ISSN 0973-2063 (online) 0973-8894 (print)

Bioinformation 22(10): 6630-6633 (2026)

©Biomedical Informatics (2026)

BIOINFORMATION
Discovery at the interface of physical and biological sciences

BIOMEDICAL INFORMATICS

www.bioinformation.net

Volume 22(10)

Review

Received October 1, 2026; Revised October 31, 2026; Accepted October 31, 2026, Published October 31, 2026

DOI: 10.6026/973206300226630

SJIF 2026 (Scientific Journal Impact Factor for 2026) = 8.478
2022 Impact Factor (2023 Clarivate Inc. release) is 1.9

Declaration on Publication Ethics:
The author's state that they adhere with COPE guidelines on publishing ethics as described elsewhere at https://publicationethics.org/. The authors also undertake that they are not associated with any other third party (governmental or non-governmental agencies) linking with any form of unethical issues connecting to this publication. The authors also declare that they are not withholding any information that is misleading to the publisher in regard to this article.

Declaration on official E-mail:
The corresponding author declares that lifetime official e-mail from their institution is not available for all authors

License statement:
This is an Open Access article which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited. This is distributed under the terms of the Creative Commons Attribution License

Comments from readers:
Articles published in BIOINFORMATION are open for relevant post publication comments and criticisms, which will be published immediately linking to the original article without open access charges. Comments should be concise, coherent and critical in less than 1000 words.

Disclaimer:
Bioinformation provides a platform for scholarly communication of data and information to create knowledge in the Biological/ Biomedical domain after adequate peer/editorial reviews and editing entertaining revisions where required. The views and opinions expressed are those of the author(s) and do not reflect the views or opinions of Bioinformation and (or) its publisher Biomedical Informatics. Biomedical Informatics remains neutral and allows authors to specify their address and affiliation details including territory where required.

Edited by P Kangueane

Citation: Srinivasan *et al.* Bioinformation 22(10): 6630-6633 (2026)

A review on the somatopsychic effects of music: Mind-body nexus

A.R. Srinivasan[1, 2, *]

[1]Department of Biochemistry, Mahatma Gandhi Medical College & Research Institute, Sri Balaji Vidyapeeth, Pillaiyarkuppam, Pondicherry, India; [2]School of Music Therapy, Institute of Salutogenesis and Complimentary Medicine, Sri Balaji Vidyapeeth, Pillaiyarkuppam, Pondicherry, India; *Corresponding author

Affiliation URL:
https://mgmcri.ac.in/
https://sbvu.ac.in/iscm/

Author contact:
A.R. Srinivasan - E-mail: raghavan.drvars2000@gmail.com, srinivasanar@mgmcri.ac.in; Phone: +91 9994455627

ISSN 0973-2063 (online) 0973-8894 (print)
Bioinformation 22(10): 6630-6633 (2026)
©Biomedical Informatics (2026)

Abstract:
The psychosomatic regulation of music listening and receptivity has been receiving impetus. In recent years, the reverse pathway, namely the somatopsychic pathway has been acquiring additional relevance. The core acoustic characteristics of music including rhythm, tempo (speed), frequency and timbre are considered cardinal in this regard. In this bottom-up approach, the review on music perception attempts to portray how physical resonance could alter psychological well-being. The review also lays emphasis on music as a non-invasive intervention, aimed at restoring psychological equilibrium.

Keywords: Somatopsychic, psychosomatic, mind-body, music receptivity, entrainment, neural plasticity

Background:
Music is regarded as the universal language of the soul and mankind **[1].** Beneath lies the intricately woven fabric that acts as the bridge between the physical and the psychological processes **[2]**. While a lot of impetus has been provided to the inherent attributes of the psychosomatic regulation, it must be stated that the reverse pathway is equally emphatic **[3]**. The somatopsychic process pertains to the sensations, gross physical experiences and measured augmented vital sensory inputs that holistically transform the mental and emotional states **[4].** Music serves as a catalyst for this body to mind transformation, wherein musical (sound) waves physically resonate within the nervous system of the listener **[5].** This in turn results in emotional or cognitive shifts. The core music and acoustic characteristics, namely tempo, rhythm, frequency and timbre need to intensely permeate the somatic component of the self which represents the state of receptive presence, wherein music acquires the role of a therapeutic connect **[6].** Therefore, it is of interest to investigate the somatopsychic effects of music, specifically how music-induced physiological shifts directly modulate psychological states.

The neurobiology of music reception:
The major structures of the Central Nervous System (CNS) are involved in the complex phenomenon. The structural elements of music, viz., pitch, tempo, timbre, rhythm *etc.* are transformed to neural signals, prior to the attainment of the conscious awareness **[7].** The components of the human brain including brainstem, medial geniculate nucleus in the thalamus and primary auditory cortex are actively involved in the perceptual pathway. The resulting feature is the intricate emotional and reward network, signifying the chemistry of pleasure. The mesolimbic dopamine system, amygdala and the hippocampus are the prominent players. The essence of these characteristic events points to the ability of the human musical brain to reorganise itself, known as neural plasticity **[8].** Entrainment is all about the rhythmic synchronization between external musical beats and internal bodily rhythm **[9].** Neural pathways translate the sound waves into visceral physical sensations by directing auditory signals through the brain's emotional and autonomic centres **[10].**

The brain-body bridge in the neurochemical response to music:
The mechanical capture of sound waves, movement through small bones into the fluid filled cochlea in the ear and brainstem relay contribute to the typical transformation into an electric signal. The amygdala in the brain functions as an alert call, whereas the hypothalamus activates the autonomic nervous system. Eventually, the sympathetic and parasympathetic nervous systems (Autonomic nervous system) are responsible for conferring the physiological state and physical sensation on the individual, following a musical experience **[11].** The impact of listening to music and its perception confer a lot of benefits. The release of the biogenic amine, viz., dopamine, endogenous opiate, viz., endorphins and the regulation of the stress hormone, viz., and cortisol during the auditory experience are largely responsible for the physiological effects, following a music listening experience and perception of the same **[12].**

Psychological and affective dimensions in music receptivity:
In the realms of psychology and neuroscience, the term emotional contagion refers to the phenomenon where one learns to capture the emotional state of another person. Music is vested with the unique power, wherein it could trigger emotional contagion by simulating human voice or motion. It is in this context that the mirror neuron system acquires importance **[13].** The mirror neurons are situated in the sensory and motor areas and enable us to internalize music that is followed by the portrayal of emotions inherently expressed by and through music. Attentional deployment, cognitive reappraisal, mood matching and neural entrainment vividly represent the core cognitive strategies which work best in diverse conditions leading to the attenuation of psychological stress by promulgating the effects through slow tempo, soft dynamics laden music or stimulate the senses by mobilising fast tempo and sharp rhythm -based music. The latter finds wide use in actions mediated through the biogenic amine, viz., Dopamine. The human brain spontaneously projects visual narratives as well as spatial layouts into the domain of psychological awareness.

Table 1: The somatopsychic effects of music

Projected Dimension	Underlying mechanism	Physical Impact (Soma/somatic component)	Psychological Impact (Psyche/psychic component)
Neuroregulation	Entrainment of biological rhythms, with reference to musical tempo and meter	• Changes heart rate and blood pressure • Modulates breathing patterns • Lowers stress hormone levels	• Promotes relaxation • Lessens acute anxiety • Induces the state of calmness and composure

Neuromodulation	Activation of the reward pathway in the central nervous system and auditory cortex.	• Triggers dopamine and endorphin release. • Enhances motor cortex coordination • Decreases pain perception	• Enhances mood and pleasure • Increases single-minded focus and attention • Strengthens emotional resilience
Immunomodulation	Attenuation of effects attributed to sympathetic nervous system arousal	• Increases Immunoglobulin A (IgA) in body secretions • Enhances natural killer cell activity • Decreases systemic inflammation	• Increases the feeling of euphoria • Delays burnout susceptibility • Enhances vitality
Emotional Responsiveness	Deep(intense) aesthetic listening and personal resonance, attributable to music receptivity	• Dissolves muscle tension • Brings about changes in skin conductance • Regulates sleep cycle	• Facilitates emotional catharsis/emotional purification • Intensifies self-awareness. • Bestows a sense of meaning and purpose on the individual
Interpersonal connection	Rhythmic synchronization and shared listening spaces.	• Stimulates oxytocin production • Simulates emotional speech cues • Coordinates concerted motor movement	• Nurtures social nexus • Inculcates empathy • Reduces loneliness and sadness/feeling of melancholy

State of mind and receptivity to music:

The concept of receptivity in music psychology is complex and denotes the specific state of psychological forthrightness, vulnerability and most significantly, the aspects related to the attention required for a discerning listener to experience and absorb music. Receptivity to music is beyond passive hearing; instead, it leads to an active psychological surrender that permits music to cast changes in cognition, emotion and the physiological state, as a whole **[14].** Intentional attention, aesthetic openness and emotional vulnerability hold the key to music. All of these well nurtured events would eventually lead to a path from where the transformation could be launched, culminating in an active, mindful practice, rather than mere, mechanical listening.

Applications of the somatopsychic effects of music:

In acute healthcare and surgical environments, the somatopsychic connection is utilized primarily for its supportive, palliative and autonomic-regulating properties. Medical professionals leverage music for tapping the unconscious to promote physical stabilization. The therapeutic connection of musical sound affords the advantageous alignment in clinical music therapy practice **[15].** Furthermore, environmental and situational receptivity to music is also being increasingly explored in modalities as to how physical surroundings or environment could influence the cognitive processing of music. A summary of the important considerations, including clinical applications in receptive music listening, with reference to the somatopsychic effects of music, is provided in **Table 1**. Music as a non-invasive, non-pharmacological somatopsychic tool could be appropriately regarded as a plausible adjuvant therapeutic modality in the treatment of psychosomatic conditions and chronic pain. Receptive music listening is utilized in preoperative and postoperative phases to mitigate the effects of the stress hormones. Listening to slow and steady tempo music, corresponding to 60–80 BPM is known to confer benefits on the cardiorespiratory system. In combination with deep relaxation techniques, music could help to resolve chronic pain by effectively lowering pain intensity **[16].** Evidence based research indicates that rhythmic and vocal music interventions could enhance the production of secretory immunoglobulin A and natural killer cells. This is synonymous with the fortification of the immune system and reduction in systemic inflammation **[17].** Research findings point to the fact that listening to music might attenuate bodily symptoms, primarily through a reduction in subjective stress. A study carried out in women with depressive disorders and somatic symptom disorders has prompted the researchers to develop targeted music interventions that would find wide use in everyday life **[18].** It is quite plausible that personalized therapeutic modalities could be mobilised, depending upon the dimension of the fatigue, namely physical or mental **[19].** A recent study had cited the therapeutic utility of Binaural Beat Music (BBM) in patients with major depressive disorders, undergoing electroconvulsive therapy (ECT), either as such or in association with the administration of the antidepressant, esketamine **[20].** The impact of music on human mind has been studied using electroencephalogram, with respect to Indian classical music based musical modes or rāgas, and the therapeutic potentials of various rāgas in clinical applications, including the management of cognitive disorders and stress are quite promising **[21].** Evidences on musical interventions are presently available that could signal the advent of measures essentially aimed at rehabilitating children with special needs, and intellectual disabilities. The interventions are based on embodied musical engagement **[22]**.

Conclusion:

The somatopsychic effects of music emphasise its inherent capacity to bridge the mind-body barrier by facilitating the metamorphosis of sound (musical) waves into holistic physiological and psychological responses. Active receptivity serves as a vital catalyst in this bidirectional feedback loop, thereby triggering neurochemical shifts, in addition to modulating autonomic nervous system activity.

References:

[1] Domingues RB *et al*. *Arquivos de neuro-psiquiatria*. 2025 **83**:1. [PMID: 40886712]
[2] Dalli OE & Pehlïvan S. *BMC medical education*. 2026 **26**:357. [PMID: 41620710]

[3] Zivny B. *Front Integr Neurosci*. 2026 **20**:1771123. [PMID: 41847152]
[4] Yang Z *et al. Sci Rep*. 2025 **15**:8276. [PMID: 40065030]
[5] Ramaswamy M *et al. Heliyon*. 2024 **10**:e35564. [PMID: 39220936]
[6] Phanphairoj K *et al. F1000Research*. 2026 **14**:873. [PMID: 42368333]
[7] Palhares PT *et al. Neurosci Biobehav Rev*. 2024 **167**:105920. [PMID: 39395772]
[8] Iurato G. *Biosystems*. 2026 **259**:105661. [PMID: 41314374]
[9] Asthagiri A *et al. Ann N Y Acad Sci*. 2025 **1554**:216. [PMID: 41139365]
[10] Burunat I *et al. Proc Natl Acad Sci U S A*. 2024 **121**:e2319459121. [PMID: 39186645]
[11] Harding EE *et al. Nat Rev Neurosci*. 2025 **26**:293. [PMID: 40102614]
[12] Tomljenović R *et al. Audiology research*. 2024 **14**:1093. [PMID: 39727613]
[13] Patel J. *Cureus*. 2024 **16**:e61299. [PMID: 38947710]
[14] Piccardi L *et al. Brain sciences*. 2024 **14**:192. [PMID: 38539581]
[15] Whitney E *et al. Cureus*. 2026 **18**:e104261. [PMID: 41909396]
[16] Chen S *et al. BMC Psychol*. 2025 **13**:455. [PMID: 40307940]
[17] Fu Y *et al. Frontiers in immunology*. 2025 **16**:1639047. [PMID: 40771800]
[18] Feneberg AC *et al. Sci Rep*. 2021 **11**:24062. [PMID: 34911978]
[19] Doerr JM *et al. Psychoneuroendocrinology*. 2021 **132**:105343.[PMID: 34214864]
[20] Zhang Y *et al. Neuropsychiatr Dis Treat*. 2025 **21**:1249 [PMID: 40584209]
[21] Babel S *et al. Cureus*. 2023 **15**:e49592 [PMID: 38156160]
[22] Lu Y *et al. Front Psychol*. 2026 **25**:1798176 [PMID: 42266781]

Caveat Emptor is applicable among the literate community where required and possible. The publisher, its journal, editors and the internal/external reviewers take adequate steps to check, evaluate, correct, edit, revise and improve content where possible and required.