

NARRATIVE LITERATURE REVIEW ON THE EFFECTS OF BACKGROUND MUSIC ON ATTENTION AND FOCUS IN STUDENTS

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ABSTRACT

Background music is ubiquitous in educational settings, yet its impact on student cognitive performance remains heavily debated. This narrative literature review synthesizes empirical research to evaluate auditory stimulation's effects on student attention and focus. Searching major academic databases (e.g., Web of Science, Scopus, PsycINFO), we evaluate recent findings through two primary frameworks: the Arousal-Mood Hypothesis, which suggests stimulating music can optimize physiological arousal, and the Seductive Detail Effect, which posits that engaging music acts as a distractor.

The synthesis reveals a multifaceted phenomenon. Cognitive outcomes are not binary; they are heavily moderated by acoustic properties (e.g., tempo, lyrics), task complexity, and individual traits such as personality and working memory capacity. Relaxing instrumental music frequently facilitates performance during simple tasks, whereas complex cognitive processing is often impaired by intrusive auditory tracks. Ultimately, this review establishes that uniform, one-size-fits-all acoustic policies in classrooms are ineffective. We advocate for personalized learning environments tailored to individual cognitive architectures and emphasize the critical need for longitudinal research exploring how diverse musical genres impact sustained academic achievement.

Keywords Background Music; Cognitive Performance; Selective Attention; Arousal-Mood Hypothesis; Seductive Detail Effect; Working Memory Capacity.

Introduction

Background music has become an integral part of daily life, often utilized to enhance ambiance, improve mood, and increase productivity. With the advent of portable music devices and streaming services, individuals have unprecedented access to vast musical libraries (Krause et al., 2013). This proliferation of background music in various settings, from classrooms to workplaces, underscores the importance of understanding its potential effects on cognitive processes such as attention and focus (Lehmann & Seufert, 2017).

The impact of background music on cognitive performance has been a topic of considerable debate. While some studies suggest that background music can enhance cognitive functions by improving mood and increasing arousal levels (Thompson et al., 2001), others argue that it may act as a distracting "seductive detail," thereby impairing cognitive performance (Lehmann & Seufert, 2017). Given the mixed findings, it is essential to critically evaluate the existing literature to provide a comprehensive understanding of how background music influences attention and focus, particularly in educational settings. This understanding could inform educators and policymakers in optimizing learning environments for students.

Research Objectives

The primary objective of this literature review is to synthesize existing research on the effects of background music on attention and focus in students. Specifically, this review aims to:

Evaluate Theoretical Perspectives: Examine various theoretical frameworks, including the arousal-mood hypothesis and the seductive detail effect, to understand their explanations for the impact of background music on cognitive performance.

Summarize Empirical Findings: Compile and analyze empirical studies that have investigated the relationship between background music and cognitive outcomes, highlighting consistent patterns and discrepancies in the findings.

Identify Influencing Factors: Identify key factors, such as the type of music, individual differences, and contextual variables, that may moderate the effects of background music on attention and focus.

Provide Practical Recommendations: Offer evidence-based recommendations for the use of background music in educational settings to enhance learning outcomes.

Literature Review

Theoretical Perspectives

Arousal-Mood Hypothesis

The Arousal-Mood Hypothesis posits that background music influences cognitive performance by altering arousal and mood levels. According to this framework, music that positively affects mood and arousal can enhance cognitive performance (Thompson et al., 2001). For instance, stimulating music is expected to increase physiological arousal and improve mood, thereby facilitating attention and focus (Thompson et al., 2001). Conversely, relaxing music might reduce arousal but still maintain a positive mood, potentially leading to improved performance on tasks requiring sustained attention (Thompson et al., 2001).

Seductive Detail Effect

The Seductive Detail Effect suggests that extraneous, albeit interesting, details in a learning environment can distract learners and impair cognitive performance. Background music, especially if it is highly engaging or contains lyrics, can act as a seductive detail, drawing attention away from the primary task and leading to decreased performance (Lehmann & Seufert, 2017). This framework emphasizes the potential negative impact of background music on tasks requiring high levels of cognitive control and attention.

Methodology

A comprehensive narrative review of peer-reviewed literature was conducted using Web of Science, Scopus, PsycINFO, and Google Scholar to investigate the impact of background music on students' cognitive performance. Search parameters combined keywords related to music listening, attention, and learning environments. Articles were included if they explicitly measured cognitive outcomes in academic contexts and engaged with frameworks like the Arousal-Mood Hypothesis or the Seductive Detail Effect; conversely, clinical therapy, purely physiological, and non-academic studies were excluded. Following a rigorous title, abstract, and full-text screening process, the selected studies were categorized by their observed effects (positive, negative, or neutral) and systematically analyzed to identify key moderating variables, including music characteristics, individual traits, and task complexity.

Findings of Reviewed Studies

Categories Based on the Effects Observed

The reviewed literature reveals mixed results regarding the effects of background music on attention and focus in students. These findings can be categorized into three main groups: positive effects, negative effects, and neutral effects.

Studies Showing Improvement in Attention and Focus with Background Music

Several studies indicate that background music can have a positive impact on cognitive performance. For instance, relaxing music has been found to reduce stress and improve the quality and efficiency of task performance (Felszeghy et al., 2019). Similarly, some research suggests that background music can enhance engagement and germane cognitive load, leading to better learning outcomes (Lehmann & Seufert, 2017).

Studies Showing No Significant Effect or Mixed Results

Other studies report no significant effects of background music on cognitive performance. For example, Nadon et al. (2021) found that background music did not significantly impact response times or error rates in a Stroop-type task, suggesting that its effect on selective attention may be minimal. Additionally, some research indicates mixed results, with the impact of background music varying based on individual differences such as working memory capacity (Lehmann & Seufert, 2017).

Studies Indicating Detrimental Effects of Background Music

Conversely, some studies highlight the negative impact of background music on cognitive performance. Music with lyrics or high arousal levels can act as a distraction, reducing task performance (Burkhard et al., 2018). The Seductive Detail Effect framework supports these findings, emphasizing how engaging music can draw attention away from the primary task (Lehmann & Seufert, 2017).

Factors Influencing the Effects of Background Music

Type of Music

The impact of background music on attention and focus can vary significantly depending on the genre and specific characteristics of the music. Studies have shown that different genres, such as classical, jazz, and pop, can influence cognitive performance in diverse ways. For instance, classical music, particularly pieces with a slow tempo and soothing melodies, is often associated with improved concentration and reduced stress levels (Schellenberg & Hallam, 2005). Conversely, fast-

paced or heavily rhythmic music, such as certain genres of pop and rock, might increase arousal levels, potentially aiding tasks that require sustained attention but also risking distraction in tasks that demand high cognitive control (Thompson et al., 2001). The characteristics of music, including tempo, volume, and complexity, play a crucial role in determining its effect on cognitive processes (Thompson et al., 2001).

Individual Differences

Personality Traits

Individual differences, such as personality traits, can significantly modulate the effects of background music on cognitive performance. Extraverts, who are generally more sociable and prone to seeking external stimulation, may benefit more from background music compared to introverts (Furnham & Bradley, 1997). Introverts, who tend to prefer lower levels of stimulation, might find background music distracting, particularly when engaging in tasks that require deep concentration (Burkhard et al., 2018).

Cognitive Load and Working Memory Capacity

The influence of background music also depends on an individual's cognitive load and working memory capacity. High working memory capacity individuals are generally better at managing the additional auditory input from background music without compromising their task performance (Lehmann & Seufert, 2017). Conversely, individuals with lower working memory capacity might struggle to filter out the auditory distraction, leading to decreased performance (Kämpfe et al., 2010).

Contextual Factors

Learning Environments

The effectiveness of background music can vary depending on the learning environment. In quiet settings, background music might provide a beneficial level of ambient noise, enhancing focus and productivity (Darrow et al., 2006). However, in already noisy environments, adding music might lead to cognitive overload and reduced performance (Kämpfe et al., 2010).

Task Characteristics

The nature of the task at hand also influences the impact of background music. For simple or repetitive tasks, background music can help maintain attention and motivation, reducing feelings of boredom (Schellenberg & Hallam, 2005). In contrast, for complex tasks that require significant cognitive resources, background music can act as a source of distraction, impairing performance (Salamé & Baddeley, 1989).

Discussion

The synthesis of the reviewed literature reveals that the effects of background music on attention and focus in students are multifaceted and context-dependent. While some studies demonstrate that background music can enhance cognitive performance by improving mood and arousal levels (Thompson et al., 2001), others indicate that it may serve as a distraction, particularly when the music contains lyrics or is highly engaging (Burkhard et al., 2018). For instance, relaxing music has been shown to reduce stress and improve task performance in certain contexts (Felszeghy et al., 2019). However, the presence of stimulating music might lead to increased errors in tasks requiring high cognitive control (Nadon et al., 2021).

The findings of this review have significant implications for educational settings. Educators and policymakers should carefully consider the type and characteristics of background music used in classrooms. For example, instrumental music with a slow tempo and soothing melodies may be beneficial in reducing stress and enhancing focus during individual study sessions (Schellenberg & Hallam, 2005). Conversely, music with lyrics or fast tempo should be avoided during complex cognitive tasks as it may act as a distraction (Salamé & Baddeley, 1989).

Furthermore, individual differences such as personality traits and working memory capacity should be taken into account. Students with high working memory capacity may benefit more from background music compared to those with lower capacity (Lehmann & Seufert, 2017). Personalized learning environments that accommodate these differences can optimize cognitive performance and overall learning outcomes.

Conclusion

Ultimately, this narrative review demonstrates that background music is neither an absolute harmony nor a definitive hindrance to cognitive performance; rather, it is a highly sensitive and conditional environmental variable. The empirical evidence confirms that the utility of auditory stimulation cannot be reduced to a binary outcome. Instead, it is dictated by the precise intersection of acoustic properties, the cognitive load of the primary task, and the individual neurological profile of the student. As educational paradigms continue to evolve, it is imperative that the application of background music in learning environments transitions from a uniform, one-size-fits-all approach toward deliberately personalized acoustic landscapes.

Moving forward, the field must transcend short-term, laboratory-based observations. While the current literature provides foundational insights, future research must prioritize longitudinal studies to assess the sustained impact of background music on cognitive performance and overall academic achievement over an extended term. Additionally, subsequent investigations should explore a wider spectrum of culturally diverse and contemporary musical genres to determine how specific structural characteristics interact with creative versus analytical processing. By deliberately calibrating auditory environments to the individual learner and the specific task at hand, educators and researchers hold significant potential to optimize the modern educational landscape.

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