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The Specificity of National Identity in Music: Neuropsychological Impact on Emotion and Cognition

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Abstract: *The article analyses the relationship between art and national identity within the framework of neuroaesthetics and cognitive sciences. In this context, the study aims to examine how the temporal and semantic characteristics of national music affect the mechanisms of emotional regulation. Furthermore, it explores the music's influence on the psyche. Emotional sensitivity manifested in national music directly influences one's psycho-emotional state and cognitive processes. To investigate this, the empirical component of the study is based on a quantitative analysis of respondents' musical preferences in stressful situations. The findings reveal links between integral, figurative, and cognitive emotional sensitivity to music, and susceptibility within visual and motor factors. In addition, the connections with personal characteristics are identified, including personality traits, musical preferences, and the use of music in everyday life. Taken together, these results support the concept of an integrated ability that arises from the interaction of differential sensitivities across various analysers. Importantly, this ability serves as the foundation for expressing diverse personal characteristics. Finally, the article verifies the hypothesis that fast-tempo music with complex content has a stronger influence on emotions than slow melodies, particularly when used to process negative emotions.*

Keywords: *national identity; music's influence; psyche; musical genres; sad music; emotions; sound.*

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1. Introduction

Today's society is experiencing an increasing tension between the globalising ideals of multiculturalism and the need to preserve national identity. The world is becoming increasingly multi-religious and multinational. In this context, the formation of an individual worldview is shaped not only by political processes but also by cognitive overload. Traditional sociological approaches (essentialist, constructivist and ethno-symbolic) are now complemented by recent research in neuroaesthetics and cognitive science. These fields view national identity not merely as an ideology but as the result of a complex interaction between the human psyche and the cultural environment (Filipchuk, 2016).

This article seeks to determine how specific elements of national musical traditions affect psycho-emotional resilience and the cognitive processing of negative emotional experiences. Particular attention is paid to tempo, rhythm, and lyrics.

Within the framework of this study, national identity is conceptualised as a dynamic cognitive-affective structure of personality. It is grounded in the socio-cultural codes, mental archetypes, and axiological orientations of a community that are internalised by the individual. From a cognitive perspective, national identity serves as a stable framework for recognising "one's own" acoustic, semantic, and visual patterns. In turn, this framework influences neurodynamic regulation and the categorisation of emotional experience. National music is understood as traditional folklore heritage and ethno-specific musical styles based on the modal-tonal, rhythmic, and verbal systems characteristic of a particular ethnic group. This concept is distinguished from commercial and mainstream popular music because it focuses on acoustic markers of ethnocultural affiliation that may activate cognitive mechanisms involved in neuropsychic self-regulation.

Individuals are exposed to music daily, even without a conscious intention to listen. It induces powerful neurophysiological activity that shapes emotional sensitivity and national self-awareness through specific rhythmic and intonational patterns. Emotional responses to national music may be associated with psycho-emotional states and cognitive processes. In this regard, they contribute to an integrated perception of the world.

A key focus of this article is the effect of musical genres on the experience of negative emotions. The study is grounded in the concept of integrated sensitivity, in which musical preferences and everyday uses of music are understood as reflections of personal characteristics. It hypothesises that compositions with a fast tempo and strong semantic content may exert a stronger therapeutic and emotional effect than traditional slow melodies. This effect enables individuals to integrate their emotional experience more effectively into the structure of both national and personal identity.

2. Theoretical Framework

Research on the links between art and national identity goes beyond sociological analysis, extending into neuroaesthetics and cognitive sciences (Shaparenko, 2016). A detailed theoretical analysis of the relevant literature indicates that national music functions not only as a cultural symbol but also as a powerful neurophysiological stimulus. Specific frequency oscillations may influence human physiological functioning through interactions between auditory perception and neural activity.

At the biochemical level, listening to music that someone considers personal or finds aesthetically appealing can influence hormone levels. It particularly raises dopamine, which activates the brain's reward system. According to Toader et al. (2023), music strongly stimulates the brain areas associated with sensory satisfaction. This effect largely depends on factors such as tonality, rhythm, and intensity.

It is essential to differentiate between the general biological impact of sound and the cognitive analysis of cultural symbols. The intricate nature of musical influence is rooted in the neural processing of sound. The left hemisphere primarily analyses tonality and rhythm, while the

right hemisphere focuses on melody and timbre. Tempo is processed simultaneously by both hemispheres (Juslin & Sloboda, 2013).

Evidence exists for the “Mozart effect” and alpha rhythm synchronisation (Koelsch, 2018). However, this article focuses on respondents’ subjective assessments of their state when exposed to music with different tempos, rather than on laboratory EEG measurements. As a result, perceiving national music activates multiple brain areas, promoting coordinated hemispheric functioning. Such cognitive activity benefits personality development at any age. It supports the redistribution of mental functions, improves motor skills, and enhances attention. The psychotherapeutic dimension is also significant. Listening to sad compositions can sometimes be more effective in overcoming depressive states than cheerful melodies, which may occasionally increase emotional dissonance (Garrido & Schubert, 2013).

Historical scientific discourse was long dominated by the idea of a strict functional separation of the hemispheres. The left hemisphere was associated with the analysis of tonality and temporal parameters of sound, while the right hemisphere was linked to melody and timbre. However, neuroimaging data challenge this simplified model of linear lateralisation. The perception of musical experience, particularly national content, involves the large-scale integration of distributed neural networks. These processes are coordinated through dynamic interhemispheric synchronisation (Li et al., 2014). Affective neuroscience shows that the processing of complex ethnocultural sonic markers activates networks linking the auditory cortex, frontal areas, and the limbic system across both hemispheres. Rather than relying on isolated brain regions, this activity reflects whole-brain functional connectivity, which underlies cognitive processing and the redistribution of mental functions.

As shown by an analysis of different genres, traditional/folk music with classical elements is often the most beneficial. Since objective bioelectrical parameters were not recorded in this study, the analysis is limited to subjective responses provided by the respondents. These responses are interpreted in light of established neurophysiological findings reported in the literature. Experiments using MRI and EEG confirm the so-called “Mozart effect” (Hotz, 1993; Jausovec et al., 2006; Kirk et al., 2009; Koelsch, 2018). Findings on these mechanisms indicate that the observed subjective improvements in respondents’ condition are grounded in similar processes. This may reflect a temporary optimisation of hemispheric functional connectivity. However, the neuroaesthetic approach requires consideration of individual experience. For example, among graduates of music schools, classical music may be associated with stress related to “imposed” learning. In such cases, a stimulus that is generally perceived as positive may instead become a cognitive trigger of tension (Vartanian & Skov, 2014).

Rock music represents a vital part of national identity. Although often viewed negatively, Zaatar et al. (2023) emphasise its crucial role in managing emotional stress. This supports the article hypothesis: face-paced, rhythmic music with significant lyrical depth provides a more powerful therapeutic effect for those struggling with negative feelings than slow, melancholic music. Garrido and Schubert (2013) believe that such music reflects one’s mental state by generating the relevant emotional responses.

Thus, the concept of national identity integrates physiological responses to art and cultural patterns. As stated by Marzola et al. (2023), music plays an essential role in maintaining cultural heritage and strengthening psychological well-being in today’s multicultural world. At the same time, the power of music to affect the brain and body makes it a primary factor in fostering individual harmony and a feeling of national belonging.

3. Methodology and Results

The diagnostic toolkit was developed in two stages. First, a pool of questions was generated based on theoretical models of psycho-emotional resilience. A pilot test of the questionnaire was then conducted on a small sample ($n = 15$) to assess the clarity of the items. The final version contained 18 items and included four thematic blocks: 1) sociodemographic (age, gender, level of

music education); 2) perception of national music (frequency of listening and perceived significance of folklore and ethnocultural sound patterns); 3) musical preferences (influence of features such as tempo (fast/slow), rhythmic pattern, and presence or absence of verbal text); and 4) emotional response (changes in emotional processing and stress levels during listening). The toolkit included closed and semi-closed questions aimed at identifying correlations between emotional state and musical characteristics.

The proposed cognitive concept was tested through a survey of 122 respondents aged between 13 and 80. The aim of the study was to examine the relationship between the national musical code and psycho-emotional regulation under conditions of social isolation and stress.

In response to the question “*Do you often listen to national music?*”, 94.26% of respondents answered “yes”, while only 5.74% answered “no”. Accordingly, national music functions as a cognitive framework and a means of creating a personalised safe space. In urban environments, music through headphones becomes a tool for establishing a personalised comfort zone. In this regard, it enables the listener to maintain mental integrity and distance themselves from external stimuli.

The central focus of the study was to test the hypothesis concerning the influence of music’s temporal characteristics on the perception of negative emotions. When asked which melodies they preferred for moments of sadness, respondents’ answers were distributed as follows: 24.59% chose traditional slow melodies, 18.85% opted for exclusively fast-tempo music with sad content, and 56.56% considered both options effective. These findings suggest adaptive selection depending on stress intensity (see Figure 1).

Correlation analysis revealed a weak but significant relationship ($r = 0.28$, $p < 0.05$) between age and tempo preference. In particular, younger respondents (13–25 years) were 15% more likely to choose dynamic music to overcome negative emotional states than older participants.

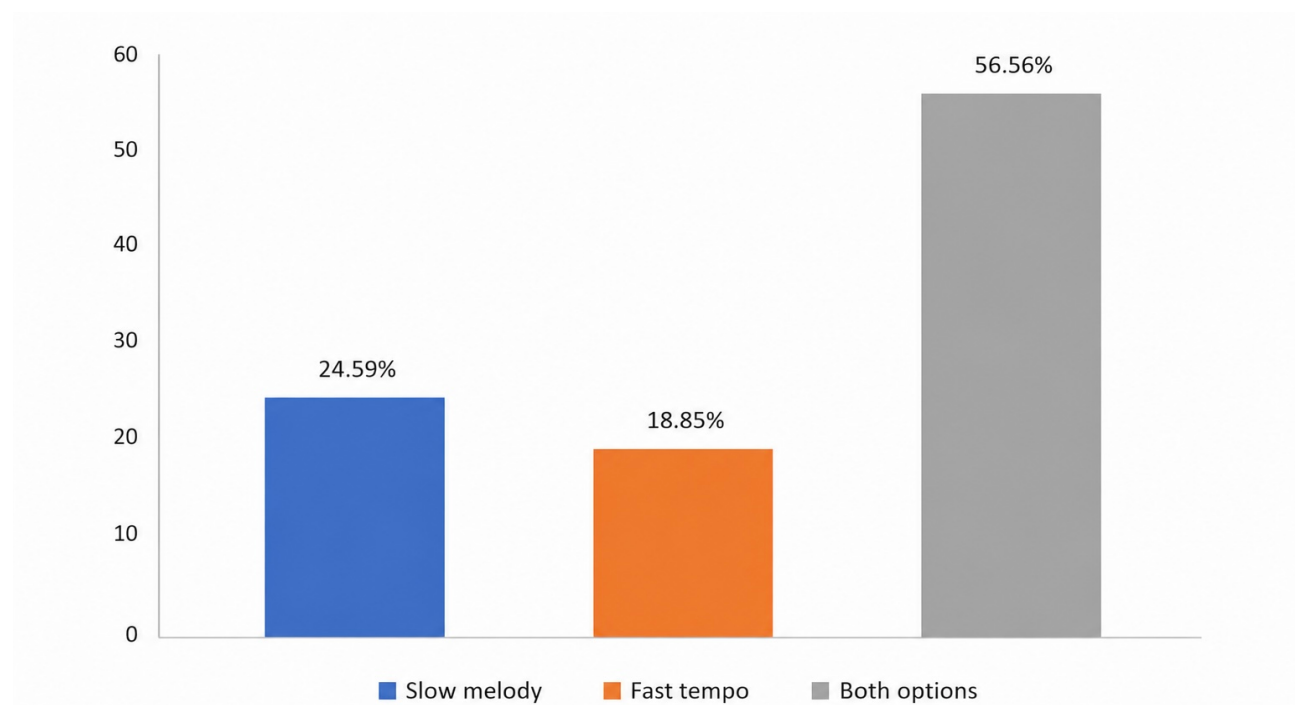


Figure 1. Participants’ Preferred Musical Tempo During Negative Emotional States
Source: The authors’ own conception

Notably, younger respondents (13–25 years) chose fast tempo for emotional regulation, whereas older respondents (60+) preferred slower, more traditional forms.

The results indicate a phenomenon interpreted in this study as a subjective manifestation of “neuro-emotional resonance”. This refers to a process in which perceived acoustic characteristics (tempo, harmony) are associated with corresponding psycho-emotional shifts. Given that direct neuropsychological measurements (e.g. EEG or fMRI) were not conducted in this work, the concept is operationalised as an empirically observed relationship between musical structure and changes in respondents’ well-being. At the theoretical level, this resonance is conceptualised within the framework of cognitive-emotional reflection (Juslin & Sloboda, 2013). According to this model, the perception of tempo and rhythm activates mental representations of emotional states. This relationship is reflected in participants’ responses. The key to confirming the hypothesis was the question: *“Have you ever noticed that a more rhythmic, or even cheerful, melody with sad lyrics seems to have a stronger impact on your mental state while listening?”*

A total of 59.84% of respondents answered “yes”, while 40.16% answered “no” (see Figure 2). This allows fast rhythm to be interpreted not as entertainment, but as a potential mechanism for emotional processing that releases emotional tension. This also suggests that a fast tempo and clear rhythm, combined with sad lyrics, can create emotional incongruence and activate deeper emotional layers. The sharp, rhythmic structure of such songs matches acute emotional pain, which at the neurophysiological level often brings increased excitability rather than apathy.

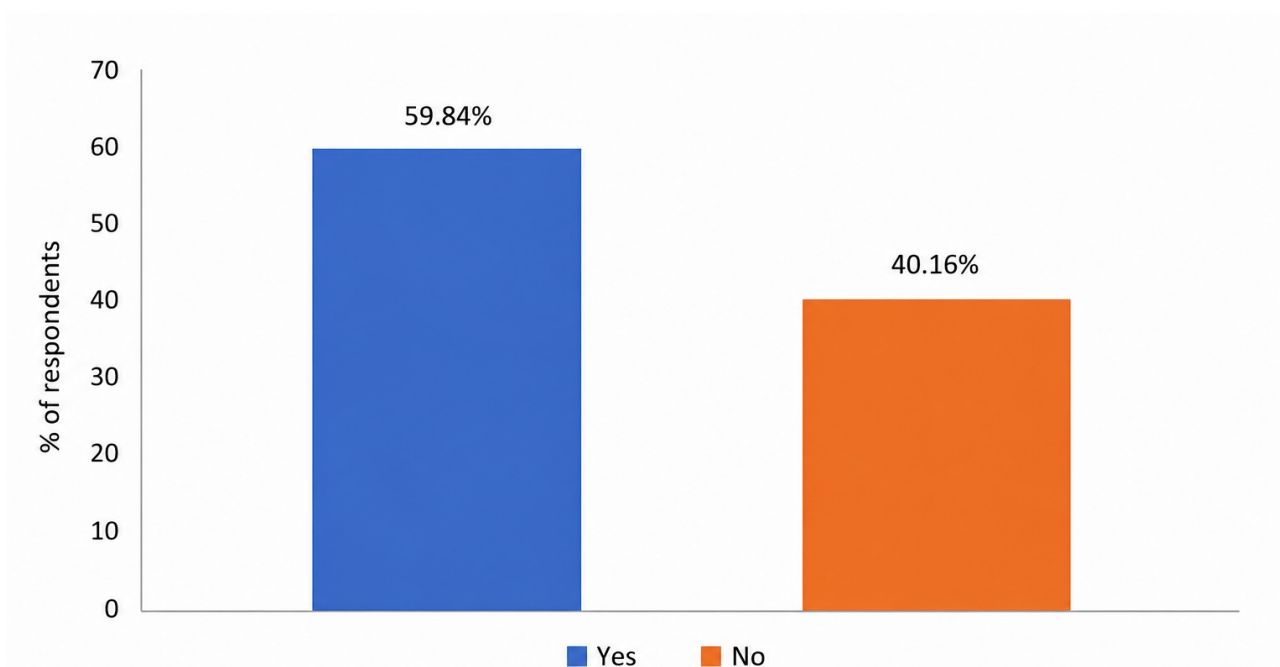


Figure 2. *Effectiveness of rhythmic music in coping with negative emotional states*
Source: The authors’ own conception

It was also important to analyse the role of different song components and to identify the main ways individuals perceive music. For 52.46% of respondents, all factors including melody, lyrics and personal associations together had the strongest effect. Personal associations are viewed as respondents’ individual autobiographical connections activated during listening. These include personal memory triggers, reflections of previous emotional experiences, and deeper family and ethnocultural contexts that give music its personalised meaning. Personal associations alone had the strongest effect for 20.49% of respondents, showing that music carries both personal and national meaning. Lyrics were most important for 15.57% of respondents, and melody alone for 9.84%. The minimum share of respondents (1.64%) selected the option “none of the above”. This indicates a high degree of alignment between the proposed impact categories and respondents’ perceptions. The relatively small proportion of respondents (9.84%) who identified melody alone as the primary

source of emotional impact suggests that isolated musical structure is generally less influential than combinations of musical and personal factors. At the same time, personal associations (20.49%) emerged as a statistically significant factor outweighing pure musical influence, highlighting the role of music as a carrier of national experience (see Figure 3). It follows that musical national identification operates primarily through “memory of the heart” and individual experience embedded in the cultural code.

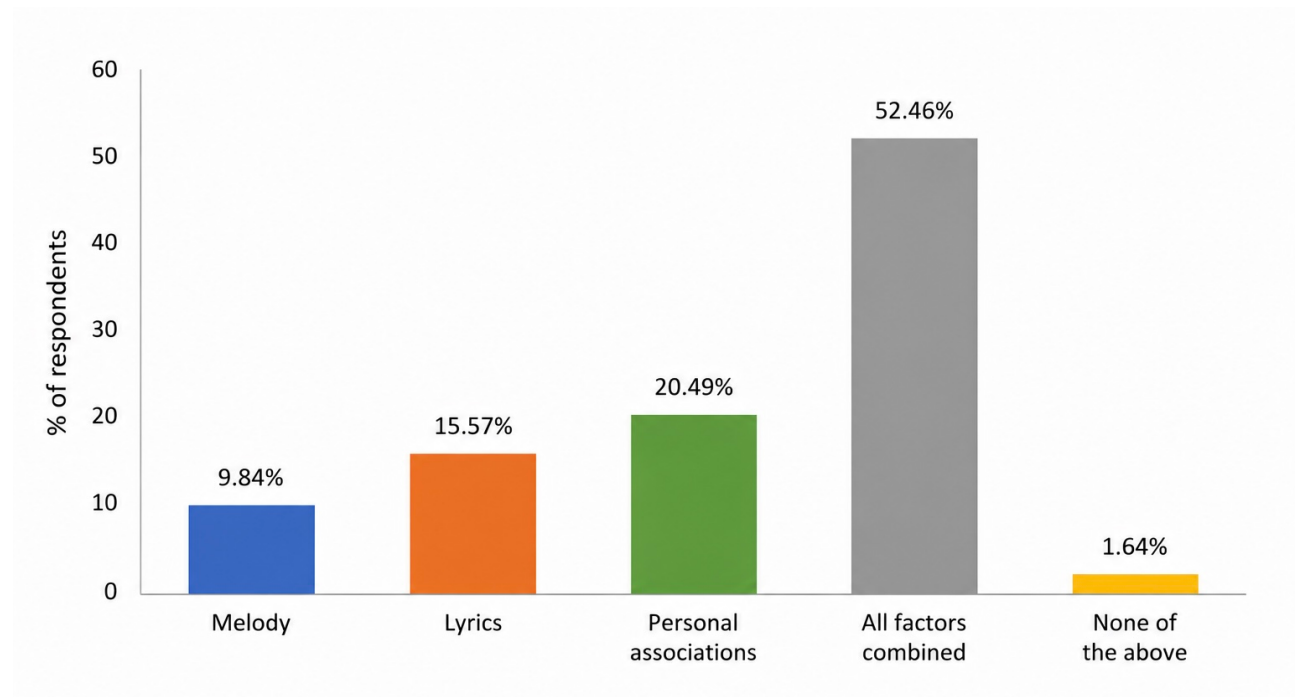


Figure 3. Factors structuring the emotional impact of a musical work
Source: The authors' own conception

The findings suggest that some participants perceived fast-tempo music with meaningful lyrical content as having stronger emotional impact than slower compositions during negative emotional states. This can be explained by the fact that a dynamic melody facilitates the sublimation of stress energy by releasing rather than accumulating it through rhythmic brain activity. Moreover, fast-tempo music with a strong semantic load has a greater effect on the emotional sphere than slow compositions during acute crises. This finding aligns with neuropsychological models of emotional regulation, in which rhythmic brain activation supports stress sublimation.

Thus, music as a complex neurocognitive tool not only reflects national identity but also actively shapes psychological resilience. The choice of performers and genres depends on one's need to process current social and personal experiences, making music a key part of cognitive and emotional development in today's multicultural world.

4. Conclusions

A review of the data suggests that national music acts as a mediator between the affective state of the individual and its cognitive processes. Although theoretical sources indicate a direct neurochemical influence involving neurotransmitters such as dopamine and oxytocin, this article emphasises the psychological significance of tempo-rhythmic structures.

The empirical study, combined with neurophysiological analysis, shows that national music affects both body and mind. Acoustic oscillations of specific frequencies may influence physiological functioning. Additionally, they may contribute to neurochemical regulation by stimulating the secretion of dopamine.

The effect of music on the psyche depends on several factors: rhythm, tonality, intensity, and frequency variations. Personal associations are important, and for most respondents (52.46%),

lyrics, melody, and memories together create a strong emotional resonance that underpins national identity.

A central finding supports the hypothesis that fast tempo and rhythmic structure enhance the experience of negative emotions. Music with a dynamic rhythm has a stronger effect on mood than slow, melancholic compositions, even when the lyrics are tragic. This occurs because the rhythmic pulse corresponds to an individual's internal emotional state. It allows negative feelings to be released rather than accumulated.

The study also found that listening to national music builds emotional memory. This memory contributes to a sense of cultural belonging. In this context, music bridges the gap between the affective and cognitive dimensions. It stimulates empathy, creative imagination, and critical perception of reality.

National music carries historical memory and forms the foundation of collective consciousness. Fundamental ideas of moral strength and national loyalty are conveyed through specific musical structures and rhythmic-intonational patterns. Thus, music serves as more than background entertainment and preserves national identity while supporting psycho-emotional stability in a globalised world.

Therefore, empirical data support the principles of neuroaesthetic theory: music is an effective mechanism for preserving national identity and maintaining psycho-emotional stability in the face of current challenges.

Statement on the Use of Artificial Intelligence

The authors acknowledge using artificial intelligence (ChatGPT, OpenAI) to improve language and readability. The final interpretation of the results, formulation of conclusions, and scientific generalisations remain solely the responsibility of the authors.

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