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**The Ukraine-Russia war: A symptoms network of complex posttraumatic stress disorder during continuous traumatic stress**

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## Abstract

**Objective:** This study is aimed to test the symptoms network of ICD-11 Complex Post-traumatic Stress Disorder (CPTSD) symptoms, using data collected from Ukrainian civilians during the 2022 Russia-Ukraine war. Findings can inform our understanding of the stress response in individuals exposed to continuous trauma and give insight into the nature of CPTSD during war.

**Methods:** A network analysis was conducted on CPTSD symptoms as assessed by the International Trauma Questionnaire using data from a nationally representative sample of 2000 Ukrainians.

**Results:** While Post-traumatic Stress Disorder (PTSD) and Disturbances in Self Organization (DSO) clusters did not enmesh, several communities within these clusters were merged. Results highlight that in terms of strength centrality, emotional dysregulation (emotional numbing) and a heightened sense of threat were most prominent.

**Conclusion:** The results confirm the ICD-11 structure of CPTSD but suggest that continuous traumatic stress manifests in more condensed associations between CPTSD symptoms and that emotional regulation may play a vital role in activating the CPTSD network. War-exposed populations could be provided with scalable, brief self-help materials focused on fostering emotion regulation and sense of threat.

**Keywords:** Symptoms network analysis; CPTSD; ICD-11; Continuous traumatic stress

**Clinical Impact Statement:** This study presents a network analysis of CPTSD symptoms among Ukrainian civilians during the Russia-Ukraine war. It thus provides a unique opportunity to study the stress-response during ongoing exposure to threat. The findings suggest a differentiation between CPTSD symptoms in the context of

continuous traumatic stress vs. past trauma past (i.e., posttraumatic stress). Given the high prevalence of PTSD and CPTSD symptoms in the peritraumatic context, mental health services in Ukraine should routinely screen for stress-response syndromes in the population. Clinicians could –specifically focus on psychoeducation and training to foster emotion regulation in situations of continuous traumatic stress.

### **The Ukraine-Russia war: A symptoms network of complex post-traumatic stress disorder during continuous traumatic stress**

Ukraine has been defending its borders against Russia since 2014 and this ongoing conflict has led to a range of mental health problems among the population (Singh et al., 2021). The long-term effects of this threat likely predispose Ukrainian civilians to adverse psychological outcomes during the current violent escalation of the conflict (Bryant et al., 2022). Since February 24, 2022, the Ukrainian population has been facing an extensive military invasion, death, destruction, and displacement, and as we write the war continues to destroy the economic, social and psychological foundations of civilians' lives (Shevlin et al., 2022). The Ukrainian mental health system is facing considerable pressure due to the growing number of civilians affected by attacks in densely populated areas. This war is acute, ongoing, highly traumatic and triggering stress-response syndromes.

In the ICD-11 working group dedicated to disorders specifically associated with stress, a new diagnostic category had been discussed: continuous trauma disorder (Maercker & Augsburger, 2019). In many countries and regions, such as in Ukraine, war cannot be characterized as a traumatic event with a clear end but is best described as a constant and ongoing threat for life. This type of trauma includes ongoing intergroup conflicts and prolonged civil wars (e.g., Kira, 2022), such as the Syrian civil war or the Israeli-Palestinian conflict (e.g., Pat-Horenczyk & Schiff, 2019). From

a clinical perspective, it is clear that there is a need for targeted practice suggestions. However, the incorporation of an entirely novel diagnosis for the context of continuous trauma was rejected due to a lack of empirical evidence. Therefore, the present investigation drew on the available ICD-11 frameworks for describing psychopathology in the wake of war trauma.

The ICD-11 (WHO, 2018) uses a hierarchical approach to describe disorders following exposure to a traumatic stressor, distinguishing between Post-traumatic Stress Disorder (PTSD) and Complex PTSD (CPTSD). A diagnosis of PTSD requires symptoms organized in three clusters: re-experiencing the trauma in the here and now, avoidance of traumatic reminders, and a persistent sense of current threat. CPTSD comprises the essential PTSD symptoms plus additional Disturbances in Self Organization (DSO) symptoms, which fall into three clusters: affective dysregulation, negative self-concept, and disturbances in relationships. A person may only be diagnosed with PTSD or CPTSD, but not both.

CPTSD is typically triggered by exposure to an event or series of events of an extremely threatening or horrific nature, most commonly prolonged or repetitive events of an interpersonal nature, from which escape is difficult or impossible (Maercker et al., 2022; WHO, 2018). However, chronic or repeated trauma is a risk factor rather than a prerequisite for a CPTSD diagnosis (Maercker et al., 2022; Stein et al., 2020), and there is evidence that CPTSD may also develop after non-interpersonal traumatic events (Brewin, 2020; Cloitre et al., 2013; Møller et al., 2020). In the absence of a disorder specifically conceptualized to represent the psychological response to continuous traumatic stress, the current study aimed to explore the network of associations between PTSD and DSO symptoms during ongoing war trauma. Continuous trauma has been understudied and it is unclear which type of

ICD-11 disorder is more likely associated with it: CPTSD because of the chronicity of the exposure or PTSD because of the continuous fear for life.

From a pathogenesis point of view, traumatic experiences can trigger multiple PTSD and DSO symptoms, which in turn may interact with each other and lead to additional symptoms until a self-perpetuating symptoms network emerges (Fried et al., 2018; Fried & Cramer, 2017). Network analysis allows visualization of the connections, magnitude, clustering, and centrality of symptoms. The network approach thus provides the opportunity to visually as well as statistically examine the associations between individual PTSD and DSO symptoms in the acute phase of adjustment to trauma. This may shed light on the clinical manifestation of continuous traumatic stress in the peri-traumatic stage and may have important clinical implications. It has been argued that targeting the central symptom(s) has the potential to enhance treatment response rapidity as this would also lower the other symptoms in the network (Fried & Cramer, 2017; Knefel et al., 2019).

The network approach has been previously used among individuals who were exposed to trauma during their lifetime in order to examine the structure of PTSD (Armour et al., 2017) and CPTSD (Knefel et al., 2019). Findings supported the distinct but correlated nature of PTSD and DSO symptoms and most studies showed that a 'sense of worthlessness' of the DSO dimension seems to be most central in CPTSD networks (Knefel et al., 2020; Levin et al., 2021). Despite the attention that PTSD and, to a lower extent, also CPTSD have received, little is known regarding the connectedness of symptoms in populations who suffer from continuous traumatic stress, such as political violence. One pioneering study that provided initial insight into the acute stage of the stress response was conducted among Israeli adult civilians living under ongoing missiles threat during an active period of exposure to rocket fire

(Greene et al., 2018). Flashbacks followed by emotional reactivity were the two most central symptoms in this network. Interestingly, a study that focused on acute stress disorder during the initial COVID-19 outbreak conducted in Israel, Switzerland, and China showed that the central symptoms in all networks were from the hyperarousal cluster (i.e. "feeling jumpy") (Tsur et al., 2021). However, no ICD-11 CPTSD network analyses were done in the acute or ongoing phase of trauma, especially not war.

In a situation of continuous traumatic stress, symptoms may associate differently and different symptoms may be central compared to the post-traumatic period. We therefore present the first study of ICD-11 CPTSD symptoms networks, using data collected among Ukrainian civilians during the Russia-Ukraine war. The study aimed to produce an exploratory empirical conceptualization of CPTSD symptoms during continuous trauma. Comparisons with post-trauma networks available in the literature may shed light on the particularities of the stress response during continuous trauma. Specifically, we aimed to visualize the connections, magnitude, and clustering, as well as to reveal (1) the most central symptom in the two networks, and (2) the bridging symptoms that connect between clusters.

## **Methods**

### **Participants and Procedure**

This study was conducted following the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for observational studies (STROBE). A probable quota sampling approach aimed for a nationally representative sample in terms of age, sex and region in Ukraine before the Russian invasion. A Ukrainian survey company (Kantar) conducted the survey using an established online panel in Ukraine between April 7-15 2022 (n = 2000). The war had started two months before the data

collection in east Ukraine, where people had previously suffered from years of threat by Russia. In the beginning of the data collection (from 8 April 2022) heavy fighting also started in the [south](#) of [Ukraine](#). Inclusion criteria included Ukrainian citizenship, age over 18 and proficiency in the Ukrainian language which is the official and national language. The dataset can be accessed through [osf.io/z5adg](https://osf.io/z5adg). Each participant received a digital invitation and provided electronic informed consent. The study was approved by the Institutional Review Board of MBE and complied with the Helsinki declaration regarding human experimentation.

### **Measurements**

Alongside demographics, we measured war related factors using the following questions: 1) "Do you have relatives who were wounded during the 2022 Russian invasion of Ukraine?"; 2) "Do you have relatives who died during the 2022 Russian invasion of Ukraine?"; and 3) "Do you have relatives who left Ukraine?". Each question was rated in the following categories `1` No, `2` Don't know, `3` Yes. Displacement (refugee) status was assessed by asking "Where is your current location following the 2022 Russian invasion of Ukraine?" with the following response categories: `1` Not displaced, `2` Displaced within Ukraine due to the Russian invasion, `3` Displaced outside Ukraine due to the Russian invasion (became a refugee). Financial status and income were assessed referring to both before and after the war. Region of residence was recorded during the data collection for ensuring representativeness of the data (south, east, west, kyiv, north, center).

*PTSD and CPTSD* symptoms were measured using the International Trauma Questionnaire (ITQ) (Cloitre et al., 2018). The ITQ includes six PTSD items and six DSO items. The PTSD symptom clusters of re-experiencing (RE), avoidance (AV),



and sense of threat (SoT) are measured using two items each. Three items measure functional impairment associated with these symptoms. The DSO symptom clusters of affective dysregulation (AD), negative self-concept (NSC), and disturbances in relationships (DiR) are measured by two items each. Each one of the conditions is also assessed by three items addressing functional impairment. The internal consistency estimates for the PTSD ( $\alpha = 0.86$ ), the DSO ( $\alpha = .88$ ) and for the CPTSD ( $\alpha = 0.90$ ) symptoms in this study were excellent. All items were answered using a five-point Likert scale ranging from 'Not at all' (0) to 'Extremely' (4). Following standard practice in trauma research, scores  $\geq 2$  ('Moderately') were used to indicate the presence of a symptom (Ben-Ezra et al., 2018; Karatzias et al., 2017). Diagnosis criteria of probable PTSD and CPTSD endorsement algorithm can be found in Cloitre et al. (2018) (Cloitre et al., 2018).

## **Statistical Methods**

We first present demographic information as well as war related and descriptive information on psychopathology. Then, we conducted a network analysis for CPTSD symptoms in the Ukrainian general population. In order to strengthen our analysis, we supplemented network comparisons between groups of high exposure: participants from the East and South vs. other regions, as well as between East only vs. other regions. Results of these comparisons are presented in full length in the supplementary materials.

**Regularized partial correlation networks:** We estimated Gaussian Graphical Models (GGM) for partial pairwise association parameters between all nodes. In the GGM, edges can be understood as conditional relations among symptoms. Symptoms that are not connected are conditionally independent. We controlled for false positives

by using the graphical least absolute shrinkage and selection operator (Graphical LASSO) (Knefel et al., 2019), which sets very small edges to zero (implemented in *qgraph*). This procedure employs a regularization technique that conservatively identifies only relevant edges (Van Borkulo et al., 2014). This visualizes sparse networks using part correlations and considered the ordinal scale of the questionnaire (Epskamp & Fried, 2018); further information regarding network estimation and stability and accuracy can be found in supplementary materials.

**Community detection and bridge symptoms.** The *springlass* algorithm was used to identify communities of items in the network. This method divides networks into groups, so that each community contains a number of densely connected clusters of nodes. We used the *bridge* function of the *networktools* package (Jones, 2018) to identify bridge symptoms between the communities in each network. Bridge strength is defined as the sum of the absolute values of all edges that exist between a node and all nodes that are not in the same cluster. Examination of the bridge symptom between the subsets revealed in a community analysis is imperative to the understanding of the underlying mechanisms in the overall network.

**Network stability:** We examined the stability of the individually estimated networks, estimating 95% confidence intervals around edge weights and a correlation-stability coefficient for strength centrality. More information regarding the network analysis techniques can be found in supplementary materials (data analysis section), and in a tutorial (Epskamp et al., 2018).

## Results

### Demographics descriptive information

The Ukrainian sample reported the following information that is described in Table 1. The sample comprised of 51.3% women and the mean age was 37.18 years with 9.23 standard deviations. The regional distribution was similar to the distribution in the Ukraine. The majority of participants were in relationship (66.6%), and most had no children (47.6%) or had 1-2 children 49.2%. The majority of participants had completed university education (61.9%).

**War related descriptive information.** As opposed to the times before the war in which 53.7% had an average income and 22.3% had a higher-than-average income, during the war, only 23.2% reported an average income and 6.5% reported a higher-than-average income. In the same vein, the rates of participants that reported they cannot afford buying food changed between before (2%) and during (10%) the war. Similarly, participants that could afford buying food but could not buy cloths changed between before (7.4%) and during the war (39.3%). Finally, before the war, 17.2% earned up to 5000 UAH while this rate changed to 50.1% during the war. During the war the self-rated health of the participants was mainly poor (10.3%) and fair (54.5%) while 30.8% and 4.4% only reported good and excellent health, respectively. Of the entire sample, 27.2% were displaced from their homes, 6.3% still lived in the Ukraine and had a refugee status, 6.4% had left the Ukraine and did not have refugee status, with 1.4% had left the Ukraine and had refugee status. The rates of probable PTSD (32.5%, n=616) and CPTSD (42.6%, n=807) were substantial.

### **Network estimation of CPTSD in the Ukrainian general population**

The estimated CPTSD network is shown in Figure 1, demonstrating high connectivity of symptoms (50 of 66 (76%) possible edges were nonzero).

**Community analysis and visual inspection.** Four communities were revealed, in which the dimensions of reexperiencing and avoidance cluster together into a single community (items 1-4), and the items of sense of threat stand alone as a second community. Regarding the DSO symptoms, items of affective dysregulation cluster together (AD: long time upset and emotional numbing), while the other symptoms of negative self-concept (NSC: feelings of failure and sense of worthlessness) and difficulties in relationships (DiRi: Feeling distant or cut off from others and difficulties feeling close to others) cluster together into a single community. Networks with communities are presented in supplementary materials (Fig SM1). With regard to the supplementary comparisons of networks among participants with different levels of exposure, the network structure was similar between participants from east Ukraine vs. other regions, as well as between participants from east and south Ukraine vs. other regions (see supplementary materials-SM6-7).

**Network stability.** To confirm the visual similarity of network, we used Spearman correlations of edge-weights for all combinations of networks (see in supplementary materials). The accuracy of the edges (0.75 CI 95% 0.672, 1) and the centrality strength index (0.75 CI 95% 0.672, 1) were large and satisfactory (see supplementary material text, results: Network accuracy and stability, and Fig. SM2-SM5). Likewise, the accuracy of the edges were satisfactory in the sub-network of the east-south vs. other regions, and in the subnetworks of the east vs. other regions (see supplementary materials-SM6-7 text and results).

**Network inference.** Standardized strength centrality and bridge centrality estimates are presented in Figure 2. Two symptoms representing both PTSD (Exaggerated startle response: SoT2) and DSO (Emotional numbing: AD2) were most central. The DSO symptoms of emotional numbing (AD2) had highest bridge centrality.

Supplementary materials show similar findings (i.e., no differences in centrality) between east and other regions, as well as no differences between east-south vs. other regions).

## **Discussion**

The current study provided the first ICD-11 CPTSD symptoms network analyses conducted during continuous war traumatic stress in Ukraine. The CPTSD network showed several differences compared to previous studies, which examined populations who had experienced trauma at some point during their lifetime, years or even decades prior to assessment (Gilbar, 2020; Knefel et al., 2016, 2019). While PTSD and DSO clusters did not enmesh, several communities within these clusters were merged, suggesting that continuous trauma manifests in intense associations between symptoms of different clusters. Two symptoms were most central in the CPTSD network, one symptom from among the PTSD symptoms ('exaggerated startle response') and one symptom from among the DSO symptoms ('emotional numbing'). Finally, 'emotional numbing' had the highest bridge centrality in the network, identifying it as a relevant catalyst agent of psychopathology. These findings were replicated in different sub-samples that varied by the level of exposure.

### **Probable prevalence rates**

The rates of probable PTSD (32.5%, n=616) and CPTSD (42.6%, n=807) were substantially higher than previously documented in Ukraine. Before the current invasion, the prevalence of probable ICD-11-based PTSD among internally displaced Ukrainians amounted to 21% (Shevlin et al., 2018) while during the present war, probable DSM-5 PTSD rates of 37.3% were reported (Niewiadomska et al., 2022). However, high rates of PTSD in a situation of ongoing traumatic stress are not

surprising and might not represent the same level of pathology as in the post-traumatic context. If the threat is ongoing, a conceptualization of traumatic stress that assumes trauma exposure to be in the past and finite may have limited applicability (Eagle & Kaminer, 2013). For example, enduring traumatic stress symptoms, such as hyperarousal, cannot be considered as maladaptive "false alarms" conditioned by previous experiences but rather as a realistic representation (Stevens et al., 2013).

Similarly, the notably high CPTSD rates should be interpreted cautiously. The current results show that continuous traumatic stress indeed manifests in the areas of both PTSD and DSO symptoms. However, longitudinal research is needed to clarify whether these peritraumatic changes persist over time and beyond the ending of the stressor. For a diagnosis of CPTSD, DSO have to be both severe and persistent, which is difficult to evaluate in the early stages of the stress response during continuous trauma. Without taking the temporal development of symptoms into account, using a screening instrument designed for the post-traumatic context, such as the ITQ, may result in an overestimation of CPTSD rates among individuals with ongoing exposure. Psychotraumatology should direct future theoretical and empirical efforts at developing frameworks that capture the psychological impact of ongoing, acute exposure to trauma (Stevens et al., 2013). However, given the high endorsement rates in the current study, it seems that the DSO symptoms tap on this kind of experience. The following discussion of the CPTSD network structure may provide further valuable information on the complexity of the psychological response to continuous trauma exposure.

### **CPTSD Network**

Using the available ICD-11 frameworks, the current study explored the associations between PTSD and DSO symptoms during the initial stress response to the war in Ukraine. The community analysis replicated the theoretical structure of CPTSD in ICD-11 so far that PTSD and DSO did not enmesh. However, contrary to the definitions in ICD-11 (WHO, 2018) and previous literature (Knefel et al., 2019), four instead of six communities emerged. Concerning PTSD symptoms, reexperiencing and avoidance merged into one community, and a sense of threat remained a separate community. Concerning DSO, negative self-concept and difficulties in relationships merged into one community, while affective dysregulation remained separate.

The merging of reexperiencing and avoidance symptoms into one community suggests strong links between these symptoms during continuous trauma. There is an abundant theoretical and empirical base for this mechanism in the literature on post-traumatic stress. In his phase model of stress response syndromes, Horowitz (1986) (Horowitz, 1986) described the initial reaction to trauma as a period in which individuals bidirectionally alternate between trauma-related avoidance and intrusions. The traumatic experience is incompatible with existing schemata and, therefore, the new information is suppressed. Whenever this cognitive control fails, the trauma is intrusively reexperienced and leads to strong emotional distress and renewed avoidance efforts. Furthermore, there is empirical evidence that avoidance of an internal stimulus, such as a thought or image, leads to a "rebound" effect, whereby the unwanted stimulus occurs with greater frequency and intensity (Nixon et al., 2009; Wisco et al., 2013). Since the war in Ukraine had been ongoing during data collection, trauma related cues were very much present in the population's daily lives and likely to fuel the cycle of avoidance and intrusion symptoms.

The current study found that affective dysregulation, including hypoactivation and hyperactivation of emotions, represented one community. Interestingly, the symptoms of affective dysregulation were found to be less connected in a network study among internally displaced Ukrainians before the current Russian invasion. Out of all six clusters of CPTSD, it was the only cluster that did not merge into a unified entity (McElroy et al., 2019). Similarly, another study found that the two regulation symptoms are not represented by a single latent variable (Ben-Ezra et al., 2018). In the post-traumatic stage, people seem to use only one of the two strategies. Contrarily, the present results suggest that in the peri-traumatic stage both types of affective regulation may manifest, which could point towards an association between these emotional regulation strategies. Higher hyperactivation, which manifests in emotional outbursts, may be followed by emotional numbing, and perhaps also vice versa. The interplay should be explicitly explored for the stress response to continuous trauma.

The final community of interest included symptoms of both negative self-concept and relationship difficulties. In other words, perceptions of one's worthlessness and difficulties being close to other people were highly intertwined in this peritraumatic stage. This association echoes previous findings summarized in a meta-analysis based on longitudinal data only (Harris & Orth, 2020). Low self-worth was associated over time with relationship conflict, dysfunctional relationships, and patterns of disapproving relationships. Theories that explain this association include the risk regulation model (Murray et al., 2006), which proposes that internal beliefs about one's worthiness are projected onto beliefs about the relationship. Low perceptions of worthiness lead individuals to distance themselves from others to be less vulnerable in case of rejection (Harris & Orth, 2020). In the current war, 20% of those individuals who were displaced reported feelings of worthlessness (Deineko, 2022). This may be



related to contextual factors such as access to adequate housing, basic services, socioeconomic opportunities and community support (Tay, 2022). It should also be noted that the positive feedback loop between relationships and self-esteem implies that there may be a vicious cycle and emphasizes the importance of clinical interventions that can offset this process.

### **Centrality indices (strength and bridge)**

Emotional numbing (of the DSO cluster), and a heightened startle response (of the PTSD cluster) showed the highest strength centrality, while emotional numbing had also the highest bridge centrality in our study. In other words, emotional numbing and an exaggerated startle response had the strongest connections with all other symptoms and emotional numbing even further explained the connectivity between the CPTSD symptom groups.

Very few network studies focused on individuals exposed to continuous traumatic stress. One such network analysis explored PTSD symptoms among civilians during armed conflict in Israel (Greene et al., 2018), and the second on acute stress disorder symptoms during the COVID-19 pandemic in China, Israel and Switzerland (Tsur et al., 2021). Both studies found hyperarousal to be most central, which is in line with our findings. Scrutinizing the literature showed only one comparable network of CPTSD. This study was conducted among internally displaced Ukrainians before the current war and found similar results, according to which both types of avoidance (particularly external but also internal) and both alertness and exaggerated startle response were most central (McElroy et al., 2019). In summary, the literature, which explored different stress response syndromes, reflects that avoidance, hyperarousal and an ongoing sense of threat are important players in the peri-traumatic response.

The present CPTSD network seems to be sustained and activated by symptoms on the emotional regulation spectrum: an exaggerated startle response, located at the higher end of the emotional response spectrum and emotional numbing, located at the lower end of the emotional response spectrum. The latter may reflect the use of avoidant coping strategies in situations of continuous traumatic stress when trauma reminders are present at all times (Stevens et al., 2013). In the long term, the implications of emotional dysregulation are known to be severe, for example challenging the sympathetic system through inflammatory processes and other negative health outcomes such as cardiovascular disease, arthritis, type II diabetes, osteoporosis, and certain cancers (Crowell et al., 2015).

The study has several limitations and strengths. First, the data collected relied on a self-report measure rather than clinician-administered interviews, which may have biased the reports. Second, the use of the ITQ for measuring CPTSD was designed to be used after trauma ended and not for continuous traumatic stress. It may not cover all symptoms that are relevant to represent the stress response to continuous trauma. Third, no measurement of participants before the current war existed and thus it is unknown how this population was affected by the previous conflict. Fourth, the centrality measures may be high because the central symptoms strongly influence the rest of the system, but also because they are the outcome of these other symptoms. Given the cross-sectional design of the study, no causal associations could be discovered based on the present analyses and longitudinal intervention studies are needed to validate the clinical utility of the central symptoms (i.e., exaggerated startle response, emotional numbing). A major strength of the study was that the central symptoms were highly similar when splitting the sample into subgroups with different levels of exposure (longer exposure [East] and shorter-immediate exposure [South])

vs. other regions that were less heavily targeted). This consistency emphasizes the solidity of the findings.

It is a political and societal necessity to acknowledge the suffering of groups exposed to continuous trauma and to reveal the symptom structure of their stress response. Thus, discussions about the criteria to gain access to treatment or compensation must continue (Maercker & Augsburger, 2017). The network of CPTSD includes a wide spectrum of symptoms (PTSD and DSO), which seem to represent at least part of the stress response to continuous trauma, even though it remains to be explored whether DSO persist over time. The community analysis further suggested that there are vicious cycles between avoidance and intrusion symptoms, and between emotional hyper- and hypoactivation. These two cycles represent similar alternations between states of confrontation/activation and avoidance/shut-down. Fluctuations between these states may be particularly representative of the stress response to continuous trauma. The lack of equilibrium reflects the fact that people affected by war have to bear great uncertainty, concerning the safety of their lives, goods, and loved ones.

The unpredictability of life under continuous threat can result in instabilities in the emotional system, and thus our results point towards the potential value of fostering emotion regulation strategies in situations of continuous traumatic stress. Individuals could be provided access to scalable, brief self-help materials that provide psychoeducation and training in emotion regulation. Such interventions could capitalize on validated therapeutic approaches that address CPTSD symptoms, such as "Skills Training for Affective and Interpersonal Regulation" (STAIR) (Cloitre et al., 2020).

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Table 1. Basic demographics and war-related background variables

	(n = 2000)	
Age, Mean (SD)	37.18 (9.23), 18-55	
Sex, women, n (%)	1026 (51.3)	
<b>Marital status</b>		
In relationship, n (%)	1333 (66.6)	
divorced/separated/widowed, n (%)	227 (11.3)	
Marital status, never married, n (%)	440 (22)	
<b>Number of children up to 16 years</b>		
0 children	953 (47.6)	
1-2 children	984 (49.2)	
3+children	63 (3.2)	
<b>Monthly income</b>	<b>Before the war</b>	<b>During the war</b>
Had no income	65 (3.2)	387 (19.3)
Low	131 (6.5)	519 (25.9)
Below average	285 (14.3)	503 (25.2)
Average	1073 (53.7)	463 (23.2)
Higher than average	365 (18.2)	95 (4.8)
High and very high	80 (4.1%)	33 (1.7)
<b>Financial status</b>	<b>Before the war</b>	<b>During the war</b>
Not enough even for food	39 (2)	202 (10%)
Enough for food but it is difficult to buy clothes	148 (7.4)	787 (39.3)
Enough to buy food and clothes, but not for household appliances	930 (46.5)	748 (37.4)
Enough to buy household appliances but not to buy a car	692 (34.6)	210 (10.5)
Can afford almost everything	190 (9.5)	54 (2.7)
<b>Income</b>	<b>Before the war</b>	<b>During the war</b>
Up to 5000 UAH	343 (17.2)	1001 (50.1)
5000-7999 UAH	266 (13.3)	300 (15)
8000-11999 UAH	436 (21.8)	342 (17.2)
12000-14999 UAH	298 (14.9)	151 (7.5)
15000-19999 UAH	281 (14)	89 (4.4)
20000-24999 UAH	166 (8.3)	47 (2.4)
More than 25000 UAH	210 (10.5)	69 (3.4)
<b>Region</b>		
East, n (%)	569 (28.5)	
West	358 (17.9)	
Kyiv	483 (24.2)	
North	160 (8)	
Centre	217 (10.8)	
South	213 (10.6)	
<b>Education, n (%)</b>		
Secondary complete/technical college	178 (8.9)	
Specialized secondary	319 (15.9)	
University incomplete	183 (9.1)	
University complete	1237 (61.9)	
Post-uni complete/Post-uni incomplete	83 (4.2)	
<b>Relatives wounded</b>		
No	1567 (78.4)	
Don't know/Prefer not to answer	240 (12)	
Yes	192 (9.6)	
<b>Relatives died</b>		
No	1642 (82.1)	

Don't know/Prefer not to answer	243 (12.2)
Yes	115 (5.8)
<b>Relatives left Ukraine</b>	
No	691 (34.6)
Don't know/Prefer not to answer	97 (4.8)
Yes	1212 (60.6)
<b>Subjective health</b>	
Bad	207 (10.3)
Fair	1090 (54.5)
Good	615 (30.8)
Excellent	87 (4.4)
<b>Refugee status</b>	
I am not a refugee, or I wasn't displaced from my home.	1455 (72.8)
I was displaced from my home, live in the Ukraine and don't have a refugee status.	262 (13.1)
I was displaced from my home, live in the Ukraine and have a refugee status.	127 (6.3)
I was displaced from my home, left the Ukraine and don't have a refugee status.	127 (6.4)
I was displaced from my home, left the Ukraine and have a refugee status	29 (1.4)

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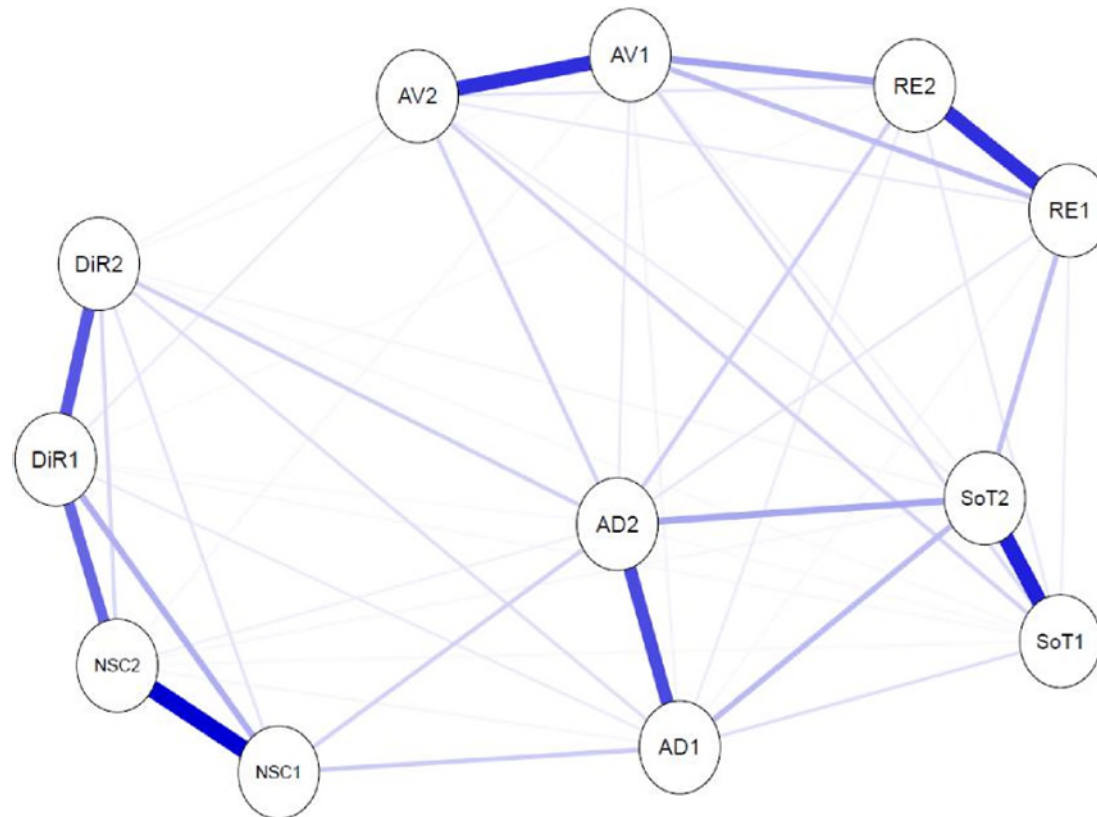


Figure 1. Dynamic CPTSD network during the Russia-Ukraine war. Note: Blue edges denote positive associations between nodes, red edges denote negative associations between nodes. Edge thickness represents the degree of association. RE1: Distressing dreams; RE2: Intrusive recollections/flashbacks; AV1: Internal avoidance; AV2: External avoidance; SoT1: Hypervigilance; SoT2: Exaggerated startle response; AD1: Long-time upset; AD2: Emotional numbing; NSC1: Feelings of failure; NSC2: Feelings of worthlessness; DiR1: Feeling distant or cut off from others; DiR2: Difficulties feeling close to others

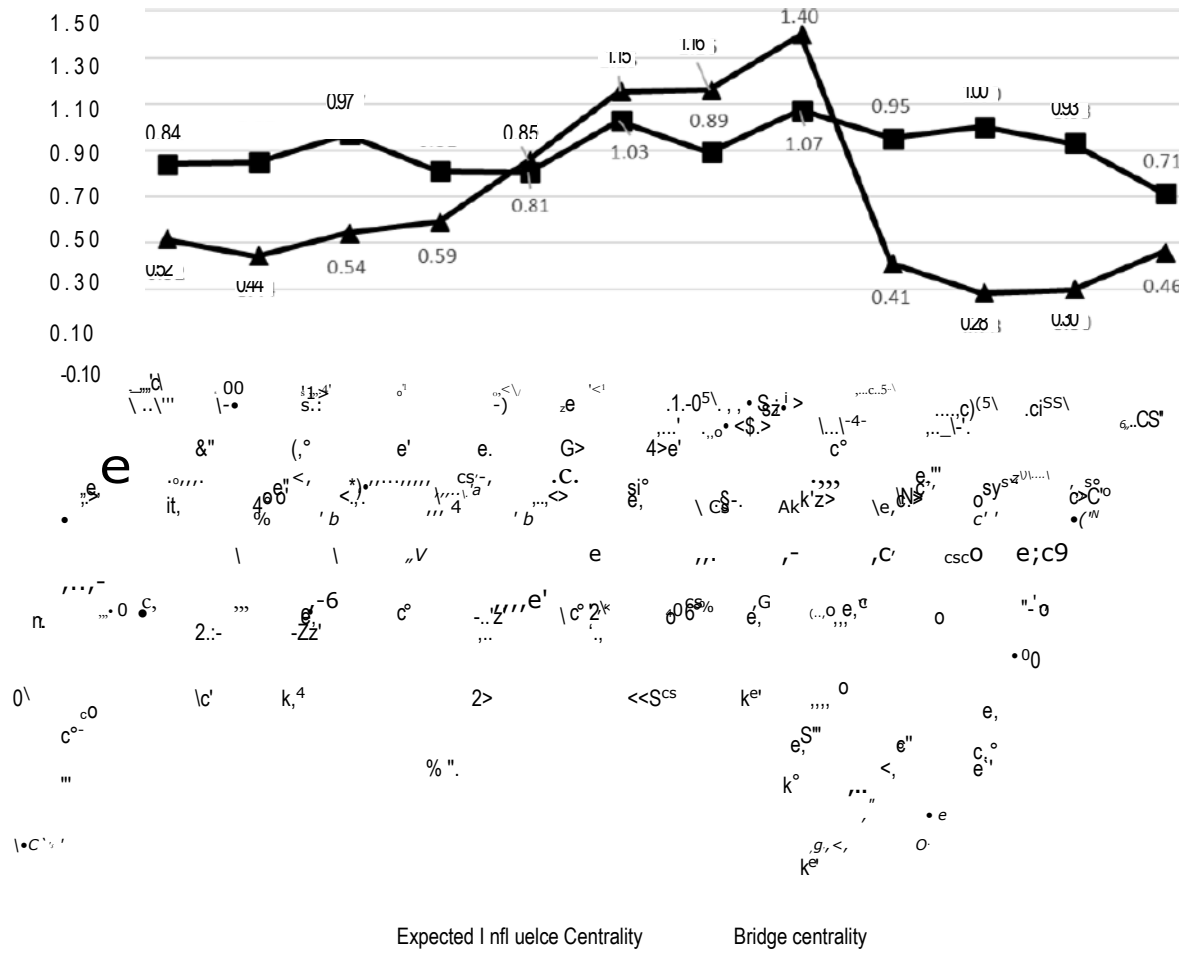


Figure 2. network node expected influence centrality and bridge centrality



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**Supplemental Material**

