

Memory and Music: The Effect of Musical Preferences While Reading

Memoria y música: el efecto de las preferencias musicales durante la lectura

Memória e música: o efeito da preferência musical durante a leitura

Angie Caroline Cañon Carrillo

Karlos Luna

Universidad Nacional de Colombia, Bogotá (Colombia)

Doi: <https://doi.org/10.12804/revistas.urosario.edu.co/apl/a.15521>

Abstract

The effect of background music on cognitive processes is well documented; however, the influence of musical preference on memory remains largely unexplored. The objective of this research was to determine whether musical preference affects memory performance and confidence judgments. Participants first classified seven musical genres from the most to the least preferred. Then, they read a popular science article while listening to a song corresponding to their preferred musical genre or to their less preferred genre. After reading, participants completed a distractor task and then, answered a cued-recall memory test on the content of the article. Participants also indicated their confidence that their answer was correct. Results indicated no significant effect of music preference on memory performance

or confidence. These findings suggest that musical preference does not influence memory recall or confidence in responses.

Keywords: music, musical preference, memory, study

Resumen

El efecto de la música de fondo en los procesos cognitivos está bien documentado. Sin embargo, la influencia de la preferencia musical en la memoria permanece en gran medida inexplorada. El objetivo de esta investigación fue determinar si la preferencia musical afecta el rendimiento de la memoria y los juicios de confianza. En primer lugar, los participantes clasificaron siete géneros musicales de mayor a menor preferencia. A continuación, leyeron un artículo de divulgación científica mientras escuchaban una canción correspondiente a su

Angie Caroline Cañon Carrillo, ORCID: <https://orcid.org/0009-0003-2222-0725>

Karlos Luna, ORCID: <https://orcid.org/0000-0001-8592-1172>

The authors have no conflicts of interest to disclose. The Universidad Nacional de Colombia does not require approval by the ethics committee to develop research such as the one presented and, therefore, there is no ethical approval document. However, the research was developed in accordance with the principles of research in psychology with humans described in Law 1090 of 2006 of the Republic of Colombia, which regulates the practice of the profession of psychology, dictates the Deontological and Bioethical Code and other provisions, as well as the principles established in the Declaration of Helsinki and adopted by international associations such as the American Psychological Association (APA). Correspondence concerning this article should be addressed to Karlos Luna, carrera 30 # 45-03, Ed. 212, Departamento de Psicología, Facultad de Ciencias Humanas, Universidad Nacional de Colombia, sede Bogotá, Ciudad Universitaria, Bogotá, 111321, Colombia. E-mail: klunao@unal.edu.co

To cite this article: Cañon Carrillo, A. C., & Luna, K. (2025). Memory and music: The effect of musical preferences while reading. *Avances en Psicología Latinoamericana*, 43(2), 1-12. <https://doi.org/10.12804/revistas.urosario.edu.co/apl/a.15521>

género musical preferido o al menos preferido. Tras la lectura, los participantes completaron una tarea distractora y, a continuación, respondieron a una prueba de recuerdo con clave sobre el contenido del artículo. Los participantes también indicaron su confianza en que su respuesta era correcta. Los resultados mostraron que la preferencia musical no tuvo ningún efecto sobre el rendimiento de la memoria o la confianza. Estos resultados sugieren que la preferencia musical no influye en el recuerdo ni en la confianza en las respuestas.

Palabras clave: música, preferencia musical, memoria, estudio

Resumo

O efeito da música de fundo sobre os processos cognitivos está bem documentado; no entanto, a influência da preferência musical na memória permanece amplamente inexplorada. O objetivo desta pesquisa foi determinar se a preferência musical afeta o desempenho da memória e os julgamentos de confiança. Os participantes classificaram sete gêneros musicais, do mais ao menos preferido. Em seguida, leram um artigo de divulgação científica enquanto ouviam uma canção correspondente ao seu gênero musical preferido ou ao seu gênero menos preferido. Depois da leitura, os participantes realizaram uma tarefa distratora e, em seguida, responderam a um teste de evocação guiada sobre o conteúdo do artigo. Os participantes também indicaram o nível de confiança de que a sua resposta estava correta. Os resultados sinalizam que a preferência musical não afetou o desempenho da memória ou a confiança. Esses achados sugerem que a preferência musical não influencia a recordação nem o nível de confiança nas respostas.

Palavras-chave: música, preferência musical, memória, estudo

Memory and Background Music: Musical Preferences Do Not Influence Memory Performance

Music has been a constant presence across societies and epochs, deeply intertwined with culture,

economic dynamics, and technological advancements, among other areas. People interact with music in diverse settings, such as public transportation, streets, workplaces, and educational institutions. Depending on the context, music serves a variety of functions and purposes across different contexts, including emotional expression, entertainment, communication, and to maintain concentration on an activity, among others.

This omnipresence of music in daily life is reflected in modern habits. According to a study by the International Federation of the Phonographic Industry (2023), people spend an average of 20.7 hours per week listening to music. The study highlighted the main activities during which individuals listen to music: driving (50% of respondents), commuting to work (45%), relaxing or reducing stress (41%), doing housework (39%), browsing the internet (37%), exercising or at the gym (33%), cooking (33%), working (32%), bathing or showering (30%), at parties (28%), and walking or hiking (27%). These findings illustrate how music integrates into daily life across a wide range of activities.

This integrative use of music while performing various activities is commonly referred to as background music (BGM). Background music refers to any music that is played while the listener's primary attention is focused on another task or activity (Radocy & Boyle, 1988). Background music includes various styles of music or sounds that are intended primarily for passive listening. It is not intended to be the focus of attention for a given audience but rather to complement that on which it is intended to focus.

As such, the potential categorization of musical stimuli as background music has led some researchers to wonder whether this passive consumption of music could have an implicit or explicit influence over people's behavior or their mind. Indeed, the potential of background music to influence cognitive and behavioral processes has drawn the attention of researchers since approximately

the 1970s (Burton, 1986; Chou, 2010; Cockerton et al., 1997; Crust et al., 2004; Davenport, 1972). Systematic reviews and meta-analyses have examined multiple factors that shape the effects of background music on cognitive processes. These include individual characteristics such as age, personality, and prior experience (Kämpfe et al., 2010; Pietschnig et al., 2010); the nature of the music, including tempo, complexity, and familiarity (De la Mora Velasco & Hirumi, 2020; Vasiley et al., 2018); and the characteristics of the cognitive tasks used to evaluate performance (De la Mora Velasco et al., 2023; Standley, 1996). Additionally, recent work has examined how background music may differentially influence types of knowledge, such as factual, conceptual, and procedural learning (Cheah et al., 2022). Together, these studies underscore the complexity of understanding how music interacts with cognitive processes.

The impact of music on cognitive processes is a complex area of study, with research yielding varying conclusions. Some studies suggest that background music has a detrimental effect on performance in tasks related to inhibitory control and reading comprehension, which involve processes such as attention and memory (Alley & Greene, 2008; Deng & Wu, 2020; Liu et al., 2017; Perham & Currie, 2014; Perham & Vizard, 2011; Xiao et al., 2020). Conversely, other research indicates that background music can be beneficial (Crust et al., 2004; Mammarella et al., 2007; Miller & Schyb, 1989; Proverbio & De Benedetto, 2018), while some studies find that background music has no significant effects (Burkhard et al., 2018; Ferreri et al., 2015; Kou et al., 2018; Liu et al., 2012; Reynolds et al., 2014).

Focusing specifically on cognitive processes, meta-analyses on the topic have concluded that background music creates difficulties in task performance, either in memory (Kämpfe et al., 2010) or in reading comprehension (Vasiley et al., 2018). In contrast, other research suggests that background music has a positive effect on cognitive functions

related to memory and language (Cheah et al., 2022; De la Mora Velasco et al., 2023). Based on these observations, thus, it would seem like there is no firm consensus on the hypothesized effect of background music on behavior or cognitive performance.

One possible explanation for these mixed findings in the role of individual factors, such as the listener's emotional response to music. Indeed, when background music is unpleasant for the listener, it can negatively affect mood and, thus, cognitive performance. Conversely, music that generates excessive arousal or stimulation can also hinder cognitive performance by acting as a distraction according to the arousal mood hypothesis (Davis & Thaut, 1989; Sloboda, 1992). Both the type of task and the arousal level induced by background music appear to play a significant role in this line of research, which underscores the importance of considering these variables when drawing conclusions. In fact, it could be suggested that the variability in research findings to date may be attributed, at least in part, to the influence of these factors.

Considering that memory is a fundamental cognitive function essential to numerous mental processes, studies suggest that background music can negatively affect memory-related tasks, such as visual memory, verbal memory, and reading comprehension, with the effect being more pronounced when the music includes lyrics. This negative effect may stem from the high cognitive demand these activities require, as background music competes for cognitive resources (Cheah et al., 2022; De la Mora Velasco et al., 2023; Souza & Barbosa, 2023). These findings highlight the importance of task complexity as a determining factor in how background music affects memory performance and suggest that tasks demanding significant cognitive effort are more vulnerable to interference from background music than simple ones.

Interestingly, individuals often report using background music during activities they consider simple, such as reading or writing (Goltz & Sadakata,

2021). While these tasks might not inherently require high cognitive effort, their performance under the influence of background music could vary depending on individual differences, such as extroversion and introversion, or the type of task, be it reading comprehension, memorization, reasoning, or writing, among others. This suggests that task complexity, along with other contextual factors, plays a critical role in determining whether background music hinders or supports cognitive processes.

It can even be suggested that the effect of background music on task performance is mediated by an indirect relationship between what is heard and the emotional state. According to a study from Calabria et al. (2023), individuals with mild cognitive impairment found that background music had neither a positive nor negative effect on encoding or face recognition tasks. While this might suggest that music does not consistently affect all types of memory processes, the same study highlighted that exposure to music during encoding reduced anxiety, sadness, and depression. This finding underscores the potential of background music to influence emotional states, which could indirectly affect memory performance under certain conditions. For example, improved mood might reduce stress-related cognitive load, potentially benefiting memory in specific contexts.

Given these findings, it is important to consider not only the presence of background music but also individual differences in musical preference. Preferred music may enhance cognitive performance by reducing negative emotional states or increasing engagement with the task. Thus, this study aims to explore the effect of musical preference on memory performance. By focusing on how preferred background music influences memory processes, we can further understand its potential role in cognitive functioning.

In this context, in a study on musical preference conducted by Kiss and Linnell (2020) participants performed a low demand sustained attention task

under two conditions: silence and self-selected music. The results showed that background music improved concentration on the task by reducing mind-wandering states, although it did not influence external distractions. These findings suggest that, under some conditions, preferred background music can protect the cognitive system from distractions, which could improve later memory.

Contrary to these findings, two studies by Perham and Vizard (2011) and Perham and Sykora (2012) demonstrated that musical preference does not influence performance on working-memory related tasks, such as serial digit counting. These results suggest that while music preference might affect attentional processes, it may not necessarily impact all cognitive tasks, particularly those involving memory.

Taking together, these studies highlight that the role of musical preference in cognitive performance is context dependent. While preferred music can support focused attention in low-demand tasks or align with study habits, its influence on memory-specific tasks appears limited. This underscores the importance of considering both task type and individual preferences when evaluating the impact of background music on cognitive outcomes.

Based on the above, this study aims to evaluate the effect of listening to preferred background music on long-term memory. Kiss and Linnell (2020) found that preferred music can enhance focused attention during low-demand tasks by reducing mind-wandering states, whereas Perham and Sykora (2012) reported that musical preference does not significantly impact working-memory related tasks such as serial digit counting. Considering these findings, our study hypothesizes that listening to preferred and non-preferred background music while reading a text will influence individuals' ability to retain and recall information from the text.

In order to examine this hypothesis, the study was conducted following the principles of psychological research involving human participants described in Law 1090 of 2006 of the Republic of

Colombia, which regulates the practice of psychology, establishes the Code of Ethics and Bioethics and other provisions, as well as in accordance with the principles established in the Declaration of Helsinki and adopted by international associations such as the American Psychological Association. The experiment was not pre-registered.

Method

Participants and Design

Eighty-five students (45 female, 38 males, and 2 nonbinaries; age $M = 22.68$, $SD = 4.75$ years old) from the Universidad Nacional de Colombia participated in this experiment. Most of them were psychology students who participated in exchange for a small academic bonus. Non-psychology students entered a prize of a voucher in a local restaurant. To determine the sample size, we based on the availability of participants. We enrolled enough participants to conduct inferential statistics, but a sensitivity analysis conducted with WebPower (Zhang & Yuan, 2018) showed that the final sample was able to detect effects of $d = 0.62$ with a power of 0.80. Thus, the experiment was not powered enough to detect small effects, a fact that should be taken into consideration to interpret the results. The experiment employed a 2 (music type: preferred music, non-preferred music) between-participants design. Participants were assigned randomly to the preferred ($n = 44$) and the non-preferred ($n = 41$) music groups.

Materials

The tasks and interface were implemented using the Python programming language (version 3.13) written in Visual Studio Code. A copy of the code is available at the OSF website of the project (<https://osf.io/2wd7v/overview>). To select the genres and songs for the experiment, we relied on an existing

survey and conducted a survey of our own. The first survey, conducted by the National Administrative Department of Statistics in Colombia (DANE, 2023), was aimed at making a general map of some cultural practices associated with the use and appropriation that people make of goods, services, and spaces offered and provided by the cultural sector. One of the relevant questions referred to the genres of recorded music that respondents had listened to in the last week. The results, which included 18 musical genres, helped to define the most listened genres in Colombia. Based on this survey, a pilot survey was conducted with the target population to further refine the selection of music genres.

The second survey was conducted with students from different programs of the Universidad Nacional de Colombia ($N = 50$). This survey presented the 18 genres from the DANE survey and asked participants to identify the genres they had listened to in the past week, allowing for a more precise selection of the seven musical genres used in the study. The seven genres selected for the experiment were electronic music, hip hop, pop, popular music (a specific Colombian musical genre different from pop music), reggaeton, rock, and vallenato.

For each of the seven genres, we selected a song from playlists classified by genre from platforms such as Spotify and YouTube, ensuring that the chosen songs were representative of their respective genres while also being relatively unknown. The selected songs were “Neón” by LIT Killah (Electronic), “So Sad” by ALI A.K.A. MIND (Hip Hop), “Sin ti mi vida” by Arevalo (Pop), “Ya no haces falta” by Robinson Silva (Popular Music), “Umaye” by Venesti (Reggaeton), “Dentro” by Niña Lobo (Rock), and “Tatuaje en el alma” by Romualdo Brito (Vallenato). Despite different languages in the titles, all the songs included lyrics in Spanish.

The reading material was the article “La entrevista cognitiva mejorada: cómo interrogar a un testigo de manera eficaz” [“The enhanced cognitive interview: How to question a witness in an effective way”] published on the popular science

website *Ciencia Cognitiva* (Paulo et al., 2014). The text was 889 words long and was written in a popular science style. The maximum reading time for this material was estimated at 11 minutes using the Text Converter reading time calculator (<https://www.textconverter.io/es/speech-time/>).

The distraction task comprised 48 anagrams, requiring participants to form as many words as possible within 3 minutes. For the memory task, a 10-question cued-recall questionnaire was developed by the Authors, focusing on the explicit content of the reading material (e. g., “What technique allows the witness to change the way they interpret the event they experienced?”). Participants were also asked to rate their confidence that their answers were correct on a numerical scale from 0 to 100.

Procedure

The experiment was conducted individually or in small groups in the Cognition Laboratory of the Department of Psychology. It began with participants providing informed consent, completing a basic demographic questionnaire, and reading the instructions of the tasks. Participants were asked to rank the seven musical genres from most to least preferred. Based on this ranking, participants were assigned to one of two conditions. Participants in the preferred music group read the text while listening to a song selected from the musical genre they had personally identified as their most preferred. In contrast, participants in the non-preferred music group read the text while listening to a song selected from the musical genre they had identified as their least preferred.

After ranking genres from highest to lowest preference, participants were informed via the computer screen that they would read a text and then answer questions about its content. They were given a maximum of 11 minutes to complete the reading while listening to background music through headphones, depending on their previous ranking

of musical genres and whether they were in the preference or non-preference group. This duration was selected based on estimates from the “Text Converter” website, which indicated that 11 minutes corresponds to the average time a person reading slowly would need to finish the text, ensuring that all participants could read it in full. The activation of the corresponding song depending on the condition was embedded into the programming. Immediately afterward, they performed a distraction task that consisted of identifying words in 48 anagrams in 3 minutes. Once this task was completed, participants took a cued-recall test designed to assess their memory of the text content. The questions were presented in the same order for all participants and without a time limit. After answering each question, participants indicated their confidence in their answers on a separate screen using a numerical scale from 0 to 100 in increments of ten. Finally, upon completing all questions, they were asked about their study habits, specifically whether they usually studied with or without background music.

Results

Answers to the memory test were scored following a strict response criterion. If the response included the information that the Authors had identified as the correct response; it was scored as 1 and, otherwise, as 0. Given this strict and clear scoring criterion, a single rater evaluated all the responses. A second rater was available in case of doubts about whether the answer should be scored as correct, but there were no such instances.

The data were analyzed using JASP software version 0.18.3 (JASP Team, 2024). A copy of the data is available at the OSF website of the project (<https://osf.io/2wd7v/overview>). We first report descriptive analyses of the musical genres selected for the preferred and non-preferred music groups, then present analyses of memory performance and, finally, of confidence. We report both frequentist

(t-test and analysis of variance) and Bayesian analyses. Bayesian analyses have the advantage of being able to provide evidence in favor of the null hypothesis of no differences between groups, with the conventional cutoffs for evidence, in support for the null ($BF_{10} \leq 0.33$), in support for the alternative ($BF_{10} \geq 3.00$ indicating support for the alternative hypothesis (Wagenmakers et al., 2018)).¹ Similarly, we report BF_{INC} for ANOVAS with the same cutoffs indicating evidence in favour of including the effect or against it.

Musical Genre Selection

Table 1 shows the genres participants chose as the most preferred and least preferred, that is, the genres they listened to during reading. Distribution of preferred and non-preferred genres in both groups was consistent. In the preferred music group, Rock (36.4%) and Pop (31.8%) were the most frequently chosen genres, and Popular Music and Vallenato were never selected as the most preferred genres. Consistently, in the non-preferred music group Popular Music (31.7%) and Vallenato

(24.4%) were the most reported non-preferred genres. Hip Hop (4.9%), Pop (4.9%), and Rock (2.4%) were the least frequently reported non-preferred genres.

Memory Performance

Descriptive statistics for memory and confidence are shown in Table 2. A t-test showed no significant differences between the group that listened to preferred music and the group that listened to non-preferred music, $t(83) = 0.94$, $p = 0.352$, $d = 0.20$, $BF_{10} = 0.332$. The Bayesian Factor showed evidence for the null hypothesis of no differences in memory between groups.

To assess whether the habit of studying with music influenced memory, we conducted an exploratory 2 (music type: preferred, non-preferred) x 2 (study with background music: yes, no) ANOVA. In the preferred music group, 20 participants reported studying with background music and 24 without. In the non-preferred music group, 21 participants reported studying with background music and 20 without. The results indicated no main effects, for music type $F(1, 81) = 0.79$, $p = 0.377$, $\eta_p^2 = 0.01$, $BF_{INC} = 0.235$ and for study with background music $F(1, 81) = 0.61$, $p = 0.439$, $\eta_p^2 < 0.01$, $BF_{INC} = 0.217$, nor interaction, $F(1, 81) = 0.05$, $p = 0.825$, $\eta_p^2 < 0.01$, $BF_{INC} = 0.066$.

¹ In the Bayesian logic and analyses it is not appropriate to talk about null or alternative hypotheses, but here we follow the terminology of the JASP Team to help readers not fully familiar with Bayesian analyses.

Table 1.
Percentage (and Number) of Participants who Selected each Genre as Most Preferred and Least Preferred

Musical Genre	Preferred Music Group	Non-Preferred Music Group
Electronic	9.10 (4)	9.80 (4)
Hip Hop	6.80 (3)	4.90 (2)
Pop	31.80 (14)	4.90 (2)
Popular Music	0.00 (0)	31.70 (13)
Reggaeton	15.90 (7)	21.90 (9)
Rock	36.40 (16)	2.40 (1)
Vallenato	0.00 (0)	24.40 (10)

Confidence

A t-test also showed no significant differences in confidence between the group that listened to preferred music ($M = 68.68, SD = 21.34$) and the group that listened to non-preferred music ($M = 65.34, SD = 21.34, t(83) = 0.85, p = 0.398, d = 0.18, BF_{10} = 0.310$).

We also conducted the same 2x2 exploratory ANOVA and found no main effects, for music type $F(1, 81) = 0.64, p = 0.426, \eta_p^2 < 0.01, BF_{INC} = 0.225$ and for study with background music $F(1, 81) = 0.02, p = 0.886, \eta_p^2 < 0.01, BF_{INC} = 0.172$, nor the interaction, $F(1, 81) = 1.10, p = 0.296, \eta_p^2 = 0.01, BF_{INC} = 0.085$.

Discussion

This study aimed to examine the effect of listening to music that people like versus music they do not like (*i. e.*, musical preference) on memory and confidence judgments during a study task. The findings revealed no significant differences between participants who listened to music from their preferred genre and those who listened to a non-preferred genre, with Bayesian analyses

showing support for no differences across all analyses. The habit of studying with or without background music also did not show any effect. These results suggest that musical preference may not play a critical role in cognitive performance and self-assessment during reading-related activities.

These results are consistent with previous research on background music and memory performance. Studies by Perham and Vizard (2011) and Perham and Sykora (2012) found that music preference did not significantly affect memory-related tasks, although their research differed methodologically from ours. They employed a repeated-measures design, exposing participants to multiple conditions, including silence, changing speech, and constant speech, whereas our study used a between-subjects design. In addition, their definition of music preference was based on individual song selection rather than genre classification (*i. e.*, each participant provided a song they liked), and their standardized nonpreferred condition was the same for all participants and consisted of thrash metal.

These methodological differences highlight the need for further research with consistent approaches to better understand the role of music preference in cognitive tasks. One way to improve

Table 2.
Mean (Standard Deviation) for Memory and Confidence

	Preferred Music	Non-Preferred Music
Memory		
All participants	0.56 (0.19)	0.52 (0.22)
Study with music	0.55 (0.22)	0.50 (0.21)
Study without music	0.58 (0.16)	0.55 (0.24)
Confidence		
All participants	68.68 (14.50)	65.34 (21.34)
Study with music	66.10 (16.32)	67.10 (23.55)
Study without music	70.83 (12.76)	63.50 (19.17)

Note: Study with or without music indicates the subsample of participants that reported studying with or without music.

ecological validity in such studies would be to allow participants to select their own preferred and non-preferred songs, as has been done in previous research (*e. g.*, Perham & Sykora, 2012). However, this would come at the cost of reducing the experimental control by having different types of songs that could possibly not be compared to each other, making analysis and generalization of results difficult.

Another study by Kiss and Linnell (2020) contrasts with our findings, as they observed significant differences between conditions. However, the use of a repeated measures design, the inclusion of a silent condition, and the use of a sustained attention task make direct comparisons between that study and ours difficult. These discrepancies highlight the lack of research on musical preferences in background music and its effect on memory as a cognitive process to be evaluated, as well as the need for standardized methodologies in future research on background music and different cognitive processes.

One factor that we intentionally controlled during the research was the presence of lyrics in all the songs used, which were in the same language as the reading task (Spanish), to ensure that the conditions were comparable. However, previous research has reported that background music with lyrics can negatively impact cognitive tasks, particularly reading comprehension and memory performance (Cheah et al., 2022; De la Mora Velasco et al., 2023; Souza & Barbosa, 2023). Although this study did not consider the possible effect of lyrics in background music compared to other conditions such as silence or music without lyrics, future research should investigate whether the presence or absence of lyrics interacts with musical preference to influence cognitive performance.

Another factor that may have influenced the experiment is participants' hearing sensitivity. Some reported that the volume of the songs was too high, while others found it too low, despite all participants being exposed to the same volume

level. This variability in perception highlights the importance of considering individual differences in auditory sensitivity, which could be an interesting aspect to explore in future research.

Regarding confidence measures, the role of background music in self-assessment processes is still largely unexplored. Our findings suggest that musical preference does not influence confidence in memory-related judgments, but further research is needed to determine whether background music affects metacognitive processes such as metamemory and metacognition.

We also conducted an exploratory analysis comparing individuals who typically study with music to those who do not. No significant differences were found between these groups, regardless of whether they were in the musical preference or non-preference group. However, the limitation of this analysis was the broad nature of the question assessing study habits. Instead of asking whether participants generally study with music, a more precise question—such as whether they read with music in the background—would have been more directly aligned with the study's focus on memory for explicit information in a text.

Several methodological improvements could enhance future research in this field. Conducting experiments in acoustically isolated environments would minimize interference from external noise. Assessing participants' auditory sensitivity or allowing them to set their own volume could help control volume-related variability, although again it may come at the cost of experimental control. Additionally, consulting music experts to refine the choice of musical stimuli could improve the accuracy of preference classification. Future studies should also investigate whether the presence or absence of lyrics moderates the effect of music preference on cognitive tasks, as previous research suggests that lyrics may interfere with reading comprehension (Cheah et al., 2022; De la Mora Velasco et al., 2023; Souza & Barbosa, 2023).

An open question remains as to whether the results found in this study would persist under more rigorous experimental controls. Future studies should refine key elements of the experimental design, including selecting songs that are more precisely categorized within their respective genres, standardizing music volume to ensure consistency among participants, and ensuring adequate noise isolation to minimize external auditory interference. By carefully controlling these factors, future research could better isolate the effects of musical preference on cognitive performance and provide a clearer understanding of its potential impact.

Conclusion

Music preference and its effect on cognitive processes, particularly memory, remains an understudied area with limited research. Our results suggest that music preference does not have a significant impact on memory performance or on participants' reported memory judgments. However, future research should further explore this variable in the context of background music to strengthen the findings and provide deeper insights. In summary, although studying with background music, especially music with lyrics, may interfere with concentration and memory, it is important to investigate whether musical preference plays any role within background music in educational contexts.

References

- Alley, T. R., & Greene, M. E. (2008). The relative and perceived impact of irrelevant speech, vocal music and non-vocal music on working memory. *Current Psychology, 27*(4), 277-289. <https://doi.org/10.1007/s12144-008-9040-z>
- Burkhard, A., Elmer, S., Kara, D., Brauchli, C., & Jäncke, L. (2018). The effect of background music on inhibitory functions: An ERP study. *Frontiers in Human Neuroscience, 12*, Article 293. <https://doi.org/10.3389/fnhum.2018.00293>
- Burton, L. (1986). Relationship between musical accompaniment and learning style in problem solving. *Perceptual and Motor Skills, 62*(1), 48-50. <https://doi.org/10.2466/pms.1986.62.1.48>
- Calabria, M., Ciongoli, F., Grunden, N., Ordás, C., & García-Sánchez, C. (2023). Background music and memory in mild cognitive impairment: The role of interindividual differences. *Journal of Alzheimer's Disease, 92*(3), 815-829. <https://doi.org/10.3233/jad-221051>
- Cheah, Y., Wong, H. K., Spitzer, M., & Coutinho, E. (2022). Background music and cognitive task performance: A systematic review of task, music, and population impact. *Music & Science, 5*, Article 20592043221134392. <https://doi.org/10.1177/20592043221134392>
- Chou, P. T.-M. (2010). Attention drainage effect: How background music effects concentration in Taiwanese college students. *Journal of the Scholarship of Teaching and Learning, 10*(1), 36-46. <https://scholarworks.iu.edu/journals/index.php/josotl/article/view/1733>
- Crust, L., Clough, P. J., & Robertson, C. (2004). Influence of music and distraction on visual search performance of participants with high and low affect intensity. *Perceptual and Motor Skills, 98*(3), 888-896. <https://doi.org/10.2466/pms.98.3.888-896>
- Davenport, W. G. (1972). Vigilance and arousal: Effects of different types of background stimulation. *The Journal of Psychology: Interdisciplinary and Applied, 82*(2), 339-346. <https://doi.org/10.1080/00223980.1972.9923824>
- Davis, W. B., & Thaut, M. H. (1989). The influence of preferred relaxing music on measures of state anxiety, relaxation, and physiological responses. *Journal of Music Therapy, 26*(4), 168-187.
- De la Mora Velasco, E., & Hirumi, A. (2020). The effects of background music on learning: A systematic review of literature to guide future research and practice. *Educational Technology*

- Research and Development*, 68(6), 2817-2837. <https://doi.org/10.1007/s11423-020-09783-4>
- De la Mora Velasco, E., Chen, Y., Hirumi, A., & Bai, H. (2023). The impact of background music on learners: A systematic review and meta-analysis. *Psychology of Music*, 51(6), 1598-1626. <https://doi.org/10.1177/03057356231153070>
- Deng, M., & Wu, F. (2020). Impact of background music on reaction test and visual pursuit test performance of introverts and extraverts. *International Journal of Industrial Ergonomics*, 78, Article 102976. <https://doi.org/10.1016/j.ergon.2020.102976>
- Departamento Administrativo Nacional de Estadística (DANE). (2023, January 31). *Colombia, Encuesta de Consumo Cultural (ECC) 2020*. <https://microdatos.dane.gov.co/index.php/catalog/691>
- Ferreri, L., Bigand, E., Bard, P., & Bugaiska, A. (2015). The influence of music on prefrontal cortex during episodic encoding and retrieval of verbal information: A multichannel fNIRS study. *Behavioural Neurology*, 2015(1), Article 707625. <https://doi.org/10.1155/2015/707625>
- Goltz, F., & Sadakata, M. (2021). Do you listen to music while studying? A portrait of how people use music to optimize their cognitive performance. *Acta Psychologica*, 220, Article 103417. <https://doi.org/10.1016/j.actpsy.2021.103417>
- International Federation of the Phonographic Industry. (2023). *Engaging with music 2023*. https://www.ifpi.org/wp-content/uploads/2023/12/IFPI-Engaging-With-Music-2023_full-report.pdf
- JASP Team. (2024). *JASP* (version 0.18.3) [computer software]. <https://jasp-stats.org/>
- Kämpfe, J., Sedlmeier, P., & Renkewitz, F. (2010). The impact of background music on adult listeners: A meta-analysis. *Psychology of Music*, 39(4), 424-448. <https://doi.org/10.1177/0305735610376261>
- Kiss, L., & Linnell, K. J. (2020). The effect of preferred background music on task-focus in sustained attention. *Psychological Research*, 85(6), 2313-2325. <https://doi.org/10.1007/s00426-020-01400-6>
- Kou, S., McClelland, A., & Furnham, A. (2018). The effect of background music and noise on the cognitive test performance of Chinese introverts and extraverts. *Psychology of Music*, 46(1), 125-135. <https://doi.org/10.1177/0305735617704300>
- Liu, B., Huang, Y., Wang, Z., & Wu, G. (2012). The influence of background music on recognition processes of Chinese characters: An ERP study. *Neuroscience Letters*, 518(2), 80-85. <https://doi.org/10.1016/j.neulet.2012.04.055>
- Liu, T., Lin, C.-C., Huang, K.-C., & Chen, Y.-C. (2017). Effects of noise type, noise intensity, and illumination intensity on reading performance. *Applied Acoustics*, 120, 70-74. <https://doi.org/10.1016/j.apacoust.2017.01.019>
- Mammarella, N., Fairfield, B., & Cornoldi, C. (2007). Does music enhance cognitive performance in healthy older adults? The Vivaldi effect. *Aging Clinical and Experimental Research*, 19(5), 394-399. <https://doi.org/10.1007/BF03324720>
- Miller, L. K., & Schyb, M. (1989). Facilitation and interference by background music. *Journal of Music Therapy*, 26(1), 42-54. <https://doi.org/10.1093/jmt/26.1.42>
- Paulo, R. M., Luna, K., & Albuquerque, P. B. (2014). La entrevista cognitiva mejorada: cómo interrogar a un testigo de manera eficaz. *Ciencia Cognitiva*, 8(1), 12-14. <https://www.ciencia-cognitiva.org/?p=826>
- Perham, N., & Currie, H. (2014). Does listening to preferred music improve reading comprehension performance? *Applied Cognitive Psychology*, 28(2), 279-284. <https://doi.org/10.1002/acp.2994>
- Perham, N., & Sykora, M. (2012). Disliked music can be better for performance than liked music. *Applied Cognitive Psychology*, 26(4), 550-555. <https://doi.org/10.1002/acp.2826>
- Perham, N., & Vizard, J. (2011). Can preference for background music mediate the irrelevant sound effect? *Applied Cognitive Psychology*, 25(4), 625-631. <https://doi.org/10.1002/acp.1731>

- Pietschnig, J., Voracek, M., & Formann, A. K. (2010). Mozart effect-Shmozart effect: A meta-analysis. *Intelligence*, 38(3), 314-323. <https://doi.org/10.1016/j.intell.2010.03.001>
- Proverbio, A. M., & De Benedetto, F. (2018). Auditory enhancement of visual memory encoding is driven by emotional content of the auditory material and mediated by superior frontal cortex. *Biological Psychology*, 132, 164-175. <https://doi.org/10.1016/j.biopsycho.2017.12.003>
- Radocy, R. E., & Boyle, J. D. (1988). *Psychological foundations of musical behavior* (2nd ed.). Charles C Thomas.
- Reynolds, J., McClelland, A., & Furnham, A. (2014). An investigation of cognitive test performance across conditions of silence, background noise and music as a function of neuroticism. *Anxiety, Stress, & Coping*, 27(4), 410-421. <https://doi.org/10.1080/10615806.2013.864388>
- Sloboda, J. A. (1992). Empirical studies of emotional response to music. In M. R. Jones & S. Holleran (Eds.), *Cognitive bases of musical communication* (pp. 33-46). American Psychological Association.
- Souza, A. S., & Barbosa, L. C. L. (2023). Should we turn off the music? Music with lyrics interferes with cognitive tasks. *Journal of Cognition*, 6(1), Article 24. <https://doi.org/10.5334/joc.273>
- Standley, J. M. (1996). A meta-analysis on the effects of music as reinforcement for education/therapy objectives. *Journal of Research in Music Education*, 44(2), 105-133. <https://doi.org/10.2307/3345665>
- Vasilev, M. R., Kirkby, J. A., & Angele, B. (2018). Auditory distraction during reading: A Bayesian meta-analysis of a continuing controversy. *Perspectives on Psychological Science*, 13(5), 567-597. <https://doi.org/10.1177/1745691617747398>
- Wagenmakers, E.-J., Love, J., Marsman, M., Jamil, T., Ly, A., Verhagen, J., Selker, R., Gronau, Q. F., Dropmann, D., Boutin, B., Meerhoff, F., Knight, P., Raj, A., van Kesteren, E.-J., van Doorn, J., Šmíra, M., Epskamp, S., Etz, A., Matzke, D., ... & Morey, R. D. (2018). Bayesian inference for psychology. Part II: Example applications with JASP. *Psychonomic Bulletin & Review*, 25(1), 58-76. <https://doi.org/10.3758/s13423-017-1323-7>
- Xiao, R., Liu, C., Chen, J., & Chen, J. (2020). The influence of music tempo on inhibitory control: An ERP study. *Frontiers in Behavioral Neuroscience*, 14, Article 48. <https://doi.org/10.3389/fnbeh.2020.00048>
- Zhang, Z., & Yuan, K.-H. (Eds.). (2018). *Practical statistical power analysis using WebPower and R*. ISDSA Press. <https://webpower.psychstat.org/wiki/>

Received: May 19, 2025
Accepted: February 13, 2026