



# Background Music and Learning

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## Introduction

Students often want to listen to background music and study at the same time, yet understanding and retaining new content requires a significant amount of their limited cognitive capacity [1]. Knowing this, teachers often question whether or not it is harmful for students to listen to their favorite tunes while working.

Research on the relationship between background music and cognitive performance has yielded inconsistent results. Some researchers argue that, compared to silence, music has an arousing effect that stimulates positive moods [2], making learners feel better and exhibit greater creativity [3], [4]. These researchers tout music's vitalizing nature as a potential solution to mind-wandering [5], anxiety, and negative moods [6], [7].

Other researchers disagree, believing that adding extraneous details to learning experiences can result in poorer transfer [8], retention, and time-on-task.

More recent research has suggested that, rather than background music being entirely good or bad, the impact of music depends on a

variety of factors. This research review explores these factors by examining two main questions:

- What influence does background music have on the cognitive functions of learning?
- How does this influence differ depending on the personality of the listener, the characteristics of the music itself, and the demand of the task at hand?

## Key Findings

Various studies have yielded conflicting conclusions regarding the impact of background music on cognitive task performance. Why? Different types of people respond to different types of music in divergent ways depending on their work demands.

### **Musical Components**

There are several musical components that influence the way the sound is perceived by the listener, including genre, lyrics, and tempo.

Music that is seen as aggressive or unpleasant has a negative effect on task performance, while self-selected music yields more positive outcomes [9].

Lyrical music is more impairing than instrumental music [10], [11], and some studies have suggested that instrumental music facilitates task performance over silent and lyrical conditions [12].

Fast tempo music increases the speed of spatial processing and the accuracy of linguistic processing [13], but easy listening music is more likely to reduce anxiety [14].

### **Personality Characteristics**

While some researchers argue that music's ability to increase arousal boosts productivity, it is important to remember that optimal levels of arousal depend on one's level of introversion or extroversion [15]. In other words, how motivated and focused people feel after listening to music depends on whether or not they naturally crave social stimulation.

Key differences between introverts and extroverts can be explained by differences in their cortical activity [16] - activity in the outermost areas of the brain responsible for functions such as perception and memory. Introverts have higher levels of cortical activity so they are naturally more aroused, making them more vulnerable to being overstimulated when background music is played. Several other researchers have confirmed that background music tends to benefit extroverts more than introverts [15], [17], [18].

### **Task Demands**

The Theory on the Capacity Model of Attention says that the amount of attention that can be employed at any one time is limited [19], [20]. Whether or not a person can perform mental tasks while listening to music depends on the demand of each activity [9].

Background music can have negative effects when learners are grappling with cognitively challenging material or learning content that requires the memorization of information in

sequential order [21]. However, background music can enhance simple task performance by reducing the likelihood of mind-wandering [5].

## **Conclusion**

While there are some studies that suggest background music can facilitate learning, many more researchers conclude that complex cognitive tasks are best performed in silence [5], [22]. However, background music can aid simple task performance by using leftover attentional resources, improving concentration. It can also improve mood and energy levels.

### **What does this mean for schools?**

- Think about the cognitive load required by assigned tasks when deciding whether or not to allow music in the classroom. Students may benefit from music when tasks are less demanding or require creative processing, particularly students that are constantly seeking additional stimuli. However, performance on tasks that already require substantial cognitive resources may be impaired with music.
- Remember that cognitive load is not a universal constant, so the amount of cognitive capacity required by certain activities differs based on the individual.
- When students are permitted to listen to music through headphones while working, encourage the use of instrumental over lyrical music.
- Teach students to self-monitor their own levels of distraction, helping them to identify when music is a helpful tool versus a harmful distraction.
- Discuss personalities and preferences with students before playing background music aloud for the whole class, understanding that what is helpful for one student might be disrupting for another.

## Resources

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