

BRAIN. Broad Research in Artificial Intelligence and Neuroscience

e-ISSN: 2067-3957 | p-ISSN: 2068-0473

Covered in: Web of Science (ESCI); EBSCO; JERIH PLUS (hkdir.no); IndexCopernicus; Google Scholar; SHERPA/RoMEO; ArticleReach Direct; WorldCat; CrossRef; Peeref; Bridge of Knowledge (mostwiedzy.pl); abcdindex.com; Editage; Ingenta Connect Publication; OALib; scite.ai; Scholar9; Scientific and Technical Information Portal; FID Move; ADVANCED SCIENCES INDEX (European Science

Evaluation Centre, neredataltics.org); ivySCI; exaly.com; Journal Selector Tool (letpub.com); Citefactor.org; fatcat!; ZDB catalogue; Catalogue SUDOC (abes.fr); OpenAlex; Wikidata; The ISSN Portal; Socolar; KVK-Volltitel (kit.edu)

2026, Volume 17, Issue 3, pages: 475-486

Submitted: May 24th, 2026 | Accepted for publication: August 13th, 2026

Children, War, and Migration - Psychiatric Perspective for Resilience

Eva-Maria Elkan*

senior child neurologist Emergency County Hospital Buzău, lecturer PhD at University “Dunărea de Jos” Galati, Romania.

cojocarumariaeva@yahoo.com,

<https://orcid.org/0000-0003-2094-1089>

Tel. +40769890878

Ilie Lăcrămioara

senior paediatrician Hospital Târgu Bujor, PhD student at University “Dunărea de Jos” Galati, Romania.

ilie.lacramioara@yahoo.com

Cristina Munteanu

clinical Psychologist at Elisabeta Doamna Clinical Hospital for Psychiatry Galati, Romania.

c_tina_m@yahoo.com

Nicoleta Andreea Tovîrnac

senior neurologist at Emergency County Hospital Brăila, PhD student at University “Dunărea de Jos” Galati, Romania.

andreeatovarnac@yahoo.com

Monica Laura Zlati*

Assistant PhD at University “Dunărea de Jos”, Galati, Romania. monica.zlati@ugal.ro, Tel. +4072256765, <https://orcid.org/0000-0003-2443-1086>

Diana Andreea Ciortea

Assistant PhD at University “Dunărea de Jos” Galati, Romania. diana.ciortea@ugal.ro, <https://orcid.org/0000-0001-7420-256X>

Anamaria Ciubara

Professor habil PhD at University “Dunărea de Jos” Galati, Romania. anamburlea@yahoo.com, <https://orcid.org/0000-0003-0740-3702>

Abstract: Armed conflicts cause social disorganisation, loss of control and loss of predictability, alongside social rearrangements that impact security and the survival of children in times of war. Providing effective support for the life adjustment of children after the traumatic impact belligerency needs the combined efforts of specialists in epidemiology, public health, mental health, paediatrics, psychiatry, anthropology, sociology and social care. The internal and external migrations driven by the multiple interacting crises will also lead to the dissolution and fragmentation of families, to the disruption of the individual goals of each family member and the educational needs of children will be one of the most affected. Children's perception of war will shake their trust in adults and social interactions outside of the family will be perceived as threatening. Consequently, in the future children will need courage to rebuild meaningful social relationships and to find new meaning in their lives. Children and families need to restore trust and a sense of dignity. Psychiatrists will be aware of the symptoms arising from collective trauma, understanding that these are not always the manifestation of an intrinsic psychiatric disorder, and that they may resolve when the traumatic event is processed within an existential framework. The struggle for immediate survival will be deeply ingrained in their psyche, and the death of close relatives such as mother, father, brothers and sisters will influence their existential on long term. The role of specialists is to help children regain a sense of meaning in their lives. Overcoming feelings of collective guilt can be achieved through action and through a proactive attitude towards peace.

Keywords: children; war; migration; fear; family; peace; resilience; psychiatric perspective.

How to cite: Elkan, E.-M., Lăcrămioara, I., Munteanu, C., Tovîrnac, N. A., Zlati, M. L., Ciortea, D. A., & Ciubara, A. (2026). Children, war, and migration: Psychiatric perspective for resilience. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 17(3), 475-486. <https://doi.org/10.70594/brain/17.3/29>

* Corresponding authors



1. Introduction

During armed conflicts, the principles of international humanitarian law are often not respected and children are directly implicated, consequently they suffer directly and experience immediate physical, psychological and social effects. Overcoming the collective guilt of states can be achieved through a proactive attitude towards peace and assisting child victims of war. Mothers who have lost a child are called *Villomah*. This means that the natural order in life is reversed and this disruption is far more profound when it occurs as a result of war. We can see a new identity shift, and these mothers should be encouraged to speak about their feelings and lives. One way is for them to adopt a child who has lost their parents in war (Cesario, 2026). Humanitarian actions following war-related deaths raise issues of international law, and states can contribute by providing procedural care to address the life challenges faced by children and families (Jafarova, 2026). Children may face prolonged parental absence for other reasons, but in the context of the war, this dimension is exacerbated by multiple interacting crises such as shortages of food, medication, and health services, and parents need more time to fix all the family problems. It has been observed that children exposed to war are more likely to develop cardiovascular problems in adulthood (Werner, 2012).

The attitude of the Romanian people was one full of empathy towards refugees after the onset of war from Ukraine, but researchers sought to see the perceptions of Romanian adolescents related to these events. Romanian adolescents also faced the Covid-19 pandemic, and subsequently had to cope with the events at Romania's borders, consequently experiencing higher levels of stress in their daily lives. The high moral attitude of their parents towards the events after the beginning of the war in Ukraine also fostered resilience mechanisms in Romanian adolescents, and positive prosocial behaviours, motivating them to volunteer to help Ukrainian refugee children. Adolescents who are helping other children cultivate noble values that will benefit them throughout their lives. Romanian research on this issue indicates that girls are more sensitive to threats and experience higher levels of anxiety. Some of the volunteering adolescents assisting Ukrainian refugees experience dissociative thoughts, which can be explained by the secondary trauma often seen in rescue personnel and individuals directly supporting populations affected by armed conflict (Maftai et al., 2022). School is a stabilising factor, helping to establish predictable routines and promote healthy socialisation with peers, and the flexibility and coherence of the school curriculum has a significant impact (Lungu, 2022).

2. Post-Traumatic Stress Disorder: From Cellular Mechanisms to Neural Circuit Dysfunction in Clinical and Translational Neuroscience

Posttraumatic stress disorder (PTSD) is a severe and maladaptive psychiatric condition, which is manifested by repeated reliving of the traumatic event, avoidance of situations associated with it, the emergence of negative emotions and thoughts, as well as a state of increased physiological activation (hyperarousal), which can persist for months or even years after exposure to a major trauma. This disorder affects approximately 6–8% of the general population, but the incidence can reach up to 25% in groups exposed to intense psychological trauma, such as soldiers involved in armed conflicts, refugees, or people who have been victims of aggression.

The development of PTSD after a traumatic event is influenced by a combination of factors, including genetic predisposition — estimates show that approximately 30–40% of vulnerability is inherited — as well as previous experiences, such as childhood or adult trauma. The core symptoms of PTSD, such as hyperarousal and sleep disturbances, are increasingly being explained by advances in translational neuroscience. At the same time, there is growing evidence to support the idea that PTSD can be considered, at least in part, a disorder of normal fear processing mechanisms. At the brain level, the circuits involved in the mammalian fear and threat response—particularly the network consisting of the amygdala, hippocampus, and medial prefrontal cortex—are among the best studied and understood systems in behavioral neuroscience.

The brain regions most consistently implicated in posttraumatic stress disorder (PTSD) are the amygdala, hippocampus, insular cortex, and various areas of the prefrontal cortex, particularly the subgenual and dorsal anterior cingulate cortex. Although less frequently mentioned, the dorsolateral prefrontal cortex, striatum, thalamus, and sensory areas also appear to play important roles.

These structures do not act in isolation but rather as an integrated network involved in both the initial formation and subsequent manifestation of fear memory. From a neurological perspective, PTSD is relevant because dysfunctions in the brain circuits involved reflect the known normal functions of these regions, an observation supported by studies across species, neuroimaging, and translational neuroscience.

Most research on the neuroanatomy of PTSD has focused on the amygdala and its substructures, which are considered essential in the processing of fear and threatening stimuli. It is now understood that sensory information defining the conditioned stimulus is processed in the lateral and basolateral nuclei of the amygdala, where it is integrated with the aversive and painful signals associated with the unconditioned stimulus. This interaction leads to the consolidation of the threat memory through mechanisms similar to long-term potentiation, which increase the efficiency of synaptic transmission.

The formation and stabilisation of fear memory also involves a number of molecular mechanisms of neuronal plasticity, including glutamate- and NMDA-receptor-dependent processes, brain-derived neurotrophic factor (BDNF), calcium-dependent signaling, and changes in gene expression mediated by the transcription factor CREB.

These processes together contribute to the amplification of synaptic activity and long-lasting structural remodeling in the amygdala, such that subsequent reactivation of the sensory representation of the conditioned stimulus is sufficient to trigger neural networks that were previously activated only by the unconditioned stimulus.

The hippocampus has been associated with posttraumatic stress disorder since the earliest neuroimaging studies on the condition. Numerous studies have shown smaller hippocampal volumes in individuals with chronic PTSD compared with healthy subjects, and these results have been subsequently confirmed by large neuroimaging meta-analyses.

The role of the hippocampus is considered essential in the contextual modulation of fear memory, as well as in the ability to differentiate between real threat signals and their generalization to similar contexts, processes considered important in the emergence and persistence of PTSD.

A major issue in interpreting these findings is whether reduced hippocampal volume is a cause or a consequence of the disorder. Preclinical studies show that trauma and chronic stress are associated with decreased hippocampal volume, but, at the same time, experimental models suggest that an already damaged hippocampus may increase vulnerability to exaggerated stress responses. Thus, a less developed hippocampal structure or function could constitute a risk factor prior to exposure to trauma, favoring the development of PTSD.

Consistent with this interpretation, human and animal research indicates that the hippocampus is involved in the process of extinction, that is, in the learned inhibition of conditioned fear memories, and its dysfunctions may contribute to the difficulties in fear extinction observed in PTSD.

The medial prefrontal cortex, particularly the subgenual region, is considered functionally equivalent to the infralimbic area of the rodent brain in humans and is increasingly being studied in the context of the neurobiology of PTSD. Both animal and human research suggests that this region plays a key role, along with the hippocampus, in the inhibitory control of threat-related memories and behaviors, contributing to the reduction of fear responses.

In individuals with PTSD, diminished activation of the subgenual prefrontal cortex has been observed, as well as reduced white matter integrity in the uncinate fasciculus, a neural pathway that connects the medial prefrontal cortex to the amygdala and other anterior subcortical structures.

In contrast, the dorsal anterior cingulate cortex, part of the medial prefrontal cortex, is considered analogous to the prelimbic region in rodents. These areas are involved in the amplification of fear and threat responses and are frequently activated together with the amygdala in situations perceived as dangerous.

It is noteworthy that, in brain areas involved in regulating emotions and physiological arousal, the dissociative subtype of PTSD exhibits activity patterns that are almost opposite to those observed in the “classic” form of the disorder. In general, individuals with dissociative PTSD exhibit “emotional hypermodulation,” that is, increased activity in the rostral anterior cingulate cortex and medial prefrontal cortex—regions normally involved in controlling emotions and arousal.

In contrast, individuals with PTSD without significant dissociative symptoms exhibit “emotional hypomodulation,” characterised by reduced activity in the same regions responsible for emotional regulation. Also, in individuals with dissociative PTSD, functional connectivity across extended brain networks is disrupted, such that trauma-related dissociative symptoms—distinct from both general PTSD and the effects of childhood trauma—can be predicted based on these connectivity patterns.

Overall, these clinical and neurobiological results consistently support the idea of including the dissociative subtype of PTSD in official diagnostic classifications (Ressler et al., 2022).

3. Materials and Methods

We aimed to develop a model of mapping resilience to give better insight into how to involve all the actors in humanitarian aid. We searched in scientific databases to reveal the impact and humanitarian interventions. Searches included models of resilience for children affected by war. Inclusion criteria were articles focusing on migration, humanitarian aid, and specialised psychiatric, medical and social support. Articles concerning migration due to natural disasters, earthquakes, hurricanes and other situations that are not the object of study in this paper were excluded. Search strategies included databases from Google Scholar, PubMed, Medline Plus and stratification was based on the impact of modern threats to child and family well-being due to multiple crises during war exposure.

4. Results

Comprehensive studies have shown that the longer the duration of exposure to war events, the more severe the posttraumatic stress disorder will be, and it will also be worse and more persistent if following displacement, the family does not find a new home and a stable life. The continuous migration of citizens across different regions increases the risks of different substance use (nicotine, alcohol, and others) which correlate with higher levels of perceived stress (Rusu & Delcea, 2024). Post-traumatic stress disorder is found in 3.9% of the population around the world, but in regions of armed conflict the prevalence of the disorder can reach up to 30%, alongside a collective fear within societies regarding global ecological collapse. Children exposed to adverse events have much higher rates of smoking, alcohol use, and other forms of substance misuse. The stigmatising identity has a long-term impact generating a shame that persists for years. An impact difficult to estimate is the anger towards environmental destruction, called Eco grief, as well as solastalgia, which encompasses the feeling of insecurity towards the space in which one lives (Gallardo, 2026).

The complex model of mapping resilience for intervention has four domains: ecological collapse, transgenerational suffering, collective guilt, and resilience. These are each interdependent with other factors affecting daily living, collective decisions and collective trauma. The organisational task of comprehensively adopting humanitarian aid goals is challenging and the most important problems are matters of prioritisation.

3.1. Main objectives

Organisational:

- Institutions
- Populations
- International organisations

Vulnerable systems that must be prioritised for adjustment

1. The health system
2. The educational system
3. Communications

The collective resilience shift model

This model illustrates the interdependence between ecological collapse, transgenerational suffering, collective guilt, and resilience. Individuals are constantly in a position where they must prove themselves, with societal factors contributing to the need to justify every action. Even during post-war recovery, personal and societal explanations are expected. Children are not prepared for multiple levels of societal interaction and rapid change.

Figure 1 illustrates the mapping of the collective resilience shift instruments, and this model can serve decedents for measures.

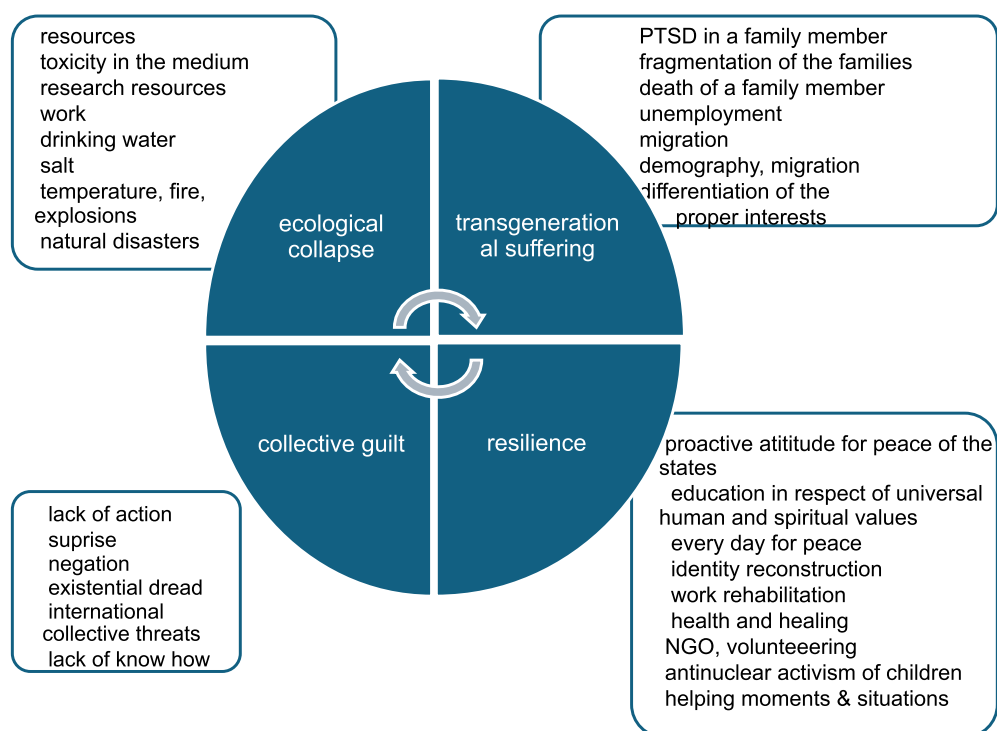


Figure 1. Mapping of collective resilience shift instruments by the author

The *ecological collapse* in migration during war encompasses resources such as water, grains, and basic medications for children and the general population. The United Nations Conference on Environment and Development (UNCED) analysed multiple factors in 1992 to determine the primary driver of family migration: conflict or ecological collapse (Suhrke & Hazarika, 1993). Toxicity in the environment and war threats includes plastics in which many materials are transported. Styrofoam, which is widespread, and everyday electronics pose real threats. Unexploded weapons also generate toxicity to the environment and consequences could be digestive problems, unexplained pain and allergies (Bonds, 2016). Developing a research resource strategy for studying the impact of the war on the forests in Ukraine is a challenging domain with

implications for future generations, health, and well-being. Consequently, a climate-resilient recovery will encompass the difficulties for the post-war recovery (Melnykovich et al., 2026). The levels of understanding peace and war were explored by Dutch scientists (Hakvoort & Oppenheimer, 1993).

Collective guilt derives from the idea that all people need a collective identity and through education and religion, individuals react to the responsibility for harm. On the other hand, the illegitimacy of the harm, perceived at both individual and societal levels, fosters positive attitudes towards helping those in need (Ferguson & Branscombe, 2014).

Post-traumatic stress disorder PTSD in one family member has a great influence on the other family members; for instance, fathers who have experienced a war and are suffering from social withdrawal may influence their children to be isolated and anxious as well. The structure of the family becomes more unorganized, and a lack of authority often influences children's behaviours and development in the family. Some children take on the parental role within the family because the parent relinquishes their responsibilities (Harkness, 1993).

Multilevel developmental paradigms are taken into account when programming services for children's and families' resilience strategies for post-war rehabilitation and integration (Sagi-Schwartz, 2012). Resilience planning also includes a dimension of negotiation, children are taught to negotiate their new roles, their future in the new post-war society they inhabit, thus operationalising resilience. Both the child and their family can recognize their strengths following survival and the rebuilding of a new life. The role of therapists is to encourage and give hope. Cultural *resources* must always be explored (Ager & Metzler, 2017). Teaching Recovery Techniques (TRT) are currently used in the post-war period and are integrated into the multiplicity of resilience because children might suffer under cumulative adverse conditions during wars (Diab et al., 2015).

4. Discussion

War leads to the fragmentation of families, family displacement, the separation of relatives, and the increasing physical distances due to migration, as well as the divergence of individual interests. Simultaneously, we are witnessing a process of community fragmentation. The sense of personal and collective security must be continuously nurtured and cultivated for each citizen, with a particular focus on individuals who have experienced war and collective trauma (Hansen, 2026).

Distrust in the future and the impact on ontological security has affected the families of the civilians within the Gulf Cooperation Council (GCC) states-namely Bahrain, Kuwait, and Oman, as well as other states in the region such as Qatar, Saudi Arabia, and the United Arab Emirates (Buheji, 2026). This distrust severely damages children's psychological well-being, leaving them vulnerable to indoctrination that force is the only means to achieve their goals in life; the danger is that these children may become involved as combatants in armed conflicts and commit acts of violence and cruelty (Lăzăreanu, 2024).

Children, much like adults, experience fear regarding destructive nuclear forces, and the author Patrícia Nabuco Martuscelli recalls the story of Sadako Sasaki, a girl who died at the age of 12 years as a consequence of her leukaemia contracted as a result of the nuclear bombings of Japan in 1945 who famously folded 1000 paper cranes. The physical health of children is more affected by radiation than that of adults, and children are acutely aware of the major health hazards, experiencing more intense existential anxieties and higher levels of 'nuclear anxiety'-the fear of nuclear war. This leads to increased anti-nuclear activism among children, allowing them to influence international relations using instruments such as art and poetry with peace themes (Martuscelli et al., 2026).

After the beginning of the war in Iran with operation Epic Fury, 100.000 individuals have already been displaced from Teheran, alongside 60.000 from Lebanon. Consequently, a protracted humanitarian medical crisis is taking shape. The longer the conflict lasts, the more urgently states must find post-conflict solutions aimed at assisting civilian victims of the war (Horton, 2026).

The recruitment of children as combatants is condemned by international child rights legislation, but it is a phenomenon that still affects thousands of children. Those who recruit children in armed conflicts are doing so under the assumption that children are more obedient and better at following orders. Children who actively participate in committing atrocities will not be able to internalise universal human values as they grow up; marked by the atrocities they have inflicted upon others, they often find it impossible to live in harmony. These children must also be viewed as victims because they fall in the middle of strange situations they lack the maturity and strength to handle. Without the power to make decisions about their own lives and actions, these children require social reintegration and support to regain a normal life (Zaharia, 2012).

Homo affectus is a new concept which wraps the old concept about the human forced to migrate and the transformation to *homo economicus*, because migration implies the realisation of new human connections. *Risheh* is a Persian term, and it refers to the return of Iranians to their homeland, and the homes they were forced to leave. The narratives play a major role in the modulation of affect and of the emotions that lead to actions impacting the lives of populations in the future. The preparation of frameworks for the management of the multiethnic, multidimensional suffering regardless of religion, race, gender and country of origin is the major principle for humanity and peace. We can propose the model of Children's Hospitals of Peace designated for each child who has witnessed horrible confrontations or suffered after any type of armed conflict anywhere in the world. The language of suffering is universal, the total suffering affecting equally all the human beings which are passing through moments of destruction and extreme panic. The profound compassionate understanding of individuals dedicated to these causes will restore children's courage to rebuild their lives, find meaning, and continuously develop the world of tomorrow. The narrative plays a major role in shaping the affects and emotions that lead to actions, which will subsequently impact people's lives (Hormozinejad, 2026).

The feeling of collective guilt can traumatise civil society which feels that it is doing nothing. When a collective conflict arises, it triggers spontaneous mobilisation and the formation of spontaneous connections between people aimed at helping those in need due to major conflicts. In these difficult moments people grow closer, forging new personal relationships across various groups. They support one another to help others and share expertise from different fields. Consequently, individuals who might never have met or cooperated otherwise collaborate during these critical relief situations. These helping networks must be supported and sustained to be more structured and more efficient. The emotion of solidarity for a noble purpose leads to shared social identities and once this is done in a conscious manner, the organisation of the helping group is much easier (Penić et al., 2021).

The anxiety, the fear of death, and the insecurity experienced by children affected by the war has collective dimensions and over one million children from Gaza were affected by the locoregional conflicts that began in 2007. Children killed between the year 2023 and July 2025 were 16.124 Palestinian school children and 1.191 Palestinian students. The adolescents from Gaza have experienced a continuous and chronic fear and all the humanitarian associations are concentrating on the drama of the children from Gaza. The factors for resilience become multidimensional in conflicts of this magnitude; family, school, organised community support, collective identity are decisive for coping and resilience among the affected populations. Many children and many families are in the situation to suppress their emotions with the aim to afford social norms, but their anger and anxiety cannot be fully expressed (Al-Hroub, 2026). In some situations we can observe that the aid is unequally distributed after any type of confrontations and in some specific terms there is a referring to coloniality of aid and over time the humanitarian aid has become institutionalised through specific, dedicated organisations. The possibility of distributing humanitarian aid could be weaponised in some situations, and so there will be other obstacles in crisis management. The security required for humanitarian aid is not as guaranteed as one might think, because food insecurity and medical insecurity generate great fear and many conflicts (Hamamra & Shehab, 2026).

A proactive attitude of states, the citizens, and embracing the concept of every day for peace, will assist communities in continuously evaluating the risk posed by war and encourage everyone to be actively involved in generating peace in the world (Rusu & Delcea, 2024).

The prevention of conflicts will be made through the cultivation of respect toward the authorities and through the continuous effort to build constructive ideologies (Staub, 2013).

Romania has joined other European states that, through the European Mechanism of Civil Protection, have sent humanitarian aid to the civilian population in Lebanon (AGERPRES, 2026).

In Lebanon there are 540.00 Palestinian refugees and the country has confronted the explosion of the ammonium nitrate in Beirut on August 4th, 2020. Together with the recent wars, multiple crises have compounded, leaving half of the population fighting poverty. The greatest impact is on children, who are forced into child labour to earn money and goods for their families. Researchers have studied 1.244 households from Lebanon and have shown that in 30% of the cases one child went to sleep being hungry, or meals had to be reduced to extend food supplies and 20% of the households have had difficulties with procuring the drinking water for their family members (Abouzeid et al., 2021).

Nongovernmental organisations (NGO's) in many cases identify supplementary factors on which we can act in humanitarian crises and in many situations, they are a factor of complementarity to the instruments that states can offer to react in humanitarian crises, notably through their ability to mobilise the volunteers (Zontek & Lipianin-Zontek, 2024).

5. Can Machine Learning Models Predict PTSD Symptoms from Trauma Narratives in Children and Adolescents?

Recent developments in machine learning (ML) are significantly changing the way psychological science is approached, opening up the possibility of innovative methods for assessing mental health and estimating risks at scale. ML brings together a series of computational techniques through which models can learn from data and make predictions. In the context of mental health services, this technology has the potential to optimise clinical processes, reduce the effort associated with diagnosis, and facilitate wider access to care.

One of the most commonly used machine learning approaches in psychiatric research is supervised learning. This involves training models on labeled data sets, where each input example corresponds to a known output. As the learning process is repeated, the model discovers relevant patterns and learns to apply them to make predictions on new data that it has not previously encountered.

This study draws on secondary data collected from three methodologically comparable cohorts originally designed to examine the mental health effects of exposure to a traumatic event in children and adolescents, as defined in the DSM-5 (American Psychiatric Association, 2013), which required presentation to the emergency department. DSM-5 Criterion A trauma exposure was determined based on hospital and emergency department medical records, supplemented by a brief initial interview in which caregivers (and the child, when relevant) described the type and details of the incident. The studies covered a wide variety of traumas, including both interpersonal situations and accidents. In all cases, at 2 to 6 weeks after the event, participants were interviewed, asked to recall and recount the experience, and to complete clinical assessments of PTSD symptom intensity and self-reported memory characteristics.

Two studies conducted in the UK contributed a total sample of 178 participants. The ASPECTS study included children and adolescents aged 8–17 years, assessed 2–4 weeks after the trauma; of these, 57 provided both narratives of the traumatic experience and PTSD data. The PROTECT study included 132 children aged 6–13 years assessed 2–6 weeks after presentation to the emergency department; for 121 of the participants, complete data relevant to the current analysis were available. The Sinethemba study, conducted in South Africa, involved 250 children aged 8–16 years identified in hospitals in the Khayelitsha area of Cape Town. Interviews were conducted

within four weeks of the traumatic event. Ultimately, 222 participants had complete data for both narratives and PTSD.

PTSD symptoms were assessed 2 to 6 weeks after the trauma, using the UCLA-RI (University of California at Los Angeles Reaction Index) and CPSS-5-SR (Children's PTSD Symptom Scale – Self Report) instruments.

First, the anonymised narratives were preprocessed and associated with participants' standardised PTSD scores. Subsequently, two benchmark models and two pre-trained models were trained and optimised separately for each dataset, as well as for the combined dataset. In the final step, the performance of the models was evaluated and compared with each other.

To assess whether trauma narratives can predict the severity of PTSD, a dual modeling strategy was used. Deep learning models based on large pre-trained language models (LLMs), which learn directly from the raw text of narratives, were compared with classic machine learning “benchmark” models, which use manually created textual features.

Combining the two approaches allows balancing the trade-off between the simplicity and interpretability of benchmark models and the potentially superior predictive power and high linguistic sensitivity of LLM models.

Two large, pre-trained, well-established linguistic models were fine-tuned: RoBERTa and XLNet. Large linguistic models are deep learning architectures trained unsupervised on large volumes of text to learn and represent contextual relationships in language.

In this study, preprocessed traumatic narratives were tokenised according to the specific vocabulary of each model and transformed into vector-type numerical representations, called embeddings. The RoBERTa model produces 768-dimensional embeddings, while XLNet generates 1024-dimensional embeddings, which capture and represent the relationships between words and phrases in the text.

The fine-tuning process was performed through a 10-fold stratified cross-validation. The models were trained using the mean square error (MSE) loss function and optimised with the Adam algorithm. The epoch with the lowest loss on the validation set was selected, and the final evaluation of the models' performance was performed using the RMSE (root mean square error) and MAE (mean absolute error) metrics.

To train the benchmark models, a set of interpretable features was derived from participants' traumatic narratives, based on empirical research and existing theoretical frameworks that associate certain characteristics of discourse with PTSD symptoms in children and adolescents. These features generally describe four main domains: coherence and disorganisation of the narrative, use of sensory and perceptual language, emotional valence and level of affective activation (arousal), and linguistic style and complexity of expression. The dataset was then standardised by applying z-score normalisation to allow for comparability across variables.

Therefore, initially, two large state-of-the-art linguistic models (RoBERTa and XLNet), fine-tuned to extract contextual representations directly from raw text, were applied. The goal was to evaluate the ability of these methods to predict PTSD symptom scores based on children's traumatic narratives. Subsequently, two classic benchmark algorithms – LASSO linear regression and XGBoost – were applied to assess the extent to which manually extracted narrative features can serve to predict PTSD symptoms in children.

In the combined dataset, both models performed at the random level: the LASSO model failed to explain the variance in the data ($R^2 \approx 0$, RMSE = 0.19), and the association between predicted and actual PTSD scores was virtually nonexistent ($r = -0.04$). Similar results were also observed for XGBoost, which obtained an R^2 of -0.01 and an RMSE of 0.20. The same pattern emerged in the UK sample, with Pearson correlations not being significant for either model. In contrast, in the South African sample, XGBoost showed a modest correlation between predicted and observed PTSD scores ($r = 0.21$, $p = 0.001$), unlike LASSO. Even so, the proportion of explained variance remained very low for both models.

In the final stage, it was assessed whether the integration of child-reported traumatic memory features contributes to improving PTSD prediction beyond that obtained from narrative features alone. Within the combined dataset, the LASSO model did not improve, continuing to explain a very small proportion of the variance and showing almost zero correlation. On the other hand, XGBoost demonstrated superior performance, reaching values of $R^2 = 0.14$ and $r = 0.37$ ($p < 0.001$), surpassing the results obtained when trained solely on narrative features.

The performance gains increased within each dataset. In the UK sample, the predictive power of the LASSO model increased significantly: R^2 rose to .57, and r reached .75 ($p < .001$). XGBoost showed a similar improvement ($R^2 = .45$, $r = .67$, $p < .001$). In the South African sample, improvements were smaller, but remained statistically significant: LASSO achieved $R^2 = .09$ and $r = .32$ ($p < .001$), while XGBoost performed slightly better ($R^2 = .14$, $r = .38$, $p < .001$). Finally, when used as the only input variables for training the models, self-reported memory features provided stronger predictive performance than when combined with narrative-extracted features, particularly in the UK datasets and the combined datasets.

The results obtained indicate that, given the datasets, variables, and modeling methods used in this study, trauma narratives, analysed independently, did not allow for a robust estimate of PTSD severity among children and adolescents. In contrast, self-reported indicators of traumatic memory characteristics were found to be more adequate predictors of PTSD symptom severity, suggesting that the way individuals subjectively evaluate their traumatic memories is more strongly associated with the severity of the disorder than the form of linguistic expression of the experience in the young population (Giuliani et al., 2025).

6. Conclusions

Awareness, knowledge, compassion and a good organisational level permit states to be resilient and to help other states and the world's children in need. The empowerment of adolescents to be proactive for peace will lead to their involvement in international negotiations for peace. Resilience represents a continuous conscious effort. The role of experts is to consistently maintain and enhance fostering peace, health and education through a multidimensional approach to resilience.

Author Contributions: Conceptualization, E.M.E. and M.L.Z.; methodology, A.C.; software, D.A.C.; validation, C.M., A.N.T. and D.A.C; formal analysis, M.L.Z.; investigation, E.M.E.; resources, A.C.; data curation, C.M.; writing—original draft preparation, E.M.E; writing—review and editing, M.L.Z; visualization, I.L.; supervision, M.L.Z. and A.C.; project administration, I.L.; funding acquisition, N.A.T. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding

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

Abbreviations

The following abbreviations are used in this manuscript:

UNCED - United Nations Conference on Environment and Development

PTSD - Posttraumatic stress disorder

TRT - Teaching Recovery Technique

NGO - Nongovernmental organization

References

Abouzeid, M., Halwani, D. A., Mokdad, A. H., & Habib, R. R. (2021). A generation at risk: The impacts of Lebanon's escalating humanitarian crisis on children. *Frontiers in Public Health*, 9, 704678. <https://doi.org/10.3389/fpubh.2021.704678>

- Ager, A., & Metzler, J. (2017). Where there is no intervention: Insights into processes of resilience supporting war-affected children. *Peace and Conflict: Journal of Peace Psychology*, 23(1), 67–75. <https://doi.org/10.1037/pac0000211>
- AGERPRES. (2026, April 15). Guvern: Ajutor umanitar pentru populația civilă din Liban. <https://agerpres.ro/2026/04/15/guvern-ajutor-umanitar-pentru-populatia-civila-din-liban--1546671>
- Al-Hroub, A. (2026). Death anxiety and trauma in forcibly displaced children in the Gaza Strip: A critical review of emerging research, 2024–2025. *Current Psychiatry Reports*, 28(1), 21. <https://doi.org/10.1007/s11920-026-01670-8>
- Bonds, E. (2016). Legitimizing the environmental injustices of war: Toxic exposures and media silence in Iraq and Afghanistan. *Environmental Politics*, 25(3), 395–413. <https://doi.org/10.1080/09644016.2015.1090369>
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (Vol. 5, Issue 5). American Psychiatric Association, Washington, DC.
- Buheji, M. (2026). Deconstructing the complexity of the situation for GCC citizens during the US-Israeli war on Iran. *International Journal of Social Science Exceptional Research*, 5(2), 183–198. <https://doi.org/10.54660/IJSSER.2026.5.2.183-198>
- Cesario, S. K. (2026). Vilomah: A name and identity for a woman whose child has died. *Nursing for Women's Health*, 30(2), 158–167. <https://doi.org/10.1016/j.nwh.2025.11.003>
- Diab, M., Peltonen, K., Qouta, S. R., Palosaari, E., & Punamäki, R. L. (2015). Effectiveness of psychosocial intervention enhancing resilience among war-affected children and the moderating role of family factors. *Child Abuse & Neglect*, 40, 24–35. <https://doi.org/10.1016/j.chiabu.2014.12.002>
- Ferguson, M. A., & Branscombe, N. R. (2014). The social psychology of collective guilt. In C. von Scheve & M. Salmela (Eds.), *Collective emotions: Perspectives from psychology, philosophy, and sociology* (pp. 251–265). Oxford University Press.
- Gallardo, L. M. (2026). *Mapping global pain and trauma: A framework for transitioning from shadow to fundamental peace*. <https://doi.org/10.20944/preprints202604.0409.v1>
- Giuliani, A., Sharp, T., Chideya, Y., Meiser-Stedman, R., Tomlinson, M., & Halligan, S. L. (2025). Can machine learning predict PTSD symptoms from trauma narratives of children and adolescents? *European Journal of Psychotraumatology*, 16(1), 2589709. <https://doi.org/10.1080/20008066.2025.2589709>
- Hakvoort, I., & Oppenheimer, L. (1993). Children and adolescents' conceptions of peace, war, and strategies to attain peace: A Dutch case study. *Journal of Peace Research*, 30(1), 65–77. <https://doi.org/10.1177/0022343393030001006>
- Hamamra, B., & Shehab, E. (2026). Humanitarian aid in Gaza: From lifeline to arena of violence and exclusion. *Third World Quarterly*, 47(3), 471–487. <https://doi.org/10.1080/01436597.2025.2576787>
- Hansen, I. (2026). Trauma-informed MHPSS in war-affected Ukraine. In *The Routledge International Handbook of Trauma-Responsive Peacebuilding* (pp. 229–241). Routledge. <https://doi.org/10.4324/9781003536970-19>
- Harkness, L. L. (1993). Transgenerational transmission of war-related trauma. In J. P. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes* (pp. 635–643). Springer. https://doi.org/10.1007/978-1-4615-2820-3_53
- Hormozinejad, S. (2026). Migrants as homo affectus: How emotion shapes return migration among Iranians. *Emotion, Space and Society*, 59, 101155. <https://doi.org/10.1016/j.emospa.2026.101155>
- Horton, R. (2026). Offline: The human consequences of Epic Fury. *The Lancet*, 407(10533), 1040.
- Jafarova, L. (2026). Death as the gateway to “humanity”: The humanitarian paradox of humanity after life. *PoLAR: Political and Legal Anthropology Review*, 49(1), e70042. <https://doi.org/10.1111/plar.70042>

- Lăzăreanu, C. G. (2024). Războiul și efectele lui asupra copiilor. Copiii din zonele de conflict. *Teologie și Viață*, 100(1–4 Suppl.), 117–128.
- Lungu, T. (2022). Incluziunea educațională a copiilor din familiile refugiate din Ucraina în instituțiile de învățământ general și depășirea situației de criză. În *Kreatikon. Creativitate. Formare. Performanță* (pp. 138–146).
- Maftai, A., Dănilă, O., & Măirean, C. (2022). The war next-door—A pilot study on Romanian adolescents' psychological reactions to potentially traumatic experiences generated by the Russian invasion of Ukraine. *Frontiers in Psychology*, 13, 1051152. <https://doi.org/10.3389/fpsyg.2022.1051152>
- Martuscelli, P. N., Bandarra, L., Salari, K., & Dalziel, W. (2026). Mushrooms, cranes, and the fear of planetary destruction: Exploring children's imaginaries of war and nuclear anxiety. *Critical Studies on Security*, 1–27. <https://doi.org/10.1080/21624887.2026.2648445>
- Melnykovych, M., Nijnik, M., Soshenskyi, O., Zibtsev, S., Lobchenko, G., Sarkki, S., Voloshyna, N., Soloviy, I., Kravets, P., Khan, Y., Yaroshchuk, R., Keeton, W. S., Rosset, C., Pauli, B., Garcia, C. A., & Waeber, P. O. (2026). Pathways for Ukraine's post-war nature recovery: Focus on forest socio-ecological systems. *Ambio*, 55(4), 817–843. <https://doi.org/10.1007/s13280-025-02263-0>
- Penić, S., Drury, J., & Bady, Z. (2021). Collective resilience. În *In the shadow of transitional justice* (pp. 197–214). Routledge. <https://doi.org/10.4324/9781003167280-18>
- Ressler, K. J., Berretta, S., Bolshakov, V. Y., Rosso, I. M., Meloni, E. G., Rauch, S. L., & Carlezon, W. A., Jr. (2022). Post-traumatic stress disorder: Clinical and translational neuroscience from cells to circuits. *Nature Reviews Neurology*, 18(5), 273–288. <https://doi.org/10.1038/s41582-022-00635-8>
- Rusu, D. O., & Delcea, C. (2024). Mental health and psychosocial adjustment in Ukrainian refugee children in Romania. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, 15(4), 197–214. <https://doi.org/10.70594/brain/15.4/14>
- Sagi-Schwartz, A. (2012). Children of war and peace: A human development perspective. *Journal of Conflict Resolution*, 56(5), 933–951. <https://doi.org/10.1177/0022002712446128>
- Staub, E. (2013). Building a peaceful society: Origins, prevention, and reconciliation after genocide and other group violence. *American Psychologist*, 68(7), 576–589.
- Suhrke, A., & Hazarika, S. (1993, June). *Pressure points: Environmental degradation, migration and conflict*. American Academy of Arts and Sciences.
- Werner, E. E. (2012). Children and war: Risk, resilience, and recovery. *Development and Psychopathology*, 24(2), 553–558. <https://doi.org/10.1017/S0954579412000156>
- Zaharia, V. (2012). Programe și strategii de reabilitare a copiilor afectați de conflictele armate: Perspective și realități. *Studia Universitatis Moldaviae (Seria Științe Sociale)*, 58(8), 80–83.
- Zontek, Z., & Lipianin-Zontek, E. (2024, September). Knowledge management in social organizations during a humanitarian crisis. În *Proceedings of the European Conference on Knowledge Management* (pp. 959–966). Academic Conferences International Limited.