

# The Impact of Different Music Genres on Learning Efficiency in Various Academic Disciplines

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**Abstract.** This research examines the intricate link between music genres and learning efficiency across diverse academic disciplines, drawing insights from a survey of 404 teenage students aged 12 to 18. It explores demographic factors, study habits, emotional states, and perceived academic impacts, offering a nuanced understanding of music's role in education. The findings highlight diverse preferences, shedding light on the multifaceted relationship between music and learning. The study explores music preferences, including genres and lyrics preferences, as well as participants' study habits, providing valuable insights into music's integration into the learning routine. The results emphasize the need for tailored approaches to accommodate individual preferences and academic requirements, contributing to the global discourse on music's role in education. In conclusion, the research fills a gap in understanding how music genres impact learning efficiency, providing evidence-based recommendations for optimizing learning environments and inspiring future research in music and education with broad global implications.

**Keywords:** music genres; learning efficiency; academic disciplines; study habits; student experiences.

## 1. Introduction

The nexus between music and the learning process has been a subject of sustained interest among educators and researchers. Music, with its profound cognitive and emotional impact, has the potential to shape the educational landscape. While the general influence of music on cognitive processes has been extensively explored, the specific effects of different music genres on learning outcomes remain a dynamic and evolving area of study. This research endeavors to bridge this gap by delving into the intricate relationship between various music genres and their impact on learning efficiency across diverse academic disciplines.

### 1.1. Background

The "Mozart effect" and studies on the influence of music on attention modulation and memory recall underscore the multifaceted role of music in cognitive processes. However, while these studies provide a foundation, they predominantly focus on the broader aspects of music's influence, leaving a void regarding the specific impact of distinct music genres on academic performance [1].

### 1.2. Rationale

This study aims to address this gap by honing in on the effects of three prevalent music genres: Classical, Pop, and Ambient music. These genres were chosen for their distinctive characteristics, including structured compositions and calming effects (Classical), catchy melodies and emotional engagement (Pop), and repetitive and soothing qualities creating a conducive environment (Ambient). Understanding the unique impact of each genre on concentration and academic performance in different disciplines can provide valuable insights for educators and learners alike.

### 1.3. Research Objectives

The primary objective of this research is to explore how different music genres influence learning efficiency across various academic subjects. By examining students' preferences, study habits,



perceived effects of music on concentration, and its impact on academic performance, this study aims to offer a nuanced understanding of the interplay between music genres and the learning experience.

### 1.4. Significance of the Study

The findings of this research hold significant implications for educators, providing insights into tailoring study environments for optimal results. As the educational landscape continues to evolve, understanding how different music genres impact concentration and academic performance becomes pivotal for evidence-based recommendations in educational practices. This study contributes to the broader field by shedding light on the intricacies of the relationship between music genres and learning, paving the way for informed and targeted approaches to enhance the educational experience.

## 2. Methodology

### 2.1. Participants

A total of 404 valid responses were collected for this study, comprising 165 males and 239 females. Participants were stratified across different age groups: 38 individuals aged 12, 26 aged 13, 15 aged 14, 26 aged 15, 55 aged 16, 42 aged 17, and 42 aged 18. Regarding educational levels, 27 participants were in primary school, 66 in middle school, 207 in high school, and 104 in university.

### 2.2. Survey Instrument

A structured questionnaire was meticulously designed to capture a comprehensive understanding of participants' music preferences, study habits, and the perceived impact of music on concentration and academic performance. The questionnaire comprised several key sections, as shown in Table 1.

**Table 1.** Survey Items and Contents

Items	Contents
Music Genre Preferences	Participants were presented with a range of music genres and asked to select their preferred genre(s) for studying.
Study Habits	Participants indicated the frequency of listening to music while studying, allowing for an assessment of how integral music is to their study routine.
Perceived Effects of Music on Concentration	Participants rated the impact of music on their concentration during study sessions on a scale from 1 (no impact) to 5 (significant impact).
Academic Disciplines	Participants specified their primary field of study, enabling the exploration of discipline-specific trends.

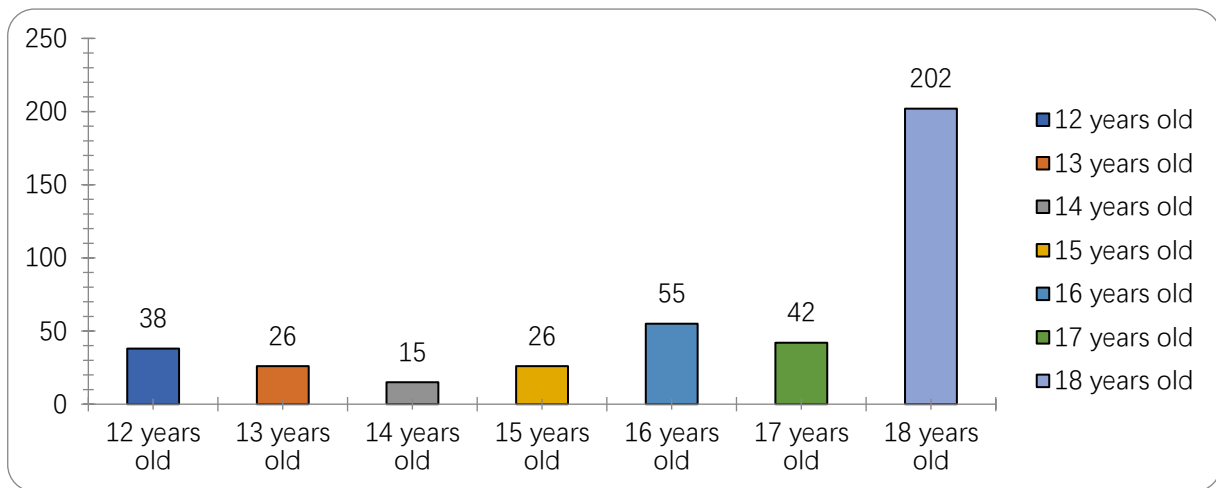
### 2.3. Data Collection

Data were collected through an online survey platform over several weeks. Each participant provided informed consent before engaging in the survey.

## 3. Results

### 3.1. Demographic Overview

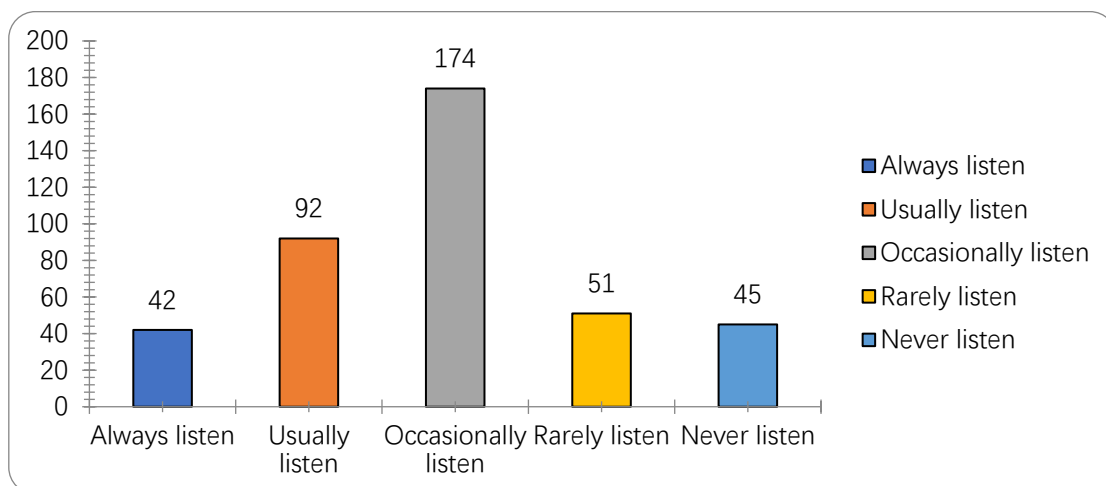
The study encompassed 404 valid responses, exhibiting a gender distribution of 165 males and 239 females. Age-wise, participants were diversified across different groups, with notable representation in the 16 to 18 age range (see Figure 1). Educational backgrounds revealed a varied cohort, with 27 participants in primary school, 66 in middle school, 207 in high school, and 104 in university.



**Figure 1.** Age Distribution of Survey Participants (Picture credit: Original)

### 3.2. Music Engagement Patterns

Of the participants, 306 individuals affirmed the incorporation of music into their study routine, while 98 respondents opted for a music-free environment during study sessions. Regarding frequency, 42 participants reported listening to music in every study session, 92 engaged with music frequently, 174 did so occasionally, 51 infrequently, and 45 never (see Figure 2).



**Figure 2.** Illustrates the frequency distribution of individuals surveyed in their engagement with music while studying (Picture credit: Original)

Further analysis reveals that participants in high school and university stages have the highest proportions of always listening to music, frequently listening to music, and occasionally listening to music. As shown in Table 2.

**Table 2.** Association between Academic Levels and Music Listening

Educational stages	Always listen	Usually listen	Occasionally listen	Rarely listen	Never listen
Elementary school	3	7	8	4	5
Middle school	7	12	31	7	9
High school	20	48	93	29	18
College	12	25	43	11	13

### 3.3. Study Duration and Music Consumption

In terms of daily study duration (excluding class time), 123 participants dedicated less than 2 hours, 161 spent 2-4 hours, 61 invested 4-6 hours, and 59 committed over 6 hours. Concerning continuous music listening during study, 71 individuals refrained from music, 157 listened for less than 30 minutes, 112 for 30-60 minutes, 37 for 60-90 minutes, 6 for 90-120 minutes, and 21 for over 120 minutes. Through cross-analysis, it was observed that there is a certain correlation between study duration and educational stage, as illustrated in Table 3. The table also presents the distribution of study duration for individuals in different educational stages, particularly the duration of continuous music listening during each study session.

**Table 3.** Study Duration and Duration of Continuous Music Listening Among Individuals in Various Educational Stages

	The time spent on studying each day				The duration of continuous music listening during study					
	less 2h	2-4h	4-6h	6h more	never	less 30min	30-60min	60-90min	90-120min	120min more
Elementary school	9	12	3	3	8	13	4	1	0	1
Middle school	23	29	6	6	11	33	16	3	1	2
High school	57	84	36	31	30	84	56	25	3	10
College	34	36	16	18	22	27	37	8	2	8

### 3.4. Music Genre Preferences

Participants exhibited diverse preferences in music genres. Classical music garnered 158 preferences, pop music 247, rock music 41, electronic music 52, hip-hop/rap music 33, country music 44, and jazz music 28. Additionally, 43 participants opted for other music genres. Further analysis, in conjunction with the educational stages of individuals learning with music, reveals their preferred music genres, as illustrated in Table 4.

**Table 4.** Relationship Between Educational Stages and Preferred Music Listening

	Classical Music	Pop Music	Rock Music	Electronic Music	Hip-hop/Rap Music	Country Music	Jazz Music	Other
Elementary school	7	18	5	6	0	1	2	5
Middle school	18	44	6	8	6	10	3	5
High school	88	122	19	27	17	21	12	18
College	46	63	11	11	10	12	11	15

### 3.5. Lyrics vs. Instrumental Preference

When choosing between music with lyrics and instrumental music during study sessions, 181 participants favored music with Chinese lyrics, 64 with foreign lyrics, and 159 preferred instrumental music. The preference for music with familiar language lyrics is somewhat associated with the learner's educational stage (age), as shown in Table 5.

**Table 5.** Relationship Between Educational Stage and Lyrics Preferences in Music

	Music with Chinese lyrics	Music with foreign lyrics	Instrumental music
Elementary school	18	3	6
Middle school	36	8	22
High school	89	36	83
College	38	17	49

### 3.6. Perceived Impact on Academic Performance

Participants assessed their perceived learning efficiency when studying music on a scale of 1 to 5. Results indicated a range of responses, with 40 individuals scoring 1(very low), 70 scoring 2(low), 168 scoring 3(Moderate), 107 scoring 4(high), and 19 scoring 5(very high). Individuals at different learning stages perceive the distribution of the impact of music on learning efficiency, as shown in Table 6.

**Table 6.** The Impact of Music on Learning Efficiency for Individuals at Different Learning Stages

Learning Efficiency Rating During Study					
	1(very low)	2(low)	3(Moderate)	4(high)	5(very high)
Elementary school	4	5	9	6	3
Middle school	6	17	21	18	4
High school	15	32	95	56	8
College	15	16	44	25	4

### 3.7. Discipline-Specific Trends

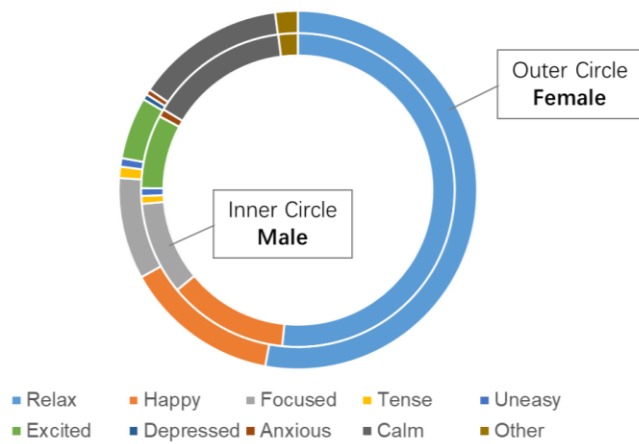
This study investigates the impact of music on the learning efficiency across various academic disciplines. Table 7 provides a systematic overview of the correlation between learning efficiency in different disciplines and the presence of music.

**Table 7.** The Impact of Music on Learning Efficiency in Different Academic Disciplines

Subject	Mathematics		Language		Science(Physical, Chemistry, etc.)		Social (Historical, Geographical, etc.)		Art or Creation (Music, Crafts, etc.)		Rhythm (Gymnastics, Ball games, Running, etc.)		Science(Physical, Chemistry, etc.)		Social (Historical, Geographical, etc.)		Art or Creation (Music, Crafts, etc.)	
	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion
Very Helpful	33	8.17%	40	9.90%	31	7.67%	34	8.42%	101	25%	145	35.89%						
Avail	110	27.23%	177	43.81%	120	29.70%	142	35.15%	203	50.25%	194	48.02%						
No Significant Effect	155	38.37%	130	32.18%	172	42.57%	182	45.05%	74	18.32%	52	12.87%						
Not Very Helpful	68	16.83%	38	9.41%	55	13.61%	29	7.18%	17	4.21%	6	1.49%						
Have a Negative Effect	38	9.41%	19	4.70%	26	6.44%	17	4.21%	9	2.23%	7	1.73%						

### 3.8. Emotional States and Learning Environments

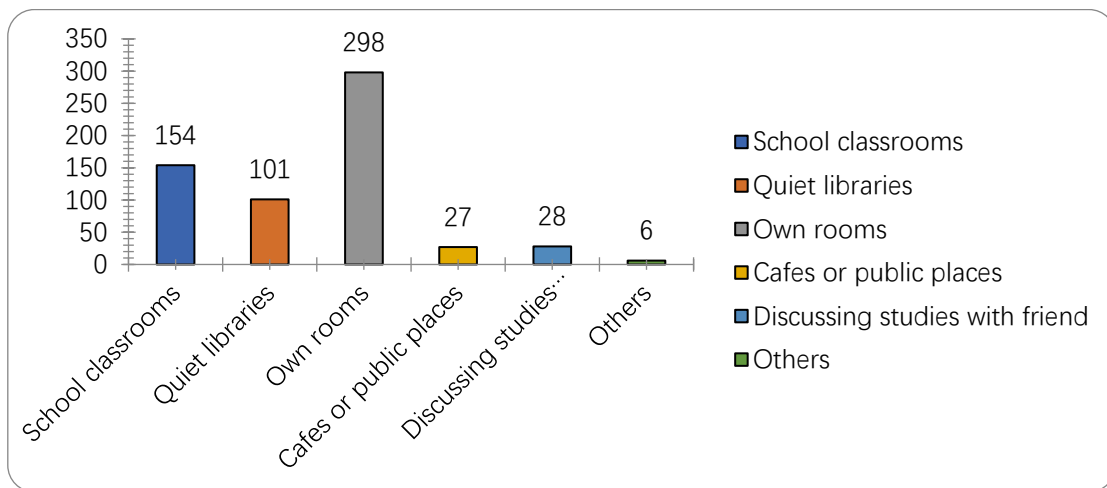
Participants revealed their emotional states while studying with music, with 336 feeling relaxed, 86 happy, 60 focused, 6 tense, 5 uneasy, 41 excited, 2 depressed, 4 anxious, and 89 calm. Analysis reveals that individuals of different genders have somewhat divergent experiences when listening to music while studying. The proportion of females who perceive a feeling of "Happy" is significantly greater than that of males. The distribution of this proportion is illustrated in Figure 3.



**Figure 3.** Depicts the varied perceptions of individuals of different genders when studying with music (Picture credit: Original)

### 3.9. Study Environments and Music Delivery

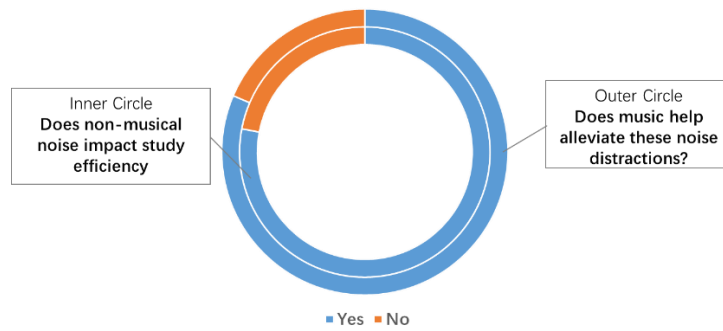
Regarding study environments, 154 participants studied in school classrooms, 101 in quiet libraries, 298 in their rooms, 27 in cafes or public places, and 28 in collaborative study settings. In terms of music delivery, 303 participants used headphones, while 80 used speakers (see Figure 4).



**Figure 4.** Diverse Study Environments and Locations (Picture credit: Original)

### 3.10. Perceived Impact of Music on Distractions

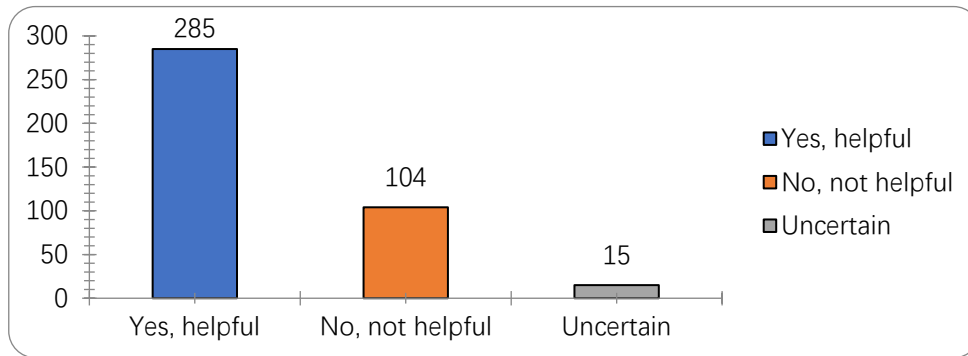
Approximately 315 participants believed that factors beyond music, such as noise, phones, and social media, could impact study efficiency, while 89 participants disagreed. Moreover, 329 participants believed that music could help alleviate distractions, whereas 75 participants disagreed. Approximately 78% of individuals believe that noise other than music affects study efficiency, while around 85% think that listening to music helps alleviate the disturbance caused by this noise (see Figure 5).



**Figure 5.** The Impact of Noise on Learning Efficiency and the Alleviating Effect of Music (Picture credit: Original)

### 3.11. Attention and Task-Specific Music Selection

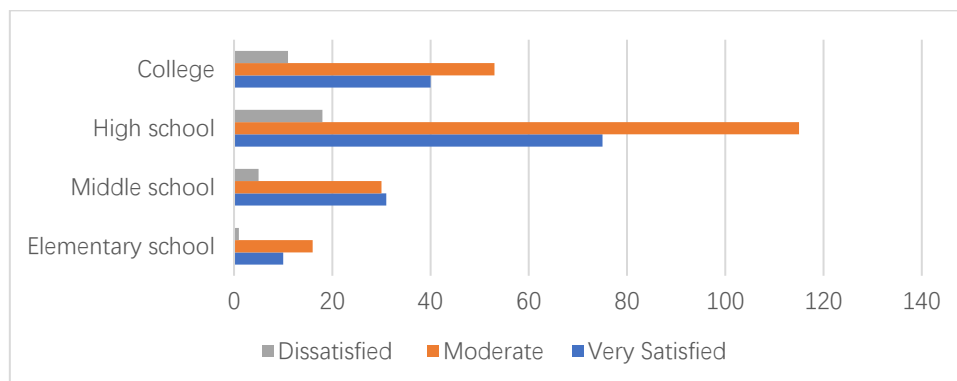
Concerning attention, 285 participants perceived music as aiding concentration, while 104 believed it had no impact. Additionally, 56.44% of them would choose different music based on the nature of the study task, while 21.78% would not. They tend to listen to the same type of music regardless of the study task. Additionally, 21.78% expressed uncertainty about this (see Figure 6).



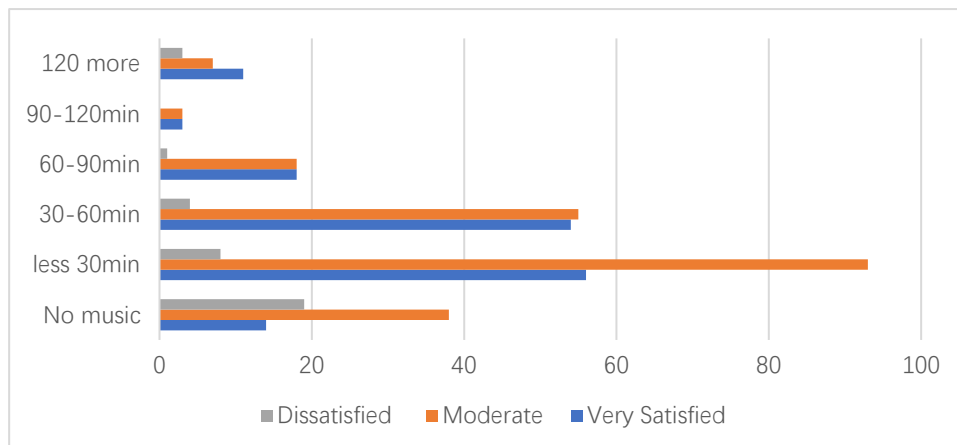
**Figure 6.** The majority of participants believe that music facilitates concentration during study (Picture credit: Original)

### 3.12. Academic Performance Satisfaction

Regarding academic performance satisfaction while studying with music, 156 participants were very satisfied, 213 were moderately satisfied, and 35 were dissatisfied. The correlation between academic performance while studying with music and the learning stage is illustrated in Figure 7. Meanwhile, we found a certain relationship between the duration of continuous music listening during study and the satisfaction with academic performance. The distribution is illustrated in Figure 8.



**Figure 7.** Satisfaction Levels with Academic Performance After Music-aided Learning Across Different Learning Stages (Picture credit: Original)



**Figure 8.** Satisfaction with Academic Performance after Studying with Varied Durations of Continuous Music Listening (Picture credit: Original)

In conclusion, these results offer a nuanced understanding of the complex interplay between music, study habits, and academic performance across diverse disciplines. The findings underscore the importance of considering individual preferences and subject-specific nuances when exploring the relationship between music and learning efficiency [2].

## 4. Discussion

### 4.1. Music Engagement Patterns and Attention

The diverse patterns of music engagement observed in this study provide valuable insights into how students integrate music into their study routines. The study elucidates the relationship between music and attention during study sessions. Classical music stands out with the highest attention ratings, followed by ambient music and pop music. These findings align with prior research, indicating that certain music genres, particularly classical, may enhance attention and cognitive processes. The results also demonstrate the significant assistance of suitable music in resisting noise interference and improving focus. Moreover, the varied frequencies of music consumption indicate the nuanced nature of individual preferences, emphasizing the necessity for personalized approaches in educational environments. However, as emphasized by the interaction of individual preferences evident in diverse music selections, this relationship possesses a certain subjectivity [3].

### 4.2. Effects on Academic Performance

Perceptions regarding the impact of music on academic performance varied among participants. In the population with an education background of junior high school and above, nearly half of those who study with music reported being "very satisfied" with their academic participation, while those expressing "very dissatisfied" were below 9%. From the perspective of music listening duration, the diversity of opinions regarding the correlation between music listening duration and academic performance highlights the need to consider individual differences and task-specific factors when assessing the influence of music on academic outcomes. Discipline-specific trends reveal intriguing patterns. For instance, in mathematics, many participants favored classical and ambient music, consistent with the structured and calming attributes associated with these genres. In language and literature, classical music and pop music were prominent choices, possibly reflecting the emotional engagement facilitated by these genres [4]. These findings provide a foundation for future research to explore the underlying mechanisms of discipline-specific preferences and their impact on learning outcomes [5].

### **4.3. Emotional States and Learning Environments**

Participants' reported emotional states while studying with music highlight the multifaceted impact of music on the learning experience. The prevalence of feelings such as relaxation, happiness, and focus suggests that, for many students, music serves as a positive influence on their emotional well-being during study sessions. The diversity of learning environments, ranging from quiet libraries to collaborative settings, further emphasizes the adaptability of music as a tool to enhance the study experience across diverse contexts.

### **4.4. Implications for Educational Practices**

These findings have significant implications for educators and learners. Recognizing the influence of music genres on attention and academic performance, educators can guide students in selecting appropriate music to create optimal study environments. Additionally, acknowledging the diversity of student preferences and the potential for music to both aid and disrupt the learning process underscores the importance of individualized approaches in educational practices [6].

## **5. Future Directions**

### **5.1. Longitudinal Studies**

Building on the insights gained from this cross-sectional study, future research could benefit from longitudinal investigations. Long-term studies would offer a more comprehensive understanding of how music engagement patterns evolve over time and their sustained impact on learning outcomes. Examining how preferences and their effects change as students progress through different educational stages would provide valuable information for educators and policymakers [7].

### **5.2. Individual Differences**

The exploration of individual differences remains a fertile ground for future research. Investigating how personal characteristics, such as personality traits and musical backgrounds, interact with music genres to influence learning outcomes could enhance our understanding of the nuanced relationship between music and academic performance. This avenue of research could contribute to the development of personalized strategies tailored to individual student profiles [8].

### **5.3. Intervention Studies**

Conducting experimental studies and interventions would provide a more nuanced understanding of the causal relationships between music genres and learning efficiency. Implementing controlled interventions, where specific music genres are introduced or restricted, could elucidate the direct impact on academic performance. Such studies could also explore the potential benefits of integrating music with other sensory stimuli, such as visual or kinesthetic elements, to optimize learning environments [9].

### **5.4. Multimodal Approaches**

Future research could delve into the efficacy of combining music with other sensory stimuli in the learning process. Investigating how multimodal approaches, incorporating visual or kinesthetic elements alongside music, influence learning outcomes would contribute to a more holistic understanding of the interplay between sensory experiences and academic performance.

### **5.5. Influence of Lyrics**

The role of lyrics in music and their impact on concentration and memory during study sessions remains an area warranting further exploration. Future studies could specifically investigate how the presence or absence of lyrics influences different academic disciplines, providing insights into the potential benefits or distractions posed by lyrical content [10].

## **5.6. Cross-Cultural Perspectives**

Examining whether the impact of music genres on learning efficiency varies across different cultural contexts would contribute to a more globally applicable understanding. Cross-cultural studies could uncover how cultural preferences and norms influence the relationship between music and academic performance, enabling the development of more culturally sensitive educational practices.

## **5.7. Holistic Approach to Well-Being**

Considering the reported emotional states of students during music-enhanced study sessions, future research could explore the broader implications for student well-being. Investigating how music contributes to the overall mental and emotional health of students, beyond its impact on academic performance, would support the development of holistic educational approaches [11].

In conclusion, these suggested future directions aim to deepen our understanding of the complex relationship between music genres and learning efficiency. By addressing these research avenues, scholars can contribute to the ongoing discourse on the role of music in education and inform evidence-based practices that cater to the diverse needs of students across various academic disciplines and cultural contexts.

## **6. Conclusion**

In summary, this study has presented a nuanced exploration of the intricate interplay between different music genres and their effects on learning efficiency across diverse academic disciplines. The extensive survey data, collected from 404 participants spanning various age groups and educational levels, provide valuable insights into the multifaceted relationship between students' music preferences and their academic experiences.

### **6.1. Contributions to the Field**

The findings of this research contribute significantly to the existing body of knowledge on the influence of music on learning. By focusing on specific music genres—classical, pop, and ambient—the study reveals distinct patterns in students' preferences and their perceived impact on concentration and academic performance. This granularity enhances our understanding of how different genres interact with the complexities of various academic disciplines.

Educators can draw practical insights from the results to tailor learning environments conducive to optimal academic performance. Recognizing the diverse effects of music on concentration and academic outcomes allows for informed decisions when incorporating music into educational practices. For instance, the study highlights that classical music tends to positively influence concentration during study, providing educators with a potential tool for enhancing focused learning experiences.

### **6.2. Acknowledging Diversity in Student Preferences**

The study emphasizes the subjective nature of the relationship between music and academic performance. Students exhibit diverse preferences and responses, reflecting the individualized impact of music on their learning experiences. Acknowledging this diversity is crucial for educators seeking to create inclusive environments that cater to the varied needs and preferences of students.

### **6.3. Limitations and Areas for Future Research**

Despite the valuable insights gained, this study has limitations. The reliance on self-reported data introduces potential biases, and the cross-sectional design limits the establishment of causal relationships. Future research, as outlined in the "Future Directions" section, should address these limitations through longitudinal studies and controlled interventions.

In conclusion, the study underscores the need for a thoughtful and context-specific approach to integrating music into educational practices. While certain music genres, particularly classical music, demonstrate positive associations with concentration during study, it is paramount to recognize the diversity of student preferences and the potential for music to both aid and disrupt the learning process. By embracing this complexity, educators and policymakers can foster inclusive and effective learning environments that acknowledge and leverage the role of music in enhancing the educational experience. This research invites further exploration into the nuances of music's influence on learning, encouraging scholars to delve deeper into the implications across diverse academic disciplines and cultural contexts. As the educational landscape continues to evolve, a comprehensive understanding of the interplay between music and learning remains essential for advancing evidence-based recommendations and promoting student success.

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