Article

The Emotional Bond of Digital Music: Memory, Nostalgia, and Fan Loyalty

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The Emotional Bond of Digital Music: Memory, Nostalgia, and Fan Loyalty

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Abstract

This study explores the formation of musical preferences and intimate emotional bonds with artists or characters in the context of digital technology. Human memory and the power of association are identified as fundamental foundations, where personal experiences connect with music, forming strong recollection pathways. Music has been proven to be a highly effective emotional trigger, particularly autobiographical nostalgia, which reinforces memories from crucial life periods (reminiscence bump). Social and personal contexts also play a significant role in influencing the formation and recall of musical memories. The research method employs a qualitative approach through literature review and narrative content analysis, gathering data from scholarly publications, journals, and relevant books. The data collection procedure involves topic and keyword identification, systematic literature search, source selection and verification, information extraction, paraphrasing and synthesis, and conceptual mapping. Data analysis is conducted through narrative content analysis, thematic synthesis, contextual interpretation, critical argumentation, and internal-external consistency verification. Findings indicate that the digitalization of music distribution has shifted consumption from physical formats to streaming services, making access more personal and repetitive. Technology acts as a "silent witness" that records traces of past experiences, triggering and reinforcing autobiographical memory through interaction with devices. Furthermore, technology significantly strengthens fans' emotional bonds by enabling repetitive consumption, collection, and digital interaction with the artist's persona. The discussion integrates these findings, showing that musical preferences are rooted in the architecture of memory, reinforced by emotion and autobiographical nostalgia, and intensified by digitalization that transforms passive consumption into active interaction. The conclusion affirms that intimate bonds with artists or characters result from a complex convergence of associative memory, strong emotional responses, and technology-facilitated interaction. This study offers insights for the music industry and platform developers, and encourages further research based on primary data for stronger empirical validation.

Keywords: musical preference; emotional bond; autobiographical memory; nostalgia; digital technology

1. Introduction

1.1. Background

Humans are "historical beings" whose behavior is constantly guided by memories of past experiences (Elita, 2004). This fundamental cognitive function enables individuals to receive, store, process, and reproduce impressions and responses, linking the present to the past, and even planning for the future (Musdalifah, 2019). Within this context, memory and associative power serve as central pillars in how information is processed and retained in consciousness, forming connections among experiences that influence perception and behavior (Elita, 2004). It is this associative mechanism that allows the memory of one thing to trigger the recollection of another, creating a complex cognitive network.

One of the most powerful and universal triggers of memory and emotion is music. Music possesses an extraordinary capacity to induce mood, evoke arousal, and even awaken profound

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nostalgia—especially autobiographical memories from important life periods (Thompson et al. in Lim, 2018, cited in Lestari et al., 2019; Sedikides et al., 2022). Certain songs can transport individuals to specific moments, evoking vivid, emotionally rich memories often associated with the reminiscence bump during adolescence or early adulthood (Rubin & Schulkind, 1997; Rathbone et al., 2008, cited in Sedikides et al., 2022). This process is not solely internal; it is also significantly shaped by the social and personal contexts in which the music was experienced, making it an integral part of one's experiential narrative (Michels-Ratliff & Ennis, 2016, cited in Sedikides et al., 2022).

Over the past three decades, the landscape of music consumption has undergone a fundamental transformation due to the transformative role of technology. The digitalization of music distribution has shifted the dominance from physical formats to streaming services, making music access easier and more personal than ever before (Ruddin et al., 2022). Smartphones and various online platforms now act as "silent witnesses," recording traces of past experiences, including music consumption history, which indirectly triggers and reinforces autobiographical memory (Setiawan & Setiaji, 2024). Repeated interaction with digital music devices and apps not only reinforces memory associations but also shapes deep listening habits, creating additional memory layers that bond individuals with music and the figures behind it (Ruddin et al., 2022).

This phenomenon raises compelling questions about how individuals form strong musical preferences and develop intimate emotional bonds with artists or characters through technological media. The author's personal experiences with musicians such as Cigarettes After Sex, Beyoncé, and The Weeknd—whose songs feel so "ear harmonious" and have led to the creation of preferred playlists—reflect a deep personal connection. In this digital era, where access to an artist's content is highly convenient and virtual interactions are readily available, it is important to understand the psychological and technological mechanisms underpinning the formation of such bonds. This study aims to explore how the convergence of memory, emotion, and technological innovation shapes musical preferences and strengthens fan loyalty.

1.2. Research Questions

Based on the background above, this study formulates the following research questions:

1. How do the basic concepts of human memory and associative power influence the formation of an individual's musical preferences?
2. What roles do emotion and music-induced autobiographical nostalgia play in strengthening the emotional bond between individuals and artists or characters?
3. How has the evolution of music access, facilitated by digital technology, influenced the way individuals form and sustain musical memories?
4. In the context of the digital era, how does technology function as a "silent witness" to the past that reinforces emotional bonds between fans and their favorite artists/characters?
5. How does the convergence of memory, emotion, and digital interaction contribute to the formation of intimate emotional bonds and deep loyalty toward artists or characters in contemporary musical preferences?

1.3. Research Objectives

In line with the research questions above, this study aims to:

1. Analyze the influence of the basic concepts of human memory and associative power on the formation of musical preferences.
2. Identify the role of emotion and music-induced autobiographical nostalgia in strengthening the emotional bond between individuals and artists or characters.
3. Explain the impact of the evolution of music access, facilitated by digital technology, on the formation and preservation of musical memories.
4. Elaborate on the function of technology as a "silent witness" to the past in reinforcing emotional bonds between fans and their favorite artists/characters.

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5. Formulate how the convergence of memory, emotion, and digital interaction contributes to the formation of intimate emotional bonds and loyalty toward artists or characters in contemporary musical preferences.

1.4. Significance of the Study

This research is expected to provide the following contributions:

1.4.1. Theoretical Contribution

This study is expected to enrich the body of knowledge, particularly in the fields of cognitive psychology and media studies, by presenting a comprehensive synthesis of the interaction between memory, emotion, music, and technology. The results may serve as a foundation for developing new theories on fan preferences and emotional bonding in the digital era, and inspire further, more in-depth research.

1.4.2. Practical Contribution

Practically, this study may offer valuable insights to the music industry, streaming platform developers, and marketers seeking a deeper understanding of how consumers form emotional bonds with artists. This understanding can be utilized to design more effective content and interaction strategies, enhance user experience, and strengthen fan loyalty. For the general public, this study may raise awareness of the complex factors behind personal musical preferences and how technology shapes their cultural experiences.

2. Literature Review

2.1. Human Memory and the Power of Association

2.1.1. Basic Concepts of Memory

Memory stands as one of humanity's most fundamental cognitive functions, enabling individuals to be "historical beings" who are shaped not only by the present but also by stored past experiences (Elita, 2004). This function provides the essential ability to receive, store, process, and reproduce impressions, understandings, and responses (Musdalifah, 2019, quoting Elita, 2004). Memory can also be viewed as a structured system that allows organisms to record facts from the external world and utilize this knowledge to guide their behavior (Schlessinger & Groves in Rakhmat, 2000, as quoted in Elita, 2004). The importance of memory is evident in thinking or reasoning activities, where most processes involve retrieving facts from recall. Through memory, humans can connect the present with the past and plan for the future, demonstrating their adaptability to various situations (Elita, 2004).

Memory operates through three interconnected primary processes. The first is recording, which is the stage of documenting information received via sensory receptors and internal neural circuits. The second is storage, involving the determination of how long information will endure, in what form it is stored, and its storage location. This storage process can be active, where individuals add additional information or fill in gaps with personal conclusions, or passive, without additions. The final stage is retrieval, or in everyday terms, remembering, which is the process of accessing and using stored information (Mussen & Rosenzweig, 1973, in Rakhmat, 2000, as quoted in Elita, 2004).

The power of association plays a central role in how human memory functions. Association is the interconnectedness between one response and another within consciousness, where the emergence of one awareness tends to be followed or accompanied by another associated awareness (Elita, 2004). This phenomenon has been understood since ancient Greek times, where memory was believed to work by linking various things into a unified whole. For example, when the word "grape" is registered by the brain, it automatically connects with various aspects such as color, taste, texture, smell, as well as experiences, events, or friends related to the fruit (Elita, 2004).

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Furthermore, Aristotle formulated several basic laws governing association, albeit in the context of freedom of thought. These laws include: (1) The Law of Contiguity (or Simultaneity), which states that responses appearing simultaneously in consciousness will be associated, such as remembering a lecturer's teaching style when remembering the lecturer; (2) The Law of Succession, where responses with a sequential relationship will be associated, for example, recalling the order of alphabet letters or a melody; (3) The Law of Similarity, which explains the association between similar responses or objects, such as a portrait triggering a memory of a person; (4) The Law of Contrast, which is the association between opposing concepts like day-night or good-bad; and (5) The Law of Cause and Effect or Logical Connection, where responses with a causal relationship will appear together, for example, heavy rain being associated with slippery roads (Elita, 2004). In addition to association, the Greeks also realized that for information to be easily remembered, it must form an extraordinary image that involves various senses, and have a specific location or place that helps recall these images and associations (Elita, 2004).

2.1.2. The Role of Association in Memory

Memory is one of the most fundamental cognitive functions possessed by humans, allowing individuals to be "historical beings" who are determined not only by the present but also by stored past experiences (Elita, 2004). Generally, the classification of memory systems stems from the field of neuropsychology, which pioneered the study of memory (Straub, 2020). This function provides the essential ability to receive, store, process, and reproduce impressions, understandings, and responses (Musdalifah, 2019, quoting Elita, 2004). Memory can also be viewed as a structured system that allows organisms to record facts from the external world and utilize this knowledge to guide their behavior (Schlessinger & Groves in Rakhmat, 2000, as quoted in Elita, 2004). The importance of memory is clearly seen in thinking or reasoning activities, where most processes involve retrieving facts from memory. Through memory, humans can connect the present with the past and plan for the future, demonstrating their adaptability to various situations (Elita, 2004).

Information from the environment enters the memory system through several stages. The initial stage is sensory memory, where information from a specific sensory modality is briefly stored. Sensory memory acts as an interface between perception and memory, recognizing material through specific receptors for very brief information storage (Straub, 2020). Subsequently, information can reach short-term memory, which retains a small amount of material for a short period. An example of mental short-term memory is digit/word span, which is the maximum number of digits or words that can be correctly recalled in sequence (Straub, 2020).

Within the scope of short-term memory, there is a component called working memory. Working memory not only temporarily stores information but also simultaneously processes or manipulates it. This function is crucial for complex cognitive activities, responsible for strategy selection and operation, rehearsal, and serving as a global workspace. Working memory combines temporary information storage and executive processing, using an attention-based control system that can access long-term memory, allowing a person to "keep many things in mind in parallel" while performing complex tasks (Straub, 2020). Part of this working memory is the episodic buffer, a storage system that can hold a small amount of information necessary for interacting with long-term memory (Straub, 2020).

Finally, only a small portion of information enters long-term memory to be stored for a longer period, ranging from hours, days, to years. Physically, the location of long-term memory is separate from sensory memory and short-term memory, involving different structures and cells in the brain. Our knowledge of the world is structured within abstract long-term memory schemas, which in turn influence how new information is stored and retrieved (Straub, 2020). Long-term memory includes various types, such as autobiographical memory, which stores memories of personal events and experiences, and episodic memory, which specifically records certain events with spatial and temporal context. Both types of memory are closely intertwined in forming the narrative of a person's personal experiences.

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The process of memory formation can be explained through several dynamic stages. Environmental information is first encoded when received by sensory memory receptors. This information then undergoes a process of consolidation, where the memory becomes more solid and stable. After consolidation, a small portion of information is stored in long-term memory. When needed, memory can be retrieved, a process that can cause the destabilization of old memories and trigger re-encoding and re-consolidation (Straub, 2020). This dynamic ensures that memory can be adjusted and updated according to actual environmental conditions.

2.2. Music as a Trigger for Memory and Emotion

2.2.1. The Connection Between Music and Emotion

Music possesses an extraordinary capacity to influence human mood and emotions. This effect has been recognized and even utilized in research to manipulate participants' emotional states. For instance, a study by Eich & Metcalfe (1989) used joyful music (such as Mozart's Eine Kleine Nachtmusik) or sad music (such as Albinoni's Adagio in G Minor) to induce specific moods in subjects, both in a guided and automatic manner (Martono & Hastjarjo, 2003).

Research indicates that emotional responses induced by music are a key factor in influencing cognitive functions, including memory. A study by Thompson et al. (in Lim, 2018, quoted in Lestari et al., 2019) reported that listening to fast or happy music not only improved spatial task performance but also triggered higher levels of arousal, a more positive mood, and greater enjoyment. This positive correlation between improved cognitive performance and arousal, mood, and enjoyment implies that emotional changes caused by music lead to its effects on cognition (Lestari et al., 2019).

In the context of memory, emotion plays a significant role in strengthening and facilitating recall. One manifestation of this influence is the phenomenon of mood-congruent memory, where individuals tend to more easily remember information that matches their emotional state when learning the material. For example, someone who is happy will more easily remember pleasant material than sad material, and vice versa (Ellis & Hunt, 1993; Matlin, 1998, quoted in Martono & Hastjarjo, 2003). Research by Teasdale & Russel (1983) (in Anderson, quoted in Martono & Hastjarjo, 2003) supports this, showing that participants tended to recall more words that matched their mood at the time of the test.

Furthermore, there is also the phenomenon of mood-state dependent memory. This means that material learned in a particular mood will be better recalled or recognized if the individual is tested in the same emotional state as during learning (Ellis & Hunt, 1993, quoted in Martono & Hastjarjo, 2003). It is important to note that in this case, the emotional nature of the material is not as crucial as the similarity of emotional conditions between the encoding and retrieval stages of information. Eich and Metcalfe (1989) found that recall ability was higher if the mood during encoding was the same as during recall, even though subjects were not asked to develop specific emotions while listening to music (Martono & Hastjarjo, 2003). Psychologically, several theories explain the mechanisms behind emotional responses and their influence on memory:

2.2.1.1. Network Theory (Bower, 1981)

This theory posits that emotional states are represented as 'nodes' or units in semantic memory. When an emotion node is activated (e.g., triggered by music), it will activate other related nodes in that emotional network, thereby activating corresponding concepts and memories (Martono & Hastjarjo, 2003). This explains how music that makes us happy can easily trigger memories or thoughts that are also happy.

2.2.1.2. Schema Theory (Aaron T. Beck)

According to this theory, an individual in a particular emotional state will have a general framework or 'schema' that corresponds to that emotion. This schema will influence how individuals

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organize information, perceive, and recall experiences. For example, someone who is sad will have a sad schema that prompts them to retrieve memories containing sadness (Martono & Hastjarjo, 2003).

2.2.1.3. Resource Allocation Model (Ellis & Ashbrook)

This theory argues that emotion affects the allocation of limited attentional capacity for cognitive tasks. Emotion can regulate how much capacity is allocated, and sometimes it can be disruptive by reducing the capacity available for processing information. This shows how mood induced by music can affect our ability to focus attention on and subsequently remember information (Martono & Hastjarjo, 2003).

Nevertheless, the complexity of the relationship between music, emotion, and memory still requires further exploration. Some studies, such as those reported by Sousou (in Lim, 2018, quoted in Lestari et al., 2019), suggest that music may not always directly influence the recall of song lyrics, even if mood is affected. However, research results generally indicate the importance of enjoying the musical experience, especially through active engagement in musical activities, as this facilitates changes in arousal and enjoyment that are crucial for the recall process (Lestari et al., 2019). Enjoyment (a positive emotion) appears to act as a strong mediating variable between music-induced arousal and memory performance (Lestari et al., 2019).

2.2.2. Music and Autobiographical Memory

Music is a rich source for autobiographical memory, which refers to memories of one's personal events and experiences (Belfi et al., 2016; Blais-Rochette & Miranda, 2016; Irish et al., 2016, quoted in Sedikides et al., 2022). Specifically, literature indicates that music is a very powerful trigger for nostalgia. Nostalgia itself is a self-relevant emotion, combining personal, meaningful, and mostly positive autobiographical memories (Sedikides et al., 2015a; Van Tilburg et al., 2018a, quoted in Sedikides et al., 2022).

The phenomenon of musical nostalgia can be defined as the ability of certain songs to transport individuals back to specific periods in their lives, often with vivid and emotionally rich memories. Music that was popular during a person's youth, particularly during late adolescence or early adulthood, tends to form lifelong musical preferences and becomes a strong source of nostalgia (Holbrook, 1993, quoted in Sedikides et al., 2022). This is an application of the reminiscence bump phenomenon, where events occurring during adolescence or early adulthood are particularly well-remembered or influential later in life, especially if they are autobiographical (Rubin & Schulkind, 1997; Rathbone et al., 2008, quoted in Sedikides et al., 2022). A concrete example can be seen in the study by Holbrook and Schindler (1989), where participants of various ages showed higher preferences for songs popular during their late adolescence. Similarly, Schulkind et al. (1999) found that older adults preferred music that was popular in their youth (Sedikides et al., 2022).

Music often serves as a highly effective memory trigger due to its ability to evoke strong emotional reactions. Studies show that nostalgia is one of the emotions most frequently evoked by music. For instance, Janata et al. (2007) found that nostalgia was the third most relevant emotional reaction (after happiness and feeling young) when participants listened to popular music excerpts from their adolescence. Juslin et al. (2008), in their study of daily emotional experiences, also reported nostalgia as the fourth most frequently experienced emotion during musical emotion episodes, after happiness, satisfaction, and interest. In fact, happiness and nostalgia occurred more frequently during musical emotion episodes than non-musical ones, indicating that music tends to trigger positive emotions, including nostalgia (Sedikides et al., 2022). This prevalence implicitly demonstrates the effectiveness of music in triggering clear and emotionally rich memories.

The formation of music-related memories is significantly influenced by the role of social and personal context. Given the social and cultural ubiquity of music, autobiographical memories are often deeply intertwined with musical experiences (Michels-Ratliff & Ennis, 2016, quoted in Sedikides et al., 2022). Listening to a piece of music again after some time can trigger emotionally laden memories of loved ones or important events (e.g., family picnics, holidays with friends or

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partners, or cultural moments like holidays) that involved loved ones (Batcho, 2007; Elvers, 2016; Wildschut et al., 2006, quoted in Sedikides et al., 2022). In fact, nostalgic music or lyrics can function as "aesthetic substitutes" for social interaction (Elvers, 2016, quoted in Sedikides et al., 2022). Furthermore, a survey of community members in the Netherlands showed that recalling nostalgic songs was related to feelings of social connectedness, which is "feeling connected to people I care about" (Hart et al., 2011, Study 3, quoted in Sedikides et al., 2022). Research by Cheung et al. (2013, Study 4) causally demonstrated that music-induced nostalgia can enhance social connectedness, where participants exposed to nostalgic song lyrics reported higher levels of social connectedness than the control group (Sedikides et al., 2022).

In addition, factors triggering nostalgia from music can also be very specific, including social interactions and sensory inputs (Chen et al., 2014; Oba et al., 2016, quoted in Setiawan & Setiaji, 2024). A concrete example can be seen in the phenomenon of Koes Plus music nostalgia commodification by the band Pelita Hati. This group successfully triggered audience nostalgia through various means. The repertoire of Koes Plus songs re-performed, especially those relevant to the audience's real-life and important past moments, became the main trigger (Setiawan & Setiaji, 2024). The use of instruments similar to the original Koes Plus also contributed to the nostalgic experience, as felt by the audience when certain instruments at the beginning of a song triggered visual memories from the past (Setiawan & Setiaji, 2024).

Pelita Hati's live performances, by maintaining similar formations, instruments, and even vocal nuances of Koes Plus, effectively recreated the atmosphere of Koes Plus's heyday, triggering youth memories for audiences aged 50-70 who grew up in that era. For them, watching Pelita Hati was an experience that seemed to transport them back in time, unlike merely listening from cassettes or radios. Even the band Koes Plus itself, through lyrics rich in positive messages and life values, became a strong trigger for nostalgia, connecting listeners with childhood memories with family (Setiawan & Setiaji, 2024). Direct interaction between the band Pelita Hati and the audience, such as during call and response in songs, also created social moments that strengthened the nostalgic experience (Setiawan & Setiaji, 2024). All these elements demonstrate the complex role of music in triggering and enriching autobiographical memory through various contextual dimensions.

2.3. The Role of Technology in Contemporary Memory and Nostalgia

2.3.1. The Evolution of Music Access and Its Impact

Over the last three decades, the music industry has undergone dramatic transformations. The primary driver of this change has been the digitalization of music distribution, which has led to the dematerialization of music formats (Ruddin et al., 2022). Whereas previously music consumption was dominated by traditional physical formats like cassettes and CDs, it has now shifted to digital consumption provided by streaming services (Vickery, 2005, quoted in Ruddin et al., 2022). This phenomenon has not only reduced music piracy issues in Indonesia but has also significantly altered public consumption patterns for music, with preferences shifting to listening to music via smartphones (Riandi, 2020, quoted in Ruddin et al., 2022).

The ease of access and portability of digital music through devices such as mobile phones and laptops has enabled a much more personal and repeated listening experience. The digital era has made music a form accessible anytime and anywhere according to fans' desires, no longer dependent on physical media (Habibi & Irwansyah, 2020, quoted in Ruddin et al., 2022). This means individuals can be continuously exposed to their favorite songs, repeatedly strengthening memory and emotional associations. For example, streaming services like Spotify, iTunes, and Joox provide access to vast music collections, even allowing users to build "personal digital libraries" from the same artists (Ruddin et al., 2022). The significant growth of streaming service users, even amidst the COVID-19 pandemic, demonstrates how digital platforms have become the primary means for individuals to access music and, indirectly, recall related memories and emotions (Ridhoi, 2020; Hendra, 2020, quoted in Ruddin et al., 2022).

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Despite the massive shift towards digital music consumption, physical music releases have never completely disappeared (Putra & Irwansyah, 2019). Media such as vinyl records, audio cassettes, and Compact Discs (CDs) are still consumed by enthusiasts and musicians, and have even experienced a revival in certain markets like Japan, South Korea, and Poland, as well as significant growth in global vinyl sales (IFPI, 2018, 2019, quoted in Putra & Irwansyah, 2019). This phenomenon indicates that the value of a physical release transcends mere audio storage; it has cultural, aesthetic, and even psychological aspects that remain relevant.

For some enthusiasts, consuming physical music is a distinct attitude and experience (Putra & Irwansyah, 2019). CDs, for example, are considered a bridge between the analog and digital eras, offering portability and convenience while maintaining cultural integrity through their physical design and annotations (Straw & Straw, 2015, quoted in Putra & Irwansyah, 2019). Meanwhile, audio cassettes and vinyl records offer a distinctive audio experience and are considered "more enjoyable" by some musicians, even with recording treatments deliberately designed to capture analog nuances (Putra & Irwansyah, 2019). The presence of these physical releases is not just about objects but also artifacts that can trigger memories more deeply through tactile, visual, and even ritualistic aspects of their playback. This creates a stronger embodied experience, potentially enriching autobiographical memories related to the music. Therefore, digitalization does not completely eliminate the relevance of physical media; rather, it creates a duality where both contribute to how individuals interact with music and build their emotional connections.

2.3.2. Technology as a "Silent Witness" to the Past

In the contemporary era, technology has transformed into a "silent witness" that records and stores traces of past experiences, both at a personal and collective level. Devices such as mobile phones, laptops, and various online platforms function as personal digital archives, storing photos, videos, messages, and, of course, music consumption history. This archive allows individuals to easily revisit fragments of their lives, indirectly triggering and strengthening autobiographical memories associated with that digital content. For instance, music playlists on streaming platforms (like Spotify or Apple Music) frequently listened to during a certain period, or archives of music videos on YouTube, can quickly transport someone back to a specific period in their life, similar to how Koes Plus songs trigger nostalgia for their fans (Setiawan & Setiaji, 2024).

More than just storage media, our interaction with technological devices themselves has become an inseparable part of experiential memory. Memories are not just about what is stored within the device, but also the experience of using the device. For example, memories of a first mobile phone, how someone first downloaded a song, or moments of scrolling through social media to discover new music. These physical and emotional interactions with technology form additional layers of memory. The use of intuitive and personalized music applications, which now dominate consumption patterns, creates repetitive and profound listening habits (Ruddin et al., 2022). These activities, such as creating playlists, sharing songs, or exploring recommendations, actively bind our memories and emotions to these platforms, making them part of our personal narrative.

In parallel with this phenomenon, there is also a "desire to return" to the ambiance of the past with the help of modern technology. Technology not only facilitates but also shapes the experience of nostalgia in the contemporary era. While musical nostalgia was once often limited to physical media that might be difficult to find, the past vibe can now be quickly rekindled through digital accessibility. The ability to instantly re-listen to old songs via streaming or YouTube, and even watch original music videos, allows individuals to experience the reminiscence bump (Rubin & Schulkind, 1997; Rathbone et al., 2008, quoted in Sedikides et al., 2022) more frequently and easily. Even the trend of indie musicians still releasing physical music (Putra & Irwansyah, 2019) can be seen as an effort to fulfill this desire, where digital technology is utilized for wide distribution, while physical media offers a tangible and intimate experience that evokes nostalgia for a certain era.

In the context of the author's research idea regarding musical preferences and how an individual can form an intimate bond with a favorite artist or character, the role of technology as a "silent

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witness" is vital. Technology enables fans to not only repeatedly consume an artist's music but also to collect, share, and interact with the artist's persona in the digital realm (Ruddin et al., 2022). This constant access, combined with technology's ability to trigger autobiographical memory and nostalgia, significantly strengthens the emotional bond between fans and the music and artists concerned. Technology becomes a bridge that connects personal past with present musical experiences, deepening the appreciation and attachment that shape fan preferences and loyalty.

4. Research Methodology

4.1. Type and Approach of Research

This research adopts a qualitative research type with a literature review (library research) approach. The qualitative approach was chosen because it allows for an in-depth exploration of the development of social phenomena, focusing on how individuals or groups hold different perspectives on a given reality. This research does not aim to test hypotheses through numbers or statistics but rather to answer fundamental questions such as why a phenomenon occurs, how attitudes are formed, and how behavior is influenced by the social environment. The characteristics of this approach include description and interpretation, a flexible yet systematic process, and an emphasis on the natural context of the phenomena being studied. Thus, this research focuses on understanding experiences, logic, and phenomena linked to relevant literature, thereby opening opportunities for the emergence of new concepts or theories based on the synthesis of textual data.

4.2. Data Collection Methods and Techniques

Given the qualitative and literature-based nature of this research, the primary data collection methods used are documentation study and narrative content analysis. Primary data are obtained from various scientific publications, journals, books, and other relevant library sources discussing human memory, the power of association, the relationship between music and emotion, and the role of technology in the context of contemporary nostalgia and music preferences. Data collection techniques involve a systematic search of these literatures, identification of key concepts, supporting theories, and findings from previous research relevant to the topic. These sources are selected based on their credibility and relevance to build a strong theoretical foundation and support the arguments developed.

4.3. Data Collection Procedures

The data collection procedures in this research are conducted in stages and systematically to ensure the completeness and relevance of the information obtained.

4.3.1. First Data Collection Procedure: Identifying Topics and Keywords

The initial stage involves the specific identification and determination of the research topic, namely "Music Preference and Emotional Connection with Artists/Characters Through Technology." Based on this topic, a number of relevant keywords are formulated, such as "human memory," "association," "music and emotion," "autobiographical memory," "musical nostalgia," "music technology," "streaming platforms," "fan connection," and "digital interaction." These keywords serve as the main guide in the literature search process.

4.3.2. Second Data Collection Procedure: Initial Literature Search

The initial literature search is conducted using online academic databases such as Google Scholar, ScienceDirect, and other scientific journal portals. The search is performed using a combination of the formulated keywords, starting from a broad scope and then narrowing down. The focus at this stage is to identify the most relevant articles, journals, books, and book chapters for each sub-theme in the literature review, as well as to find sources that form the main theoretical foundations.

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4.3.3. Third Data Collection Procedure: Source Selection and Verification

After the initial search, a strict selection of the found sources is performed. Selection criteria include topic relevance, publisher or journal credibility, publication year (preference for recent sources), and language (priority for Indonesian and English). Irrelevant or less credible sources are eliminated. Verification is conducted to ensure that the information contained in the sources is accurate and scientifically accountable.

4.3.4. Fourth Data Collection Procedure: Reading and Information Extraction

The selected sources are then read in depth. During this process, key information, definitions, theories, concepts, main arguments, and relevant research findings are extracted. The author takes notes, summarizes important points, and identifies relevant quotes. This process also involves identifying the interrelationships between concepts and theories from various sources.

4.3.5. Fifth Data Collection Procedure: Paraphrasing and Information Synthesis

The extracted information is then paraphrased and synthesized into the author's own language. The main goal is to avoid plagiarism and present ideas from various sources into a coherent and original narrative. At this stage, the author also begins to integrate findings and theories from various sources to form new arguments and analyses, in line with the innovative and creative theme to be achieved.

4.3.6. Sixth Data Collection Procedure: Conceptual Mapping and Relationships

Additionally, conceptual mapping is performed to illustrate the relationships among memory, association, music, emotion, technology, and fan connection. This aids in visualizing how each element mutually influences and contributes to the phenomenon of music preference and emotional bonding. This mapping also identifies gaps in the literature that can be filled by the original ideas of this research.

4.4. Analysis Techniques and Conclusion Drawing

Data analysis in this literature-based qualitative research is carried out through a series of complementary techniques to achieve deep understanding and produce robust conclusions.

4.4.1. Narrative Content Analysis

The primary technique is narrative content analysis, where texts from various literature sources are analyzed to identify patterns, themes, and underlying meanings. The focus is on the narratives constructed by previous experts and researchers regarding memory, music, emotion, and technology, as well as how these narratives interrelate and form a comprehensive understanding.

4.4.2. Thematic Synthesis

Following narrative content analysis, thematic synthesis is performed. Information and findings from various sources are grouped based on recurring themes or core concepts that are interrelated. For example, all information about the "reminiscence bump" or "the role of physical media" will be brought together to form a complete picture of that theme. This helps in identifying causal or correlational relationships between phenomena.

4.4.3. Contextual Interpretation

Each piece of information and concept is interpreted within a broader context, both theoretical and contemporary socio-cultural. The author seeks to understand how old theories resonate with modern phenomena, especially in the context of music digitalization and fan interaction. This interpretation allows for drawing conclusions relevant to current realities.

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4.4.4. Critical Argument Formulation

Based on synthesis and interpretation, critical and creative arguments are formed. This involves combining various ideas, identifying gaps in existing understanding, and formulating the author's original insights. These arguments aim to provide new perspectives or solutions to the problems raised, in line with the research objective to produce innovative and inspiring work.

4.4.5. Internal and External Consistency Verification

Finally, internal and external consistency verification is conducted. Internal consistency ensures that the arguments and conclusions drawn do not contradict the information or theories presented in the literature review. External consistency involves checking whether the conclusions drawn are logical and relevant to real-world conditions, even though this research is qualitative and without direct field data. This process also includes critical reflection on the author's biases or assumptions.

5. Results and Discussion

This chapter presents the main findings obtained through the systematic analysis of relevant literature, as outlined in Chapter III (Research Methodology). These findings are then discussed in depth to answer the research questions and achieve the stated objectives. The discussion will integrate concepts from the literature review, demonstrating how various elements such as memory, emotion, music, and technology interact in shaping individuals' preferences and emotional connections to artists or characters.

5.1. Research Findings

5.1.1. Memory Association as the Foundation of Emotional Connection

A key finding indicates that the power of memory association serves as the primary foundation for forming emotional connections to music and, by extension, to artists or characters. The basic concepts of human memory, involving the processes of recording, storage, and retrieval (Mussen & Rosenzweig, 1973, in Rakhmat, 2000, quoted in Elita, 2004), become relevant. Certain songs or music tend to associate with experiences, events, or even significant people in an individual's life. These associations can be sensory (color, smell, texture) or conceptual (events, friends), as explained by Aristotle's laws of association (Elita, 2004). The stronger and more positive the associations formed between music and personal experiences, the greater the potential for a deep emotional bond to develop.

5.1.2. Music as a Trigger for Emotion and Autobiographical Nostalgia

It was found that music is a highly effective emotional trigger, particularly for nostalgia, which directly strengthens autobiographical memory. Research confirms music's capacity to induce mood (Eich & Metcalfe, 1989, in Martono & Hastjarjo, 2003) and to elicit arousal and enjoyment that positively correlate with improved cognitive performance (Thompson et al. in Lim, 2018, quoted in Lestari et al., 2019). The phenomena of mood-congruent and mood-state dependent memory (Ellis & Hunt, 1993; Matlin, 1998, quoted in Martono & Hastjarjo, 2003) further emphasize the role of emotion in recall. Furthermore, music is specifically identified as an abundant source for autobiographical memory (Belfi et al., 2016; Blais-Rochette & Miranda, 2016; Irish et al., 2016, quoted in Sedikides et al., 2022), and a very powerful trigger for nostalgia. The reminiscence bump phenomenon, where music from late adolescence or early adulthood forms lifelong preferences, provides significant empirical evidence (Rubin & Schulkind, 1997; Rathbone et al., 2008, quoted in Sedikides et al., 2022).

5.1.3. The Role of Social and Personal Context in Musical Memory

Analysis indicates that the social and personal context in which music is experienced significantly influences the formation and retrieval of music-related memories. Autobiographical

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memories are often intricately intertwined with musical experiences due to the social and cultural ubiquity of music (Michels-Ratliff & Ennis, 2016, quoted in Sedikides et al., 2022). Music can trigger emotionally laden memories of loved ones or important events (Batcho, 2007; Elvers, 2016; Wildschut et al., 2006, quoted in Sedikides et al., 2022), and even enhance social connectedness (Cheung et al., 2013, quoted in Sedikides et al., 2022). The example of Koes Plus nostalgia commodification by Pelita Hati (Setiawan & Setiaji, 2024) concretely demonstrates how the replication of visual elements, sound, and direct interaction can trigger strong and collective past memories.

5.1.4. Technology as a Catalyst for Access and Memory

Another important finding is the transformative role of technology in the evolution of music access and its impact on memory and nostalgia. The digitalization of music distribution has shifted consumption from physical formats to streaming services, making music easily accessible anytime and anywhere (Ruddin et al., 2022; Habibi & Irwansyah, 2020, quoted in Ruddin et al., 2022). This ease of access allows for repeated exposure to songs, strengthening memory and emotional associations. Modern technology also functions as a "silent witness" that records traces of past experiences, storing music consumption history and personal moments, which indirectly triggers and strengthens autobiographical memory (Setiawan & Setiaji, 2024). Interaction with technological devices itself also becomes part of the experiential memory, creating an additional layer of memory through deep listening habits (Ruddin et al., 2022).

5.1.5. Technology Strengthens Emotional Bonds with Artists/Characters

Finally, it was found that technology significantly strengthens emotional bonds between fans and the music and artists/characters concerned. Constant access through digital platforms allows fans to not only repeatedly consume music but also to collect, share, and interact with the artist's persona in the digital realm (Ruddin et al., 2022). Technology's ability to trigger autobiographical memory and nostalgia more frequently and easily through instant access to old songs and music videos, and even the trend of physical releases by indie musicians, fulfills the desire for nostalgia and creates a stronger embodied experience. All of this contributes to deepening appreciation and attachment, which shape fan preferences and loyalty towards artists or characters.

5.2. Discussion

This discussion integrates the research findings outlined previously, analyzing them within the theoretical framework of memory, emotion, and technology, and connecting them to the phenomenon of music preference and the formation of intimate bonds with artists or characters.

5.2.1. Memory and Association: The Architecture of Musical Preference

Musical preference is not merely formed from aesthetic preference; rather, it is deeply rooted in the architecture of memory and the power of association. Every time a song is heard, the brain not only processes the melody and lyrics but also automatically activates associated memory nodes (Bower, 1981, in Martono & Hastjarjo, 2003). This explains why songs heard during significant life moments often become "favorite songs" for life. For example, a song that accompanied a joyful graduation moment will always evoke the same feeling of euphoria every time it is played. These associations create strong neural pathways, making the recall of music-related memories more efficient and emotionally intense. Preference for a particular artist can then be formed when their entire music catalog consistently triggers positive associations relevant to personal experiences.

5.2.2. Emotion, Nostalgia, and Autobiographical Traces

The relationship between music, emotion, and autobiographical memory is central to the formation of intimate bonds. Music not only triggers emotions but also actively manages and strengthens recall. The phenomenon of nostalgia, predominantly triggered by music, especially songs

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from the reminiscence bump (adolescence/early adulthood), demonstrates how music becomes an "anchor" for personal identity and life narratives. When someone listens to a song from their youth, it's not just the music playing, but the entire schema of emotions and experiences from that period (Aaron T. Beck, in Martono & Hastjarjo, 2003) that is also activated. This explains why fans can feel so connected to artists whose music colored crucial phases of their lives; the artist becomes an integral part of the individual's emotional and autobiographical landscape.

5.2.3. Music Digitalization: From Passive Consumption to Active Interaction

The evolution of music access, from physical media to streaming platforms, has not only changed how music is consumed but also intensified fan interaction with music and artists. The ease of access and personalization of playlists on apps like Spotify or Apple Music encourages repeated exposure, which essentially strengthens memory pathways and emotional associations. This differs from previous eras where access might have been more limited. Now, listening to music is no longer a passive activity but an active interaction involving personal curation, sharing with communities, and exploring related content. This interaction, over time, fosters a deeper sense of ownership and connection to the music and its creators.

5.2.4. Technology as an Extension of Memory and Artist Persona

The concept of technology as a "silent witness to the past" asserts how digital devices and online platforms have become an extension of personal memory. Listening history, playlists, and visual archives on platforms like YouTube not only store data but also serve as effective external triggers for recalling autobiographical memories. This means that the bond with an artist is not only formed from their musical work but also from the digital experience of consuming and interacting with that artist's persona. The artist, in this case, is not just a creative entity but also a digital character who constantly interacts with fans across various platforms. Consistency in this interaction and availability allows fans to build "intimate bonds" as if they know the artist personally, even if the interaction is technologically mediated.

5.2.5. Formation of Intimate Bonds: Convergence of Memory, Emotion, and Digital Interaction

The formation of intimate bonds with artists or characters is ultimately the result of a complex convergence of richly associated memories, strong emotional responses (especially nostalgia), and technology-facilitated interaction. Technology not only eases access but also creates an immersive environment for fans to continuously strengthen these bonds. The ability to instantly access an artist's entire discography, watch virtual concerts, or see behind-the-scenes footage, all contribute to developing a sense of closeness and loyalty. This phenomenon indicates that modern music preference is a multi-dimensional construct, where personal experience, emotional history, and the digital technological landscape intertwine to create a deep connection between listeners and the music and figures behind it. This is proof that the embodied experience in physical music consumption (Putra & Irwansyah, 2019) has now evolved and been amplified through the digital dimension, forming new ways for humans to connect with art and its artists.

6. Conclusions

6.1. Conclusions

This research aimed to analyze music preferences and the formation of intimate emotional bonds with artists or characters through technology, by comprehensively reviewing relevant literature concerning human memory, emotion, music, and the role of technology. Based on narrative content analysis and thematic synthesis, it can be concluded that music preferences and deep emotional bonds with artists or characters result from a complex convergence of richly associated memories, strong emotional responses (especially nostalgia), and technology-facilitated digital interaction.

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The power of memory association serves as the primary foundation, where specific songs or music are automatically linked to experiences, events, or significant people in an individual's life, forming strong neural pathways for emotional recall. Music is proven to be a highly effective emotional trigger, particularly for nostalgia, which directly strengthens autobiographical memories from the reminiscence bump period (late adolescence or early adulthood). The social and personal context in which music is experienced further enriches the formation and retrieval of these musical memories, even leading to increased social connectedness.

The transformation of the music industry due to digitalization and ease of access through streaming platforms has been a crucial catalyst. Technology has not only shifted consumption patterns from physical to digital but also functions as a "silent witness" recording traces of past experiences. Listening history and repeated interactions with technological devices become part of the experiential memory itself. Ultimately, technology significantly strengthens emotional bonds by allowing fans not only to repeatedly consume music but also to collect, share, and personally interact with the artist's persona in the digital realm. This creates an immersive environment, deepens appreciation, and fosters loyalty that shapes fan preferences and intimate connections in the contemporary era.

6.2. Suggestions

This research has outlined the complex mechanisms behind music preferences and emotional bonds with artists/characters in a digital context. Based on the findings and discussion, several suggestions can be made for various parties:

6.2.1. For Future Scientific Writers

It is suggested that future researchers deepen this study by conducting field research involving primary data, such as surveys or in-depth interviews with music fans from various generations and backgrounds. This will provide stronger empirical validation for these literature-based findings, as well as uncover nuances and variations in individual experiences that may not yet be covered.

6.2.2. For the Music Industry and Streaming Platforms

The music industry and streaming platform providers can utilize these research findings to develop more personalized and in-depth features. Focusing on experiences that trigger nostalgia, enabling users' musical memory curation, and facilitating more intimate interactions between fans and artists through interactive features, can increase user loyalty and create unique added value.

6.2.3. For Artists and Talent Management

Artists and talent management can use these insights to build more effective fan engagement strategies. Understanding how their music interacts with listeners' memories and emotions, and leveraging technology as a tool to foster personal bonds (e.g., through more authentic behind-the-scenes content, interactive live streams, or merchandise that integrates nostalgic aspects), can strengthen their fanbase and create more meaningful connections.

6.2.4. For Readers and Music Enthusiasts

This research is expected to provide readers with a deeper understanding of why they have certain music preferences and why they feel so connected to their favorite artists or characters. This awareness can enrich the music listening experience, encourage personal reflection, and further appreciate the role of music in their emotional lives and memories.

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