachem Ben-Ezra**[3] | **Eoin McElroy**[4] | **Enya Redican**[4] | **Maria Louison Vang**[5] | **Marylene Cloitre**[6,7] | **Grace W. K. Ho**[8] | **Boris Lorberg**[9] | **Dmytro Martsenkovskyi**[10,11] | **Philip Hyland**[12]

[1]School of Health & Social Care, Edinburgh Napier University, Edinburgh, UK

[2]School of Psychology, Ulster University, Coleraine, Northern Ireland, UK

[3]School of Social Work, Ariel University, Ariel, Israel

[4]School of Psychology, Ulster University, Derry, Northern Ireland, UK

[5]Centre for Psychotraumatology, University of Southern Denmark, Odense, Denmark

[6]National Center for PTSD Dissemination and Training Division, VA Palo Alto Health Care System, California, USA

[7]Department of Psychiatry and Behavioural Sciences, Stanford University, California, USA

[8]School of Nursing, The Hong Kong Polytechnic University, Hong Kong, People's Republic of China

[9]Department of Psychiatry, UMass Chan Medical School, Massachusetts, USA

[10]Department of Psychiatry and Narcology, Bogomolets National Medical University, Kyiv, Ukraine

[11]Institute of Psychiatry, Forensic Psychiatric Examination and Drug Monitoring of Ministry of Health of Ukraine, Kyiv, Ukraine

[12]Department of Psychology, Maynooth University, Kildare, Ireland

Correspondence
Mark Shevlin, School of Psychology, Ulster University, Coleraine, Northern Ireland, UK.
Email: m.shevlin@ulster.ac.uk

Funding information
Ulster University

Abstract

Background: High rates of posttraumatic stress disorder (PTSD) have been documented in war-affected populations. The prevalence of Complex PTSD (CPTSD) has never been assessed in an active war zone. Here, we provide initial data on war-related experiences, and prevalence rates of ICD-11 PTSD and CPTSD in a large sample of adults in Ukraine during the Russian war. We also examined how war-related stressors, PTSD, and CPTSD were associated with age, sex, and living location in Ukraine.

Method: Self-report data were gathered from a nationwide sample of 2004 adult parents of children under 18 from the general population of Ukraine approximately 6 months after Russia's invasion.

Results: All participants were exposed to at least one war-related stressor, and the mean number of exposures was 9.07 (range = 1–26). Additionally, 25.9% (95% CI = 23.9%, 27.8%) met diagnostic requirements for PTSD and 14.6%

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.
© 2023 The Authors. *Acta Psychiatrica Scandinavica* published by John Wiley & Sons Ltd.

(95% CI = 12.9%, 16.0%) met requirements for CPTSD. There was evidence of a strong dose–response relationship between war-related stressors and meeting criteria for PTSD and CPTSD. Participants who had the highest exposure to war-related stressors were significantly more likely to meet the requirements for PTSD (OR = 4.20; 95% CI = 2.96–5.95) and CPTSD (OR = 8.12; 95% CI = 5.11–12.91) compared to the least exposed.

Conclusions: Humanitarian responses to the mental health needs of the Ukrainian population will need to take account of posttraumatic stress reactions. Education in diagnosing and treating PTSD/CPTSD, especially in the situation of a significant lack of human resources and continuing displacement of the population, is necessary.

KEYWORDS

complex posttraumatic stress disorder, parents, posttraumatic stress disorder, Ukraine war, war-related stressors

1 | WAR EXPOSURE, PTSD, AND COMPLEX PTSD AMONG PARENTS LIVING IN UKRAINE DURING THE RUSSIAN WAR

Russia's war on Ukraine commenced in February 2014 and culminated in a failed full-scale invasion in February 2022.[1] It is impossible to know at this time exactly how many Ukrainians have been killed and injured, but the United Nations estimates that approximately 6000 civilians have been killed (including 383 children), and more than 8000 have been injured.[2] When military personnel are eventually included, these figures will be considerably higher. Moreover, at least 8 million Ukrainians have been internally displaced, 7 million have taken refuge in another country, and 2 million have been illegally deported to Russia.[2] Considering that the total population of Ukraine is 44 million, the figures above verge on staggering. It is impossible, therefore, to adequately describe the effect this war has had, is having, and will have on the people of Ukraine.

Posttraumatic stress disorder (PTSD) is a commonly studied condition in war-affected communities.[3,4] A recent meta-analysis of adult survivors of war from 1989 to 2019 found the global point prevalence of PTSD to be 26.5%.[5] This indicates that rates of PTSD are considerably higher in war-affected populations than populations unaffected by war where prevalence rates tend to be around 10% or less.[6] Furthermore, a 2016 survey of Ukrainians who had been internally displaced by Russia's invasion of the south and east of the country found that 21.0% met diagnostic criteria for PTSD or Complex PTSD (CPTSD), as defined by the eleventh version of the *International Classification of Diseases* (ICD-11).[7*] Based on these data, it is probably reasonable to assume that a substantial proportion of the adult population of Ukraine will be experiencing clinically relevant levels of trauma-based psychopathology.[8]

Significant Outcomes

- There is a high level of exposure to war-related stressors among parents living in Ukraine during the Russian war.
- Rates of ICD-11 PTSD and CPTSD were 25.9% and 14.6%, respectively.
- There was evidence of a dose–response relationship between war-related stressors and meeting criteria for PTSD/CPTSD.

Limitations

- The sample is not representative of the entire adult population of Ukraine meaning these findings are not entirely generalizable.
- Trauma exposure was restricted to war-related stressors; we did not assess for trauma exposures prior to the war.
- Other psychological disorders, such as anxiety and depression, were not assessed.

*In this study, people were screened for ICD-11 PTSD and a differential diagnosis between PTSD and CPTSD was not made. Thus, it is not known how many of those diagnosed with PTSD had CPTSD and what proportions met requirements for the respective disorders.

The ICD-11 makes a distinction between PTSD, defined as a narrow, fear-based disorder where all symptoms are directly related to a traumatic event or set of events, and CPTSD which is a broader disorder including the core PTSD symptoms *and* additional problems with affect regulation, self-concept, and interpersonal relations. Understanding how common these two disorders are in Ukraine as a result of the war will be important in guiding humanitarian mental health and psychosocial support responses given that CPTSD is associated with more day-to-day impairments and diagnostic comorbidity than PTSD, and may require interventions that are quantitatively and qualitatively different from those currently offered for PTSD.[9] We are not aware of any data at this time that indicates the relative prevalence of ICD-11 PTSD and CPTSD in civilian populations affected by war, let alone during the initial months of a conflict. Studies with military veterans have found relatively higher rates of CPTSD compared to PTSD,[10,11] but the treatment-seeking nature of these samples makes it impossible to draw meaningful inferences. An important research endeavour therefore is to begin to understand the relative prevalence rates of these forms of trauma-related psychopathology in the Ukrainian population.

2 | AIMS OF THE STUDY

The main aim of this study was to assess the type and frequency of exposure to different war-related stressors, the prevalence rates of ICD-11 PTSD and CPTSD, and their relationship in a nationwide sample of parents living in Ukraine during the Russian war.

3 | METHODS

3.1 | Participants and procedures

This study uses data collected as part of *The Mental Health of Parents and Children in Ukraine Study* which was developed to understand how Russia's war on Ukraine has affected the mental health and day-to-day lives of adults and their children in Ukraine. Inclusion criteria for this study was being aged 18 years or older, being a parent of a child under the age of 18 years, currently living in Ukraine, and capable of completing the survey in Ukrainian. These data were collected between July 15th and September 5th, 2022 by the survey company TGM Research who maintain nationally representative survey panels in 130 countries, including Ukraine. Given the ongoing conflict and the mass displacement of people in Ukraine, we used opportunistic sampling methods to recruit participants, but took steps to recruit people of different sexes, ages, and living in different regions of Ukraine. Participants were recruited from west Ukraine (Lvivska, Ivano-Frankivska, Zakarpatska, Rivnenska, Ternopilska, Voly), north Ukraine (Zhytomyrska, Kyivska, Chernihivska, Sumska), central Ukraine (Vinnytska, Kirovohradska, Poltavska, Cherkaska), east Ukraine (Donetska, Kharkivska, Luhanska), and south Ukraine (Zaporizka, Dnipropetrovska, Khersonska, Odeska, Mykolaivska, Crimea). Participants were contacted by TGM Research via email, in-app notification, or text message, and provided with information about the nature of the study. If consenting, participants completed the survey online, and were remunerated for their time by the survey company.

Prior to data collection, an a priori power analysis was conducted to determine the appropriate sample size. We assumed a combined PTSD/CPTSD prevalence rate of 24% in the general population (see 4, 5), a confidence level of 95%, and a margin of error of 2%, and found the necessary sample size was 1752. We therefore set our target sample size to be 2000 people. Our final sample included 2004 people and their sociodemographic characteristics are presented in Table 1. Ethical approval for the study was provided by the SI Institute of Psychiatry, Forensic Psychiatric Examination and Drug Monitoring at the Ministry of Health of Ukraine.

3.2 | Measures

All measures were translated from English into Ukrainian and then back-translated from Ukrainian into English to ensure accuracy by a team of mental health experts on this project that are fluent in both languages and familiar with the measures.

War-related stressor: For the purposes of this study, a list of 34 events was used to assess various stressful experiences people may have had during the war. These events are described in Table 2. Participants were given the following instructions: '*We wish to ask you about different things you may have experienced during the war. Below are descriptions of events that you may have experienced following the Russian attack on Ukraine on February 24th, 2022*.' Participants were asked to indicate on a Yes[1] or No (0) basis if they had experienced each event. If indicating exposure to multiple events, participants were asked to identify the experience they found most distressing. Scores range from 0–34 with higher scores reflecting higher levels of war-related experiences. For analytic purposes, total scores were recoded into quintiles.

TABLE 1 Sociodemographic characteristics of the sample ($N = 2004$)

	% or Mean	*N* or SD
Sex		
Male	42.9%	860
Female	57.1%	1144
Age	37.72	8.19
Number of children	1.48	0.67
Child with delayed development	10.7%	215
Child with emotional or behavioural problems	12.7%	255
Born in Ukraine	95.0%	1903
Living location in Ukraine before war		
Western Ukraine	20.5%	411
Northern Ukraine	27.8%	557
Central Ukraine	15.9%	318
Eastern Ukraine	10.0%	201
Southern Ukraine	25.5%	512
Outside of Ukraine	0.2%	5
Living location in Ukraine now		
Western Ukraine	24.8%	497
Northern Ukraine	27.6%	553
Central Ukraine	18.2%	365
Eastern Ukraine	5.2%	105
Southern Ukraine	24.2%	484
Outside of Ukraine	0%	0
Residential area		
Urban area	75.0%	1502
Rural area	25.0%	502
Property type		
Apartment	60.2%	1206
House	36.5%	732
Emergency accommodation	3.3%	66
Forced to move to another part of Ukraine	28.7%	575
Forced to move to another country	9.5%	191
Marital status		
Married or living with partner	78.0%	1563
Single	6.8%	137
Separated or divorced	11.1%	222
Widowed	1.6%	32
Highest education level		
Completed general/secondary school	11.4%	230
Completed vocational school	25.8%	518
Undergraduate degree	62.7%	1256
Employment status		
Full-time employed	39.1%	784
Part-time employed	20.3%	407
Temporarily unemployed due to the war	20.9%	419
Unemployed not due to the war	14.8%	297
Student	0.6%	13
Retired	1.6%	32
Not working due to disability	2.6%	52
Emergency service worker		
Health worker	2.9%	59
Rescue worker	0.4%	8
Aid worker	5.5%	110
Social service worker	1.7%	35
Police officer	0.4%	9
Firefighter	0.1%	2
Armed Forces	2.0%	40

ICD-11 PTSD and CPTSD: The International Trauma Questionnaire (ITQ: 10) is a self-report measure of all diagnostic requirements for ICD-11 PTSD and CPTSD. In this study, participants were instructed to complete the ITQ thinking about the most distressing war-related stressor they nominated in the previous section. Six items measure PTSD symptoms of re-experiencing in the here and now, avoidance, and sense of current threat, and participants indicate how bothered they have been by these symptoms in the past month. Six items measure 'Disturbance in Self-Organization' (DSO) symptoms of affective dysregulation, negative self-concept, and disturbed relationships, and these are answered in terms of typical reactions. Both sets of symptoms are followed by three items measuring functional impairment across various areas of life. All items are answered using a five-point Likert scale ranging from 0 ('Not at all') to 4 ('Extremely'), and a symptom is considered present based on a response of ≥2 ('Moderately'). Diagnostic requirements for PTSD include exposure to a war-related stressor, one symptom from each PTSD cluster, and presence of functional impairment associated with these symptoms. Diagnosis of CPTSD requires that all PTSD criteria are met, as well one symptom from each DSO cluster and evidence of functional impairment associated with these symptoms. The ICD-11 diagnostic rules permit a diagnosis of PTSD or CPTSD, but not both. The psychometric properties of the ITQ are well supported,[13] and in

TABLE 2 War exposure and stress related disorders

War exposure	Total ($n = 2004$)	None ($n = 1204$)	PTSD ($n = 521$)	CPTSD ($n = 291$)	χ^2 (df = 2) p
1. I heard air raid sirens.	1984 (99.0%)	1183 (99.0%)	515 (99.2%)	286 (98.6%)	0.69 0.705
2. I experienced extreme financial hardship.	1494 (74.6%)	819 (68.5%)	418* (80.5%)	257* (88.6%)	62.86 0.000
3. I had to take shelter in an underground location.	1452 (72.5%)	829 (69.4%)	392 (75.5%)	231* (79.7%)	15.6 0.000
4. I heard or saw bombing or artillery fire.	1348 (67.3%)	754 (63.1%)	383* (73.8%)	211* (72.8%)	23.45 0.000
5. I witnessed the destruction of local infrastructure.	1285 (64.1%)	704 (58.9%)	369* (71.1%)	212* (73.1%)	35.24 0.000
6. I was unable to sleep for prolonged periods of time.	1177 (58.7%)	579 (48.5%)	364* (70.1%)	234* (80.7%)	137.63 0.000
7. I lost my job (temporarily or for an extended period).	1103 (55.0%)	613 (51.3%)	301 (58.0%)	189* (65.2%)	20.63 0.000
8. I heard or saw gun fire.	1058 (52.8%)	568 (47.5%)	305* (58.8%)	185* (63.8%)	34.78 0.000
9. I was stopped by military patrols.	985 (49.2%)	542 (45.4%)	279* (53.8%)	164* (56.6%)	17.64 0.000
10. Someone close to me (e.g., parent, sibling, neighbour, friend) was physically hurt in the war.	904 (45.1%)	474 (39.7%)	267* (51.4%)	163* (56.2%)	37.14 0.000
11. Someone close to me (e.g., parent, sibling, neighbour, friend) had their home damaged or destroyed.	818 (40.8%)	435 (36.4%)	239* (46.1%)	144* (49.7%)	24.90 0.000
12. My loved ones were displaced.	723 (36.1%)	361 (30.2%)	231* (44.5%)	131* (45.2%)	44.24 0.000
13. Someone close to me (e.g., parent, sibling, neighbour, friend) died in the war	702 (35.0%)	368 (30.8%)	211* (40.7%)	123* (42.4%)	23.58 0.000
14. I had to move to another part of Ukraine.	501 (25.0%)	267 (22.3%)	151* (29.1%)	83 (28.6%)	4.97 0.083
15. I was unable to access essential healthcare like medicines or visiting a doctor.	429 (21.4%)	205 (17.2%)	127* (24.5%)	97* (33.4%)	40.72 0.000
16. I saw dead bodies or mutilated body parts.	391 (19.5%)	175 (14.6%)	140* (27.0%)	76* (26.2%)	44.71 0.000
17. I was unable to access necessities like food, water, electricity, or heating.	316 (15.8%)	144 (12.1%)	106* (20.4%)	66* (22.8%)	31.57 0.000
18. My hometown was occupied by invading Russian forces.	234 (11.7%)	121 (10.1%)	74* (14.3%)	39 (13.4%)	7.02 0.030
19. Someone close to me (e.g., parent, sibling, neighbour, friend) went missing	224 (11.2%)	97 (8.1%)	74* (14.3%)	53* (18.3%)	30.95 0.000
20. My home was damaged or destroyed.	160 (8.0%)	85 (7.1%)	43 (8.3%)	32* (11.0%)	4.971 0.083
21. I took part in defensive operations.	149 (7.4%)	92 (7.7%)	43 (8.3%)	14 (4.8%)	3.53 0.171
22. I was shot at by the enemy forces.	137 (6.8%)	67 (5.6%)	49* (9.4%)	21 (7.2%)	8.44 0.015
23. Someone close to me (e.g., parent, sibling, neighbour, friend) was kidnapped or held hostage.	96 (4.8%)	40 (3.3%)	29 (5.6%)	27* (9.3%)	19.17 0.000
24. I had to move to another country.	92	46	29	17	3.74

(Continues)

TABLE 2 (Continued)

War exposure	Total ($n = 2004$)	None ($n = 1204$)	PTSD ($n = 521$)	CPTSD ($n = 291$)	χ^2 (df = 2) p
	(4.6%)	(3.8%)	(5.6%)	(5.9%)	0.154
25. I was forcibly separated from my partner.	83 (4.1%)	39 (3.3%)	23 (4.4%)	21* (7.2%)	9.44 0.000
26. I had to touch dead bodies or mutilated body parts (e.g., moved or buried dead bodies).	75 (3.7%)	34 (2.8%)	32* (6.2%)	9 (3.1%)	11.45 0.003
27. I shot at the enemy forces.	39 (1.9%)	22 (1.8%)	16* (3.1%)	1* (0.3%)	7.48 0.024
28. I killed a member of the enemy forces.	39 (1.9%)	22 (1.8%)	15 (2.9%)	2 (0.7%)	4.89 0.087
29. I was forcibly separated from my children.	36 (1.8%)	21 (1.8%)	6 (1.2%)	9 (3.1%)	4.02 0.134
30. I or my partner experienced a miscarriage.	23 (1.1%)	10 (0.8%)	7 (1.3%)	6 (2.1%)	3.37 0.185
31. I was physically hurt in the war.	18 (0.9%)	7 (0.6%)	10* (1.9%)	1 (0.3%)	8.47 0.014
32. I was kidnapped or held hostage.	4 (0.2%)	3 (0.3%)	1 (0.2%)	0 (0.0%)	0.74 0.691
33. I was tortured.	4 (0.2%)	2 (0.2%)	2 (0.4%)	0 (0.0%)	1.54 0.463
34. I experienced sexual violence.	2 (0.1%)	2 (0.2%)	0 (0.0%)	0 (0.0%)	1.35 0.508

this sample the internal reliability of the PTSD ($\alpha = 0.83$), DSO ($\alpha = 0.86$), and total ($\alpha = 0.89$) scale scores were satisfactory.

3.3 | Analytic plan

We first report descriptive statistics indicating the proportion of people exposed to each war-related stressor, and the proportion of people that meet diagnostic criteria for ICD-11 PTSD and CPTSD. Next, chi-square (χ^2) analyses were used to examine the associations between exposure to each war-related stressor and PTSD and CPTSD diagnostic status. Standardised residuals greater than 1.96 indicate significantly more cases of PTSD and CPTSD than expected under the null hypothesis. Next, we tested if the total number of war-related stressors and diagnostic status were associated with age, sex, and region of Ukraine using t-tests, χ^2 tests, and one-way between-groups analysis of variance (ANOVA) tests. Effects sizes for the t-tests are interpreted using the guidance from Cohen[12] where Cohen's d values less than 0.40 reflect a 'small' effect, values from 0.40 to 0.80 reflect a 'moderate' effect, and values greater than 0.80 reflect a 'large' effect. Eta-squared (η^2) was used as an effect size indicator for the one-way ANOVA tests and based on guidance from Cohen[13] values of 0.05 and less indicate a 'small' effect, values from 0.06 to 0.13 indicated a 'moderate' effect, and values 0.14 or larger indicate a 'large' effect. Finally, multinomial logistic regression was used to identify the unique effect of cumulative war-related stressors on diagnostic status (0. No diagnosis, 1. PTSD, 2. CPTSD) while controlling for sex, age, and region (Western region was treated as the reference category).

4 | RESULTS

The mean number of war-related stressors was 9.07 (SD = 4.34; *Mdn* = 9.00; Mode = 8), with a range from 1 to 26. The most common stressors were hearing air raid sirens (99.0%), experiencing extreme financial hardship (74.6%), having to take shelter in an underground location (72.5%), seeing/hearing bombing and artillery fire (67.3%), and witnessing the destruction of local infrastructure (64.1%) (see Table 2 for full details).

Diagnostic requirements for ICD-11 PTSD were met by 25.9% ($n = 519$; 95% CI = 23.9%, 27.8%), and an additional 14.6% ($n = 290$; 95% CI = 12.9%, 16.0%) met requirements for CPTSD. The difference was statistically significant (χ^2 (1, $N = 809$) = 64.82, $p < 0.001$). The bivariate associations between exposure to each war stressor

TABLE 3 Estimates from the multinomial logistic regression model predicting PTSD and CPTSD

	PTSD			CPTSD		
	B	OR	95% CI	B	OR	95% CI
Age	0.00	1.00	(0.98–1.01)	−0.00	0.99	(0.98–1.01)
Sex (female)	0.33***	1.39	(1.10–1.73)	0.99***	2.71	(2.01–3.67)
Western Ukraine	-	-	-	-	-	-
North Ukraine	−0.08	0.92	(0.67–1.24)	−0.38	0.68	(0.46–1.01)
Central Ukraine	0.20	1.22	(0.88–1.69)	0.04	1.04	(0.68–1.59)
Eastern Ukraine	−0.58*	0.56	(0.31–0.99)	0.13	1.14	(0.64–2.05)
South Ukraine	0.06	1.06	(0.77–1.44)	0.12	1.12	(0.76–1.66)
War Stressor Quintile 1	-	-	-	-	-	-
War Stressor Quintile 2	0.53**	1.71	(1.19–2.46)	0.84**	2.33	(1.41–3.86)
War Stressor Quintile 3	0.69***	2.00	(1.41–2.84)	0.84**	2.32	(1.41–3.82)
War Stressor Quintile 4	1.05***	2.85	(2.02–4.02)	1.49***	4.46	(2.79–7.10)
War Stressor Quintile 5	1.44***	4.20	(2.96–5.95)	2.09***	8.12	(5.11–12.91)

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

and PTSD and CPTSD are also reported in Table 2. Meeting diagnostic requirements for PTSD was significantly associated with 20 stressors, and the same for CPTSD. Some of these stressors were associated with both disorders (e.g., seeing dead bodies or body parts, having someone close gone missing), some were only significantly associated with PTSD (e.g., having to move to another part of Ukraine, being shot at by enemy forces), and some were only associated with CPTSD (e.g., having one's home damaged or destroyed, being forcibly separated from one's partner).

Age was not associated with the total number of war-related stressors ($r = -0.03$, $p = 0.101$), nor diagnostic status (F (2, 2001) = 2.92, $p = 0.054$). Males reported significantly more war-related stressors (M = 9.48, SD = 4.57) than females (M = 8.75, SD = 4.15; t (2002) = 3.74, $p < 0.001$, d = 0.17), although this difference was small at less than one stressor (ΔM = 0.73). There was a significant association between sex and diagnostic status (χ^2 (2, $N = 2004$) = 35.99, $p < 0.001$) with females having higher rates of CPTSD than males (18.3% vs. 9.4%), but no differences in rates of PTSD (Females = 26.6%, Males = 25.0%).

There were significant, and moderate sized differences in the mean levels of war-related stressors across the regions of Ukraine (F (4, 1999) = 43.73, $p < 0.001$, $\eta^2 = 0.08$), with the lowest number in the western region (M = 7.58, SD = 4.43). Scheffe post-hoc tests indicated that the east (M = 11.51, SD = 4.09), north (M = 10.53, SD = 4.01), south (M = 8.77, SD = 3.90), and centre (M = 8.57, SD = 4.40) of Ukraine all had significantly higher levels of war-related stressors than the west ($p < 0.05$). The association between region and diagnostic status was also significant (χ^2 (8, $N = 2004$) = 16.18, $p = 0.040$) with the only significant residual indicating higher levels of CPTSD in eastern Ukraine (22.9%).

The multinomial logistic model of diagnostic status was statistically significant (χ^2 (20) = 197.12, $p < 0.001$), and the estimates are reported in Table 3. Controlling for sex, age, and region of Ukraine, increased exposure to war-related stressors was positively associated with PTSD and CPTSD, and there was evidence of a dose–response relationship from quintile 2 through to 5 with the odds ratios for PTSD increasing from 1.71 to 4.20, and from 2.33 to 8.12 for CPTSD.

5 | DISCUSSION

The primary aim of this study was to describe the type and frequency of war-related stressors, prevalence rates of ICD-11 PTSD and CPTSD, and how they related to one another in a large, nationwide sample of parents living in Ukraine approximately 6 months after Russia's full-scale invasion. The results indicated that that there were high levels of exposure to individual stressors with the vast majority of participants having an experience of threat to personal safety (e.g., heard air raid sirens, heard or saw bombing or artillery fire), financial security (e.g., experienced extreme financial hardship), and damage to their local environment (e.g., destruction of local infrastructure). These experiences did not happen in isolation, with exposure to multiple stressors being the norm; on average participants reported having experienced nine stressors. These stressors were associated, individually and cumulatively, with meeting diagnostic requirements for ICD-11

PTSD and CPTSD. There was a dose–response relationship between war-related stressors and the likelihood of meeting the diagnostic requirements for both disorders. Overall, these findings confirmed expectations of a strong and meaningful association between war-related stressors and clinically relevant posttraumatic distress.

Results showed that 40.5% of participants in our sample met criteria for ICD-11 PTSD or CPTSD, a figure higher than the average global point-prevalence of PTSD reported in a recent meta-analysis (26.5%),[5] and the figure of 21.0% from a 2016 study of Ukrainian IDPs.[7] This is likely explainable, in part, by the nature of our sample. The previously mentioned study of Ukrainian IDPs used random probability sampling methods to construct a sample representative of the entire population of Ukrainian IDPs. In this study, we were unable to use random sampling methods due to the ongoing conflict, and our target population was parents of children under 18. Consequently, the mean age of our sample was relatively young (37 years), and younger age has been consistently associated with higher rates of ICD-11 PTSD and CPTSD.[15] Thus, the age profile of our sample may have contributed to these finding. Furthermore, it is possible that parents of younger children (i.e., those under 18 years) may have been especially affected by this war. Caring for a child during a time of war is known to be a source of extreme stress,[13] and it may be that these individuals are especially vulnerable to posttraumatic stress reactions during this conflict.

A key finding was that significantly more people met criteria for ICD-11 PTSD (25.9%) than CPTSD (14.6%). With acknowledgment of the non-representative nature of our sample, this finding is important because it provides initial and tentative evidence that PTSD may be more common than CPTSD in civilian populations affected by war, especially during the early phase of war. Furthermore, it provides a basis to inform the humanitarian mental health and psychosocial support (MHPSS) response to this particular conflict. Our results suggest that existing evidence-based treatments for PTSD will be crucial[14] and given the number of people that are likely to be suffering from serious posttraumatic stress problems across Ukraine, delivering these treatments online,[15] or recruiting lay members of the public to deliver MHPSS interventions in the community,[16] will be especially important. Multiple psychological therapies have been shown to be effective in reducing PTSD symptoms in humanitarian settings including trauma-focused cognitive behavioural therapy (including narrative exposure therapy and brief behavioural activation), eye-movement desensitisation and reprocessing therapy, and interpersonal psychotherapy.[17] The number of people potentially experiencing complex posttraumatic stress problems should not be underestimated, and although clinical and MHPSS interventions for PTSD will likely be beneficial, these people may require greater supports. Skills Training in Affective and Interpersonal Regulation (STAIR) is a psychological intervention specifically designed to target the DSO symptoms of CPTSD and this therapy has been should to be effective when delivered online to war-exposed persons.[10] This approach may be a useful adjunct to standard PTSD interventions for those experiencing CPTSD.

A particularly noteworthy finding was that rates of CPTSD were highest in the east of Ukraine, which has been occupied and at war with Russia for 8 years. This implies that a protracted conflict throughout Ukraine may lead to higher rates of CPTSD. Careful monitoring of the population will be needed in the months and years ahead to understand how the psychological response to the trauma of this war evolves.

Although primarily focused on the association between war-related stressors and PTSD and CPTSD, we explored how these variables related to the age, sex, and living location of our participants. In the unadjusted analyses, we found no age differences in war-related experiences, or PTSD and CPTSD, and this may be due to the restricted age profile of our sample that was previously discussed. Males were exposed to a higher number of war-related stressors than females, but this effect was very small. Rates of CPTSD were, however, nearly twice as high among females as males. The empirical literature on sex differences in rates of ICD-11 PTSD and CPTSD finds that women consistently have higher levels of PTSD, but there is often no difference in CPTSD.[18] It seems, therefore, that the conditions of war in Ukraine have left women more vulnerable to complex posttraumatic stress reaction than men. Mental health responses to this conflict should therefore be cognizant of these potentially important sex differences. Finally, those living in western Ukraine had the fewest war-related stressful experiences (mean = 7.6) while those living in eastern Ukraine had the most (mean = 11.5). This general trend is not overly surprising given the Russian invasion of Ukraine was focused primarily on the east, south, and north of the country. However, our findings show that people in every region of Ukraine have been exposed to numerous stressful experiences during this war, and even in comparatively 'safe' regions of the country, people have been severely affected.

This study has several limitations which ought to be considered. First, and as previously discussed, the sample is not representative of the entire adult population of Ukraine meaning these findings are not entirely generalizable. It is likely that given the online model of contact and data collection that those panel members who lived

in areas that experienced the most damage to the infrastructure would be less likely to have received the invitation to take part. It should also be considered that those Ukrainians who were displaced or very seriously traumatised would be very unlikely to participate. Nevertheless, the sample was broad, diverse, and inclusive of people living throughout Ukraine. Second, we assessed ICD-11 PTSD and CPTSD symptoms in relation to people's experiences of the Russian war. We did not assess for trauma exposures prior to the war. Third, the list of war-related stressors used in this study was developed especially for this project, and although it is quite extensive, important events not considered by the study team may be missing. Finally, there is evidence that there has been a significant increase in sexual violence acts against women in eastern Ukraine, and the majority of these were committed by non-domestic perpetrators; the sexual violence survivors were less likely than physical violence survivors to have reported the incident prior to receiving care.[19] On the basis of this it may be expected that the rates of sexual violence may be under-reported.

Despite these limitations, this study is important in providing initial data on war-related experiences and posttraumatic stress reactions among adults living in Ukraine during the Russian war. We found that people of different sexes, ages, and living in every region of Ukraine were exposed to multiple war-related stressors. Furthermore, approximately 40% of people in our sample reported symptoms consistent with diagnostic status for PTSD or CPTSD, and exposure to war-related stressors, individually and especially cumulatively, was associated with meeting diagnostic requirements for both disorders. These findings indicate that posttraumatic stress reactions to the war will need to be a central focus of the humanitarian response effort, however, the provision of care to such a large and geographically dispersed population (within and outside Ukraine) will be a massive undertaking and will require developing innovative solutions to delivering mental health care.

AUTHOR CONTRIBUTIONS

Philip Hyland, Dmytro Martsenkovskyi, Thanos Karatzias and Mark Shevlin developed the study protocol. Philip Hyland, Mark Shevlin and Thanos Karatzias produced first draft, and Mark Shevlin and Philip Hyland completed the analyses. All authors provided critical revisions and approved the final version of the manuscript.

ACKNOWLEDGMENTS

We would like to thank Dr *Vitaliy* Ostropytskyy from Ulster University for his hard work in assisting with the translations of the psychological measures.

FUNDING STATEMENT

The authors received no financial support for the research, authorship, and/or publication of this article.

CONFLICT OF INTEREST

The authors report no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Mark Shevlin https://orcid.org/0000-0001-6262-5223
Menachem Ben-Ezra https://orcid.org/0000-0002-7890-2069
Eoin McElroy https://orcid.org/0000-0001-5466-8522
Enya Redican https://orcid.org/0000-0002-8863-2234
Maria Louison Vang https://orcid.org/0000-0001-7031-4070
Marylene Cloitre https://orcid.org/0000-0001-8029-1570
Dmytro Martsenkovskyi https://orcid.org/0000-0002-6030-2698
Philip Hyland https://orcid.org/0000-0002-9574-7128

REFERENCES

1. Newlines Institute. An independent legal analysis of the Russian federation's breaches of the genocide convention in Ukraine and the duty to prevent. https://newlinesinstitute.org/wp-content/uploads/English-Final-FINAL-Report-updatedcitations-1.pdf
2. https://data.unhcr.org/en/situations/ukraine
3. Morina N, Stam K, Pollet TV, Priebe S. Prevalence of depression and posttraumatic stress disorder in adult civilian survivors of war who stay in war-afflicted regions. A systematic review and meta-analysis of epidemiological studies. *J Affect Disord*. 2018;239:328-338. doi:10.1016/j.jad.2018.07.027
4. Steel Z, Chey T, Silove D, Marnane C, Bryant RA, van Ommeren M. Association of torture and other potentially traumatic events with mental health outcomes among populations exposed to mass conflict and displacement: a systematic review and meta-analysis. *JAMA*. 2009;302(5):537-549. doi:10.1001/jama.2009.1132
5. Hoppen TH, Priebe S, Vetter I, Morina N. Global burden of post-traumatic stress disorder and major depression in countries affected by war between 1989 and 2019: a systematic review and meta-analysis. *BMJ Glob Health*. 2021;6(7):e006303. doi:10.1136/bmjgh-2021-006303
6. Kessler RC, Aguilar-Gaxiola S, Alonso J, et al. Trauma and PTSD in the WHO world mental health surveys. *Eur J Psychotraumatol*. 2017;8(sup5):1353383. Published 2017 Oct 27. doi:10.1080/20008198.2017.1353383
7. Shevlin M, Hyland P, Vallières F, et al. A comparison of DSM-5 and ICD-11 PTSD prevalence, comorbidity and disability: an analysis of the Ukrainian internally displaced Person's

mental health survey. *Acta Psychiatr Scand*. 2018;137(2):138-147. doi:10.1111/acps.12840
8. Shevlin M, Hyland P, Karatzias T. The psychological consequences of the Ukraine war: what we know, and what we have to learn. *Acta Psychiatr Scand*. 2022;146(2):105-106. doi:10.1111/acps.13466
9. Karatzias T, Cloitre M. Treating adults with complex posttraumatic stress disorder using a modular approach to treatment: rationale, evidence, and directions for future research. *J Trauma Stress*. 2019;32(6):870-876. doi:10.1002/jts.22457
10. Cloitre M, Hyland P, Prins A, Shevlin M. The international trauma questionnaire (ITQ) measures reliable and clinically significant treatment-related change in PTSD and complex PTSD. *Eur J Psychotraumatol*. 2021;12(1):1930961. Published 2021 Jun 22. doi:10.1080/20008198.2021.1930961
11. Letica-Crepulja M, Stevanović A, Protuđer M, Grahovac Juretić T, Rebić J, Frančišković T. Complex PTSD among treatment-seeking veterans with PTSD. *Eur J Psychotraumatol*. 2020;11(1):1716593. Published 2020 Feb 26. doi:10.1080/20008198.2020.1716593
12. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. Routledge; 2013.
13. Eltanamly H, Leijten P, Jak S, Overbeek G. Parenting in times of war: a meta-analysis and qualitative synthesis of war exposure, parenting, and child adjustment. *Trauma Violence Abuse*. 2021;22(1):147-160. doi:10.1177/1524838019833001
14. Lewis C, Roberts NP, Andrew M, Starling E, Bisson JI. Psychological therapies for post-traumatic stress disorder in adults: systematic review and meta-analysis. *Eur J Psychotraumatol*. 2020;11(1):1729633. Published 2020 Mar 10. doi:10.1080/20008198.2020.1729633
15. Wild J, Warnock-Parkes E, Murray H, et al. Treating posttraumatic stress disorder remotely with cognitive therapy for PTSD. *Eur J Psychotraumatol*. 2020;11(1):1785818. Published 2020 Jul 14. doi:10.1080/20008198.2020.1785818
16. https://pscentre.org/what-we-do/movement-resource-room-mhpss-policy-and-resolution/the-mhpss-framework/
17. Purgato M, Gastaldon C, Papola D, van Ommeren M, Barbui C, Tol WA. Psychological therapies for the treatment of mental disorders in low- and middle-income countries a'ected by humanitarian crises. *Cochrane Database Syst Rev*. 2018, Issue 7. Art. No.: CD011849. doi:10.1002/14651858.CD011849.pub2
18. McGinty G, Fox R, Ben-Ezra M, et al. Sex and age differences in ICD-11 PTSD and complex PTSD: an analysis of four general population samples. *Eur Psychiatry*. 2021;64(1):e66. Published 2021 Oct 4. doi:10.1192/j.eurpsy.2021.2239
19. Capasso A, Skipalska H, Guttmacher S, Tikhonovsky NG, Navario P, Castillo TP. Factors associated with experiencing sexual violence among female gender-based violence survivors in conflict-afflicted eastern Ukraine. *BMC Public Health*. 2021;21(1):789. Published 2021 Apr 24. doi:10.1186/s12889-021-10830-9

How to cite this article: Karatzias T, Shevlin M, Ben-Ezra M, et al. War exposure, posttraumatic stress disorder, and complex posttraumatic stress disorder among parents living in Ukraine during the Russian war. *Acta Psychiatr Scand*. 2023;1-10. doi:10.1111/acps.13529