

MELODIES OF REMEMBRANCE: MUSIC, MEMORY, AND QUALITY OF LIFE IN RETIREMENT

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ABSTRACT

This review article combines narrative literature review and narrative synthesis methods to explore the complex relationship between music and memory from neuroscientific and psychological perspectives. Specifically, the paper examines how music stimulates neurogenesis, enhances neuronal plasticity, and facilitates connections between the Default Mode Network (DMN) and the brain's reward system. Furthermore, Music-Evoked Autobiographical Memories (MEAMs) and the phenomenon of the reminiscence bump demonstrate the important role of music in retrieving autobiographical memories formed during adolescence. In addition, the article discusses the application of music therapy in geriatric care and analyzes its benefits for older adults with Alzheimer's disease and dementia. Music therapy has been shown to alleviate depressive symptoms, reduce stress levels, and help maintain a sense of identity and personal continuity.

Keywords

Music Therapy, Music-Evoked Autobiographical Memories (MEAMs), Reminiscence Bump, Neuroplasticity, Dementia, Elderly

Introduction

Music is often perceived as a simple source of entertainment, yet it serves a far more profound role as the "soundtrack of life," precisely preserving the shades of human experiences and emotions. Beyond providing aesthetic pleasure, music is an effective method for restoring forgotten memories, a capability that holds particular significance for the elderly and those suffering from dementia. This restorative power is not a coincidence but the result of intricate neurological tasks; listening to familiar melodies synchronizes critical brain networks, such as the Default Mode Network and the Reward System, effectively turning an auditory experience into a "revival" of vivid life events. By stimulating the release of neurotransmitters like dopamine and endorphins, music regulates emotions and enhances synaptic plasticity, facilitating the retrieval of memories that might otherwise remain inaccessible. Consequently, music acts as a "wonder drug"

that protects an individual's identity and connects them to their past, making it a vital component in cognitive health and therapeutic practices.

Despite a considerable number of works that have discussed the link between music and memory, the existing research has concentrated mostly on certain aspects, such as neurology, emotions, or therapy. As a result, the complex interaction among all those spheres remains understudied, especially regarding old age and neurodegeneration. Furthermore, not much research has been conducted on MEAMs and the reminiscence bump as factors that can help preserve identity in older people suffering from dementia. Thus, in the current work, an attempt is made to integrate all of the relevant knowledge concerning the issue in order to gain a better understanding of the place of music in relation to cognition and treatment.

The current paper addresses the connection between music and memory within the context of neuroscience and psychology, concentrating on elderly people as well as those suffering from dementia. The topics covered in this article include: (1) the neuronal processes involved in remembering events, (2) music and its contribution to the activation of autobiographical memories (in particular, MEAMs and the reminiscence bump), and (3) the use of music therapy as an instrument of both cognitive and affective interventions for elderly patients. One of the main ideas put forward in the article is the relevance of music heard in the period of one's adolescence (10–30 years old) for the future development of memory.

Methodology

The review methodology employed for this analysis is a narrative literature review technique complemented by narrative synthesis to explore the relationship between music and memory. Relevant literature sources were obtained from the scientific databases available, which include peer-reviewed journal publications, books, and reports from credible organizations that were mostly published within the period 2000 to 2025.

The inclusion criteria used for collecting relevant literature mainly concentrated on those that related to the field of neuroscience, psychology, and music therapy that dealt with the concepts of neuroplasticity, music-evoked autobiographical memory (MEAMs), and reminiscence bumps phenomenon. These resources are selected based on their relevance and importance in providing insights on the mechanisms of memory formation related to emotions and cognitive functions of the human brain.

The analysis of relevant literature was conducted through the method of narrative synthesis, in which the information was arranged and interpreted based on the identified themes rather than statistical data.

Neural Mechanisms of Music and Memory in Aging

This section focuses on how music influences brain functions related to memory, particularly in elderly individuals and those with cognitive decline. Music is more than just a means of getting pleasure; it is also an effective method for restoring memories that have been forgotten. This holds particular significance for those who are elderly or who suffer from dementia. It is not a coincidence that when an individual is exposed to familiar melodies, they are able to recall song lyrics or previous events; this capacity is a result of the intricate and extraordinary tasks that are carried out by the human brain. The rearrangement of brain cells, as well as the collaboration of neuronal networks and neurotransmitters, are all components of these procedures.

The most important mechanism is the systematic synchronization of brain networks, which occurs most frequently when people interact with "nostalgic music." Research has shown that these melodies activate the simultaneous functioning of two important parts of the brain: the Default Mode Network (DMN), which is associated with self-reflection and autobiographical memories, and the Reward System (Habibi et al., 2025). A connection is established between the parts of the brain that are involved with emotions (insula) and those that are related to self-identification (posteromedial cortex) because of the interaction between these two neurological systems. Therefore, listening to music is more than just an aural experience; it serves as a "revival" of vivid life events. Based on the findings of Quin-Conroy et al. (2024), this method elucidates how music might assist patients with memory deterioration in reestablishing a connection with their past.

Through their role as conductors, neurotransmitters are responsible for regulating emotions and memories in conjunction with the activity of the brain network. Dopamine and endorphins are two of the pleasure-inducing neurotransmitters that are released by the brain in response to the stimulation of the limbic system and the frontal cortex by music (Alvin, 1966, quoted in the study team on playing the angklung, n.d.). Not only do these drugs make one feel good, but they also significantly increase synaptic plasticity, which in turn improves the passage of signals between cells and makes it easier to retrieve memories (Atithya Suwan and Sutthisri Trakulstitthichok, 2021). Furthermore, music protects memory from being damaged by stress and anxiety by lowering levels of cortisol, a stress hormone that is detrimental to neuronal health (Shaw, 1982, mentioned in the study team on playing Angklung, n.d.). This is accomplished by lowering cortisol levels.

The ability to "modify brain structure" (also known as cerebral plasticity) is yet another remarkable neurological phenomenon. According to research published by Van Praag et al. in 1999 and quoted by Jatuporn Paengjak and Rapeepan Chompan in 2022, music and cognitive management have the potential to promote neurogenesis, particularly in the hippocampus, which is the region of the brain that is responsible for memory. It is claimed that listening to high-frequency music, such as compositions by Mozart (also known as the Mozart Effect), might improve

the connection of nerve endings, which in turn optimizes the activity of brain cells. This, in turn, leads to improvements in memory and cognitive ability. According to Shimizu et al. (2017), as mentioned in Jatuporn Paengjak and Rapeepan Chompan (2022), the rhythm of music causes the release of norepinephrine into the prefrontal cortex. This, in turn, enhances blood circulation, which is crucial for cognitive processes and decision-making.

When it comes to restoring and revitalizing the brain, music functions as a "wonder drug" that demands listeners to actively connect with it rather than just consumption. It does this by utilizing mechanisms that link feelings to memories, which in turn helps to expedite the release of vital chemicals and improves the connections between neurons. Therefore, the incorporation of music into everyday activities or therapeutic practices is not merely a method of achieving aesthetic pleasure; rather, it is a crucial means of protecting the "identity" and "memories" of the elderly over the course of extended periods of time. These neural mechanisms are particularly significant in elderly individuals and patients with dementia, as music provides a unique pathway for stimulating preserved brain networks and facilitating memory retrieval despite cognitive decline.

Memories are stored in music, and music is a reflection of who we are individuals.

When some songs are played, vivid memories of prior experiences come flooding back to us. It is as if we are sitting in a "time machine," and we are reliving those moments all over again. This phenomena, which encompasses feelings such as happiness and grief, as well as images of people and places that have deteriorated with time, is an example of the significant relationship that exists between music and memory. This connection is collectively referred to as "Music-Evoked Autobiographical Memories" (MEAMs). These memories are frequently more emotionally charged and complicated than those that are induced by other stimuli (Belfi & Jakubowski, 2021; Janata, 2009).

It is during the adolescent years, mainly between the ages of 10 and 30, that the connection between music and memory becomes even more obvious. This effect, which is referred to as "The Musical Reminiscence Bump," occurs when listening to music brings back memories from the past (Janata, 2009). The intense recollection of songs from this era can be explained by psychological and neurological theories that indicate that this is a stage of rapid development for the brain and memory systems. These theories suggest that this is in fact the case. Furthermore, it is an era that is filled with a multitude of "first" events, such as the first love of one's life and traveling with friends, all of which have a significant amount of emotional weight (Janata, 2009). In addition, the interaction with music that occurs throughout this time period is critical in the process of fashioning an individual's "identity." According to Belfi & Jakubowski (2021), the playlists that we select to listen to are not only a reflection of our interests, but also of our

personalities, our capacity for emotional resilience, and the identities that we believe we should embody. The relevance of this concept is particularly significant when applied to old age and the development of dementia since memories that are created during teenage years retain their strength and can be easily accessed using music.

The fact that "Musical Features" have a major impact on the features of the memories that are recalled is yet another intriguing factor. Recent research conducted by Nawaz and Omigie (2025) investigated the auditory properties of songs. They discovered that songs that have low energy levels but high acoustic quality (Low energetic - High acoustic) are frequently connected with vividness, distinctiveness, and a significant amount of life significance. In addition to this, they are typically associated with a variety of complex feelings, such as the appreciation of aesthetics or nostalgia. On the other hand, songs that are characterized by quick and lively rhythms (high energy) are frequently related to social topics and enjoyment (Nawaz & Omigie, 2025).

A significant number of medical professionals have recognized the efficacy of music in memory retrieval, particularly in the field of "Music Therapy" for patients suffering from Alzheimer's disease and degenerative dementia. Studies have shown that patients may have a loss of short-term memory; however, music may act as a trigger to awaken long-term memories and emotions that have been repressed (Baird & Samson, 2009). Listening to music that is familiar can improve communication and interaction among patients who are depressed or withdrawn. Additionally, it can promote the release of mood-enhancing neurotransmitters such as dopamine and endorphins, which can help alleviate stress and anxiety. However, the implementation of music therapy for individuals who suffer from depression requires careful evaluation. This is because there are studies that suggest that these individuals may evoke negative memories when exposed to music, in contrast to the general population, which typically recalls positive memories (Belfi & Jakubowski, 2021).

In conclusion, music is more than just a form of entertainment; it serves as the "soundtrack of life," meticulously preserving the nuances of our experiences and feelings along the way. According to Belfi & Jakubowski (2021), music is a medium that can be utilized to investigate the profound depths of the psyche, beginning with the dream-filled years of adolescence and continuing until old age, when memories begin to fade. Through the affirmation of the narratives and feelings that have contributed to the formation of our current identities, it makes a connection between our former selves and the present and fosters psychological healing.

The influence that music has on the emotional memory of older persons

This section specifically focuses on elderly individuals, highlighting how music influences emotional memory and recall in later life. According to a number of studies, older people who have been listening to music since they were adolescents had a better ability to remember and recall memories that occurred during that time period. It's possible that older folks who were born in the 1950s and grew up listening to Elvis Presley or The Beatles will remember going to dances or going on their first trip abroad. It is possible that older people who have experienced really intense emotions, such as the death of a loved one, can recall the music that they listened to during that time period, and the songs that they listened to may bring back the emotions that they were experiencing at the time.

Schulkind et al. (1999) also tested the capacity to recall songs with other categories of knowledge, such as lists of names, historical events, and literary content. They found positive correlations between the two types of knowledge. The findings revealed that older people were better able to remember song lyrics and melodies than they were able to remember other sorts of information. This was owing to the fact that music has repeated sound structures and unique patterns that assist with cognitive retention. When older people were given the task of memorizing poems that did not have any melodies, for instance, they demonstrated a forty percent higher degree of accuracy in recalling song lyrics than poems that did not contain any melodies. Furthermore, when older persons were asked to recall songs from their youth as well as names of people from the past, they demonstrated a sixty percent better level of accuracy in recalling the songs than they did in recalling the names.

What are the advantages of listening to music for improving memory in those who are elderly?

Listening to music not only enhances memory recall but also stimulates neural activity and supports brain function, particularly in elderly individuals with cognitive impairment. Music can be of tremendous assistance in the process of rehabilitating and improving cognitive functions in senior people, particularly in those who are afflicted with Alzheimer's disease or dementia. Numerous benefits are provided by reference sources, including the following

1. The Most Important Component in Order to Gain Access to Long-Term Memories

A vault of long-term memories that have been buried away can be opened with the help of music. Although patients with Alzheimer's disease show a decrease in their short-term memory, they continue to have the ability to recall music (Baird & Samson, 2009). Listening to songs that are familiar to older individuals can be beneficial in terms of helping them recall things that occurred in their lives, particularly when they were adolescents or between the ages of 10 and

30, which is referred to as the "Reminiscence Bump" era. This is the time when memories are at their most vivid and emotionally significant (Janata, 2009). This phenomenon has the effect of assisting patients in reestablishing connections with their previous identities and life narratives.

2. Enhancing the Capabilities of the Mind

According to the Särkämö et al. (2008), listening to music concurrently activates multiple parts of the brain, including the hippocampus and the frontal lobe, both of which are crucial for memory and the organizing of information. Helps to improve schooling. According to Baird & Samson (2009) the consumption of music, which provides aural stimulation, has been shown to boost memory retention in both youngsters and the elderly when compared to quiet.

According to Baird & Samson (2009), individuals with mild cognitive impairment (MCI) may benefit from listening to classical music for thirty minutes every day for a period of six months through the process of improving cognitive function.

3. Rehabilitating Emotional Disorders and Reducing the Effects of Depression

According to Baird & Samson (2009), music has the ability to release neurotransmitters that are related with happiness. These neurotransmitters include "dopamine" and "endorphins," and they aid to alleviate tension and anxiety.

According to Janata (2009), the positivity effect occurs when persons with Alzheimer's disease, when exposed to music, commonly experience pleasant memories that raise their mood and significantly reduce feelings of depression. The elderly are able to achieve peace, relaxation, and a reduction in aggressive or restless behavior with the assistance of music that has an adequate loudness and pace (for example, 70-80 beats per minute, which mirrors the heart rate)

4. Foster communication and social interaction among individuals Increasing Social Connectivity and Improvements in Communication

According to Baird & Samson (2009), music has the potential to improve the ability of Alzheimer's patients to overcome despair and break old patterns, which in turn makes it easier for them to reconnect with people. Alzheimer's patients frequently retreat from others or experience difficulty in communicating. According to Särkämö et al. (2008), music therapy assists patients in initiating physical activity, vocalization, or recalling memories associated to songs, which ultimately makes it possible for them to create new channels of communication.

Methods for Implementing Music in Order to Improve Memory

Rhythm: According to Särkämö et al. (2008), humans have the ability to utilize musical rhythm in order to improve the arrangement of knowledge and the recall of it from memory.

As evidenced by the success of the "Music And Memory" initiative in the United States (Särkämö et al., 2008) and research indicating that self-selected music is often linked to more vivid and significant recollections (Nawaz & Omigie, 2025), the customization of music that resonates with seniors is highly effective in evoking memory and emotion. This is evidenced by the fact that the initiative was successful.

Despite the significant contributions from the research in the article on the role of music in enhancing memory and cognitive processes, it is important to highlight several limitations of the study. Firstly, many of the empirical studies have used particular subjects for their investigations, especially individuals who suffer from mild or moderate degrees of dementia.

Secondly, the impact of music in boosting memory depends largely on individual characteristics and cultures. The preference for certain types of music depends greatly on personal experience and culture. Thus, results obtained as a result of research using western music cannot be applied to other circumstances, including Asian cultures.

Finally, there is a controversy about the application of some of the terms that are used during the investigation, namely the term "Mozart Effect". Some studies show that classical music can temporarily improve cognitive abilities; however, they also indicate that the effect is only temporary and does not lead to an increase in memory or intelligence levels.

Conclusion

In conclusion, the connection between music and memory is a powerful neurological phenomenon that functions like a "time machine," allowing individuals to vividly relive past experiences and emotions. For the elderly, music is not simply a pastime but a critical key to unlocking the "Reminiscence Bump," granting access to deeply ingrained memories from their formative adolescent years when their identities were being shaped. Even in cases of Alzheimer's disease where short-term memory fades, music remains a resilient pathway to long-term memory, enabling patients to reconnect with their personal narratives and engage in social interaction. By reducing stress and fostering psychological healing, music therapy proves that the songs we cherish are more than just art; they are the guardians of our history. These findings highlight the critical role of music as both a neurological and psychological mechanism, particularly for elderly individuals and patients with dementia. Therefore, the customization and integration of music into daily care is essential, not only for cognitive rehabilitation but for preserving the dignity and selfhood of the elderly.

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