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Reflections and Ways to Improve Musical and Patriotic Education under new Military-Political Conditions: Neuropedagogical Strategies

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Abstract: *This article is the first in international discourse to explore the evolving role of Ukrainian music education in new military and political conditions. It aims to examine global trends in music education for youth and describe the unique context in Ukraine. The article proposes a neuropedagogical model of musical and patriotic education, incorporating elements of music therapy, along with general methodical recommendations. As researchers and ethnic Ukrainians, the authors can observe the growing neurosocial distinctiveness of Ukrainian identity. This identity is reflected in non-verbal, authentic narratives such as music, dance, and cultural symbols. While these expressions are largely suggestive and reflective, they contribute to a broader, holistic perception. The authors have attempted to apply this perception to the sensitive field of music education, especially given its current emotionally charged and patriotically heightened state. Research methods rely on descriptive, reflective, analytical-synthetic, and modelling approaches (both pedagogical and neuroscientific), which have led to several key findings. The first is the confirmation of absolute heteromorphism in the values and goals of patriotic education across different geopolitical regions. The authors also emphasise the special significance of such education in areas experiencing national uncertainty or military-political conflict. Additionally, the authors used a personal-professional anxiety scale for music teachers. The article shows that educational environments in Ukraine are open and highly sensitive. Their participants also display a strong tendency towards reflection. On this basis, the authors of the article have developed two models: a relatively closed, multi-vector model of musical and patriotic education and an open neuropedagogical model intended for use in the current military-political context.*

Keywords: *music education; music; concepts and archetypes; expansion of educational environments; neurosociety; suggestive influence; training model; anxiety scale; music perception; criteria and levels of development.*

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1. Introduction

Today, music pedagogy is increasingly engaging in interdisciplinary dialogue with neuroscience. This expands the understanding of music's roles as an art form and a neuropsychological tool for shaping identity. In this context, an important issue concerns how music education in different geopolitical and ethnocultural regions reflects social functions, neurocognitive priorities, and patriotic narratives.

This question has become particularly relevant due to Russia's war against Ukraine. The war has sharply intensified national-cultural and worldview narratives, especially in the context of preserving the ethnic and state self-identity of Ukrainians. It also ties into educational reforms that emphasise a more national-orientated approach (Matviienko & Sonechko, 2023).

As Ukrainian scholars, the authors of this article witness firsthand how the war has significantly reduced state funding for music education programmes in Ukraine. Intellectual and material resources are increasingly redirected to the war effort. Educational budgets have been cut, and many music programmes are forced to close.

As a result, opportunities for formal online education and access to its resources were sharply reduced. Moreover, the psychological impact of military actions had two major effects: first, music education practices were pushed into the background; second, educational participants lost their priorities and goals, replacing them with uncertainty and chronic stress.

Additionally, Ukrainian educators notice an increase in negative feelings towards previously popular Russian music content (Bondarenko, 2023a).

On the other hand, cultural life, including the music industry, almost came to a standstill with the cancellation of concerts and festivals. This breakdown disrupted the wider resource environment of music education, weakening in particular the emotional connection to cultural heritage and to innovation fostered through musical communication.

2. Research Relevance and International Significance

This issue is becoming increasingly relevant both domestically and internationally. To a large extent, this is due to the ban on Russian-language music and other cultural content, which has become strict and is applied at the state level.

At the same time, the government supports cultural, linguistic and social movements aimed at preserving and strengthening Ukrainian ethno-cultural and socio-political identity (Bilinska, 2022). At the same time, the main focus is not on strict regulation from above, but on encouraging direct communication. The goal is to strengthen verbal and musical communication between conscious masses.

A central issue in this context is the neurosocial dimension of music education. From a neurosocial perspective, music education should consider the child (student) as a subject "embedded in a neurosocial context". This means that the child is attuned to both traumatic experiences and cultural codes (Fernandez & Evans, 2022). Within this framework, music functions as a channel that is simultaneously metasocial, participatory, and a form of protest.

At the neuropsychological level, this implies a constant interaction between the prefrontal circuits responsible for critical thinking and the mesolimbic system that evaluates emotions. This interaction creates a complex cognitive-emotional dynamic in the perception of patriotism.

The neuropedagogical conclusion is that teachers must act as transmitters of knowledge as well as moderators of sociocultural resonances. These resonances form neuroassociations that help children build their ideas about the homeland, good, enemy, and heroism. In this sense, the pedagogy of patriotism is not simply about learning a hymn or song lyrics. Instead, it is about the subtle shaping of the brain context that will later influence how children react in existentially challenging situations.

Accordingly, the neuropedagogy of general music education cannot remain separate from these processes. Therefore, it is extremely important to shape these new educational and neurosocial-cultural conditions surrounding the academic potential of Ukrainian music.

The need for changes in educational strategies for musical and patriotic education in the new military-political conditions is urgent. This urgency is enhanced by the fact that all social changes during war are accelerated. In some cases, these changes occur radically and sharply. Therefore, it is extremely important to direct them using educational methods, directing them on a democratic path. This must be done while ensuring compliance with all rights and freedoms, adhering to Western values and socio-cultural worldview (Dovgan, 2024).

Even before the intensive phase of the full-scale offensive on Ukraine, there was a noticeable shift in the narratives of the mass media and the level of public trust in them. Consumers of mass media and cultural discourse no longer took information at face value; instead, they increasingly questioned most new content, a defining feature of the post-truth era. In this environment, people began to determine for themselves what to believe and where to seek informational and emotional support (Szostek, 2018).

As a result, the importance of reliable and enduring sources of such support has increased significantly. Even ancient examples of authentic Ukrainian literature and music have experienced a new surge in popularity. This revival has contributed to the neo-mythologizing of state symbols, sacred concepts, and official emblems.

Scholars and everyday observers around the world recognise Ukraine's growing global status, as well as the increasing international interest in its intangible cultural heritage. However, due to the ongoing war, Ukraine's domestic cultural market is burdened by local systemic challenges and even geopolitical risks (Wang et al., 2022). As a result, most cultural and artistic events remain local in scale and are predominantly charitable in nature. The only product that remains fully accessible and constantly in demand is the country's spiritual creativity, interest in which has noticeably increased.

The authors of this article observe, both psychologically and from the point of view of their internal geopolitical consciousness, by the numerous divisions that Ukraine is currently experiencing. These turning points continue to multiply, and it is important to recognise a key truth: even the most prominent foreign scholars may not fully grasp the spiritual and mental foundations of the current military and political upheavals in Ukraine.

A striking example is de Ploeg's book entitled "Ukraine in the Crossfire" (2017). The book presents a detailed, fact-based and impartial account of neoliberal and nationalist events in Ukraine, from the Maidan to the war in the East. At the same time, it focuses on artistic and cultural, as well as musical and educational metamorphoses. It also highlights mental and archetypal factors, primarily spiritual connections, myths and concepts that are often ignored by Ukrainian researchers. These phenomena are difficult to perceive from within the nation.

The authors of this article,, are more attuned to the internal psycho-emotional state of the country. However, they may not notice broader, rationally understandable trends that are often more obvious to external observers.

A similar trend can be observed in other academic works that try to draw lessons from the Ukrainian experience for Europe and the wider world. While some studies recognise Ukrainian mythology as a form of collective social consciousness, they often fall short in other areas. The influence of suggestive cultural forces, such as music, language, and ethnopsychological context, is often ignored, despite their essential role in shaping national identity and life experience (Pabriks & Kudors, 2015).

Accordingly, the purpose of this article is threefold. First, it is important to study global trends in music and patriotic education in the context of posthistorical consciousness. The goal is to compare these trends with the current situation in Ukraine and relate them to the neurosocial background that can be optimised through educational methods. Second, it is important to investigate the neuro- and psychosocial aspects of the rapid development of national consciousness among young Ukrainians. This includes studying the unique Ukrainian combination of individualistic postmodernism and collective national patriotism. Finally, based on the results obtained, the article will propose a general model for new aspects of music education. It will also

present a neuropedagogical model of music-patriotic education and offer broader theoretical and methodological conclusions.

Russia's war against Ukraine has significantly affected many aspects of Ukrainian society, including its cultural and educational systems. As of 2024, the significant impact of this and other global conflicts on the geopolitical and sociocultural landscape worldwide can also be observed.

The experience of Ukrainian scholars can now be applied in other global "hot spots". Their work on creating educational, social and cultural conditions for patriotic education in wartime is particularly valuable (Bezlyudna, 2022; Kiyan, 2023). However, educators should remain cautious about militaristic narratives and excessive patriotic propaganda.

Some of these appear in publications indexed in leading scientometric databases, but they may not be consistent with democratic educational values.

Thus, there is a growing need in the field of music education to revise existing models to meet the new challenges and opportunities arising from ongoing war. The relevance of this article is underlined by a long-standing pedagogical principle recently highlighted by Andersson et al. (2020): the "borderline friction" between adults and children. The idea is that when a teacher tries to instil values in students, these unresolved issues are transferred to the students themselves. As they grow older, these students may become teachers or parents, perpetuating the same cultural disorientation for the next generation (Andersson et al., 2020). This leads to a recurring cycle of cultural ignorance and the alteration of self-identity. In contrast, the shared educational experiences of both older and younger generations during wartime can offer invaluable lessons for all civilised societies.

Finally, beyond pedagogy, it is important to evaluate and explore the topic from the perspective of music as an instrument of both war and peace. For example, Cusick (2020) examines music as a weapon of war. In the era of the blogosphere, this concept is widely spread and discussed in the context of modern wars. However, the authors of this article focus on the pedagogical-therapeutic and patriotic-educational potential of music in school education. This potential may outweigh the traumatic and destructive plans associated with it.

3. Methodology

In general, this article employs a survey and educational modelling design, and also includes a quasi-experimental segment.

The authors mainly used interpretive methods to assess and explain socio-political and educational phenomena. In addition, analytical, generalising, comparative, reflective and modelling approaches were employed.

These methods helped to describe and develop new educational conditions, as well as provide methodological recommendations.

To address the psychological and pedagogical problems of musical and patriotic education in wartime, the authors used a teacher-related state-professional anxiety scale. This included a randomised diagnostic survey of 64 children from central Ukraine based on the State-Trait Anxiety Inventory (STAI) (Spilberger, 1983). This approach allowed us to identify and objectively analyse professional problems and obstacles in this area, serving as a quasi-experimental component of the study.

Regarding neuropedagogical methods, the authors focused on establishing correlations between the expected educational and psychorehabilitation goals and neuropedagogical (or neuropsychological) models. These models were then extrapolated to the methodological sphere.

Selection of participants

The selection of the study population involved relative randomisation, although it was affected by certain objective limitations. These included the distant nature of cooperation and the refusal of some parents to facilitate the participation of their children, largely due to psychoemotional and other factors associated with deprivation.

The study population consists of school-age children studying in secondary schools implementing programmes of musical and patriotic education in the new military-political environment.

The total sample size was $N = 64$ participants.

Experimental group: 40 students who regularly participate in structured musical and patriotic education activities (school choir, orchestra, music lessons with patriotic repertoire, thematic activities).

Comparison group: 24 students who receive standard educational material without systematic additional musical and patriotic activities.

Demographic characteristics

Age:

Range: 12–16 years (grades 7–10).

Rationale: This age group is sensitive to the formation of values, emotional development, identity, and responsiveness to musical and patriotic content, which is crucial for the study of neuropsychological strategies.

Gender:

Participants of all genders were included.

Expected distribution (approximate): about 50–60% girls and 40–50% boys, reflecting the typical gender composition of school classes.

Gender is recorded to analyse possible differences in emotional and motivational responses to musical-patriotic education.

Region/location:

Country: [e.g. Ukraine]

Region: [e.g. central/western/eastern region; specific oblast or city]

Settlement type: urban and/or rural schools, depending on your context.

Table 1. Differences in emotional and motivational responses to musical-patriotic education

Category	Subcategory	Value
Country	–	Ukraine
Region	Macro-region	central / western / eastern
	Specific oblast	Kyive
	City / Town	Kyive
Settlement type	Urban	yes/no
	Rural	yes/no
	Mixed	yes/no

Participants were recruited from general secondary education institutions in Ukrainian schools operating in conditions of constant military-political tension and implementing musical-patriotic educational activities as part of their educational process.

Additional characteristics:

Educational context: students attending schools with implemented music classes (choir, ensemble, music lessons) and patriotic activities (memorable dates, patriotic songs, thematic school activities).

Language of instruction: Ukrainian

Absence of diagnosed severe intellectual disabilities that would prevent participation in standard school education.

For inclusion in the experimental group:

Age from 12 to 16 years.

Enrollment in a comprehensive secondary school in the selected region.

Regular participation (at least one semester) in structured music-patriotic activities (choir, orchestra, music class with patriotic repertoire, patriotic activities).

Sufficient cognitive and language abilities to understand instructions and complete questionnaires/tasks.

Criteria for inclusion in the experimental group: age from 12 to 16 years, enrollment in a general secondary educational institution, regular participation for at least one semester in structured musical-patriotic educational activities, sufficient language and cognitive abilities to perform research procedures, as well as providing informed consent from legal guardians and the student's consent.

Despite these limitations, the participants shared key demographic characteristics: they were residents of the central regions of Ukraine, including both large cities (with a population of over 200,000) and smaller towns. These settlements were not in areas of direct military confrontation, but were regularly subjected to shelling.

Therefore, in addition to geography, the main exclusion criterion was the unwillingness of more than 30% of children (at the proposal stage) to participate in the study.

Despite the aforementioned limitations and practical inconveniences, the study adhered to the necessary ethical standards. All participants were children whose parents gave their voluntary and informed consent to participate in the survey.

Music has been an integral part of human societies since ancient times, playing a role in rituals, communication, education, and emotional regulation. Recent advances in neuroscience have enabled researchers to examine how music influences brain activity and emotional responses. Classical music is of particular interest due to its structural complexity and its ability to evoke diverse emotional states.

Understanding the neuropsychological mechanisms involved in music perception contributes to a better understanding of cognitive and emotional processes and highlights the potential use of music in education, therapy, and psychotherapy.

4. Neurophysiological Basis of Music Perception

4.1. Musical Perception and Brain Activity

Music activates a wide range of brain areas, including:

- Auditory cortex (temporal lobe) – analysis of auditory stimuli;
- Prefrontal cortex - formation of associations, decision-making, and emotional regulation;
- Amygdala – involved in emotional evaluation;
- Hippocampus – associated with memory;
- Reward system (ventral tegmental area, nucleus accumbens) – dopamine release.

Thus, music perception is not only an acoustic process, but also a cognitive-emotional act that involves deep brain structures.

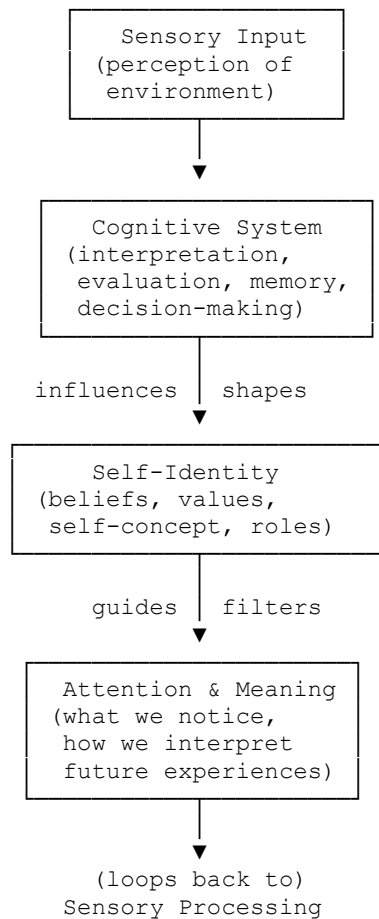


Figure 1. Sensory pathways provide raw data from the environment.

Cognitive pathways interpret that data, compare it with memories, and generate meaning.

Self-identity pathways shape how experiences are interpreted and influence attentional focus.

The system is cyclical: identity influences cognition, cognition shapes perception, and new sensory input can reinforce or challenge identity.

4.2. Neurochemistry of Pleasure

Classical music, like other forms of art, can trigger the release of dopamine, a neurotransmitter associated with pleasure and motivation. This makes music comparable in effect to other rewarding stimuli, such as palatable food, physical activity, or social recognition. Studies using functional MRI (fMRI) show that listening to one's favourite classical music activates the brain regions associated with reward processing.

5. The emotional impact of classical music

5.1. Characteristics of Classical Music as an Emotional Trigger

Classical music has rich harmony, a multi-layered structure, and frequent changes in tempo and mood. This allows it to:

- emotionally engage the listener;
- stimulate attention and imagination;
- induce stable positive emotional states (calm, delight, inspiration).

Unlike many other genres, classical music is often aimed not at arousal, but at contemplation, inner balance, and self-reflection.

5.2. Mood and Listening Studies

Experiments show that after 15–20 minutes of listening to works by Mozart, Bach, or Tchaikovsky:

- Stress (cortisol) levels decrease;
- Subjective well-being increases;
- Attention and memory improve.

Some researchers call this phenomenon the “Mozart effect,” although more recent meta-analyses clarify that the effect is more characteristic of any harmoniously arranged music that evokes positive emotions.

6. Neuropsychology of Musical Perception

6.1. Emotional Memory and Classical Music

Classical music actively interacts with the memory system. It often evokes memories of events, people, and feelings. Activation of the hippocampus promotes a deeper integration of emotional experience into consciousness, which contributes to the stable formation of positive attitudes.

6.2. Music and “Mirror Neurons”

Listening to music, especially emotionally charged compositions (for example, Chopin’s romantic music), activates mirror neuron systems involved in empathy and emotional participation. This helps the listener literally “experience” music as an internal event, improving the ability to empathise and understand the feelings of others.

7. Music as a means of neuropsychological regulation

7.1. Classical music in therapeutic practice

Music therapy based on classical works is used for:

- depression and anxiety disorders;
- sleep disorders;
- recovery from stroke;
- treatment of age-related cognitive decline (e.g. Alzheimer's disease).

The slow tempo, harmony, and repetition of musical phrases help normalise breathing, heart rate and brain activity.

7.2. Effect of concentration and relaxation

Studies show that works by Bach, Vivaldi, Handel and Debussy enhance alpha brain activity – a state of easy concentration, characteristic of a relaxed but attentive state of mind. This not only helps relieve anxiety, but also increases mental performance.

8. Cognitive and Educational impact

8.1. Music and Intellectual Development

Music improves:

- spatial thinking;
- abstract and symbolic thinking;
- attention and short-term memory.

Executive functions play a crucial role in the early development of preschool children. Many studies have shown that music training can positively influence these functions, but there is still no consistent consensus on the topic, particularly regarding the dose–response relationship. (Lu, , Shi, & Musib, 2025).

8.2. Music as a Learning Aid

Classical music is used as background music during learning:

- improves concentration;
- reduces fatigue;
- helps with learning.

This is especially effective when listening to Baroque music with a rhythm of approximately 60 beats per minute, which corresponds to the resting heart rate.

9. Individual Differences in the Perception of Classical Music

9.1. Personality and Cultural Characteristics

Not all people perceive classical music in the same way. The impact depends on:

- musical experience; • cultural attitudes; • level of emotional intelligence.

Nevertheless, even unprepared listeners experience positive physiological and emotional reactions when listening to classical music.

9.2. Music Preferences and the Brain

People who prefer classical music often show higher activity in the medial prefrontal cortex, which is associated with self-reflection and aesthetic judgement. This confirms that the perception of classical music is an active cognitive process that requires engagement and imagination.

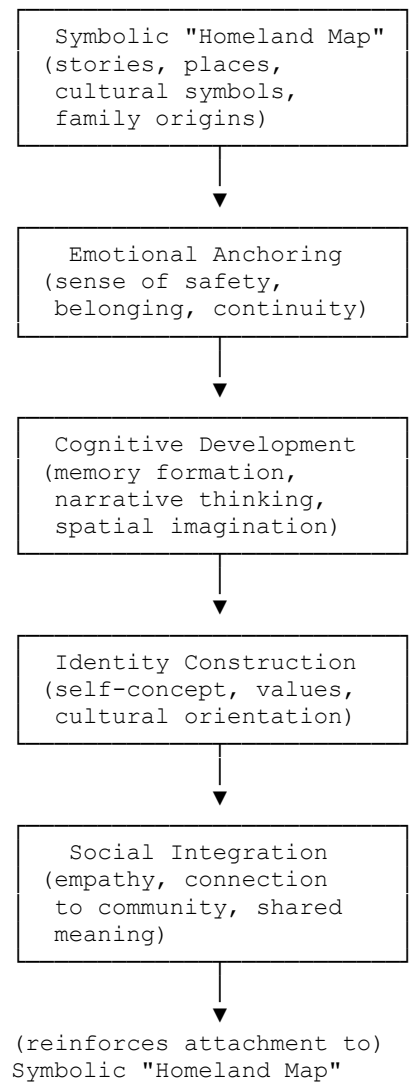


Figure 2. Symbolic "Homeland Map"

A symbolic “*homeland map*” can be anything: family stories, cultural traditions, familiar landscapes, or even a child’s imagined map of “where I come from.”

It provides emotional grounding, which supports healthy neural development.

It strengthens memory, narrative thinking, and spatial reasoning.

It helps children form a stable identity, which is crucial for resilience.

It enhances social understanding, giving children a sense of belonging to something larger than themselves.

11. Current Neuropedagogical Background of the Problem

This issue is becoming increasingly relevant both domestically and internationally. To a large extent, this is due to the ban on Russian-language music and other cultural content, which has become increasingly stringent and is applied at the state level.

At the same time, the government supports cultural, linguistic and social movements aimed at preserving and strengthening Ukrainian ethno-cultural and socio-political identity (Bilinska, 2022). In parallel, the main focus is not on strict regulation from above, but on encouraging direct communication. The goal is to strengthen verbal and musical communication within socially conscious communities.

A central issue in this context is the neurosocial dimension of music education. From a neurosocial perspective, music education should consider the child (student) as a subject “embedded in a neurosocial context”. This means that the child is attuned to both traumatic experiences and cultural codes (Fernandez & Evans, 2022). Within this framework, music functions as a channel that is simultaneously metasocial, participatory, and a form of protest.

At the neuropsychological level, this implies a constant interaction between the prefrontal circuits responsible for critical thinking and the mesolimbic system that evaluates emotions. This interaction creates a complex cognitive-emotional dynamic in the perception of patriotism.

The neuropedagogical conclusion is that teachers must act as transmitters of knowledge as well as moderators of sociocultural resonances. These resonances form neuroassociations that help children build their ideas about the homeland, good, enemy, and heroism. In this sense, the pedagogy of patriotism is not simply about learning a hymn or song lyrics. Instead, it is about the subtle shaping of the brain context that will later influence how children react in existentially challenging situations.

Accordingly, the neuropedagogy of general music education cannot remain separate from these processes. Therefore, it is important to explore the new educational and neurosocial-cultural conditions surrounding the academic potential of Ukrainian music.

The need for changes in educational strategies for musical and patriotic education in the new military-political conditions is urgent. This urgency is enhanced by the fact that all social changes during war are accelerated. In some cases, these changes occur radically and sharply. Therefore, it is extremely important to orient them using educational methods, directing them on a democratic path. This must be done while ensuring compliance with all rights and freedoms, adhering to Western values and socio-cultural worldview (Dovgan, 2024).

Even before the intensive phase of the full-scale offensive on Ukraine, there was a noticeable shift in the narratives of the mass media and the level of public trust in them. Consumers of mass media and cultural discourse no longer took information at face value; instead, they increasingly questioned most new content, a defining feature of the post-truth era. In this environment, people began to determine for themselves what to believe and where to seek informational and emotional support (Szostek, 2018).

As a result, the importance of reliable and enduring sources of such support has increased significantly. Even ancient examples of authentic Ukrainian literature and music have experienced a new surge in popularity. This revival has contributed to the neo-mythologizing of state symbols, sacred concepts, and official emblems.

Scholars and everyday observers around the world recognise Ukraine’s growing global status, as well as the growing international interest in its intangible cultural heritage. However, due to the ongoing war, Ukraine’s domestic cultural market is burdened by local systemic challenges and even geopolitical risks (Wang et al., 2022). As a result, most cultural and artistic events remain local in scale and are predominantly charitable in nature. The only product that remains fully accessible and constantly in demand is the country’s spiritual creativity, the interest in which has noticeably increased.

The authors of this article are deeply struck, both psychologically and from the point of view of their internal geopolitical consciousness, by the numerous divisions that Ukraine is currently experiencing. These turning points continue to multiply, and it is important to recognise a key truth: even the most prominent foreign scholars may not fully grasp the spiritual and mental foundations of the current military and political upheavals in Ukraine.

A striking example is de Ploeg’s book entitled “Ukraine in the Crossfire” (2017). The book presents a detailed, fact-based and impartial account of neoliberal and nationalist events in Ukraine, from the Maidan to the war in the East. At the same time, it focuses on artistic and cultural, as well as musical and educational metamorphoses.

Table 2. A summary of neuropedagogical strategies for music instruction in diverse geocultural settings

Context	The primary role of music	Neuroeducational analysis
1. Countries with a stable national identity	Cognitive-aesthetic: developing memory, thinking, and motor skills	Music is used as a tool for neuroplastic development. The activation of the hippocampus, motor cortex, and frontal lobe engages multiple brain systems simultaneously.
2. Countries after colonisation, totalitarianism, or armed conflicts	Identity-mobilising: forming neuro-ethnic consciousness	Music acquires the meaning of a “neuro-ethnic code”, activating archetypal images of resistance and freedom. Patriotism is formed through emotional pathways of long-term memory.
3. Cosmopolitan and multicultural environments	Social-affiliative: fostering belonging to the community	By activating mirror neurones, empathy for diverse cultures is cultivated. Patriotism is interpreted as loyalty, equality, and acceptance of the identity of the “other”

Source: the authors’ own conceptualisation

Before formulating methodological recommendations and constructing a neuropedagogical model, it is important to clarify Table 2 to ensure a more accurate framework.

To begin with, this table conceptualises three primary models of music education, each rooted in distinct neuropsychological mechanisms. These mechanisms are activated depending on the geocultural context and the presence or absence of historical trauma.

In countries with a well-established national identity, music primarily serves a cognitive-aesthetic function. It stimulates the frontal cortex, hippocampus, motor cortex, and sensory cortex, thereby functioning as a tool for neuroplastic adaptation. In societies that have experienced the “trauma of war” or imperial domination, musical artefacts act as psychological anchors. They also function as neuro-cultural reflections, supporting gradual spiritual restoration. It operates as a means of forming a collective neuro-identity, where emotionally charged musical patterns activate archetypal associations with freedom, honour, and justice. This occurs through channels of affective memory, often supported by rhythmic, repetitive structures that embed the image of the nation within the child’s bodily and psychological experience.

Furthermore, scholars observe that social affiliation predominates in the neuro-cultural educational space (Reissmann et al., 2021). In such contexts, patriotism loses its ethnocentric framing and transforms into inclusive neuro-empathy, i.e., the brain’s ability to integrate both the “self” and the “other” without hierarchical conflict.

Engagement with musical products through perception, study, and consumption helps strengthen identity and foster a sense of belonging, reflecting the state of society, which can now be seen as a neuro-socium. It is also important to consider regional differences. Societies most at risk are those facing potential loss of independence, agency, and identity, particularly their historical and cultural continuity, due to external cultural influence, such as developing countries in Africa (Onyeke, 2021).

In relatively closed but emotionally rich educational institutions, such as Greek-Cypriot schools, collective experiences and the processing of trauma through expressions of patriotism have been observed (Bryant, 2021). This is supported by research, which indicates “group synchronisation of emotional states” via mesolimbic activity (Daughtry, 2015). At the same time, such activity can intensify anxiety, as can empathetic unity. Another ambivalence lies in music’s neuro-potential to stimulate both inherent cultural codes and artificial ones, including propagandistic or radical messages (Fauser, 2013). These patterns highlight the need for a careful approach when selecting methodological neuropedagogical tools.

Drawing on global experience, several neurocentric modes of musical and patriotic education can be identified: (a) the aesthetic mode, typical of democratic countries; (b) the identity-protective mode, common in post-imperial countries; and (c) the therapeutic mode, found in countries experiencing crisis. Unfortunately, all three modes and their associated validity are relevant to Ukraine.

To explore this topic further, it is important to consider it in the context of more traditional pedagogical and ethnic identity issues. A review of relevant sources on national and patriotic themes (often treated as synonymous) highlights significant differences between countries. It also reveals various axiological orientations inherent in these concepts. The family and immediate surroundings, as models of a “small homeland”, are closest to a child’s natural existence. However, in countries that have recently gained independence from colonial or totalitarian rule, educators often discuss military and national patriotism together (Mustaev et al., 2021).

On a broader cosmopolitan and global scale, patriotism is viewed as synonymous with equality, loyalty, and the final elimination of racial discrimination. Emerging social-political categories, such as critical racial media literacy and critical patriotism, are gaining prominence (Hawkman & van Horn, 2019). These categories involve various forms of public consciousness and practice – education, sports, culture, music, journalism, and more. However, they must begin within schools. Public education and regional patriotism need to find common points of loyalty to ultimately liberate younger generations from destructive attitudes towards ethnic, regional, or racial differences.

One can draw comparisons with the Ukrainian national identity issue, recognising both similarities and differences. One thing is certain: in regions that have undergone historical upheavals, the foundation of patriotism is deeply rooted in mental and even archetypal concepts, such as *truth*, *justice*, and *freedom*.

One can observe this in all countries that experienced totalitarian influence during the past century. In these contexts, consistent axiological narratives emerge. Teachers seek to use music not only to foster patriotism among youth but also to assert national identity and establish a connection to the global cultural discourse.

Thus, the main neuroeducational aim of musical and patriotic education, and of music education more broadly, is to preserve unity across generations. This unity, in turn, promotes healing among participants through shared synchrony. The main challenge lies in bridging the gap between the enjoyment of mass, synthetic, contemporary music and authentic, national, and timeless forms of music. In this context, one can speak of propaganda in the best sense of the word.

This area of music education is enriched by numerous articles that explore two main directions: resistance to the virtualisation of authentic music and, conversely, the search for synergy and compromise with digital media. The issue is broad and multifaceted. Ethnic music, as one of the oldest and most organic components of the multimedia, technologised environment, spans both

culturally authentic and synthetic regions. It remains relevant in a wide range of contexts – across the Western world, the East, and even in small island nations. Therefore, despite regional and ethnic differences, a consistent pattern persists: patriotic unity and national identity are maintained through tradition (Gong, 2021).

By contrast, in developed liberal democracies, such as those in Western Europe, education through music and its traditions is approached either as an individualised process or as a clearly defined educational goal. Still, Ukraine has yet to fully realise the spiritual and mobilising potential of music – this remains incomplete.

One must acknowledge the presence of neuro-cultural relativism across different societies. Equally important is recognising that patriotism is understood in context-dependent ways. The relevance and value attributed to patriotic education differ from country to country, shaped by the perceptions of local communities and teachers.

12. Research results and discussion

From a 21st century perspective, a clear distinction can be made between propaganda and psychotherapy. They are fundamentally different phenomena. However, they share a common feature: both influence the human psyche. In the case of propaganda, the influence is directed at the masses, while psychotherapy is focused on individuals or small groups.

The starting point for this analysis was not only the context of the war, but also the results of a randomised survey of teachers. This survey provided additional material that deepened the analytical framework.

As mentioned in the introduction, the study involved 64 participants, children attending music classes in the central regions of Ukraine. To assess their levels of state and trait anxiety, the authors used the State–Trait Anxiety Inventory (STAI) (Spielberger, 1983). This method includes two different scales: current state anxiety and anxiety as a personality trait.

As a result, all 64 participants completed both parts of the survey. It consisted of 40 statements, 20 for each scale. The results are presented below:

1. State Anxiety (SA).

High level – 24 participants (37.5%).

Medium level – 28 participants (43.75%).

Low level – 12 participants (18.75%).

2. Trait Anxiety (TA).

High level – 20 participants (31.25%).

Medium level – 30 participants (46.88%).

Low level – 14 participants (21.88%).

The fact that most participants showed moderate levels of anxiety on both scales highlights the need for systematic interventions. Thus, the study confirms that anxiety is a pressing issue among participants involved in music education in central Ukraine. Workshops, stress management training, and peer support initiatives may be particularly helpful.

Thus, the study confirms that personal and professional anxiety is a pressing problem among children in music lessons in central Ukraine. Further research should be aimed at expanding the sample to make it representative (rather than demonstrative), and to examine specific stressors in more detail to develop effective strategies for reducing anxiety.

It is also important to pay attention to the psychological well-being and quality of life of children, especially in contexts involving prolonged stress, educational disruption, and traumatic experiences (Ardelean et al., 2022). This is particularly relevant in the context of interactive teacher–student relationships, especially during creative lessons.

Many studies show that the main non-physical consequence of war for children is psychological trauma. This can manifest itself as depression, post-traumatic stress disorder, neurotic

symptoms, or conversion symptoms. In addressing this issue, educators can use the phenomenological approach proposed by Bensimon (2022). His work on integrating trauma into music therapy and education has become especially relevant during a period of intense global military and political tension.

The scholar has clearly identified three levels in this context: musical integration of the body, integration of events, and integration of life history (Bensimon, 2022). These levels and methods require integrated implementation within the Ukrainian neuroeducational context.

Historically, opportunities for the development of national identity in Ukraine have been constrained. Remembering national heroes and brief moments of independence throughout Ukraine's history not only supports democratic education, but also helps protect young people from psychological harm. It promotes self-respect and teaches respect for other peoples who, like Ukrainians, have the right to peace and dignity.

The teacher is at the centre of this important mission. As Rusova (1924) wrote: "A teacher who is aware of his high calling can enliven the teaching and educational process with his creative spirit" (p. 90).

Such an approach may seem contradictory to the cosmopolitan tendencies of the modern world. However, it remains relevant for countries with underdeveloped democracies.

Even before the escalation of the war, Ukrainians understood that the upbringing of patriotic consciousness through music involves a complex interaction. It connects music with national politics, and aesthetics with the pragmatic. These elements are closely intertwined. This is especially evident in countries with strong cultural traditions, as well as in countries with a significant totalitarian history and those experiencing a process of self-determination.

Accordingly, it is important to conceptualise patriotic consciousness as a heuristic construct, as well as a measure of development. It serves as an ideological tool (Marongedze, 2019).

In addition, it is important to explore current educational trends in the study of the formation of patriotic consciousness in the arts. These trends are especially relevant in the context of the influence of the environment, emotions and motivation.

One of the key theories is the facilitative approach, which is applied to sports, art and other forms of self-expression and acquisition of values.

Scholars argue that it is not necessary to focus on the unique individual ways of reflecting on the musical environment. Instead, attention should be paid to its ecological and resource qualities (Henriksen & Stambulova, 2017), since reflection on art goes beyond the everyday perception of reality. This is evident in Ukraine, where in the midst of war disruptions, people often use songs — through listening or singing — as a means of rest, relaxation, social cohesion and cultural creation.

Thus, war is now perceived in a more irrational and reductive way at the level of psychological processes. Even younger schoolchildren, who may not fully realise the scale of global geopolitical changes and the evolution of Ukraine's role in the world, intuitively understand that something important is happening. Ukrainians are now active participants in shaping a new history of their country and the world.

Children who were able to overcome the trauma of war showed early signs of maturation, as well as a stronger national identity and resilience.

The authors of this article observed spontaneous forms of irrational self-medication. Adults, for example, would stop on the sidewalk whenever the national anthem was played on the radio. Similarly, both children and adults engaged in improvised singing of folk songs during prolonged stays in bomb shelters. However, this behaviour should not be overstated, as the same individuals also exhibited hypochondria, stress, and depression. Ukrainian youth, who grew up under the influence of both Ukrainian and Russian culture, underwent noticeable changes since the beginning of the war (Marukhovska-Kartunova et al., 2024). While the war primarily affected the development of self-identity among adults, children, through imitation and the desire for maturity,

contributed to what can be described as a “new youth front” of decolonisation. We hope that these children will develop into a generation that is not only shaped by trauma but also characterised by strong patriotic awareness and agency.

The music teachers interviewed reported that, contrary to expectations, the feelings of inferiority that arose from the military humiliation of young Ukrainians have in most cases had the opposite effect. In addition, the COVID-19 pandemic, which has affected Ukraine, as well as the rest of Europe, has led to the withdrawal of students from offline learning and group music activities. During this period, many teachers have lost their jobs, and several studies have reported a significant decrease in student motivation to learn, especially during the transition to online education. However, there has also been an increase in the distribution of music on social networks and the development of new Ukrainian musical movements. This experience may be valuable in times of even greater hardship (Bondarenko et al., 2023b).

Therefore, any strategy for musical and patriotic education in the modern military-political context must take into account the therapeutic and propaganda potential of Ukrainian music. Table 3 outlines such a strategy along with explanations.

Table 3. Outline of musical and patriotic education in wartime

Focus area	Methodological approach	Therapeutic/educational impact
1. Psychological support through music	Including musical pieces in the programme that help children cope with stress and anxiety	Both traditional Ukrainian songs and today’s compositions with positive messages can support emotional resilience.
2. Interactive learning methods	Using interactive methods such as music workshops and music projects	Student engagement is enhanced. Active participation in the music-making process strengthens patriotic consciousness.
3. Innovations	Using musical platforms, virtual concerts, and distance learning	It plays a key role in situations of migration, when attending schools or other forms of group learning is not possible.
4. A historical-traditional approach	Studying the history of Ukrainian songs and music, with an emphasis on patriotic themes	Students gain an understanding of patriotism by exploring cultural continuity and its role in the pursuit of national sovereignty.
5. Collaboration with renowned musicians and composers	Involving well-known Ukrainian musicians and composers in the educational process	Student motivation is increased. Joint projects, such as songwriting or co-composition with professionals, serve as powerful tools for patriotic education.
6. Music-based psychotherapy	It allows the expression of emotions and the alleviation of psychosomatic symptoms through movement and bodily engagement	It promotes psychological integration and the reduction of psychosomatic issues, particularly effective in group settings

Source: the authors’ own conceptualisation

In light of current wartime conditions, strategies for musical and patriotic education are increasingly incorporating elements of music therapy.

This shift naturally leads to reflection on whether an entirely new model for training music teachers is required or if the traditional framework can still serve as a relevant and effective foundation.

Ukrainian scholars have already gained experience in implementing musical and patriotic education under conditions of limited national consciousness and incompletely established sovereignty. According to Boiko (2005), this process involves self-reflection on national relations, understanding one's place and role within the system of interethnic relations, and recognising oneself as a representative and subject of the national community. Derbak (2006) further describes national consciousness as an integrative psychological and spiritual construct, grounded in knowledge of national realities – rituals, beliefs, myths, imagery, concepts, traditions, and more.

National consciousness has long been a cornerstone of Ukrainian values. Therefore, the proposed model for training music teachers should be viewed as a profound modernisation of the traditional approach, rather than as a completely new methodological construct.

Given Russia's war against Ukraine, developing a new model for music education requires a comprehensive approach. This approach takes into account the ongoing social, economic, and cultural realities of the war. A critical methodological analysis of the current educational situation, supported by the numerous sources reviewed above, allows one to formulate key didactic recommendations.

These recommendations are aimed at the development and effective implementation of such a model:

- *Conducting an educational needs assessment.* Scholars should carry out an assessment to identify the gaps in music education caused by the war, including budget cuts in public funding, disruptions to the music industry, and the psychological effects. The assessment should include feedback from educators, musicians, and citizens affected by the war.

- *Involving the community in musical and patriotic education.* The educational environment should be open and socially orientated, strengthening social bonds through its non-institutional character.

- *Changing the methodological paradigm in teacher training.* Teacher training must be adapted to meet the challenges of the current context. A first step could involve offering training for music teachers and musicians on trauma-informed music education. This training should focus on addressing the emotional needs of students and educators who have experienced trauma, as well as on teaching how to use music as a tool for moral and psychological healing.

- *Fostering collaboration between musical artists and academic institutions.* To foster increased opportunities for young individuals to interact with, learn about, and present national and uplifting songs, the cooperation between musical artists and learning institutions should be vigorously encouraged.

- *Providing remote access.* Given the constraints of war, ensuring digital access to music education is critical. Resources such as music lessons, tutorials, and educational tools should be updated and made available to students who may not have access to formal education due to the conflict.

13. The Neuropedagogical Model of Musical and Patriotic Education

Building on these recommendations, the authors have examined the foundational principles of music education and the requirements for training music teachers.

Consequently, they propose a generalised model for teacher training (see Table 4).

Table 4. Schematic model of musical and patriotic education

Meta-methodologic al vector	Specification	Specific methodological content
1. Goals and objectives	Fostering patriotism	Preparing future defenders of the homeland by instilling love for it
	Identity development	Internalising ethnocultural codes and national musical heritage
	Spiritual growth	Shaping moral principles through spiritual development
2. Content	Perception of Ukrainian music	Listening to the diachrony of musical works, from folk to contemporary compositions
	Awareness of historical background	Studying musical works related to wars and the patriotic struggles of Ukrainians across different periods
	Own creativity	Engaging in personal musical creation, improvisation, and imitation
3. Activities and forms of work	Festival approach	Organising and conducting concerts and song competitions
	Club approach	Establishing thematic school (or campus) clubs
	Interactive approach	Using communicative and competitive formats, such as musical quests, quizzes, and discussions
	Co-working approach	Facilitating collaboration and interaction among students, war veterans, and patriotic musicians
4. Resources	Teaching staff	Training music teachers to work within the context of patriotic education
	Material and technical facilities	Ensuring that educational institutions are equipped with the necessary musical instruments and equipment
	Educational materials	Developing textbooks, guides, song collections, and audio-visual materials focused on patriotic themes
5. Assessment and monitoring	Assessment	Developing criteria for assessing students' achievements in musical and patriotic education
	Feedback	Collecting feedback from students, parents, and teachers to continuously improve the educational process
	Analysis of results	Regularly analysing the outcomes of activities and adjusting programmes in response to changes in the learning environment and society

Source: the authors' own conceptualisation

Table 3 provides a detailed representation of all structural and didactic elements. Moreover, the numbering of the items reflects a logical progression from abstract concepts (such as goals and content) to more concrete aspects (such as resources and methods). In the explanation that follows, it is also essential to address the components of teachers' readiness for musical and patriotic education in the context of the current military-political situation. These components may serve as a foundation for future experimental studies aimed at assessing such readiness.

The key components of future music teachers' readiness for patriotic education include motivational, cognitive, emotional, and reflective elements. This structure has become a standard approach in Ukraine for the experimental validation of pedagogical models (Mykhailova, 2005).

The motivational component develops through the student's self-awareness and their sense of belonging to all that is Ukrainian and enduring. This requires careful guidance of young people during a sensitive developmental stage.

The cognitive component is reflected in the teacher's aspiration to acquire the necessary knowledge, skills, and competencies to foster students' national identity. The emotional component involves the development of axiological orientations, a national ideal, and spiritual and moral sensibilities. The reflective component, most closely linked to the teacher's personal development, entails the capacity for self-improvement and ongoing professional growth.

Based on these components, four correlational criteria have been identified to assess the readiness of future music teachers to foster national self-awareness. These are motivational and goal-orientated, cognitive and informational, emotional and axiological, and reflective and evaluative (Dobrovolska, 2020).

The *motivational and goal-orientated* criterion reflects an understanding of the need to develop patriotic feelings in students. It includes an interest in fostering national self-awareness, recognising the value of Ukrainian musical art, and the ability to apply it in educational settings effectively.

The *cognitive and informational* criterion refers to the level of awareness regarding the components of national self-awareness. It also involves knowledge of music teaching methods that contribute to its development, as well as the ability to organise and apply knowledge and skills systematically in educational contexts.

The *emotional and axiological* criterion indicates the extent to which value orientations are developed. It encompasses sensory meanings such as dignity, a sense of community, pride, collective love for the homeland, tolerance, and empathy, alongside the overcoming of hatred towards the enemy.

The reflective and evaluative criterion is based on self-assessment. It involves awareness of the development of knowledge, values, and the emotional-irrational sphere. It also considers the individual's recognition of their need for personal growth.

However, it is important to revisit the neuropedagogical model developed from the general educational framework and schematic representation. The pedagogical criteria for readiness are extrapolated onto the neuropedagogical patterns discussed earlier.

To implement the neuropedagogical model successfully in musical and patriotic education, the teacher must possess comprehensive readiness. This includes the ability to form a micro-neuro-social environment. The model incorporates motivational and goal-orientated, cognitive and informational, emotional and axiological, and reflective and evaluative criteria. Each criterion is explained through the lens of neuropsychological determination, examining the neuropedagogical mechanisms interacting with the model's key components.

The teacher's readiness to implement the sensory identification component is based on a motivational and goal-orientated approach. This approach aims to form a bodily-affective experience of national belonging in the student. From a neuropedagogical perspective, this means activating the limbic system, which governs emotions, and mirror neurons, which support empathy and cultural identification.

Vocal intonation of Ukrainian songs, rhythmic movements, and folk melodies, when combined with physical movement, are not only lesson elements. They serve as sensory keys, helping to form a symbolic map of the homeland in the child's brain. The teacher, motivated by patriotic content and a pedagogical mission, becomes a source of emotional contagion. This initiates deep cultural identification through music.

The next component, the cognitive and informational criterion, reflects the teacher's ability to handle facts and construct neuro-associative chains.

The main focus should be on integrating activity with multisensory engagement. It is useful to combine creative and perceptual forms of activity. Examples include drawing to music, dancing, or at least moving to music through tapping or percussion. The authors of this article believe that this combination can produce a holistic effect by maximising the engagement of neuroplasticity mechanisms.

The emotional and axiological criterion is demonstrated by the teacher's ability to initiate a musical experience as a shared emotional journey. Emotional anchoring occurs when the child perceives music not only as an aesthetic object but also as a personal and collective story. The teacher should create environments where the song becomes "the song of our class", "the musical symbol of the city", or a collective prayer for Ukraine. Furthermore, socio-affiliative practices such as flash mobs, musical support for the Armed Forces of Ukraine, and group music-making activate oxytocin-mediated trust, fostering a sense of belonging to the broader "we". The outcome is not just emotional engagement but also the formation of an affective bond with the national context.

Finally, the reflective and evaluative criterion highlights the teacher's readiness to facilitate metacognition, helping the child recognise their emotional and value-based responses to music.

Techniques such as listening diaries, emotional song maps, and reflective circles are not just instructional methods; they also encourage the development of prefrontal thinking, which is crucial for moral judgement, critical reflection, and accepting one's position. The teacher, in this process, functions as a looking glass, directing students to comprehend themselves through the consideration of their experiences.

Thus, by considering the neuro-interpretation of criteria, mental-emotional patterns, and methodological implementation with a focus on specific neuropsychological and neuro-social outcomes, the authors propose a model of music education within the framework of neuropedagogy (see Table 5).

Table 5. Neuropedagogical model of musical and patriotic education

Component	Neuropedagogical foundation	Implementation	Expected effect on the child/student
1. Sensory identification	Activating the limbic system and mirror neurones	Vocal intonation of folk and patriotic songs; national rhythmic movements	Development of empathy for symbols and traditions; emotional connection to the cultural context
2. Emotional anchoring	Forming affective-cognitive memory through emotions	Shared musical experience, integrating music into memories (e.g., "The song of our class/city/heritage")	Strong emotional links between "music and homeland"; enhanced patriotic self-awareness
3. Perceptual integration	Engaging visual, auditory, and tactile cortices in a unified perception of music	Visualisation with music (drawing, graphic scores), dance, and body percussion	Creation of a holistic aesthetic image of the country; development of intersensory connections
4. Cognitive activation	Neuroplasticity; strengthening associative and logical connections through musical content	Exploring the history of songs, composers, and national symbols; quest-based lessons	Deepening understanding of national identity; strengthening connections between "music, history, language, and culture"
5. Socio-affiliation (belonging)	Brain response to group membership; effects of oxytocin and social security	Group music-making, choral flash mobs, musical support for the Armed Forces of Ukraine	Increased sense of unity and belonging; formation of trust within the group and the national "we"
6. Therapeutic regulation	Transition from β -waves to α/θ -waves in the brain; reduction of cortisol	Music therapy practices: "musical breathing," musical fairy tales, and improvisation exercises	Decrease in anxiety; emotional stabilisation; strengthening of inner resilience
7. Reflective integration	Metacognition: self-reflection through neural pathways in the prefrontal cortex	Listening diaries, emotional song maps, reflective circles ("What did you feel during the song about Ukraine?")	Enhanced awareness of personal reactions, development of critical thinking, and formation of values based on reflection

Source: the authors' own conceptualisation

The neuropedagogical model of musical and patriotic education requires the teacher to go beyond mastering methods and repertoire. It demands a high level of professional maturity. The teacher must integrate a neurobiological understanding of child development with the aesthetic, spiritual, and patriotic dimensions of music. In this way, music becomes a powerful tool for shaping civic consciousness.

On the other hand, as shown by the neuro-relevant criteria, the foundation of preparation is based on entirely internal and personal phenomena. These include emotions, will, motivation, cognitive traits, and, most importantly, reflection. The latter is crucial for both the teacher and the

student. Today, music is studied globally as an object of suggestive influence, personal reflection, and perception. In contrast, components such as epistemological, compositional, or genre-related aspects are secondary.

14. Discussion

Despite the deliberate focus on emphasising Ukrainian identity in the model, one must acknowledge a potential bias. The authors of this article did not include pro-Russian or neutral cultural contexts. The absence of this may compromise the model's validity, particularly when considering cultural hybridity as outlined in recent academic work. The notion of ambicoloniality, for instance, underscores how Ukrainian and Russian cultural traditions have influenced each other. Such elements lead to a hybrid identity formation, as opposed to a unified one (Biedarieva, 2024). McWilliams and Legnér (2024) investigated cultural colonial influence in the post-Soviet space. They found that Russian music may play a role in maintaining post-colonial consciousness.

To overcome this bias, the model should incorporate modules capable of analysing cultural hybrids. An example of this might be a comparative examination of folklore or intonational structures that are musically alike in both cultures.

Compared to EU and NATO approaches to cultural resilience in wartime, the authors' model does not contradict their general frameworks for protecting identity. However, it remains less integrative. NATO and EU strategies view culture not only as a means of self-preservation but also as a field for democratic dialogue with hostile or "other" contexts. This dialogue helps neutralise propaganda through critical reflection, rather than outright exclusion (Pesenti, 2021). In this sense, improving the model towards interpretative openness and mediation would be beneficial. This could include fragments of foreign culture. Such an approach would align the model with European standards of cultural resilience and strategic education in hybrid warfare.

One must also recognise certain epistemological and methodological gaps in this article. These stem from military-political, psychological, and mental factors affecting the authors, who are citizens of a country invaded by the Russian Federation. One potential issue for independent readers is a bias in patriotic narratives due to the wartime context, which leads to ignoring Russian cultural influence. One can explain this by the organic resistance to such influence during war. Furthermore, this influence is perceived not as an aesthetic or cultural phenomenon but as a tool of soft power, historically used to colonise Ukrainian culture. Therefore, the authors consciously avoid representing Russian musical or cultural codes in the model of national musical and patriotic education. Instead, they focus on authentic Ukrainian traditions, intonational systems, archetypes, and heroic motifs. Even though this may seem one-sided, it serves the protective and restorative role of education during traumatic social experiences. Additionally, the focus on Ukrainian musical culture supports the nation's subjectivation. It restores symbolic ties to history, notably through sound as a carrier of identity and memory. In a more stable environment, a more critical reflection on this model will be possible. This could include broader intercultural and musicological contexts.

The authors also admit that the short timeframe prevented them from longitudinally testing even the relative validity of the proposed model. Thus, they must acknowledge possible risks and limitations, including: a) uneven levels of neuroaesthetic sensitivity among learners, which may affect emotional and cognitive engagement with patriotic content; b) difficulties in operationalising components such as "musical national identity" or "cultural-axiological affiliation", due to the lack of stable quantitative indicators; and c) challenges in distinguishing the effects of patriotic education caused specifically by musical influence from those of other pedagogical factors, such as teacher personality or environment.

In future research, it would be advisable to apply a quasi-experimental design with multilevel control analysis. Using psychophysiological, motivational, and affective indicators would help measure how well empirical results align with the neuropedagogical model's predictions.

15. Conclusions

Ukrainians, who have recently developed a healthy sense of individualism in their postcolonial experience, are now forced to unite around authentic concepts and musical heritage due to the war. This unity is essential in resisting the threat of physical and mental annihilation or, in the worst case, assimilation.

An assessment of music teachers' personal and professional anxiety, using the State-Trait Anxiety Inventory (STAI), revealed high and average anxiety levels, particularly as a personality trait. Ten participants (31.25%) exhibited high anxiety, which highlights a psychological and professional challenge in teaching music during the ongoing war. Even though the authors did not directly examine the psycho-traumatic state of children, their findings indicate that children's musical perception serves two crucial functions for the traumatised psyche: therapeutic (internal integration) and identity-patriotic (external integration), both of which are closely associated with emotional well-being and psychosocial functioning in childhood (Ardelean et al., 2022). These roles not only merge with the emerging war culture but also act as existential tools for self-preservation, emotional processing, engagement, and national unity.

The practical outcomes of this article are realised through several relatively well-developed aspects. First, the authors identified the existing problems and gaps in musical and patriotic education during a nationwide crisis. Second, they defined the methodological basis for reforming music-pedagogical education in the context of global and regional crises. Third, they propose a new neuropedagogical and even neuro-social model that extends beyond the classroom and the school.

It should adopt a community-centred approach that addresses the social, emotional, and economic difficulties faced by young people and families affected by the conflict.

It is also crucial to draw some conclusions related to the article's goal.

1. Global trends in musical and patriotic education are significantly shaped by the geopolitical status of countries. In Western countries, music education is regarded as a tool for overall development, including cognitive, psychomotor, and aesthetic growth. Scholars in these regions often debate the tension between the popular and the authentic, as well as today's virtual versus the traditionally sacred. Conversely, in countries with distinct regional (postcolonial, marginalised, or demographic) challenges, where national self-affirmation is essential, musical and patriotic education becomes a central instrument. It helps in both reinforcing national identity and striving for recognition among the world's diverse nations.

2. Conclusion on Ukraine. In Ukraine, the educational and patriotic environment has been notably expanded due to the ongoing war, which has played a role in uniting the nation. A defining feature of this environment is the exceptionally high motivation of the people. The authors believe that this motivation is so strong that it no longer needs to be cultivated in schools. Ukrainian patriotic songs can be heard everywhere, and the social media profiles of children and young people are filled with their renditions of both well-known and forgotten folk songs. This demonstrates that Ukrainian music, as a tool for patriotic education, is both self-sustaining and effective. Consequently, teachers do not need to introduce any special additional measures; their role is to adjust and act as facilitators.

3. Conclusion on the proposed neuropedagogical model of musical and patriotic education and its prospects for implementation. The proposed model includes such components as sensory identification, emotional anchoring, and cognitive activation. It also integrates current insights from neuroscience, pedagogy, and cultural psychology. This model responds to the challenges posed by wartime and the evolving educational context in Ukraine. It depends upon the combined action of cognitive, emotional, and sensorimotor systems within the child's brain. The outcome is that music can both influence national identity and manage psycho-emotional well-being, promote self-examination, and cement steadfast moral-patriotic ideals. Every part of the model focuses on distinct neurological responses, spanning from the limbic system to the prefrontal cortex. This framework develops a comprehensive educational system in which music functions as a prompt,

mentor, and healer all at once. This model is suited for diverse educational environments, encompassing both traditional schooling and online learning, and finds utility in formal and informal learning situations. This is strong because it can unite the spiritual suffering of the wartime generation with the longing for a durable cultural self-identity, doing so through a secure, visually appealing, and neurologically effective educational framework. In the future, this model could serve as the foundation for national programmes in art teacher training and could also become a platform for intercultural dialogue in post-conflict societies.

16. Research Limitations

To bring the ideas of this article into educational practice, it is necessary to further develop the model and integrate specific materials and didactic content. The authors also anticipate experimental research within the framework of the problem in question.

There is a growing interest in the continuation of sociocultural youth music trends during the war, with initial studies already underway. International scholars, who are not influenced by the surge of patriotism and are not located in Ukraine's war zones, can objectively assess the role of music (not only Ukrainian music) within Russia's war against Ukraine. These scholars have reached unexpected conclusions. After the invasion, cultural and neuro-social disintegration was observed in post-Soviet republics. Furthermore, global musical discoveries during the first months of aggression were perceived and absorbed only within certain cultural clusters (Lee et al., 2024).

This may indicate a form of dimorphism in these republics. While Ukraine shifted to producing its own content, interest in local Russian products declined. In Belarus, which aligns with Russia, the popularity of Ukrainian music grew. This suggests "underwater currents" of discontent and resistance that have not yet fully surfaced. This provides valuable material for understanding the passionate potential of music and its metapolitical nature.

References

- Andersson, K., Gullberg, A., Danielsson, A. T., Scantlebury, K., & Hussénius, A. (2020). *Chafing borderlands: Obstacles for science teaching and learning in preschool teacher education. Cultural Studies of Science Education*, 15, 433–452. <https://doi.org/10.1007/s11422-019-09934-x>
- Ardelean, V. P., Andrei, V. L., Miuța, C. C., Boros-Balint, I., Deak, G.-F., Molnar, A., Berki, T., Győri, F., Geantă, V. A., Dehelean, C. A., & Borcan, F. (2022). The KIDSCREEN-27 quality of life measure for Romanian children aged 6: Reliability and validity of the Romanian version. *Healthcare*, 10(7), 1198. <https://doi.org/10.3390/healthcare10071198>
- Bensimon, M. (2022). *Integration of trauma in music therapy: A qualitative study. Psychological Trauma: Theory, Research, Practice, and Policy*, 14(3), 367–376. <https://doi.org/10.1037/tra0001032>
- Bezlyudna, N. (2022). *Sotsialno-pedahohichni umovy realizatsii natsionalno-patriotychnoho vykhovannia molodshykh shkoliariv u period voiennoho stanu* [Socio-pedagogical conditions for implementing national-patriotic education of primary school students under martial law]. *Věda a perspektivy. Serie "Pedagogika" [Science and Perspectives. Series "Pedagogy"]*, 7(14), 1–13. [https://doi.org/10.52058/2695-1592-2022-7\(14\)-165-177](https://doi.org/10.52058/2695-1592-2022-7(14)-165-177)
- Biedarieva, S. (2024). *Ambicoloniality and war: The Ukrainian Russian case*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-031-74077-0>
- Bilinska, O. (2022). *Muzychne mystetstvo i viina (vid pochatku XX st. do sohodennia): na prykladi spohadiv Osypa Zaleskoho* [Music and war: From the early 20th century to the present through the lens of Osyp Zaleskyi's memoirs]. *Scientific Collection "InterConf+"*, 22(113), 328–337. <https://doi.org/10.51582/interconf.19-20.06.2022.032>
- Bondarenko, A. (2023a). *Transformatsii u stavlenni do rosiiskoi muzyky v umovakh viyny* [Transformations in attitudes toward Russian music during wartime]. In N. R. Rabei (Ed.), *Materialy III Mizhnarodnoi naukovoï konferentsii "Mizhhaluzevi dysputy: dynamika ta*

- rozvytok suchasnykh naukovykh doslidzhen” [Proceedings of the 3rd International Scientific Conference “Interdisciplinary Disputes: Dynamics and Development of Current Scientific Research”] (pp. 347–348). European Scientific Platform. <https://archive.mcmd.org.ua/index.php/conference-proceeding/article/view/393>
- Bondarenko, A., Humeniuk, T., Romanenko, A., Makarenko, L., & Lysenko, L. (2023b). *The impact of the Covid-19 pandemic on music education in Ukraine. Fontes Artis Musicae [Sources of the Art of Music]*, 70, 244–262. <https://doi.org/10.1353/fam.2023.a909191>
- Boiko, S. M. (2005). *Stanovlennia i rozvytok natsionalnoi samosvidomosti ukrainskoho narodu: tsinnisnyi vymir* [The evolution of the Ukrainian people’s national consciousness: A value-orientated perspective] (Unpublished doctoral dissertation). Taras Shevchenko National University of Kyiv. <https://uacademic.info/ua/document/0405U005028>
- Bryant, R. (2021). An education in honor: Patriotism and rebellion in Greek Cypriot schools. In V. Calotychos (Ed.), *Cyprus and its people* (pp. 53–68). Routledge. <https://doi.org/10.4324/9780429040368-4>
- Cusick, S. G. (2020). Music as torture / Music as weapon. In M. Bull & L. Back (Eds.), *The auditory culture reader* (pp. 379–391). Routledge.. <http://www.redalyc.org/articulo.oa?id=82201011>
- Daughtry, J. M. (2015). *Listening to war: Sound, music, trauma, and survival in wartime Iraq*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199361496.001.0001>
- de Ploeg, C. K. (2017). *Ukraine in the crossfire*. Clarity Press, Inc.
- Derbak, A. P. (2006). *Dukhovni zasady stanovlennia natsionalnoi samosvidomosti (sotsialno-filosofskyi analiz)* [Spiritual principles in the development of national consciousness: A socio-philosophical perspective] (Unpublished doctoral dissertation). Taras Shevchenko National University of Kyiv. <https://uacademic.info/ua/document/0406U003790>
- Dobrovolska, R. O. (2020). *Formuvannia hotovnosti maibutnoho vchytelia muzychnoho mystetstva do orhanizatsii muzychno-estetychnoho prostoru zakladiv zahalnoi serednoi osvity* [Developing future music teachers’ competence in organising the musical and aesthetic environment in general secondary schools] (Unpublished doctoral dissertation). Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University. <https://uacademic.info/ua/document/0820U100481>
- Dovgan, V. (2024). *Osoblyvosti derzhavnoho upravlinnia rozvytkom muzychnoi osvity* [Specifics of state governance in the development of music education]. *Naukovi innovatsii ta peredovi tekhnologii. Seriiia “Upravlinnia ta administruvannia” [Scientific Innovations and Advanced Technologies. Series: Management and Administration]*, 6(34), 114–121. [https://doi.org/10.52058/2786-5274-2024-6\(34\)-114-121](https://doi.org/10.52058/2786-5274-2024-6(34)-114-121)
- Fausser, A. (2013). *Sounds of war: Music in the United States during World War II*. Oxford University Press.
- Fernández, A. L., & Evans, J. (2022). Cross-cultural testing: Adaptation, development, or cross-cultural tests? In A. L. Fernández & J. Evans (Eds.), *Understanding cross-cultural neuropsychology: Science, testing, and challenges* (pp. 125–134). Routledge. <https://doi.org/10.4324/9781003051497-13>
- Gong, Y. (2021). Infiltration and utilization of folk music resources in music education in kindergarten under the background of “Internet Plus”. In S. F. Zhang & H. L. Wang (Eds.), *Proceedings of the 4th International Conference on Information Systems and Computer Aided Education* (pp. 830–832). Association for Computing Machinery. <https://doi.org/10.1145/3482632.3483029>
- Hawkman, A. M., & van Horn, S. E. (2019). What does it mean to be patriotic? Policing patriotism in sports and social studies education. *The Social Studies*, 110(3), 105–121. <https://doi.org/10.1080/00377996.2018.1553841>
- Henriksen, K., & Stambulova, N. (2017). Creating optimal environments for talent development: A holistic ecological approach. In J. Baker, S. Cobley, J. Schorer, & N. Wattie (Eds.),

- Routledge handbook of talent identification and development in sport* (pp. 271–284). Routledge. <https://doi.org/10.4324/9781315668017-19>
- Kiyan, O. (2023). Natsionalno-patriotychne vykhovannia zasobamy khudozhno-mystetskoï osvity v umovakh voiennoho stanu: suchasnyi aspekt [Patriotic education through art education in the context of martial law: A current approach]. *Molodyi vchenyi* [Young Scientist], 8(120), 43–48. <https://doi.org/10.32839/2304-5809/2023-8-120-10>
- Lee, H., Anglada-Tort, M., Sobchuk, O., van Rijn, P., Schönwiesner, M., Tchernichovski, O., Park, M., & Jacoby, N. (2024). *Global music discoveries reveal cultural shifts during the war in Ukraine* [Preprint]. <https://doi.org/10.31234/osf.io/7b98u>
- Marongedze, R. (2019). *Interface of music and politics: Versions of patriotic consciousness in Zimbabwean music, 1970–2015* (Unpublished doctoral dissertation). The University of South Africa. <https://uir.unisa.ac.za/server/api/core/bitstreams/847cfa99-17b1-4327-aa0e-f36a1a5f30c7/content>
- Marukhovska-Kartunova, O., Rabenchuk, O., Ladonko, L., Bzunko, H., & Petrunia-Pyliavska, N. (2024). Cultural management: Analysis of strategies, policies, and practices in Ukraine and the EU countries. *Multidisciplinary Science Journal*, 6, Article 2024ss0226. <https://doi.org/10.31893/multiscience.2024ss0226>
- Matviienko, L. V., & Sonechko, O. S. (2023). Osoblyvosti rozvytku ukraiïnskoï osvity ta nauky v umovakh viiskovoi ahresii RF (2014–2023) [The development of Ukrainian education and science in the context of Russia’s military aggression (2014–2023): Key challenges and trends]. In M. Holdenblat (Ed.), *Proceedings of the 1st International Scientific and Theoretical Conference “Scientific Method: Reality and Future Trends of Researching”* (pp. 196–197). European Scientific Platform. <https://doi.org/10.36074/scientia-24.03.2023>
- McWilliams, A., & Legnér, M. (2024). Threat assessments and heritage in the age of hybrid warfare. *International Journal of Heritage Studies*, 30(12), 1379–1392. <https://doi.org/10.1080/13527258.2024.2393610>
- Mustaev, R. D., Tukhtanazarov, I. I., & Khasanov, N. Kh. U. (2021). The role of family, community and education in the development of patriotic spirit in youth. *JournalNX*, 7(1), 311–314. <https://www.neliti.com/publications/336405/the-role-of-family-community-and-education-in-the-development-of-patriotic-spiri#cite>
- Mykhailova, O. C. (2005). Psykholoho-pedahohichna model sotsiokulturnoho vykhovannia [A psycho-pedagogical model of socio-cultural education]. *Visnyk Zhytomyrskoho derzhavnoho universytetu imeni Ivana Franka* [Zhytomyr Ivan Franko State University Journal], 25, 222–225. <http://eprints.zu.edu.ua/1471/1/05mosmsv.pdf>
- Onyeke, B. U. (2021). Safeguarding the Nigerian folk music as a cultural heritage: A case study of Iheakpu-Awka moral folksongs for sustainable education and development. *Bassey Andah Journal*, 14, 161–173. https://www.academicexcellencesociety.com/safeguarding_the_nigerian_folk.pdf
- Pabriks, A., & Kudors, A. (Eds.). (2015). *The war in Ukraine: Lessons for Europe*. The Centre for East European Policy Studies University of Latvia. <https://diasporiana.org.ua/politologiya/the-war-in-ukraine-lessons-for-europe/>
- Pesenti, M. (2021, January 19). *Ukraine’s cultural revival is a matter of national security*. Atlantic Council. <https://www.atlanticcouncil.org/blogs/ukrainealert/ukraines-cultural-revival-is-a-matter-of-national-security/>
- Reissmann, A., Stollberg, E., Hauser, J., Kaunzinger, I., & Lange, K. W. (2021). The role of state feelings of loneliness in the situational regulation of social affiliative behavior: Exploring the regulatory relations within a multilevel framework. *PLoS One*, 16(6), Article e0252775. <https://doi.org/10.1371/journal.pone.0252775>

- Rusova, S. F. (1924). *Teoriia i praktyka doshkilnoho vykhovannia* [The theory and practice of preschool education]. Ukrainian Public Publishing Fund.
<https://irbis-nbuv.gov.ua/ulib/item/UKR0005011>
- Spielberger, C. D. (1983). *State-Trait Anxiety Inventory*. Consulting psychologists Press.
- Szostek, J. (2018). Nothing is true? The credibility of news and conflicting narratives during “information war” in Ukraine. *The International Journal of Press/Politics*, 23(1), 116–135.
<https://doi.org/10.1177/1940161217743258>
- Wang, Y., Bouri, E., Fareed, Z., & Dai, Y. (2022). Geopolitical risk and the systemic risk in the commodity markets under the war in Ukraine. *Finance Research Letters*, 49, Article 103066. <https://doi.org/10.1016/j.frl.2022.103066>