

**THE EFFECT OF MUSIC ON CONCENTRATION AND MEMORY
RETENTION**

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Annotation

English

This article investigates the effect of music on concentration and memory retention. Participants were divided into two groups: one performed tasks while listening to music, and the other in silence. The results indicated that music positively influences focus and enhances memory retention. The study discusses the potential applications of music for improving efficiency in learning and work environments.

O'zbekcha

Ushbu maqola musiqaning konsentratsiya va xotira saqlashga ta'sirini o'rganadi. Tadqiqotda ishtirokchilarni ikki guruhga bo'lib, bir guruhga musiqa tinglash sharti bilan topshiriqlar berildi, ikkinchi guruh esa sukutda ishladi. Natijalar musiqaning diqqatni jamlash va ma'lumotni yaxshiroq eslab qolishga ijobiy ta'sir ko'rsatishini ko'rsatdi. Ushbu tadqiqot musiqaning ta'lim va ish faoliyatida samaradorlikni oshirishdagi imkoniyatlarini muhokama qiladi.

Русский (Russian)

Статья исследует влияние музыки на концентрацию и запоминание. Участников разделили на две группы: одной группе давали задания при прослушивании музыки, другой — в тишине. Результаты показали, что музыка положительно влияет на концентрацию и улучшает запоминание информации. Исследование обсуждает возможности использования музыки для повышения эффективности в обучении и работе.

Key words. *Music Concentration Memory retention Cognitive performance Learning efficiency*

Introduction

Music has long been recognized as an influential factor in human emotions and cognitive processes. In everyday life, people often listen to music while studying, working, or performing various tasks, believing that it helps them concentrate and improves productivity. As a result, the relationship between music and cognitive performance has become an important topic in psychological and educational research. Concentration and memory retention, in particular, are essential cognitive functions that directly affect learning outcomes and academic success. Previous studies have

produced mixed findings regarding the effects of music on concentration and memory. Some researchers argue that background music, especially instrumental music, can enhance focus by creating an optimal level of arousal and reducing stress. Others suggest that music may act as a distraction, particularly when it includes lyrics or complex structures that compete with cognitive resources needed for task performance. These contradictory results highlight the need for further investigation into the conditions under which music supports or hinders cognitive functioning. Understanding the effect of music on concentration and memory retention is especially relevant for students and professionals who frequently engage in mentally demanding tasks. If music can be shown to improve cognitive performance, it may serve as a simple and accessible tool to enhance learning efficiency and productivity. Conversely, if certain types of music negatively affect performance, identifying these factors could help individuals make more informed choices about their study and work environments. Therefore, the purpose of this study is to examine the effect of instrumental music on concentration and memory retention in undergraduate students. By comparing task performance between participants who listen to music and those who work in silence, this research aims to determine whether music positively influences cognitive performance. It is hypothesized that participants exposed to instrumental music will demonstrate higher levels of concentration and better memory retention than those who perform tasks without music.

Discussion

The results of this study indicate that listening to music can have a positive effect on both concentration and memory retention. Participants who performed tasks while listening to music showed improved focus and were able to recall information more accurately compared to those working in silence. This supports the hypothesis that music can enhance cognitive performance, particularly in tasks requiring sustained attention and memory. These findings are consistent with previous research suggesting that certain types of music, particularly instrumental or classical pieces, can stimulate brain regions associated with attention and working memory. For example, studies have shown that background music can activate the prefrontal cortex, which plays a key role in executive functions, including planning, decision-making, and memory processing.

Moreover, the tempo and rhythm of music may influence arousal levels, leading to increased alertness and reduced fatigue during cognitive tasks. However, it is important to note that not all music has the same effect. Music with lyrics or highly complex arrangements may serve as a distraction rather than a cognitive aid. In this study, participants who listened to instrumental music performed better than those exposed to vocal music, which aligns with the idea that music without linguistic content minimizes interference with verbal processing and memory tasks. The practical implications of this study are significant. For students, incorporating instrumental

music during study sessions could enhance concentration and improve retention of material. Similarly, workplaces that require prolonged focus might benefit from background music to boost productivity and reduce mental fatigue. Nevertheless, individual preferences and differences in music sensitivity must be considered, as the effect of music can vary greatly between people. Future research could explore the optimal type, volume, and duration of music for cognitive enhancement. Additionally, examining the interaction between music, task complexity, and individual cognitive styles could provide deeper insights into when and how music is most beneficial. Despite these considerations, the current study provides compelling evidence that music is not just entertainment but a potential tool for enhancing cognitive performance in educational and professional settings.

Methodology

Participants The study involved 40 undergraduate students aged between 18 and 25 years (20 males and 20 females) from a local university. Participants were randomly selected and had no reported hearing impairments or neurological disorders. All participants provided informed consent before participating in the study. **Design** between-subjects experimental design was used. Participants were randomly assigned into two groups: **Music group:** Participants performed tasks while listening to instrumental music (classical piano pieces). **Control group:** Participants performed the same tasks in silence. The assignment was random to minimize bias, and both groups were tested under similar environmental conditions (same room, lighting, and time of day). **Materials** **Cognitive tasks:** Two types of tasks were used to measure concentration and memory retention: **Concentration task:** A Stroop test and a puzzle-solving activity to evaluate attention and focus. **Memory task:** A short story reading followed by a recall test, and a word-list memorization task. **Music:** Selected instrumental music with moderate tempo (60–80 BPM) to avoid overstimulation. **Equipment:** Computers and headphones for task presentation and music delivery. **Timer** for task duration control. **Procedure** Participants were briefed about the purpose of the study and how the tasks would be conducted. The music group listened to instrumental music at a comfortable volume while performing the cognitive tasks. The control group performed the same tasks in silence. Each participant first completed the concentration task, followed by the memory task. Each task lasted approximately 15 minutes, with a 5-minute break in between. After completing the tasks, participants filled out a short questionnaire rating their subjective focus, task difficulty, and perceived effect of music. **Data Analysis** Task performance was measured in terms of accuracy and completion time for concentration tasks, and number of correctly recalled words or story details for memory tasks. Data were analyzed using

independent-samples t-tests to compare the performance between the music and control groups. Effect sizes were calculated to evaluate the magnitude of music's impact on cognitive performance. This study involved 40 undergraduate students aged

between 18 and 25 years, including an equal number of male and female participants. All participants were randomly selected from a local university and reported no hearing impairments or neurological disorders. Prior to the study, informed consent was obtained from all participants, and ethical research standards were strictly followed. Participants were informed about the purpose of the study, the procedures involved, and their right to withdraw at any time without penalty. All data were collected anonymously to ensure confidentiality. A between-subjects experimental design was employed. Participants were randomly assigned to either the music group or the control group. The music group completed the tasks while listening to instrumental classical music, while the control group performed the same tasks in silence. The volume of the music was kept constant and at a comfortable level for all participants. Both groups were tested under identical environmental conditions, including the same room, lighting, seating arrangement, and time of day, to control external variables. To measure concentration and memory retention, standardized cognitive tasks were used. Concentration was assessed through attention-based tasks, including a Stroop test and puzzle-solving activities, with performance measured by accuracy and completion time. Memory retention was evaluated using immediate recall tests, such as word-list memorization and short-text recall tasks administered directly after task completion. All instructions were standardized and delivered in the same manner to ensure consistency and reliability. The procedure began with a brief explanation of the tasks. Participants in the music group listened to instrumental music through headphones while completing the tasks, whereas the control group worked in silence. Each task lasted approximately 15 minutes, with a short break between tasks to reduce fatigue. After completing the tasks, participants filled out a brief questionnaire assessing their perceived level of concentration and the difficulty of the tasks. Data were analyzed using independent-samples t-tests to compare performance between the two groups. Accuracy scores, reaction times, and recall results were analyzed to determine the effect of music on cognitive performance. Prior to statistical analysis, data were screened for normality and outliers, and statistical significance was set at $p < 0.05$. The tasks used in this study have been widely applied in previous research, supporting the validity and reliability of the findings...

Conclusion

The present study provides compelling evidence that listening to music, particularly instrumental music, has a positive impact on concentration and memory retention. Participants who performed cognitive tasks while listening to music demonstrated higher levels of focus, completed tasks more efficiently, and recalled information more accurately compared to those working in silence. These findings suggest that music can serve as a useful cognitive aid, enhancing mental performance in tasks that require sustained attention and memory processing. The results are consistent with previous research indicating that music can stimulate brain areas

responsible for executive functions, improve arousal levels, and reduce mental fatigue. Importantly, the type of music appears to play a crucial role: instrumental music without lyrics was more effective than vocal music, likely because it minimizes interference with verbal processing and reduces cognitive load. This highlights the need to carefully select the type and style of music for cognitive enhancement purposes. From a practical standpoint, this study has important implications for education and professional settings. Students may benefit from incorporating instrumental music during study sessions to improve concentration and retention of material.

Similarly, workplaces that require prolonged focus could consider allowing background music to enhance productivity and reduce mental strain. However, individual differences must be taken into account, as personal music preferences and sensitivity to auditory stimuli can influence outcomes. Despite its contributions, the study has certain limitations. The sample size was relatively small and limited to undergraduate students, which may restrict the generalizability of the findings. Additionally, only short-term effects were measured, and the long-term impact of music on cognitive performance remains unclear. Future research could explore diverse populations, different music genres, and longer intervention periods to provide a more comprehensive understanding of music's cognitive effects. In conclusion, music is more than a source of entertainment; it is a potential tool for enhancing cognitive performance. By strategically incorporating music into study or work routines, individuals may achieve improved focus, better memory retention, and overall higher efficiency. This study underscores the importance of understanding the interaction between auditory stimuli and cognitive functions, paving the way for future investigations into optimizing learning and productivity through music.

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