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Abstract

The 2022 Russian invasion of Ukraine created major challenges for this country. As yet however few studies have examined perceptions of national resilience during a period of conflict. We collected online data from across Ukraine during April 2022 (N=2000) assessing key demographics, national resilience, interpersonal trust, subjective trauma, income change, loss of relatives and coping with health risk. Findings suggested that national resilience could be assessed in this setting using a unifactorial scale. National resilience was high, particularly amongst the young, those with high levels of interpersonal trust, lived in Ukrainian-speaking areas, were not displaced, and felt able to 'bounce back' from health threats or hardships. Policy makers need to encourage interpersonal trust and provide appropriate support to older and less mobile populations and those in Russian-speaking areas to ensure continued resilience at a time of national threat.

1. Introduction

Despite an extensive literature on individual resilience, far less attention has been paid to national resilience. National resilience during times of trauma is best viewed as a process that includes community factors and the broader physical and social ecology [1,2]. High levels of resilience were reported by the Ukrainian people following the Russian annexation of the Crimean in 2014, and the larger Russian invasion in 2022 [3]. However, while formal and informal community activities – both military and civilian – proved highly effective following previous Russian incursions [4], national resilience may be undermined over time in situations of acute and continuing danger [5]. It is therefore important to assess such resilience during a time of enhanced and continuous national threat. In this paper we consider major correlates of national resilience approximately six weeks into the 2022 Russian invasion of Ukraine. At this time the Russian army had (unsuccessfully) attempted a major nationwide offensive, including a continued bombardment of the capital Kyiv.

Resilience is often broadly defined. In this paper we focus on the concept of a “resilience national social contract”, focusing on social cohesion and relations between state and society [6], as well as factors that indicate perceived sense of self-efficacy and psychological distress. In their model of national resilience, Kimhi & Eshel [5] propose two national-resilience promoting factors: an individual-level resource (sense of coherence) and community-level conjoint resilience, plus two inhibiting factors, individual stress appraisals and psychological distress. In this paper we provide an adapted version of their framework using measures situationally tailored to the conflict in Ukraine. Sense of Coherence focuses on the development of perceived health and well-being and we include in our study this perceived ability to “bounce back” after illness and trauma, recognising the importance of this self-efficacy as a protective factor against distress in those impacted by war [7]. At the community level the psychological literature increasingly recognises the dynamic combination of pre-existing characteristics and specific situational circumstances in understanding resilience. In our analysis we focus interpersonal

trust as an indicator of community processes. This reflects the horizontal cohesion (citizen-citizen relations) likely to develop as a result of the conflict [6, 8]. In line with evidence from Ukraine following Russian separatist actions in 2014 [4], as well as data collected as part of the World Values and European Values Surveys (2020) [3], we anticipated interpersonal trust to be positively associated with national resilience. However, we also recognise that while trust is an important immediate outcome of mass stressors, and in itself a means of expressing national resilience [9], this trust can be strained over time particularly when resources are limited [10]. We argue that it is therefore important to assess the contribution of this trust to resilience during a time of strained environmental conditions (i.e., where there are considerable strains on resources).

Kimhi & Eshel [5] also discuss two resilience-inhibiting factors in their paper, focusing on individual stress appraisals and distress. While in their formulation these inhibitors address traumatic events in general we contend that national resilience is best framed in the context of a particular threat. We therefore assess stress in relation to the war using a Subjective Traumatic perceptions scale that directly asks respondents about the trauma they are experiencing as a consequence of the war [11]. Finally, we assess the importance of historical factors and resources in shaping resilience [12]. In the Ukrainian situation there are potentially important divisions between regions, influenced partly by the major language groupings (Russian, primarily in the South and East of the country, and Ukrainian, spoken more widely elsewhere). While some research has suggested that those living in the South and East will show lower levels of national resilience [3], others have suggested that responses to events such as *Euromaiden*, and ethnic variations and political orientations within the country, have produced 'cross-cutting cleavages' leading to relatively few differences between Eastern and Western oblasts in terms of sense of belonging or pro-Russian identity [8, 13]. Considerable economic challenges confronted Ukraine even in the years preceding the 2022 Russian invasion and were exacerbated by the COVID-19 pandemic [14]. Hobfoll's "conservation of resources" theory [15,

16] focuses on the threat of loss of resources particularly in the context of wide-spread societal challenges such as those posed by war. Poverty is often part of a 'loss spiral' following such events, whereas the family can be a critical resource to help deal with stressors. In their Israeli research Eshel & Kimchi find national resilience to be associated positively with economic conditions [17]. In line with earlier research in Israel, we anticipate economic loss to be negatively associated with national resilience [5]. In our paper we also include loss of home (displacement), as well as the impact of loss of a family member due to the war, as (negative) predictors of national resilience. Six months after the 2022 invasion the overwhelming majority of Ukrainians saw themselves as citizens of Ukraine, but older people were more willing to see themselves as "Soviet people", [18]. In line with this we anticipated national resilience to be greater amongst the young. In their formulation of national resilience Eshel & Kimchi predicted that while men were higher on some components of national resilience they were lower than women in others [17]. Our data was also collected at a time when significant numbers of women were moving overseas, making simple predictions about sex differences about national resilience more difficult. We therefore did not make any predictions about sex variations in national resilience in our data.

2. Material and Methods

2.1. Participants.

We conducted an online survey of the Ukrainian population between 7-15th April 2022, employing the Ukrainian branch of an international survey company (Kantar). We used an existing panel aiming at obtaining representation of age, sex and region (before displacement) and worked in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for observational studies (STROBE). Each participant received a digital

invitation and provided electronic informed consent. The study was approved by the Institutional Review Board of the first author. Inclusion criteria were age (18-55) and fluency in Ukrainian.

We estimated a sample of 1975 participants to be required to detect low-medium effect sizes of 0.20, with 99% power and a 1% significance level (Gpower v. 3.1.9.4). Of 2,765 who clicked through to the survey, 176 (6.4%) were omitted for failing to meet inclusion criteria, a further 326 (11.8%) dropped out and 263 (9.5%) were removed to meet quotas for representative sampling. The final sample ($N= 2000$; M age 37.18, from 18-55, $SD = 9.23$) is described in Table 1.

2.2. Measures.

In addition to demographic information (sex, age and marital status (*yes/no*), region of origin, children (*yes/no*)) we asked respondents if they had lost a relative in the current war (*yes/no*) and had moved away from their home as a result of the conflict (either within or without Ukraine; *yes/no*). Income was in bands (from *no income* to *more than 25,000 UAH per month*) and measured both before the war and during the war to create an index of income change. We tested individual resilience and health risk through the single item “In the context of the war I tend to bounce back after illness or hardship (0 (*very unlikely*) to 4 (*very likely*))” and individual trauma via a five-item measure of Subjective Traumatic Outlook [12], where respondents were asked to consider the most stressful or traumatic event in their life *within the context of the current conflict with Russia* (1 (not at all) to 5 (*very much*, $\alpha=.80$). Interpersonal Trust was assessed using a modified version of the General Trust Scale [20], which focuses primarily on interpersonal trust (‘horizontal social cohesion’ [8]’ (e.g. *most people are trustworthy*, 5-point scales from (1) *strongly disagree* to (5) *strongly agree*). The original 8-item scale includes two items that assessed institutional trust towards two public institutions (the United Nations and NATO). To avoid potential overlap with the national resilience scale we removed these two items (revised $\alpha=.88$). National Resilience was measured using the 13-item National Resilience

scale [5] (three sub-scales: identification with country, solidarity and social justice, trust in public institutions, 6 point-scales from (1) *strongly disagree* to (6) *strongly agree*, $\alpha=.91$). Data can be accessed at osf.io/z5adg.

3. Results

3.1. *Preliminary analyses: the National Resilience scale*

To check the utility of our dependent variable in the context of the current conflict in Ukraine we conducted an exploratory factor analysis on the national resilience scale, using principal components analysis with varimax rotation and Kaiser Normalization and not limiting the number of factors. Two factors emerged explaining 52.5% and 12.8% of the variance, but an inspection of the scree plot and rotated component matrix indicated a single factor on which all items loaded $> .60$ with the exception of one item ("The expression 'man is wolf to man' is characteristic of my society'), which loaded $-.01$ to this first factor. Unsurprisingly this item had the only negative association with the scale overall ($r = -.24$). We deleted this one item and then treated the scale as a unidimensional measure (revised $\alpha=.94$). Factor analysis with the reduced scale produced a single factor explaining 60.63% variance with all items loading $.69$ or above.

3.2. Predictors of national resilience

Respondents reported high national resilience scores (in the revised scale $M = 4.62/6$), greater than the 3.90 reported by the scale's originators in their representative sample Israeli adults [5]. A linear regression on national resilience entered demographics (age, sex, marital status, children, original region - Russophone area or not (East or South (Russophone) vs. West, Kyiv, North and Center (predominately Ukrainian speaking)) movement from the area, loss of relatives, perceived ability to 'bounce-back' after illness or hardship, subjective traumatic

outlook, income change, and trust. This regression explained 26% of the variance. An a priori test revealed no multicollinearity. Tolerances ranged from 0.87 to 0.97 and the Variation Inflation Factor (VIF) ranged from 1.01 to 1.31. National resilience was positively associated with younger age, living in a Ukrainian speaking area (Kyiv, West, North or East), not moving from home, interpersonal trust, and confidence in ability to cope with illness and hardship during the war. There were no significant associations between sex, marital status, having a child, subjective trauma or loss of relatives and national resilience.

In our data the strongest correlate of national resilience was interpersonal trust. We conducted a sensitivity analysis repeating our linear regression but with interpersonal trust removed (Supplementary material 1). Although our model inevitably now predicted less variance ($R^2 = .06$) we note that the same predictors were still significant predictors of national resilience in the reduced model (i.e., age, language region, displacement, and bouncing back after illness/hardship).

4. Conclusion

Sustained national resilience is likely to be vital for ensuring national security and economic recovery in Ukraine [4]. Data collected in the year before the 2022 Russian invasion indicated a strong sense of Ukrainian identity and belonging across the country [8]. Other survey evidence collected during this war suggests an increase in pride and joy in the country, support for independence and optimism for the future compared to six months prior to the invasion [18]. Our findings on national resilience, collected shortly after the 2022 Russian invasion, support these findings by finding high levels of national resilience. Consistent with a model which proposes the resilience-promoting factor of social cohesion [5] our findings also illustrate the strong association between interpersonal trust and national resilience, consonant with other work relating horizontal social cohesion to sense of 'national belonging' in the months following the

2022 Russian invasion [8]. In line with this model individual resilience, expressed through the ability to bounce-back after illness or trauma, was positively associated with national resilience. Even before the second, wider Russian invasion of Ukraine in February 2022 attacks on the Donetsk and Luhansk provinces in 2014 had led to the mass displacement of peoples across Europe [19]. Consistent with conservation of resource theory [15,16], the loss of home (displacement) was a national resilience inhibiting factor. Our findings suggest that, when using the scale employed in our study and in the context of ongoing conflict, national resilience may be usefully viewed psychometrically as a unidimensional measure in future research.

Language spoken is an important marker of identity [8]. In our research, those from primarily Ukrainian-speaking regions reported higher levels of national resilience. National resilience was also greater amongst those with a belief in their ability to 'bounce back' if faced by illness or hardship, an association also reported in Israeli studies of national resilience during COVID-19 [20]. Younger respondents also reported greater resilience. Here we note data from the SCORE programme collected in Donetsk and Luhansk (2021) reported support for reforms in society were stronger amongst younger populations in Donetsk and Luhansk [21], with greater desire for a movement away from Soviet-style systems. Ukraine was already suffering from severe economic challenges prior to the 2022 Russian invasion. In our data, 41% reported income of less than 10 000 UAH/ month before the war, 75% reported this during the war. Nearly all our respondents reported either income loss (63%) or no change in income (34%) as a result of the conflict with Russia, but this was not associated with lower national resilience. This suggests that, in the early stages of a national conflict, economic losses may be accepted as part of a wider national struggle, with income loss framed in terms of the comparison between individuals during a time of particular hardship [22].

We recognize several limitations to our study. We used only a limited number of factors to assess national resilience and some of our measures were very short (e.g our assessment of 'bouncing back' after ill health or other hardships). Conceptually, we recognise that national

resilience is a multidimensional construct that ideally needs assessment beyond individual survey scores and should include a range of protective and promotive factors and processes [12]. As such it can be best seen as a process rooted in social interactions and the presence (or absence) of facilitative environmental factors [6], with scales such as the one used as the dependent variable in our current study most closely reflecting a sense of national allegiance rather than wider multisystemic resilience. Although challenging, national resilience should optimally be assessed through further measures of community engagement and community resources, which may involve the collection of a wide range of data, with strong rooting in a cultural context (such as in the six-phrase sequential mixed methods approach used by Ungar and colleagues in their analysis of two oil and gas dependent communities in Canada and South Africa [12]). This can be usefully complemented through the use of online panels (such as the Social Cohesion and Reconciliation Index for Ukraine) which include regional measures of sense of belonging, identity and trust in central and local institutions [23]. We also acknowledge that resilience as a concept should not simply be viewed as the overcoming of a specific challenge (the primary focus of the scale used in our study) but longer-term sustenance and societal development [12]. This is likely to include assessments of the role of non-state actors [6], not directly assessed in our measures but proven to be of considerable importance during resilience against the 2014 Russian incursions [4].

In our study we employed a cross-sectional design which lacked pre-measurement of the study variables. Resilient social contracts involve a dynamic process which include addressing core issues of conflict, deepening and broadening social cohesion, and developing increasingly fair and inclusive institutions [6]. Data collected in 2019 and 2021 from Donetsk and Luhansk indicate that horizontal social cohesion (which includes trusting relations between citizens) predicts vertical social cohesion (trust of authorities, and part of our assessment of National resilience), rather than vice versa [8]. Nevertheless national resilience may decrease over time in the face of a continuing threat [20], potentially weakening interpersonal

relationships. Obtaining a broad and truly random sample was particularly problematic given the circumstances of the study. Estimating sample size was restricted by collecting data during a time of intense conflict (during which electricity supply was often unpredictable). While internet penetration was estimated at around 90% in 2022 [24] internet usage was significantly associated with age, with penetration rates dropping substantially for those aged over 55. Our sample therefore excluded older respondents, who, despite suffering high levels of distress during Russian incursions [8, 25], may have been less likely to have moved between regions or left the country [19]. As a consequence of the 2022 invasion the use of Russian decreased [18]. Fluency in Ukrainian was one stipulation for participation in our survey, which may have biased our responses towards higher levels of Pluralistic Ukrainian identity and sense of belonging to the country [8]. Other large surveys during this war have also suggested participants with pro-Ukrainian sentiments may be more likely to participate in such surveys [22].

5. Conclusion

Ukraine has a strong sense of historical memory [26]. In the years preceding the Russian invasion, Udovyk (2017) claimed: "It is possible to describe this society in many ways, but not as weak" [cited in [4]]. The 2022 invasion has had a substantial impact on the environment and the health of the citizens of Ukraine [27]. Rebuilding this country, both physically but also psychologically, is likely to require a 'whole of society' approach [3], recognising the nuances of sentiments both between and within regions and tailoring interventions to the most vulnerable populations, many of whom will have been displaced [27]. Data collected from a telephone survey of 1,025 respondents across Ukraine in September 2022 showed that, while 71% of Ukrainians considered themselves to be happy, this figure declined steadily with age (from 79% amongst those aged 18-29 to 57% of those aged over 70)[22]. Our evidence suggests specific help may be needed for older people, and those with less ability to bounce back from ill health or other challenges. Tolerance towards others and encouraging active citizenry are likely to be

important for encouraging resilience [8, 28], with local institutions important in rebuilding intergroup relations following the war [8]. Such institutions need to make sure that their actions are protective of human rights and are socially tolerant during times of duress [8]. This may require initiatives that encourage positive activities rather than the more violent protests or actions that can emerge subsequent to conflict [8]. Interventions to enhance relations between those identifying as Russian and Ukrainians within Ukraine should encourage contact social proximity but may need to do so in a way that ensures wider institutional support for such interactions [29, 30]. Such contact also needs to recognise the likely complex legacy of the conflict at both individual and community level [31]. Thus ensuring continued national resilience is also likely to necessitate the full integration of civic service participation into broader national state authorities, with different solutions for those in areas of varied cultural and language background.

Declaration of Interest: The authors declare no conflicts of interest.

Ethical standards: The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. All procedures involving human subjects/patients were approved by the second author's IRB No. AU-SOC-YHR-20220311

Authors' contribution: Robin Goodwin: Analysed data and wrote the paper. Yaira Hamama-Raz: Performed the research and wrote the paper. Elezar Lesham: Performed the research and wrote the paper. Menachem Ben-Ezra: Designed and performed the research and wrote the paper. All authors reviewed the manuscript.

Data availability: The dataset can be accessed through osf.io/z5adg

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Table 1: Participant characteristics

	Frequency	Percent	Mean	SD
Age			37.18	9.23
Sex (Female)	1026	51.3		
Region of origin				
- East	569	28.5		
-West	358	17.9		
-Kyiv	483	24.2		
-North	160	8.0		
-Centre	217	10.8		
-South	213	10.6		
Married or cohabiting (yes)		66.6		
Have children (yes)	1047	52.4		
Education (highest level)				
-Secondary	497	24.8		
-University (completed)	1237	61.9		
-Postgraduate	83	4.2		
Displacement due to war				
-Not moved	1455	72.8		
-Moved within Ukraine	389	19.4		
-Moved overseas	156	7.8		
Relatives died in war (yes)	115	6.6		
Income now (1 U\$ ~ 36 UAH)				
Up to 5000 UAH	624	38.5		
5-7999 UAH	300	18.5		
8-9999UAH	193	11.9		
10-11999 UAH	149	9.2		
12-14999 UAH	151	9.3		
15000-19999 UAH	89	5.5		
20-25000 UAH	47	2.9		
More than 25000 UAH	69	4.2		
Trust in others (total)			20.78	4.47
Bounce back after illness/hardship			2.41	.96
Subjective traumatic outcome (total)			13.40	4.24
National Resilience (total)			55.38	11.18

Table 2: Linear regression: Associations between National Resilience and Demographics and War Experiences.

Variable	Unstandardized B	SE	Standardized Beta	t	P
Constant	2.096	.193		10.858	.001
Age	-.005	.002	-.051	-2.117	.034
Sex	.059	.046	.031	1.296	.195
Married (yes)	.006	.052	.003	.121	.904
Child (yes)	.024	.048	.013	.504	.614
Ukrainian speaking region (yes)	.226	.044	.116	5.092	.001
Displaced (yes)	-.231	.049	-.121	-4.681	.001
Relatives died (yes)	-.089	.088	-.023	-1.010	.313
Bounce back after illness or trauma	.094	.023	.095	4.059	.001
Trust in others	.096	.005	.450	19.438	.001
Subjective traumatic outcome	.007	.006	.031	1.195	.232
Income change (positive)	-.019	.012	-.038	-1.618	.106

R² adjusted = .26

Supplementary material

S1: Linear regression: Associations between National Resilience and Demographics and War Experiences.

Variable	Unstandardized B	SE	Standardized Beta	t	P
<i>Demographics</i>					
Constant	3.94	.19		20.81	.001
Age	-.01	.00	-.07	-2.68	.007
Sex	.07	.05	.04	1.31	.19
Married (yes)	.02	.06	.01	.36	.72
Child (yes)	.09	.05	.05	1.67	.10
Ukrainian speaking region(yes)	.24	.05	.12	4.77	.001
Displaced (yes)	-.21	.06	-.11	-3.70	.001
Relatives died (yes)	-.06	.01	-.02	-.61	.54
Bounce back	.16	.03	.16	6.26	.001
Subjective traumatic outlook	.01	.01	.03	1.13	.26
Income change (positive)	-.01	.01	-.03	-1.12	.26