METU Students' Listening Habits and Interpersonal Interactions

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Recieved January 2025

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1. Abstract:

This paper investigates the relationship between music preferences, listening habits, and social interactions among METU students. By using a stratified sampling approach, data was collected from various locations on campus, ensuring diversity in gender and academic background. Statistical analyses and visualizations were applied to explore key questions.

Keywords: Music preferences, social interactions, METU students, stratified sampling, socialization

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2. Introduction:

This survey aims to explore the intricate relationship between music genre preferences, listening habits, and social interactions among students at Middle East Technical University. Music has been an integral part of human culture for at least 40,000 years, serving not only as a form of entertainment but also as a tool for communication and emotional expression (d'Errico et al., 2003). Over time, it has evolved into a universal language that shapes our daily lives, influences our interactions with others, and reflects our identities. Today, music plays a pivotal role in shaping our emotional states and fostering connections within communities, with distinct genres offering unique emotional experiences tailored to various cultural and historical contexts.

Each musical genre carries its own set of characteristics, shaped by its historical, cultural, and instrumental influences. These features contribute to the way music affects the listener emotionally, from the calming melodies of classical music to the energizing rhythms of dance genres. According to P. E. Savage et al. (2015), the emotional effects of music are largely determined by the instruments used, the structure of the composition, and the cultural significance attached to the genre, which can vary significantly across different societies. Furthermore, musical genres often serve as a reflection of one’s personal identity, providing individuals with a sense of belonging and helping them navigate social circles.

In this context, understanding how music preferences and listening habits intersect with social behaviors is crucial. Our focus in this survey is to delve deeper into the social effects of music, examining how the choice of genres and the act of listening can influence one's social interactions and group affiliations. By collecting data from students at Middle East Technical University, we aim to uncover insights into how these musical behaviors contribute to the dynamics of social life within academic environments. Music, in this sense, serves not only as a means of personal expression but also as a regulatory force within social groups. Antoshkin, V. et al. (2020) suggest that music helps establish social values and norms, contributing to the maintenance of social equilibrium by fostering a shared sense of identity and cohesion among group members.

Moreover, the positive impact of music extends beyond the social realm. Music has long been recognized for its therapeutic effects, providing significant health benefits even outside of clinical settings. Rossi, C. et al. (2024) highlight that music can improve self-esteem, empower individuals, and foster a sense of achievement. These benefits are evident across multiple genres and listening activities, further demonstrating the powerful role of music in our lives, both individually and within communities.

By exploring these dimensions, this survey aims to offer a comprehensive understanding of how music, as a cultural and emotional force, plays a vital role in the social and personal lives of students, shaping their connections and experiences at Middle East Technical University.

3. Aims and Objectives:

Aims:

a. To understand the listening habits of METU students and their impact on interpersonal interactions.

b. To explore the connection between music preferences and socialization levels among students.

Objectives:

a. Identify patterns in music preferences and their correlation with social behaviors.

b. Investigate the relationship between leisure activities and music listening frequency.

c. Examine how music-related discussions influence students' socialization scores.

d. Analyze significant life events that influence music preferences and habits.

e. Provide actionable insights into the role of music in fostering social connections.

4. Methodology:

4.1 Sampling Strategy

Prior to commencing the survey, we engaged in a discussion regarding possible challenges. Considering that our group comprised three male members, we foresaw that female students might exhibit a lower likelihood of participation. To mitigate this potential gender disparity, we implemented a stratified sampling method to guarantee sufficient representation of female participants. Furthermore, we arranged a follow-up meeting subsequent to some preliminary fieldwork to evaluate and modify our strategy as necessary.

We positioned ourselves in areas with significant student engagement, including Çatı Café, the library, and the cafeteria of the Physics Department. The survey process proved to be more efficient and enjoyable than anticipated, and the predominantly favorable feedback from METU students was uplifting. In our initial debriefing session, we recognized two primary concerns:

1. **Gender Representation:** Despite focused efforts, the response rate among women was slightly lower than that of men. We decided to continue prioritizing female participants to achieve a more balanced sample.
2. **Sample Diversity:** Our initial location choices led to an overrepresentation of engineering students, while preparatory school students were entirely absent. To address this, we incorporated **cluster sampling** by

assigning one team member to remain in the original locations for simple random sampling, while the other two visited different faculties to diversify the sample.

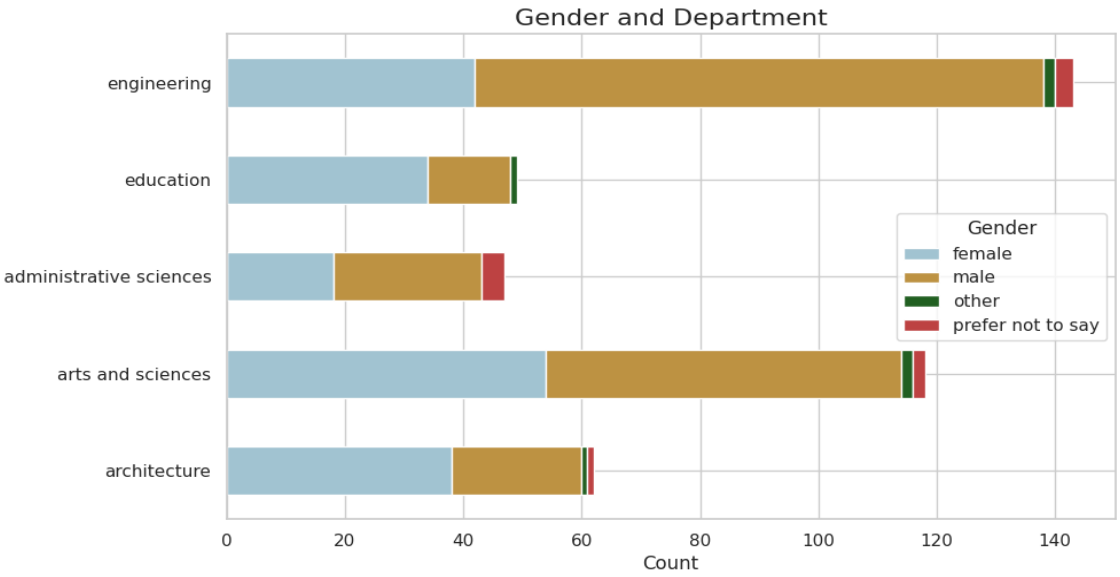
Although the rate of new respondents slowed over time, the data collected during our second meeting showed improvements in diversity. Encouraged by these results, we continued surveying independently across different locations and times, striving for balanced representation as much as possible.

4.2 Observations and Experiences

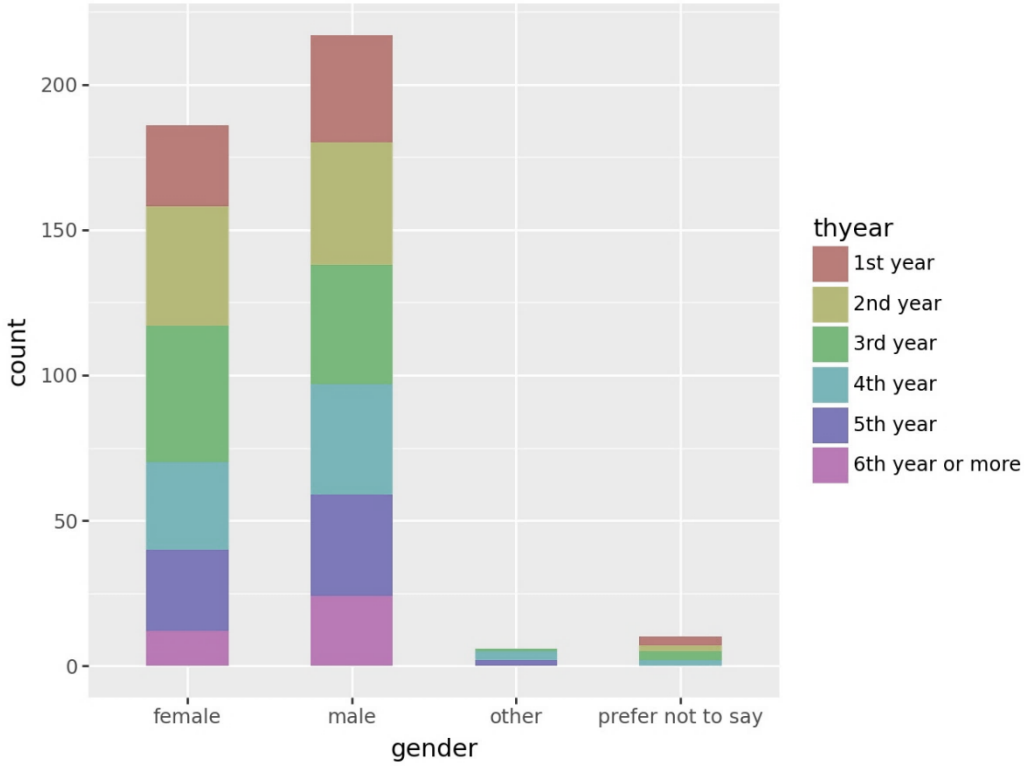
Throughout the survey process, we noted several key insights:

1. **High-Foot-Traffic Areas:** Individuals in busy locations were generally willing to participate, whether they were alone or in a group.
2. **Engaging Final Question:** The “final boss” question at the end of the survey successfully sparked curiosity and motivated respondents to complete the survey.
3. **Strong Engagement:** An impressive 88% of participants completed the entire survey.
4. **Topic Relevance:** Music-related questions elicited particularly high levels of interest, increasing participation rates.
5. **Uninterested Respondents:** Persistent efforts to engage disinterested individuals often led to inaccurate responses, negatively impacting data quality.
6. **Timing Matters:** Students were more receptive after classes ended, whereas class breaks or hurried transitions between locations made them less willing to participate.
7. **Dormitory Areas:** These locations had low activity during class hours, and the few students present showed minimal interest in participating.
8. **Library Success:** Contrary to expectations, the library proved highly productive, as students found the survey engaging during their study breaks.
9. **Social Settings:** Cafeterias and the campus marketplace were effective for data collection, particularly among students waiting in line or socializing.
10. **Challenges with Architecture Students:** Jury week created a stressful environment for architecture students, making them harder to engage. However, persistence allowed us to meet our sample size goals.
11. **Highlighting Survey Appeal:** Emphasizing the survey's brevity and entertainment value increased participation, especially in social settings like cafeterias and the marketplace.
12. **Language Barrier:** Preparatory students were less willing to participate because the survey was conducted in English, which posed a challenge.

4.3 Visualizing Sampling Adequacy



This horizontal bar chart shows the distribution of gender across different academic departments. The "male" category dominates in most departments, especially in engineering and arts and sciences. Other gender categories have minimal representation.



This stacked bar chart displays the distribution of students by gender and academic year. The majority of students are either male or female, with first-year and second-year students forming significant portions. Representation for "other" and "prefer not to say" genders is minimal across all years.

5. Analysis

The analysis of our data involved a combination of statistical tests and visualizations to uncover meaningful patterns and relationships. We conducted proportional Z-tests, ANOVA, and regression analyses to assess various factors within the dataset, focusing on aspects such as gender distribution, faculty representation, music discussion frequency, and the influence of life events on music preferences. In parallel, we created visualizations like heatmaps, line graphs, and regression plots to illustrate the relationships and findings more clearly.

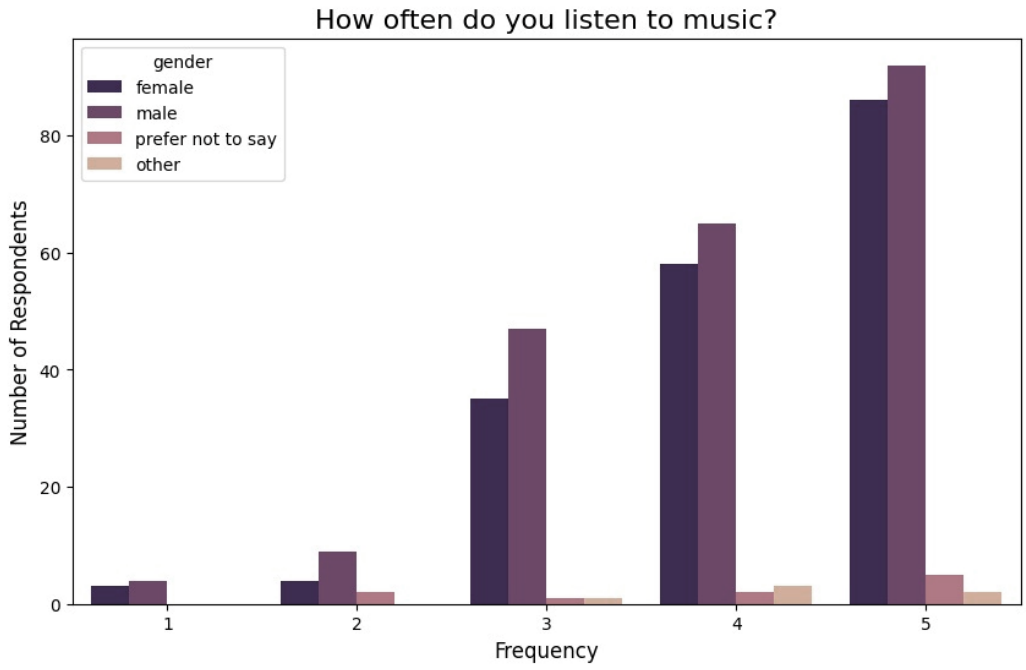
While most of the relationships in our data were statistically significant at the conventional 5% significance level, some patterns did not reach this threshold. To ensure we captured subtler trends and drew more comprehensive conclusions, we adjusted our significance level to 10%, allowing for a more nuanced interpretation of the data. Through this approach, we were able to better understand the underlying patterns and provide a richer analysis of the factors influencing music preferences among the participants.

5.1 Do 50% of METU students have the highest level (5) of music listening habits?

We conducted a proportional Z-test to evaluate whether 50% of METU students have the highest level (5) of music listening habits. The null hypothesis (H_0) proposed that 50% ($p = 0.5$) of students are at this level, while the alternative hypothesis (H_1) suggested that the proportion differs from 50% ($p \neq 0.5$).

The test yielded a Z-value of 2.41 and a p-value of 0.016. With a significance level (α) set at 0.10, the p-value was found to be smaller than the threshold. Consequently, the null hypothesis (H_0) was rejected.

This result indicates that the assumption that 50% of METU students have the highest level of music listening habits is not supported. The proportion is significantly different from 50%, suggesting a meaningful deviation from the hypothesized value



5.2 Does the preference for leisure places relate to how often students listen to music?

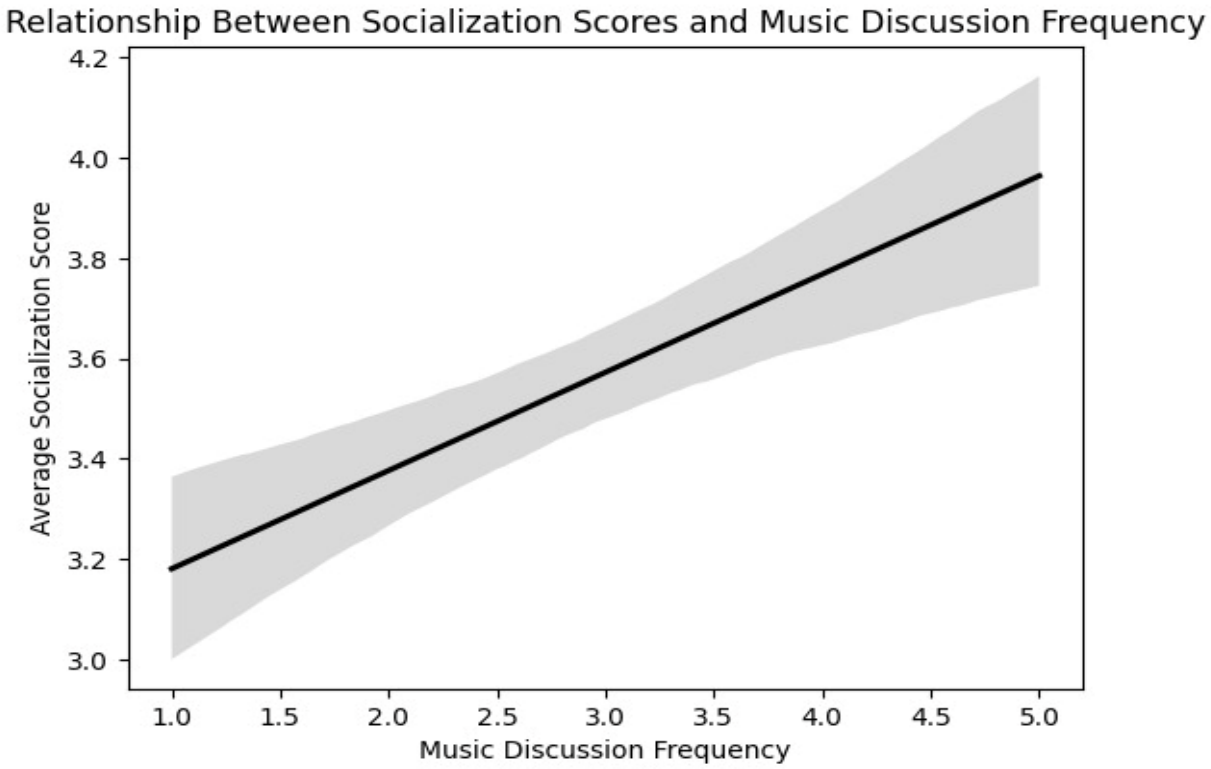
The null hypothesis (H_0) states that the differences between groups are random, and there is no significant difference among the groups. In other words, there is no statistically significant relationship between leisure time preferences (leis_time) and music listening frequency (listen_freq). The alternative hypothesis (H_1) posits that there is a significant difference among the groups, indicating a meaningful relationship between leisure time preferences and music listening frequency.

In this analysis, the frequency of music listening in different leisure time locations preferred by METU students was examined using a one-way ANOVA test. The results revealed an F-value of 1.0958 and a p-value of 0.307. Since the p-value is greater than the significance level of 0.05, the null hypothesis cannot be rejected.

	df	Sum sq	Mean sq	F	PR(>F)
Leisure Time	56.0	55.954502	0.999188	1.095816	0.306986
Residual	362.0	330.078911	0.911820		

This indicates that there is no statistically significant relationship between leisure time preferences and music listening frequency. In other words, students' frequency of listening to music does not differ significantly based on their preferred leisure activities (e.g., cafes, dormitories, etc.). Regardless of the leisure activity chosen, there is no notable variation in music listening frequency among students.

5.3 Is there a relationship between students' socialization scores and how often they discuss music with friends?

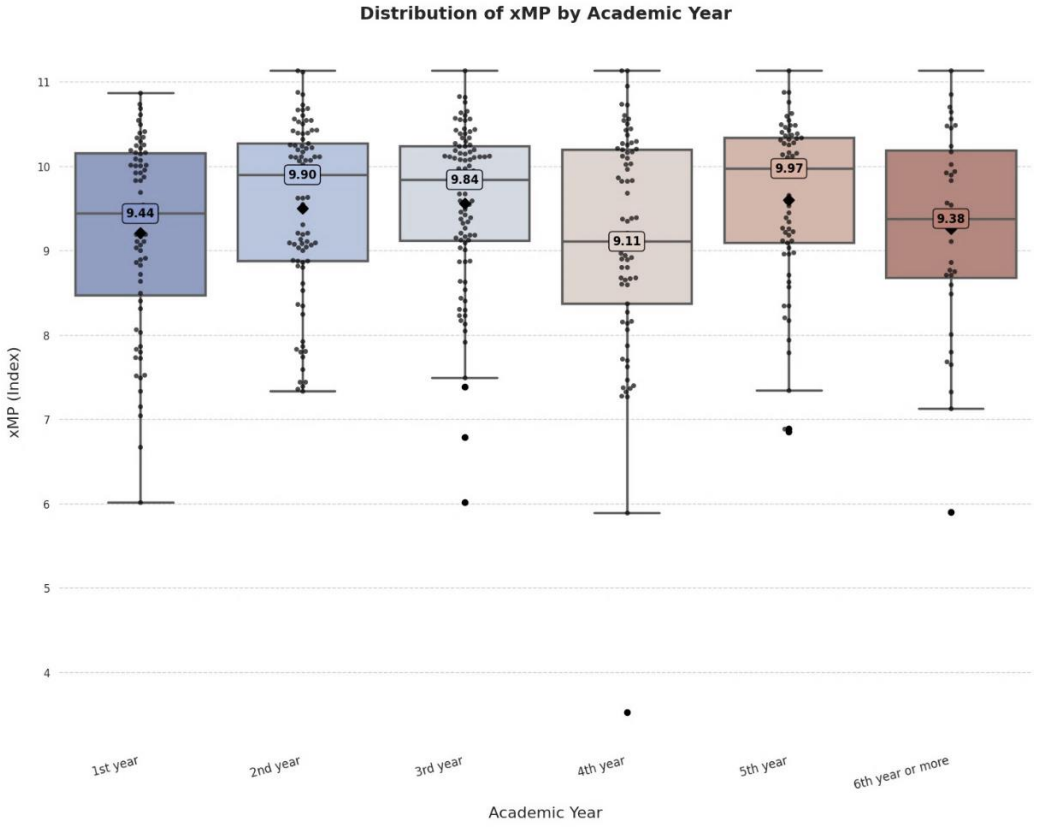


The regression plot confirms the positive relationship between **music discussion frequency** and **socialization scores (how_social)**. The line demonstrates a gradual increase, supported by the confidence interval that narrows toward the middle of the dataset. This suggests that the relationship is statistically significant and robust, with minimal uncertainty around the central range of data.

This finding emphasize the importance of music as a social catalyst, encouraging meaningful interactions and enhancing social connections. They also underline the potential of music-related discussions as a tool for fostering community and improving social engagement among students.

5.4 - How does the xMP index vary across different academic years, and what factors contribute to these variations?

$$xMP = \log_2((listen\_freq^{4.2})) + (debate\_freq^{3.7}) + (prefer\_listen\_studying^{3.5}) + (attend\_concert\_freq^{4}) + (is\_comf\_sharing^{2}) + (is\_reflect\_you^{2.7}))$$



The graph shows the distribution of the xMP index across different academic years using boxplots. Each boxplot provides insights into the central tendency, spread, and outliers of xMP values for each academic year. 1st-Year Students: Have lower and more varied xMP values compared to other years.

2nd and 3rd Years: Show an increase in median xMP values, with more consistent distributions.

4th Year: Marks a dip in xMP values, along with increased variability, indicating a potential shift in behavior or performance.

5th Year: Achieves the highest median xMP value and the most consistent distribution.

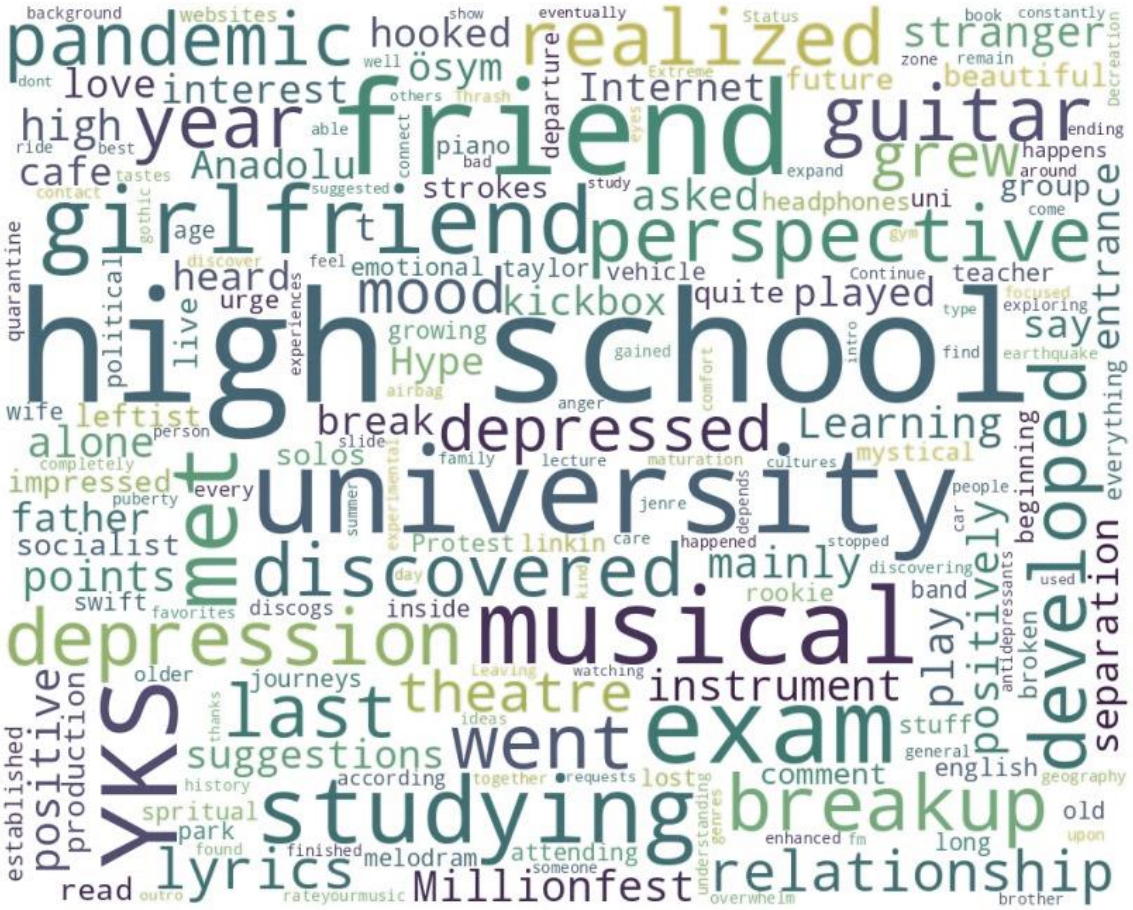
6th Year and Beyond: xMP values decrease, and variability increases, possibly due to unique circumstances or extended academic progress.

As students progress through their academic years, the xMP index shows a general upward trend. The peak in the 5th year suggests that students may establish stable behaviors or habits that maximize their xMP performance during this time. The drop and wider distribution in the 6th year or more could be linked to challenges associated with prolonged academic journeys.

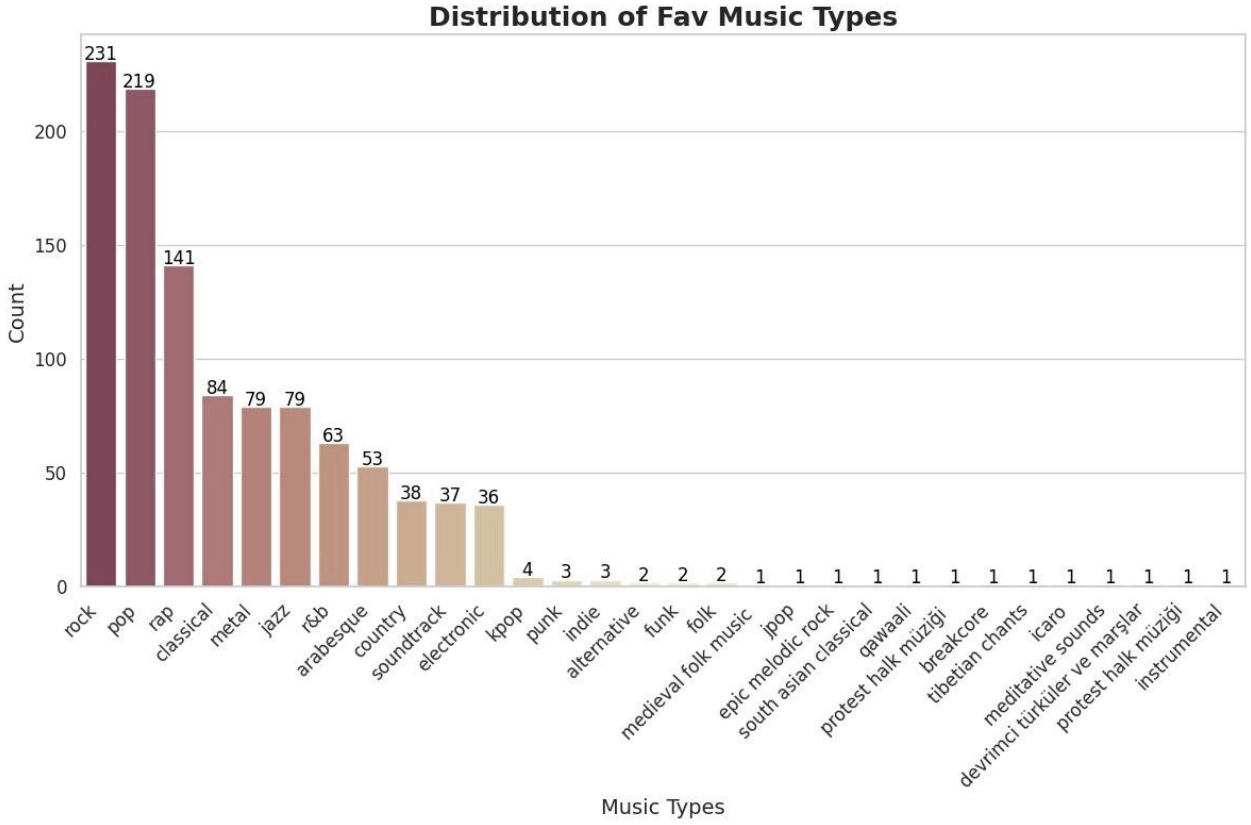
5.5 - Has there been a turning point in your life that changed your music listening frequency or genre preference?

This question was one of the original ones we included in our survey. We introduced it to participants as the "final boss," which created excitement when asked. A quarter of the students who answered the survey gave positive responses to this question.

The word cloud highlights key turning points like **high school**, **university**, and **exams**, showing the influence of academic life. Personal relationships (**girlfriend**, **breakup**) and emotional events (**depression**, **perspective**) also played a major role. Creative engagement (**guitar**, **musical**, **lyrics**) and global events like the **pandemic** further shaped participants' music habits.



5.6 – Are there any differances between rock and rap?

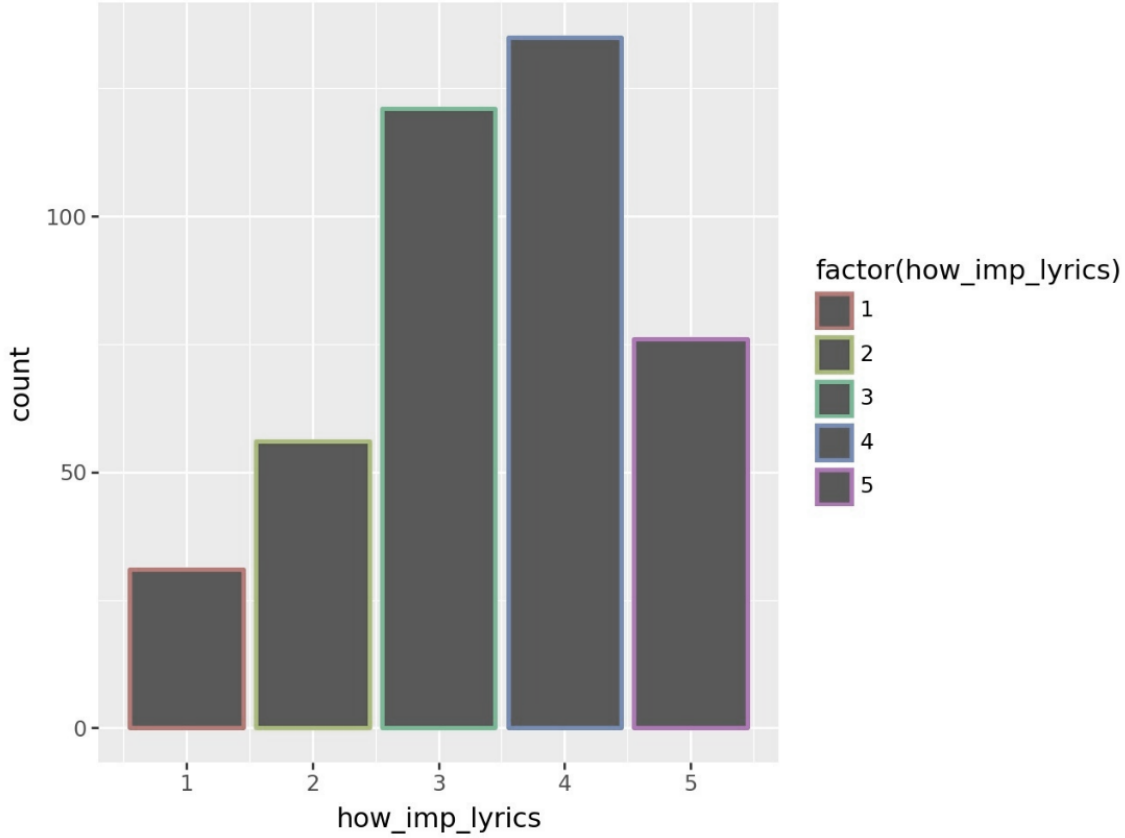


To examine whether there is a significant difference in preferences between Rock/Pop and Rap music genres, a two-proportion Z-test was conducted. The null hypothesis (H_0) stated that there is no significant difference in preferences between the two genres, while the alternative hypothesis (H_1) suggested that there is a significant difference.

The analysis produced a Z-value of 5.65 and a p-value of approximately 0.0001. Since the p-value is considerably smaller than the commonly accepted significance level ($\alpha = 0.05$), the null hypothesis (H_0) is rejected.

This result indicates that there is a statistically significant difference in preferences between Rock and Rap music genres. The proportions of preferences for these genres are not equal, confirming the presence of meaningful variation between them.

5.7 – How important lyrics?



The color-coded bars, representing the different levels of importance, reveal that the majority of respondents consider lyrics to be moderately to very important in music, with the highest counts at levels 3 and 4.

This chart is insightful as it highlights the significance that people place on lyrics when enjoying music, with most respondents rating lyrics as an essential aspect of their musical experience. This could suggest that lyrical content plays a crucial role in the emotional and intellectual connection that listeners have with their favorite songs.

6. Results and Discussion

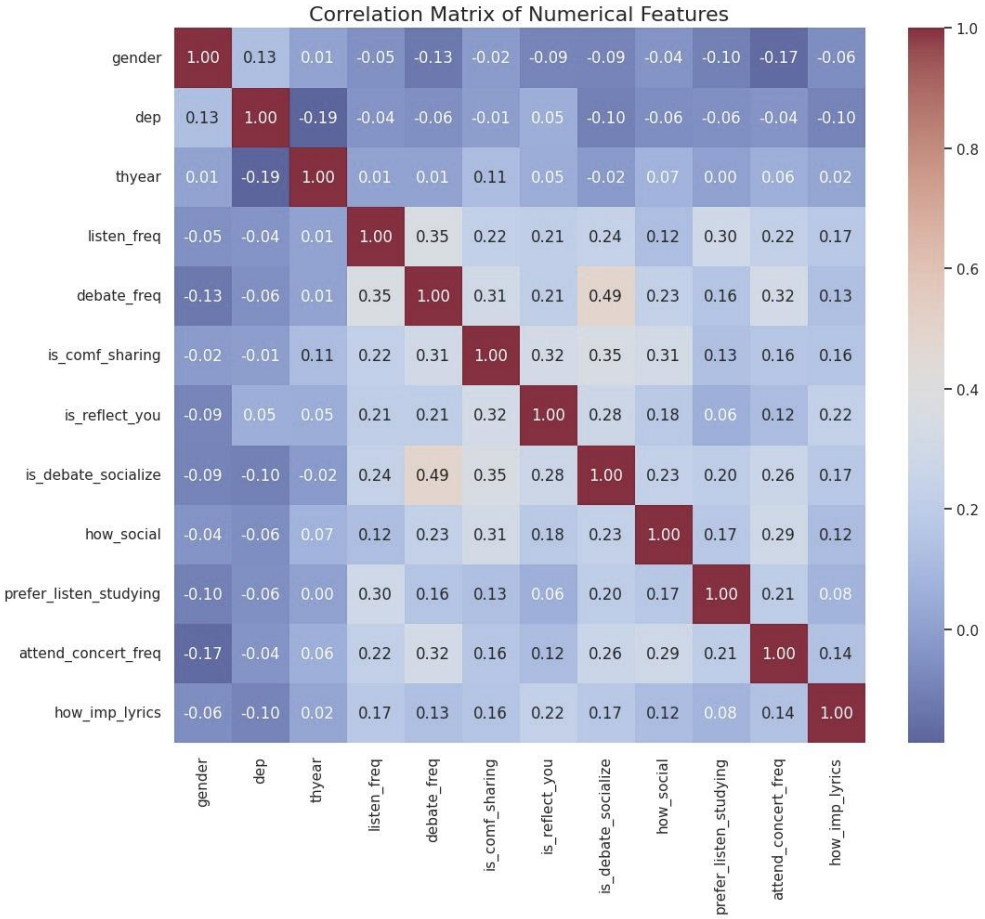
The survey revealed significant insights into METU students' music habits and social interactions. A proportional Z-test indicated that the proportion of students with the highest music listening level (5) significantly deviates from 50%, reflecting diverse listening behaviors. ANOVA analysis found no meaningful link between leisure place preferences and music listening frequency, suggesting uniformity in habits across environments. Regression analysis highlighted a strong positive relationship between discussing music with friends and higher socialization scores, affirming music's role as a social catalyst. Furthermore, open-ended responses revealed pivotal life events such as academic transitions and emotional experiences shaping music preferences, showcasing music's personal impact. These findings underline music's dual role as a connector and a reflection of individuality.

7. Conclusion

This study highlights the multifaceted relationship between music habits and social dynamics among METU students. Key findings include:

- Frequent discussions about music are positively correlated with higher socialization scores, underscoring music's role as a social catalyst.
- Music listening habits are not significantly influenced by leisure place preferences, suggesting a uniform behavior across different environments.
- Significant life events shape music preferences, emphasizing the personal and emotional impact of music.

Overall, this study provides valuable insights into how music serves as a medium for connection and self-expression, contributing to a deeper understanding of student behaviors and preferences.



This correlation matrix shows the relationships between different features in the dataset. Positive correlations (e.g., 0.49) indicate that as one feature increases, the other also tends to increase, such as the relationship between "debate_freq" and "is_debate_socialize." Negative correlations suggest that as one feature increases, the other decreases, though these relationships are generally weak in this matrix. Values close to zero indicate no meaningful relationship between features. Overall, this matrix helps identify connections between variables in the data.

8. Appendices

Survey Questions

1. What is your gender? [gender]
2. What is your department? [dept]
3. What year are you in school? [thyear]
4. What are your favorite music types? [fav_type]
5. What types of places do you prefer for spending your leisure time? [leisure_time]
6. How often do you listen to music? [listen_freq]
7. How often do you discuss or debate music with friends? [debate_freq]
8. Do you feel comfortable sharing your music preferences with others? [is_comf_sharing]
9. Do you feel the music you listen to reflects who you are? [is_reflect_you]
10. Do you think discussing or debating songs helps you socialize? [is_debate_socialize]
11. How social do you consider yourself? [how_social]
12. Do you prefer listening to music while studying? [prefer_listen_studying]
13. How often do you attend concerts or live music events? [attend_concert_freq]
14. How important are lyrics to you when listening to music? [how_imp_lyrics]
15. Has there been a turning point in your life that changed your music listening frequency or genre preference? [turning_point]

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