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Musical Preferences among Students Aged 9–19: A Study on Musical Genres and Styles

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Abstract: This study aimed to explore students' musical genre preferences, exploring variations across gender and age groups in Hungary. Additionally, we investigated the relationships among the popularity of musical genres and connections between musical programs and related activities. With the help of stratified sampling, we examined the opinions of students aged 9–19 about each genre (N = 1159) using specific musical examples. In this study, musical genres were classified into four main types based on related music videos, including classical popular music (CPM), rock music (RM), classical art music (CAM), and folk music (FM). Different types of analyses, such as *t*-tests, one-way and two-way ANOVAs, and correlational analyses such as correlation coefficients (r), chi-square tests, and eta squares, were employed in this study. The results showed that the popularity of the four pieces of music classified as CPM, RM, CAM, and FM had a moderately strong correlation with each other. The correlations between FM, CPM, and RM did not differ from each other, but they showed significantly weaker correlation values than the correlation between FM and CAM. Moreover, significant differences were found in the students' perceptions of the genres based on their gender and age groups. Among the four performances, the girls had a greater preference compared to the boys for each one, except for the folk music piece. The youngest age group (9–12) showed the highest preference for the CPM, although the difference compared to the oldest age group (17–19) was not statistically significant. Therefore, this study is beneficial for music education, focusing on students' genre preferences, including CPM, RM, CAM, and FM.

Keywords: music education; musical genres; school age; age differences; gender differences; music preference

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1. Introduction

Music holds a unique and powerful place in the lives of individuals, influencing emotions, cultural identity, and social interactions. Listening to music and going to concerts and other extra-curricular musical activities are part of the everyday life of many young people. As students progress through their formative years, their musical preferences often undergo significant transformations that are shaped by many factors such as age, peer influences, and exposure to diverse musical genres [1].

Musical genres are descriptive terms that have been crafted by humans to classify musical compositions [2]. And musical styles are generally classified as classical popular music, rock music, classical art music, and folk music [3]. Based on the results of international studies, pupils mostly prefer listening to popular music over other musical styles, with classical art music and folk music being the least-popular genres among them [2–4]. In the realm of musical genres, the personality of students and their opinions or preferences hold significant importance [5]. Rentfrow et al. [6] hypothesized that musical preferences

were indicative of unconscious motivations, impulses, wants, and expressions of overt psychological characteristics. And these preferences are potentially influenced by particular situational encounters, requirements, or limitations [6].

Moreover, several investigations, for instance, references [5,7,8], have highlighted that the personalities and behavioral traits of students hold considerable sway over their musical inclinations. Schäfer and Sedlmeier [9] also noted that the cognitive, emotional, and cultural functions of music, as well as its ability to induce physical responses and familiarity, contribute to determining students' musical preferences. Consequently, it becomes imperative to explore whether students' contextual factors can influence their musical preferences. As a result, our comprehensive survey examines students' genre preferences and aims to uncover how individual background elements (age and gender) influence the popularity of distinct music genres. Our investigation extends beyond a mere exploration of musical preferences—it also aims to explore correlations and potential influences that contribute to the formation of these inclinations. By focusing on a diverse range of musical genres and styles including CPM, RM, CAM, and FM, we endeavor to capture the broad spectrum of choices that students encounter in today's rich musical landscape.

2. Literature Review

2.1. Listening to Music and Musical Preference

Listening to music may constitute an important part of everyday life. Services specialized on the streaming of musical contents (e.g., Spotify, YouTube Music, Apple Music, Amazon Music) offer relevant content that is tailored to fit users' listening habits. The number of streaming providers has been constantly increasing, from 341 million in 2019 to 487 million in 2021. Based on the statistics obtained regarding musical genres, there are more than 300 musical genres, with pop being the most popular worldwide [10]. The popularity of listening to children's songs online is clearly highlighted by YouTube's 2023 statistics. Seven out of the ten most frequented videos are English nursery rhymes. The most popular is the "Baby Shark Dance" video, which has been played more than 12 billion times. The seven children's songs in the top ten have reached nearly 40 billion views. Recommendation systems for music services help to attract and increase interest and can reinforce existing music styles [11]. Soares-Quadros et al. [11] emphasize the importance of studying algorithms, which provide an opportunity to learn about music preferences and consumption habits. In one study, Droe [12] mentions that when analyzing musical taste, one can examine what kind of music people listen to, or what style the music they like is related to. In order to understand musical style comprehensively, we need to ask questions such as what distinguishes musical taste from preference, how quickly musical taste can change, and whether preference can be interpreted simply as liking or disliking a musical stimulus [12].

The literature distinguishes between the concepts of musical preference and taste. Preference refers to a reaction to a piece of music at a given moment, while taste refers to a longer period of time; a generalization of musical disposition [13,14]. Hargraves et al. [14] developed a model to explain the two concepts, which includes three main elements: (1) the person (age, gender, cultural group, musical training), (2) the music (structure, style, complexity, familiarity) and (3) the listening situation (work, leisure, entertainment). To measure music preference, the strength and type dimensions are distinguished. Strength refers to the extent to which a person likes a particular style or piece, and type refers to which styles of music they prefer. Verbal and aural preferences can also be distinguished. For the acoustic preference, Hargraves et al. [14] examined how much people liked a style by presenting a specific example, while their verbal measurement required the subjects to think of a musical style or piece and evaluate it [13].

There is a consensus among different studies that students of different ages and genders appreciate different kinds of music. The preference for some music can be traced back to when a person was a newborn. Some researchers claim that newborn babies react positively to music heard in the mother's womb and music with positive sounds [1,15].

According to LeBlanc's [16] concept, young children are characterized by openness, which decreases over time. This hypothesis was supported by Madsen and Geringer [17] by examining preschool-aged children, who proved to be more receptive to individual musical styles. Meanwhile, Hargreaves et al. [18] found that a decrease in musical openness begins between 10 and 11 years of age. Early childhood is characterized by the acceptance of most musical styles, and as age progresses, popular musical styles increasingly come to the forefront [2]. The preference for classical art music also decreases, as confirmed by Croatian research. Based on the results, 14–15-year-old students prefer classical art music less [3,4]. Adolescents' musical preferences become more and more firmly set as they become older [19], and they tend to prefer the most popular musical styles [14]. Compared to instrumental music, vocal pop music is more popular with adolescents. If the learners encounter a track in an unknown style, they prefer instrumental music to vocal. It has been shown that knowledge of a language and a person's attitude towards songs in that language are positively related [2,20]. Previous studies have indicated that while preference for some genres (e.g., classical and country) increases with age, the opposite is true for other genres (e.g., reggae and rock) [11,21]. Children's devotion to pop music manifests itself primarily as they listen to music [14,22,23]. Boys are typically more partial to heavy metal, jazz, and rap [24,25], while girls prefer pop, country, and Latin [11,26]. Radočaj-Jerković et al. [27] claim that girls are characterized by a wider acceptance of classical art music and a diversity of musical styles.

2.2. Dilemmas of Musical Genres and Their Categorization

The strong spread of digitalization in recent decades has not only revolutionized the areas of music composition, distribution, sales, storage, education, and music scores but also defined different musical styles. There is also an increasing trend of applying artificial intelligence or recognition algorithms such as the k-nearest neighbor (k-NN) or support vector machines (SVMs), which has been scrutinized by several scientific studies [28–30]. Tzanetakis and Cook's [31] work is considered to be the foundation of automatic music genre classification systems. This organizing and analyzing software also supports the possibility of researching musical works that are stored on digital platforms. The most relevant and up-to-date data regarding music styles can be accessed through the APIs (application programming interfaces) of major music service applications (e.g., Spotify, Last.fm). Based on the Spotify data, the number of identified music genres exceeds 5000. Further continuous growth can also be predicted because, in addition to the appearance of new genres or styles, new style subcategories can also be created based on their crossover. There have been several theories of the hierarchization of musical genres.

In Hungary, one of the most widespread groupings classifies different musical styles under the concepts of "light music" (pop) and "serious music" (classical). However, these two definitions unwittingly close the interpretation and judgment of styles into a dichotomous framework, which can also limit these styles to association between pairs of opposites, such as mediocre/sophisticated, amateur/professional, simple/complex, easy to understand/abstract, and conservative/progressive. With some insight into music history, musicology, aesthetics, and performing arts, we can give an example or a counterexample for any of the pairs of opposites listed above, both in terms of "light music" and "serious music". Thus, we do not consider the application of these two concepts as organizing principles to be expedient from a research point of view. The definition and conceptualization of the concept of "popular music" is still one of the topics of popular musicology, taking into account its sociological, performative, or ethnographic interpretations [32]. The concept of "classical art music" is also the subject of definitions in a matrix of various geographical and historical connections. For example, the aria *La donna é mobile* from Verdi's opera Rigoletto, classified in the category of "classical art music" from a modern perspective, was a popular hit of its time, which was also whistled by people in the street [32]. Thus, looking back, Steppenwolf's *Born to be wild* is one of the great classics of rock music.

In the English-language literature, several groupings and categorizations of musical genres or styles appear. In addition to folk music, which can be considered as the most ancient genre, there are art or classical art pieces, avant-garde and experimental music, and popular and religious music styles. In another paradigm for the categorization of musical works, the directing principle is not the musical style, but rather the function and/or purpose of the music [33]. The purpose of the piece (or the composer) may be:

- entertainment (dance music, concert, or show music),
- mediating culture (concert for the distribution of musical knowledge, classical art music concert, or opera performance) [34],
- mental recreation (relaxation, meditation) [35],
- healing (application of different musical frequencies and rhythms in medicine),
- energization/revving up (e.g., for sport activities) [36],
- business use (advertisements, music on hold during a phone call, ambient music in hotels or shopping malls) [37],
- transcultural function (theatre or film music) [38],
- music related to the magic rituals of religious or tribal cultures (Christian rock),
- reflection of social processes or conflicts (rap, hip-hop, punk).

The size and/or composition of the performance equipment can also be a factor that influences the musical preference of an individual. Both aspects can be even more decisive than the style or function of the music. Regarding the size of the performance apparatus, it may be that an individual prefers the sound of chamber productions performed with a solo instrument or a few instruments, in contrast to the more monumental sound of a large orchestra. The number of performers can also be seen as a quantitative indicator which, in the case of acoustic instruments or vocals, can correlate with the level of the highest possible volume of the given piece of music. The indicator that can be considered as measuring quality (but rather "kind") is not to be interpreted on the axis of good or bad (quality), depending on the performer's apparatus, but, for example, in the dimension of a soft string orchestra sound versus booming brass ensemble, or in comparing the difference between a children's choir and a men's choir in sound and timbre; in essence, this pertains to the color or image of sound.

2.3. Review of Related Findings from Other Studies

It has been shown [39] that hearing certain genres of music elicits positive emotions. Furthermore, pieces that elicited more powerful reactions from the listener were associated with a higher level of enjoyment. The results of this study also demonstrate how listening to music from different genres can potentially alter one's mood. Another study [40] found that female students preferred jazz, Latin, reggae, and western music more, while male students preferred excerpts from rock and metal music. Studying the correlation between the frequency with which the students listened to certain types of music and their musical preferences revealed a statistically significant relationship.

Students' musical learning and other subjects were found to be related in a study [41] examining children's musical programs. And even in another study [42] about musical preferences and fashion, a strong positive correlation between them was found. Vella and Mills [43] also studied the relationship between students' use of music and their musical preferences, and they found that the relationship was partially mediated by the students' cognitive use of music. In a study of students' musical preferences and musical education [40], a statistically significant relationship was found between the students' musical preferences and the frequency with which they listened to that music.

In the world of classical (artistic) music, even recently, it has been observed that most of the leaders and conductors of major music institutions are male. The best-known and most successful composers and performers in the history of music were male, including J.S. Bach, W.A. Mozart, L.v. Beethoven, or Franz Liszt. Performing musical activities and teaching music have been men's work since the Middle Ages. Except for private music lessons in gentlemen's salons, it was almost unthinkable that women could participate

in professional music training. One of the world's most famous orchestras, the Vienna Philharmonic, hired its first permanent female member in 2003. As in other areas of life, in music, women are increasingly taking on roles that were traditionally considered to belong to men [43]. However, in the research results, the respondents consider playing music as a generally feminine activity [44]. Gordon [45] found no developmental gender differences in musical ability, but girls performed better on music tests [46] and believed that they had a higher level of competence [41].

Gender stereotypes can also be detected in the choice of musical instruments. Bigger, louder, more strident instruments (trumpet, drum, trombone, tuba) are preferred by boys, while higher-pitched, softer-sounding instruments (flute, violin, harp) are preferred by girls [47,48]. The source of gender stereotypes related to the choice of musical instruments can be parents, music teachers, or the media [47]. In the context of music lessons, it happens that professional performers introduce students to the properties of musical instruments in the context of musical instrument presentations. Research has proven that more girls choose instruments played by women, even if those instruments are considered "masculine" [49]. In the comparison of boys and girls, there was no significant difference in their attitudes towards listening to classical or pop music [50]. However, a significant gender difference was found in their attitudes towards singing, learning songs, learning folk songs, singing classical art music, singing popular music, preparing a program, and reading sheet music. The girls had a more positive opinion of the subject of singing and music, and the age of the students also affected their attitudes [50–52]. The girls had a more positive attitude towards these music class activities than the boys. The girls were significantly more motivated to keep a rhythm, read sheet music, acquire musical knowledge, and learn singing than the boys.

Based on the above review of related findings from other studies, it was found that students' preferences for musical genres are of significant importance for students' emotions, their reactions to related activities, and their success in other academic subjects. Furthermore, some distinct relationships were also found between students' musical preferences and their musical listening habits, their use of music, and their musical education. However, there is still a research gap concerning the relationships between the popularity of musical genres and the connections between students' music-listening habits and their musical activities. Moreover, in accordance with the above studies, it is also interesting to conduct research investigating the differences between students' preferences regarding musical genres across age groups and genders.

2.4. Aims and Research Questions

The aim of our research is to explore the preferences of students aged 9–19 regarding musical genres. We addressed the following research questions.

RQ1: What relationship can be identified between students' opinions on musical genres and the background questions assessing their music listening habits and inclination towards musical activities?

RQ2: re there any significant differences in students' opinions on musical genres based on age or gender?

3. Methods

3.1. Sample

Students aged 9–19 took part in the measurement (N = 1159), including 618 girls and 541 boys. The average age was 13.80 years (SD = 2.21). Most of the students attended primary school, including 764 students. Based on the age of the students, four groups were created: (1) aged 9–12 (N = 392), (2) aged 13–14 (N = 372), (3) aged 15–16 (N = 323), and (4) aged 17–19 (N = 163). All of the participants were students enrolled in either primary or secondary education. The secondary school participants were selected based on the stratified sampling, including grammar schools, technical schools, vocational high schools, and vocational training schools, ensuring proportional representation.

Data collection occurred during regular classroom hours with the agreement of the class teacher and the administration of the school. The students were asked to fill out the questionnaire and were asked to complete some tasks, guided by the class teachers or examiners. Each student followed the examiners' instructions for the collection of the data. The data collection was undertaken under the supervision of the class teachers or examiners. Participation in this study was voluntary, and the participants could withdraw at any time. All the data collected in this study were anonymous. This study did not include the names of the students or the names of the schools that participated in the study. The responses were kept confidential, and the use of pseudonyms was enforced. After the study, parents, teachers, and other stakeholders were entitled to free access to the published data analysis. This study was also conducted according to the guidelines of the Declaration of Helsinki and approved by a University Institutional Review Board in Hungary.

3.2. Measurement Tool and Procedure

For data collection, we used an online interface, Jotform, where we placed four videos showing different musical styles. The length of the videos was half a minute, and all of them contained performance methods that were different from the traditional concert experience. In terms of the musical works performed, we chose those that the age group in our sample may not have been able to identify based solely on their author and title, but the melody played is popular and definitely familiar. The school computers were used to show these videos to the individual students, and when there was not a sufficient number of computers for all the students in some of the schools, we employed additional laptops provided by our research project team. These videos were displayed under the supervision of class teachers or examiners. At the end of a more detailed description of each video, the students were asked to fill out a questionnaire including 42 items (e.g., 'do you like this video?' with 1–5 scales such as 'strongly dislike', 'dislike', 'neutral', 'like', and 'strongly like'). This questionnaire was adapted from Bonneville-Roussy et al.'s [53] digital source of music video questionnaire. Among these 42 items, the questionnaire also included an assessment of the students' experiences learning and playing musical instruments. For example, 'have you ever played a musical instrument?' with 1–5 scales such as 'yes, in music school', 'no, but I want to', 'yes, but only at home', 'yes, at the music hour', and 'no, because I have no chance'.

We engaged three experts from the fields of instrumental performance, vocal arts, and music history to curate videos encompassing diverse musical styles. Their professional judgment was instrumental in guaranteeing the content validity of our chosen videos. Despite a modest item count (4), our measurement tool exhibited satisfactory reliability, with a Cronbach's alpha coefficient of 0.71.

The first musical segment featured a carpet piano on which the performers played a short and stripped-down version of Hoagy Carmichael's Heart and Soul. The piano is one of the best-known musical instruments, and this work is one of the favorites of beginner pianists due to its popularity and easy technique. One of our goals of using the video was to show a new form and way of playing of this instrument, which can be new and attention-grabbing for students. The musical experience of the video was also enhanced by the fact that the performers played the instrument as if they were dancing to the music. The video also showed children queuing to try this device.

Instrument: electric piano.
Instrumentation: solo.
Sound: homogenous (only instrumental).
Performers' apparatus: trio.
Musical style: classic popular music.
The year of publication of the original piece of music: 1938.
Venue of production: street.
The (assumed) purpose of the performance: to entertain others. Video hereinafter referred to as classical popular music (abbr.: CPM).

The second piece was a musical part of a movie that is still very popular today, Harry Potter (Hedwig's theme). The composer is John Williams, whose name is associated with the music of other highly successful films such as *Star Wars*, *Jurassic Park*, *E.T.*, or *Schindler's List*. The musical excerpt shown in the video was part of a Hungarian classical art music talent show. The solo performer was a 12-year-old female flutist accompanied by a symphonic orchestra. This piece is described as follows.

Instrument: acoustic instruments of a symphonic orchestra.
Instrumentation: instrumental soloist + orchestra.
Sound: heterogeneous (instrumental only).
Performing apparatus: great orchestra.
Musical style: classical (art) music.
Year of publication of original music: 2001.
Venue of production: stage of a TV studio.
The (assumed) purpose of performance: entertaining others, contest production.
Video hereinafter referred to as: classical art music (perhaps art music), (abbr.: CAM).

The third piece of music was one of the productions of the City Rocks project, where the video mainly featured children who played different instruments (guitar, bass guitar, and drums) and sang the song "Neked könnyű lehet" (It may be easy for you) by the band Republic. This flashmob-like production was a community experience that aimed to promote rock music and community music making between young children, adults, professional performers, and amateur musicians.

Instrument: Vocal, electric, and acoustic instruments.
Instrumentation: singer + band.
Sound: heterogeneous (vocal and instrumental).
Performing apparatus: classic rock band instrumentation, originally chamber orchestra in terms of the number of musicians, expanded to full orchestra in its current form.
Musical style: classic rock.
Year of publication of original music: 2006.
Venue of production: outdoor stage (and surrounding space, considering the number of performers).
The (assumed) purpose of performance: entertaining themselves and others, promotion of Hungarian music.
Video hereinafter referred to as: rock music (abbr.: RM).

In the last video, the students could again see a performance in a talent show. The five-member folk band of young people presented their production entitled "Sárközi mulatság" (Festival in Sárköz), without vocals, on different types of tamburas (tambura bass, tambura viola, first tambura, and first bass tambura).

Instrument: acoustic folk instruments.
Instrumentation: chamber orchestra.
Sound: heterogeneous (instrumental only).
Performing apparatus: quintet (chamber orchestra).
Musical style: folk music.
Year of publication of original music: unknown.
Venue of production: stage production.
The (assumed) purpose of performance: entertaining themselves and others, contest production.
Video hereinafter referred to as: folk music (abbr.: FM).

The students had to evaluate the musical pieces on a scale of 1–5. We added the following supplementary questions to the videos: "Would you like to try (carpet) piano playing?", "Do you watch talent shows or classical art music shows?", and "Would you take part in a community music production?"

4. Results

4.1. Correlational Analyses for the Popularity of Musical Genres

As we discussed in the literature review, a wide variety of aspects should be taken into account when defining musical genres, especially if we want to measure their popularity. We tried to assemble the content and form of the questionnaire using an innovative approach that would allow us to determine the opinions of the respondents regarding each music video from as many perspectives as possible.

First, regarding the popularity of musical genres from the total sample, the students liked the classical popular music the best out of the four videos (M = 4.01, SD = 1.03), followed by the rock music (M = 3.97, SD = 1.03), and the classical art music (M = 3.51, SD = 1.19). The folk music performance received the lowest score (M = 3.50, SD = 1.17). The differences between the averages ranks of the videos were significant based on a repeated measures analysis of variance (Wilks' lambda = 0.78, F(3) = 106.13, $p < 0.01$, $\eta^2 = 0.22$). There was no significant difference between the assessment of classical art music and folk music ($p = 1.00$), nor was there a significant difference between the assessment of classical popular music and rock ($p = 1.00$). Out of the four videos, classic rock and classic pop, as we categorized them, were significantly more popular than classical (art) music or folk.

Then, we proceeded with the correlational analyses of the popularity of the musical genres. The popularities of the four pieces of music had moderately strong correlations with each other. The highest correlation was between folk music and classical art music, while the lowest correlation was found between the classical art music and rock music (Table 1).

Table 1. Correlations between the popularity of each musical piece.

Variables	CPM	RM	CAM	FM
CPM	-	0.39 **	0.41 **	0.36 **
RM		-	0.29 **	0.36 **
CAM			-	0.45 **
FM				-

Note: ** $p < 0.01$; CPM = classical popular music, CAM = classical art music, RM = rock music, FM = folk music.

The correlations between the popularity of rock music (z = 3.27, $p < 0.01$) and the popularity of classical art music (z = 4.24, $p < 0.01$) were not as strong as for the rest of the musical excerpts. The correlation between rock music and classical popular music was stronger than the correlation between rock music and classical art music (z = 2.72, $p < 0.01$), and the correlation between rock music and folk music was also stronger (z = 1.88, $p < 0.05$). When analyzing the correlations between classical art music, we could see that the correlation between classical art music and rock music was weaker than the correlation between classical art music and classical popular music (z = 3.30, $p < 0.01$) and the correlation between classical art music and folk music (z = 4.48, $p < 0.01$). The correlation between folk music and classical popular music and rock music did not differ from each other, but they showed significantly weaker correlation values than the correlation between folk music and classical art music (z = 2.90, $p < 0.01$). The correlation between rock music and classical art music was weaker compared to the other musical styles.

Based on the questions following the music videos, 64% of the students regularly watched talent shows and 22% watched classical art music programs. A total of 72% of the students said they would be willing to try the carpet piano seen in the classical popular music video.

We were able to show a weak relationship between the responses obtained for the background questions about watching music programs and possible music-related activities (Table 2). However, the correlation between participation in musical productions and the three background questions was of different strengths. It was weaker with watching talent

shows than with trying the carpet piano (z = 2.23, $p < 0.01$) and was weaker with watching classical art music programs (z = 1.73, $p < 0.05$).

Table 2. Correlations of following music programs and the students' music-related activities.

Variables	Trying the Carpet Piano	Watching Talent Shows	Watching Classical Art Music Programmes	Taking Part in Community Music Programmes
Trying the carpet piano	-	0.182 **	0.163 **	0.221 **
Watching talent shows		-	0.141 **	0.128 **
Watching classical art music programs			-	0.204 **
Taking part in community music programs				-

Note: ** $p < 0.01$.

4.2. Differences between the Four Age Groups and within Each Age Group

Considering the age group composition of our sample, we were interested in determining whether the results differed when comparing the different sub-samples. We ran analyses of variance (ANOVAs) to investigate potential differences in the perception of the musical pieces across the age groups of 1 (9–12 years), 2 (13–14 years), 3 (15–16 years), and 4 (17–19 years) and within each age group. Post-hoc tests were run to investigate differences in musical perception across the four age groups, then a repeated ANOVA (using Wilks' lambda) was also conducted to investigate specific differences in musical perception within each age group.

First, during the ANOVA of sub-samples based on age, there was a significant difference in the perception of the musical performances across the four different age groups (Table 3).

Table 3. ANOVA for investigating age differences in the perception of musical pieces.

Variable	Age Groups								ANOVA		Differences in Age Groups Obtained Based on Post-Hoc Tests
	(1) 9–12 Years		(2) 13–14 Years		(3) 15–16 Years		(4) 17–19 Years				
	M	SD	M	SD	M	SD	M	SD	F	p	
CPM	4.15	1.01	3.91	1.08	3.91	0.98	4.05	0.96	4.60	<0.01	(2) (3) (4) < (4) (1)
RM	4.02	1.07	4.04	1.01	3.77	1.05	4.01	0.90	3.83	0.01	(3) < (1) (2) (4)
CAM	3.76	1.18	3.43	1.17	3.25	1.21	3.46	1.13	10.35	<0.01	(2) (3) (4) < (1)
FM	3.61	1.14	3.52	1.19	3.32	1.20	3.41	1.10	3.48	0.02	(3) (2) (4) < (1) (2) (4)

Based on the above ANOVAs, it was found that the classical popular music video was liked the most by the youngest age group (9–12), but not significantly more than by the oldest age group. We could only show a significant difference between our sub-samples in the youngest and in the 13–16 age group. The popularity of rock music was also quite high in the entire sample, but the students in 9–12 and 13–14 age groups preferred this style significantly more than 15–16-year-olds. The classical art music video was liked significantly more by age group of 9–12 years than by any of the other age groups, which supports previous research results reporting that, compared to the younger age group, classical art music is less liked by 14–15-year-old students [3,4]. The preferences of the 9–12-year-olds and the 17–19-year-olds for different musical styles differed only for the

classical art music. The popularity of folk music differed significantly only in relation of the first and third age groups.

Second, a repeated measures ANOVA was conducted for the investigation of differences in musical perceptions within each age group. According to the repeated measures analysis of variance, the perception of musical styles differed based on age group. The students of 9–12 years of age had different opinions regarding the individual pieces of music (Wilks' lambda = 0.82, F(3) = 29.52, $p < 0.01$, $\eta^2 = 0.19$). There was no significant difference between the popularity of the classical popular music and rock ($p = 0.15$) and between their perceptions of the classical art music and folk music ($p = 0.19$). The preferences of the 13–14 year-olds also differed (Wilks' lambda = 0.79, F(3) = 33.08, $p < 0.01$, $\eta^2 = 0.21$). In this age group, there was no significant difference between the popularity of classical popular music and rock ($p = 0.19$) and between the perception of classical art music and folk music ($p = 1.00$). These scores support the results of Hargreavs et al. [14], according to which adolescents prefer the popular musical style. Students of the 15–16-year-old group liked the four musical performances to different degrees (Wilks' lambda = 0.72, F(3) = 29.80, $p < 0.01$, $\eta^2 = 0.28$), but there was no difference between the popularity of classical popular music and rock music ($p = 0.24$) or the attitudes towards classical art music vs. folk music ($p = 1.00$). It was also typical of the oldest students to not like the videos to the same extent (Wilks' lambda = 0.69, F(3) = 24.01, $p < 0.01$, $\eta^2 = 0.30$), but there was no difference between the popularity of the classical popular music and rock music ($p = 1.00$) and between the students' perceptions of classical art music and folk music ($p = 1.00$). We can state that the distributions of style preferences in the four age groups were very similar to the results for the entire sample.

Considering the entire sample, the averages of the third age group (15–16-year-olds) were the lowest for all the videos, and averages of the first age group (9–12-year-olds) were the highest except for rock music. The difference between the two age groups was significant in terms of the popularity of all the musical pieces (F = 8.22, $p < 0.01$). Starting from the age of 9, as time progresses, we can observe a decreasing trend in the average popularity of the different types of music videos, but this trend seemed to reverse at the threshold of adulthood (Figure 1). However, the difference between the third and fourth age groups was not yet significant.

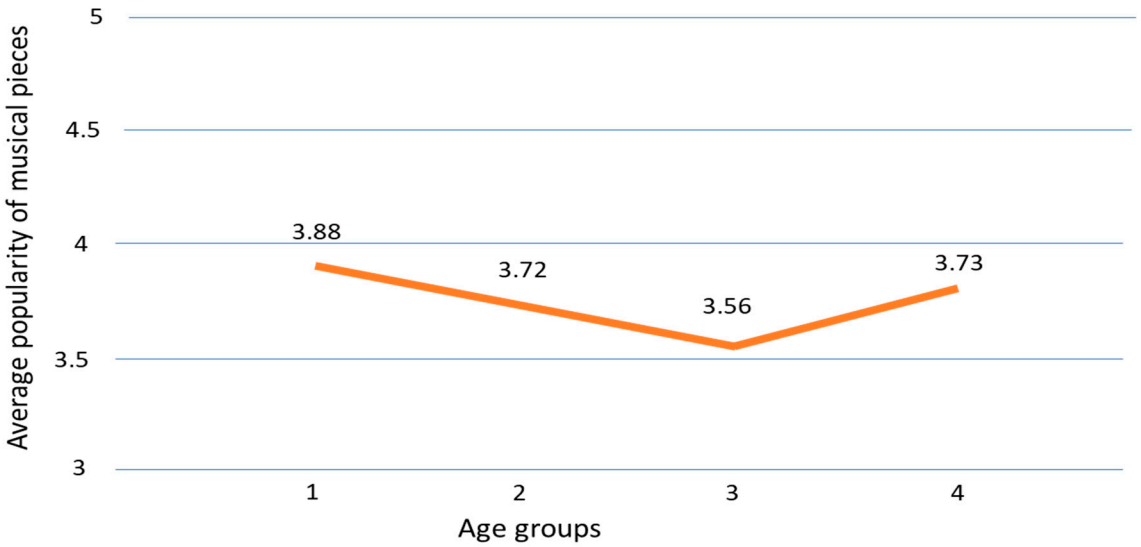

Figure 1. The average popularity of the musical pieces based on age group. Note: Age groups: 1 (9–12 years), 2 (13–14 years), 3 (15–16 years), and 4 (17–19 years).

Examining the strength of the correlations based on age group, we can see that for the 9–12-year-old students, rock music (z = 2.22, $p < 0.05$) and classical art music (z = 2.27, $p < 0.01$) showed correlations of different strengths with the perception of the other musical

excerpts. The correlation between rock and classical popular music (r = 0.38 **) was stronger than the correlation between the popularity of rock and classical art music (r = 0.26 **) (z = 1.87, $p < 0.05$). The correlation between the classical art music and classical popular music (r = 0.40 **) was also stronger than the correlation between the classical art music and rock (r = 0.26 **, z = 2.21, $p < 0.05$). The degrees of association between the classical popular music, folk music, and other styles were equal.

The same can be observed in the case of the students in the 13–14-year-old group (rock music z = 3.32, $p < 0.01$, classical art music (z = 3.63, $p < 0.01$)). In this age group, the correlation between the rock and classical popular music was stronger (r = 0.37 **) than between the rock and classical art music (r = 0.19 **, z = 2.66, $p < 0.01$). The correlation between the rock music and classical art music (r = 0.19 **) was weaker than that of the rock and folk music (r = 0.36 **, z = 2.51, $p < 0.01$). The correlation between the classical art music and rock was significantly weaker (r = 0.19 **), than that of the classical and classical popular music (r = 0.38 **, z = 2.82, $p < 0.01$) and the classical and folk music (z = 3.63, $p < 0.01$). In this age group, the associations between folk music and the rest of the styles were of the same strength.

The highest correlation values were obtained for 15–16-year-old students. Unlike the previous two age groups, here, we could not indicate any significant difference in the strength of the correlation between the rock music and classical popular music and between the rock music and classical art music. The strength of the correlation between the classical popular music and folk music was significantly weaker (r = 0.32 **) than its correlation with the other musical styles (CPM-RM r = 0.47 **, CPM-CAM r = 0.47 **, z = 1.91, $p < 0.05$). The association between the folk music and the other styles did not differ in the previous two younger age groups; however, in this age group, the strength of the correlation between the folk music and classical art music was significantly stronger (r = 0.57 **) than the strength of the correlation between the folk music and classical popular music (r = 0.32 **, z = 3.88, $p < 0.01$) or between the folk music and rock music (r = 0.38 **, z = 2.65, $p < 0.01$).

For the oldest students, the correlation between the classical art music and folk music—similarly to age group 3 and unlike age groups 1 and 2—was significantly stronger (r = 0.55 **) than for the rock music (r = 0.23 **, z =3.44, $p < 0.01$) or classical popular music (r = 0.33 **, z = 2.47, $p < 0.01$). A further difference was found in the correlation between the folk music and classical art music (r = 0.38 **), which was stronger than the correlation between the folk music and rock music (r = 0.55 **, z = 1.95, $p < 0.05$). For the oldest students, the correlation between the classical art music and folk music (r = 0.55 **) was stronger than the correlation between the classical art music and rock music (r = 0.23 **, z = 3.44, $p < 0.01$), and the classical vs. folk music correlation was stronger than the classical vs. street music correlation (r = 0.33 **, z = 2.47, $p < 0.01$). Furthermore, the folk music vs. rock correlation (r = 0.38 **) was weaker than the correlation between the folk music and classical art music (r = 0.55 **, z = 1.95, $p < 0.05$).

Based on the supplementary questions added to the videos, the students of different ages had different opinions. The students' willingness to try the carpet piano differed significantly based on the opinions of the age groups (F = 2.63, p = 0.046). The 17–19-year-olds (M = 0.80, SD = 0.40) were more motivated to try this form of playing the piano than the 13–14-year-olds (M = 0.69, SD = 0.46). This may also be explained by the fact that the performers in the video were closer to the older age group. Almost two-thirds of the students (64%) watched talent shows, but we found no difference between the age groups (F = 0.87, p = 0.46). The attitude of each age group was different towards participation in a community musical production (F = 13.96, p = 0.00). The youngest age group felt more motivated (M = 0.48, SD = 0.50), than the 13–14-year-olds (M = 0.36, SD = 0.48), 15–16-year-olds (M = 0.26, SD = 0.44), and 17–19-year-olds (M = 0.27, SD = 0.45). This result suggests that, compared to the older age groups, the youngest were more open to trying this kind of musical activity.

The students of the youngest age group (M = 0.25, SD = 0.44) watched significantly more classical art music programs (F = 35.94, $p < 0.01$; t = 2.73, $p < 0.01$), than those belonging to the oldest age group (M = 0.15, SD = 0.34). Students of the 13–14-year-old group (M = 0.23, SD = 0.42) were similarly more likely to watch classical art musical programs than students of 17–19-year-old group (M = 0.15, SD = 0.34) (F = 19.71, $p < 0.01$; t = 2.09, $p < 0.05$). Art music programs typically feature pieces of classical art music. Compared to all the other age groups, the youngest age groups liked this genre more. This seems to have affected other areas of their cultural consumption as well.

4.3. Differences between Genders

We found a significant difference between the opinions of the boys and girls (Table 4). Among the four performances, the girls displayed a greater preference compared to the boys for each one, except for the folk music piece, where no significant difference in perception was observed (F = 2.76, $p = 0.10$; t = −1.13, $p = 0.26$). Based on the literature, the preferences of boys and girls differ [11,25]. Though boys generally prefer rock music, our results demonstrated the opposite: based on the feedback received, a preference for rock music was typical for the girls. The data regarding the popularity of folk music is certainly thought-provoking from the point of view of the primary school curriculum based on folk music songs.

Table 4. Differences between boys and girls.

Musical Genres	Boys (n = 541)		Girls (n = 618)		Levene-Test		Two Sample *t*-Test	
	M	**SD**	**M**	**SD**	**F**	***p***	**t**	***p***
SM	3.74	1.13	4.25	0.86	38.36	<0.01	−8.60	<0.01
RM	3.89	1.13	4.05	0.93	28.16	<0.01	−2.74	<0.01
CM	3.26	1.23	3.73	1.11	10.40	<0.01	−6.75	<0.01
FM	3.45	1.20	3.53	1.14	2.76	0.10	−1.13	0.26

Note.: SM = classical popular music, RZ = rock music, KZ = classical art music, NZ = folk music.

Analyzing only the boys' preferences, there was a significant difference between the popularity of each musical excerpt (Wilks' lambda = 0.80, F(3) = 43.68, $p < 0.01$, $\eta^2 = 0.20$). The girls' opinions were also different regarding the four videos (Wilks' lambda = 0.71, F(3) = 83.28, $p < 0.01$, $\eta^2 = 0.39$).

In the background questions related to the musical pieces, we found a significant difference between the boys and girls. For each question, the girls gave more positive feedback. The girls (M = 0.79, SD = 0.41) were more likely to try playing the piano (F = 123.18, $p < 0.01$; t = −5.62, $p < 0.01$), than the boys (M = 0.64, SD = 0.48). Watching the individual TV programs like talent shows (F = 87.91, $p < 0.01$; t = −5.22, $p < 0.01$) and classical art music programs (F = 2.52, $p = 0.11$; t = 0.80, $p < 0.05$) was less typical of the boys. Based on the musical pieces, a higher proportion of the girls would participate in community music productions (F = 25.19, $p < 0.01$; t = −2.54, $p = 0.01$).

We also compared the differences between the boys and girls on the basis of the age groups. Among the 9–12-year-old students, the popularity of classical popular music (F = 2.05, $p = 0.15$; t = −3.53, $p < 0.01$) and that of classical art music (F = 14.94, $p < 0.01$; t = −4.92, $p < 0.01$) was significantly higher for the girls. The girls of the 13–14-year-old group liked the classical popular music piece better (F = 14.89, $p < 0.01$; t = −3.26, $p < 0.01$) than the boys, but there was no significant difference in the popularity of the rest of the videos. The boy–girl difference among the older students (aged 15–16) was significant for three of the pieces: the classical popular music (F = 5.70, $p = 0.02$; t = −5.92, $p < 0.01$), the rock music (F = 11.43, $p < 0.01$; t = −3.42, $p < 0.01$), and the classical art music (F = 0.85, $p = 0.36$; t = −3.33, $p < 0.01$), which were liked better by the girls. In the oldest age group, all four videos, including the classical popular music (F = 17.05, $p < 0.01$; t = −5.43, $p < 0.01$),

the rock music (F = 18.83, $p < 0.01$; t = −2.92, $p < 0.01$), the classical art music (F = 2.75, $p = 0.10$; t = −3.41, $p < 0.01$), and the folk music (F = 0.42, $p = 0.52$; t = −4.65, $p < 0.01$), received a poorer score from the boys. For these gender differences, with increasing age, a trend of increasing distance was observed in the area of the preference of musical styles. While in the first two age groups, there was a significant difference only between a maximum of two styles, in the third age group, there were already three, and in the oldest age group, there was a difference in the preferences for all the musical styles between the girls and boys.

Based on the background questions, the youngest girls (aged 9–12) were more likely to try the carpet piano (F = 40.32, $p < 0.01$; t = −3.23, $p < 0.01$) than the boys. At the age of 13–14, the only difference arose in the watching of talent shows: the girls watched more programs like this (F = 16.98, $p < 0.01$; t = −2.04, $p < 0.01$). The girls in the 15–16-year-old group expressed more positive opinions about trying the carpet piano (F = 35.71, $p < 0.01$; t = −3.12, $p < 0.01$), watching talent shows (F = 53.34, $p < 0.01$; t = −4.58, $p < 0.01$), and watching classical art music programs (F = 21.51, $p < 0.01$; t = −2.27, $p < 0.05$) than the boys. In group 4, fewer of the boys expressed interest in trying the carpet piano (F = 80.17, $p < 0.01$; t = −4.25, $p < 0.01$) and watching talent shows (F = 16.82, $p < 0.01$; t = −1.72, $p < 0.01$) than the girls. Just as for the perception of musical styles, regarding the motivation to consume musical programs and participate in musical activities, negative trends were observed between the sexes with advancing age. In the first age group, we found a difference only in a willingness to try the carpet piano. In the second age group, there was a difference in the students' habits of watching talent shows. In the third age group, in addition to trying out the carpet piano, the girls expressed a significantly higher interest in watching classical art music and talent shows. In our study, the biggest difference between the boys and girls in the field of musical activity and interest could be found in the 15–16-year-old age group.

Based on a two-way analysis of variance, the differences between the different age groups and between the boys and girls were also significant (Table 5). The interaction was also significant in the analysis of the classical popular music, rock music, and folk music; that is, the independent variables included in this study influenced each other. The change in the students' opinions about the musical pieces increased with age. The perception of the classical popular music did not change equally for the boys and girls. The popularity decreased between the ages of 9–12 and 13–14 for both the boys and girls. For the boys, this decrease continued, while for the girls, an increase could be seen at older ages. The growth of the difference between the genders began at the ages of 13–14. The perception of the rock music was the same for the boys and girls at the ages of 9–12, then stagnated for the boys at the ages of 13–14 and increased minimally for the girls. After that, at the ages of 15–16, the differences between the sexes became larger but typically showed a decreasing trend. In the oldest age group, the differences between the students were still significant, but their opinions started changing in a positive direction. Based on the significant interaction, the included variables were not independent of each other. For the boys, it could be seen that their preferences for the videos decreased to a much greater extent. Classical art music was liked by the students at the youngest age, and then at the age of 13–14, the students' interest decreased. For the boys, the decline continued until the age of 15–16, and then increased slightly. On the other hand, we found that the girls had an increasingly positive opinion of classical art music, but still not to the same extent as the youngest students. Gender explained 3.6%, age explained 2.4%, and their interaction only explained 0.5% in the evaluation of the classical art music excerpt, which means that there was no trend-like difference between the boys and girls. Among the four pieces, the boys only showed a significant preference for the folk music compared to the girls. With increasing age, the students' opinions became more negative, but the difference was not significant. The girls had an increasingly positive attitude from the ages of 13–14, while the boys' attitude became increasingly negative. The change in opinions showed a greater decrease, and the differences between the boys and girls were significant in the oldest age

group. Overall, it can be seen that, considering the entire sample, the students' feedback showed a decreasing trend and then changed the most at the ages of 15–16.

Table 5. Two-way analysis of variance for musical pieces as dependent variables.

Musical Genres	ANOVA			
	Main Effects	**F**	***p***	η^2
CPM	gender	84,202	<0.001	0.068
	age group	4075	0.007	0.011
	interaction	4317	0.005	0.011
RM	gender	14,615	<0.001	0.000
	age group	4244	0.005	0.005
	interaction	4129	0.006	0.006
CAM	gender	42,824	<0.001	0.036
	age group	9519	<0.001	0.024
	interaction	2048	0.105	0.005
FM	gender	8253	0.004	0.007
	age group	5321	0.001	0.014
	interaction	7285	<0.001	0.019

Note: Independent variables of variance analysis: gender and age groups (9–12, 13–14, 15–16, and 17–19 years of age).

5. Discussion

Technological devices and media service platforms offer a wide range of styles and allow us to instantly access different cultural and musical expressions and musical styles [54]. The novelty of our research is that, in our study, we examined the students' preferences for certain music genres based on an online questionnaire in which we placed concrete examples and music video tracks.

Our exploration into the popularity of the musical genres revealed noteworthy patterns among the surveyed students. Classical popular music emerged as the most preferred genre, followed closely by rock music. This aligns with existing research highlighting the enduring appeal of classical and rock genres among diverse age groups [55]. In contrast, the classical art music and folk music received lower scores, indicating a relative lack of enthusiasm among the participants.

The observed correlations between the musical genres further enrich our understanding. Notably, classic popular music and classical rock demonstrated stronger popularity correlations than classical art music and folk music. This suggests a cohesive preference for contemporary variations in classical genres, which are potentially influenced by modern cultural trends. The weaker correlation between classical art music and rock music supports prior research suggesting a perceptual divide between these genres among young audiences [56]. Beyond genre preferences, the participants' engagement with musical activities and programs revealed intriguing connections. A substantial portion of the students regularly watched talent shows, indicating a widespread interest in performance-based musical content. Furthermore, a notable percentage expressed a willingness to try the carpet piano featured in the classical popular music video. These findings suggest a potential link between exposure to musical activities and receptivity to diverse genres.

The process of the development of musical taste is influenced by the specific characteristics of the individual, the music, and the context of listening to music. A person's musical preference and musical taste are determined by the interactions between these factors. According to North et al. [23], students' reactions to individual musical styles and genres may have more explanatory power than the particular piece of music. Age, musical training, knowledge, or musical experience also influence music listening [54]. In the current study,

age emerged as a significant factor influencing musical preferences among the surveyed students. The youngest age group (9–12 years) displayed a distinct affinity for classical popular music; a preference that decreased with age. A possible reason for this could be that their interest extended to several musical styles, and as they aged, they preferred more popular music genres [2,18]. In contrast, the rock music garnered increasing popularity among the older age groups, aligning with the notion that adolescents often gravitate towards contemporary and popular genres [57]. Interestingly, classical art music, while initially preferred by the youngest age group, experienced a decline in popularity as the students progressed through adolescence. This supports existing research indicating a shift in preferences away from classical art music among older students [58]. The correlation analyses based on age groups further refined these trends, revealing dynamic associations between the genres across developmental stages. The observed weakening of the correlations among the older students suggests a greater diversity in their musical preferences, reflecting the broadening of individual tastes during adolescence. Notably, the reversal of the decreasing trend in the popularity of different music videos at the threshold of adulthood indicates a potential resurgence in musical exploration during late adolescence.

There was a significant difference in the perception of genres based on gender and the age groups. Gender emerged as a significant influencer of musical preferences, challenging some conventional stereotypes. While boys are often thought to have a preference for rock music, our findings revealed that the girls displayed a greater preference for classical popular music. The reversal of expected gender preferences suggests a nuanced and evolving landscape of musical tases among contemporary youth [27]. The gender-based differences extended beyond genre preferences to encompass engagement with musical activities and programs. The girls expressed a higher willingness to try the carpet piano, a greater interest in watching the talent shows, and a more positive attitude towards participating in community music productions. These findings challenge preconceived notions about gender-specific preferences and indicate a more inclusive and diverse musical landscape among the surveyed students.

The two-way analysis of variance underscored the complex interplay between age, gender, and musical preferences. These significant interaction effects highlight the dynamic nature of preferences across developmental stages and gender groups. Previous research [59] has consistently identified age-related shifts in preferences, emphasizing adolescents' inclination toward popular musical styles and a decline in interest in classical genres. Contrary to traditional stereotypes, our study aligns with recent research, challenging preconceived notions about gender-specific music preferences, as noted by Soares-Quadros Júnior et al. [60]. Notably, our emphasis on the increasing divergence of musical preferences between the boys and girls with age underscores the need for nuanced approaches in education, supporting the findings of Sri et al. [61].

As for the practical implications, understanding the dynamic nature of musical preferences among students is crucial for educators, policymakers, and researchers. Our findings suggest the importance of fostering a diverse musical environment that acknowledges and appreciates a broad spectrum of genres. Moreover, the observed convergence in preferences for classical art music and folk music suggests that a nuanced understanding is needed when designing music curricula. While popular genres dominate, recognizing and acknowledging the subtle distinctions in perception among classical art music and folk music enthusiasts is essential. This insight can guide educators in striking a balance that accommodates both traditional and contemporary musical elements in their teaching strategies. Educators can apply these insights to tailor music education programs that resonate with the evolving tastes of students across different age groups and genders. The significant age-related differences highlight the importance of providing musical experiences at different developmental stages. As students progress through adolescence, their musical preferences become more distinct, emphasizing the necessity for flexible and adaptive educational strategies. Future research could explore the sociocultural factors influencing musical preferences, considering regional and cultural variations. Additionally, exploring

the impact of technological advancements, such as streaming platforms and social media, on music consumption habits could provide further insights into the contemporary music landscape among youth.

Our study also has some limitations. One limitation is that we exclusively employed four pre-selected music videos, each representing distinct music styles. However, it is important to note that these selections cannot represent the overall representativeness of music. For future investigations, we aim to enhance the diversity of our dataset by incorporating sub-styles associated with these genres. This expansion is intended to provide a more comprehensive understanding of the subject and enhance the validity of our findings. Then, we used cross-sectional data collection for the analysis of age-related changes. In future research, it is advisable to conduct longitudinal studies as well. In this study, we did not address factors such as whether the students knew the given piece of music or how much their knowledge of the musical pieces was influenced by whether they saw the video or only heard its audio component. In the future, it is worth supplementing the data collection by taking these factors into account as well as examining the students' perceptions of traditional concert experiences. We focused on the students' preferences for specific musical pieces rather than their general musical preferences. Furthermore, there might be some factors (e.g., tempo, rhythm, melody, harmony, performance, etc.) that may have impacted the selection of the specific videos. However, we validated the content validity of these selected videos with musical experts. We assessed the students' preferences for the music genre videos only. There might be some mediating factors that could have influenced the decisions of the participants in our study. Accordingly, for future research, it would be valuable to explore the interplay of various factors, including tempo, rhythm, melody, harmony, and performance, in shaping individuals' preferences for specific musical pieces.

6. Conclusions

Overall, we can conclude that there was a mild association between the students' musical preferences related to watching music programs and potential music-related activities. Moreover, the popularity of the four music pieces exhibited a moderately strong correlation among them. The highest correlation was observed between the folk music and classical art music, whereas the lowest correlation existed between the classical art music and rock music. In the investigation of gender differences, we can conclude that the students' music preference was influenced by their age and gender. It is evident that, irrespective of age group or gender, the students exhibited a significant preference for popular genres such as classical popular music and rock music over classical art music or folk music. There was no substantial distinction in the perception of the classical art music and the folk music among the participants. The outcomes of our investigation provide valuable feedback for music education and instrumental training. The increasing divergence between the boys and girls in their musical preferences further suggests the need for gender-sensitive approaches in music education. Recognizing and embracing these variations can foster a more inclusive and engaging learning environment. In addition to maintaining the value and tradition-preserving function of school music education and instrumental training, a greater integration of contemporary, quality, popular genres into the curriculum could perhaps move the popularity of music classes in a more positive direction and make instrumental training more attractive to young people.

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