

# Comparative analysis of Chinese and European classical music

## Análise comparativa da música clássica chinesa e europeia



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**Abstract:** The purpose of the present research is to conduct a quantitative analysis of Chinese classical music and then compare it with Western European classical music. The results obtained under the comparative analysis of samples using the Student's t-test for independent variables have shown that there is a significant difference between the studied music types. In this case, the present study presupposed analyzing a total number of 18 musical scores. Mathematical analysis facilitated forming 12 samples from independent variables that characterized the length of the studied excerpts, compassed the number of repetitions, the

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initial interval, and the number of unique intervals. Despite a significant contribution of European classical music to Chinese music, it suggests that Western European music is more complex than Chinese classical music. Accordingly, the results obtained can be useful in the field of musicology and music theory.

**Keywords:** Chinese music. Classical music. Comparative analysis. European music. Mathematics and music.

**Resumo:** O objetivo da presente pesquisa é realizar uma análise quantitativa da música clássica chinesa e depois compará-la com a música clássica da Europa Ocidental. Os resultados obtidos na análise comparativa de amostras utilizando o teste t de Student para variáveis independentes mostraram que existe uma diferença significativa entre os tipos musicais estudados. Neste caso, o presente estudo pressupôs a análise de um total de 18 partituras. A análise matemática facilitou a formação de 12 amostras a partir de variáveis independentes que caracterizaram a extensão dos trechos estudados, englobando o número de repetições, o intervalo inicial e o número de intervalos únicos. Apesar de uma contribuição significativa da música clássica europeia para a música chinesa, isso sugere que a música da Europa Ocidental é mais complexa do que a música clássica chinesa. Assim, os resultados obtidos podem ser úteis no campo da musicologia e teoria musical.

**Palavras-chave:** Música chinesa. Música clássica. Análise comparativa. Música europeia. Matemática e música.

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## Introduction

The study of Chinese classical music is a relatively new, rapidly developing direction in the field of scientific work. Many researchers aim at studying various aspects of Chinese music. For example, some studies (HUANG and THIBODEAUX, 2016) discuss the features of teaching classical piano music in China and regard the prospects for its further development. In particular, this article (HUANG and THIBODEAUX, 2017) focuses on the technical features of this issue.

Other studies (HO, 2014; QUIN, 2021) analyze a slightly different topic which is quite important in this context. It regards the development of popular music in China and its influence on Chinese modern culture. Moreover, studies in the field of Chinese folk music are very popular among researchers. For example, some of them focus on this subject as they suppose it is vitally significant (CHEN, 2016; HU and YANG, 2017; QU and XIAO, 2020; YANG and WELCH, 2016).

In the thesis formed within the research of CHEN (2021), the author states that the founder of classical music in China is Yin Chengzong. His most outstanding work is the Yellow River Piano Concerto, written in 1069. This Chinese pianist and composer became one of the cultivators of European classical music in 20th century China. Another essay with a similar structure (HSIEH, 2016) describes the influence of Western musical culture on the example of Percussion Concerto by Chen Yi.

Western classical is just one of many different classical music traditions, so when discussing Western classical music, scientists are specifically discussing European classical music. To make things even more confusing, there is a specific period in history called the "classical period" that distinguishes the style of music of that era from other eras before and after it (VANWEELDEN, 2012). All compositions of Western classical music are formally written using musical notation, and the performers have little or no freedom to

improvise. In Western classical music, when vocals are used, the instruments carry a lot of weight in the overall composition.

It is worth mentioning some features of Chinese classical music for comparison. From a philosophical point of view, Chinese philosophers understood classical music as music that harmonizes nature and achieves a certain cosmic alignment (WANG *et al.*, 2022). The highest form of music was intended for personal, and spiritual development, which explains the slow, meditative sound of typical literary compositions. All well-born, well-educated Chinese were taught to compose music and play musical instruments. The earliest Chinese musical system was a 12-tone scale based on the pitches, called “bells,” of a bamboo pipe, one of the oldest instruments. By the seventh century BC, it moved to the pentatonic scale, derived from the theory of the cycle of fifths (FAN *et al.*, 2020). From the beginning, Chinese music has associated each tone with one of the five elements of nature (earth, wood, metal, fire, and water). Classical Chinese music is mostly heterophonic, in which the same melody is repeated in several variations. The works often sang of nature, life, the world around. Many Chinese songs were dedicated to four animals - a dragon, a phoenix, a qilin (a miracle beast, a kind of chimera) and a tortoise (HUL, 2020). This is reflected in the titles of works that have come down to our times (for example, “Hundreds of birds worship the phoenix”). Later, there were more songs in terms of themes. They were divided into: labor songs (accompanying field work, fishing activities); protest (exposing bribery, cruelty of landlords); love and family (about the relationship between men and women); playful, comic (funny situations, joyful moments are described); lyrical (describes a specific event, making it understandable to all listeners) (GUO *et al.*, 2021).

Some articles (FALIKS, 2019) provide a qualitative analysis of the relevance and prospects of classical music in modern China. Current trends indicate that Chinese youth prefer to go to Europe to study music. Upon the completion of their studies, they return to their homeland in search of work and self-realization, which is a huge cultural impetus towards the introduction of European

classical musical heritage into modern Chinese musical culture. In addition, the author of this article (FALIKS, 2019) noted that in China, there is a fairly large demand for specialists who can perform well and compose classical music. It is worth noting that according to another article (YANG and WELCH, 2016), modern China experiences an acute problem of the displacement of classical Chinese folk music. However, in some earlier research (HAN and LEUNG, 2015), the emphasis is placed on the need to maintain a balance between the study of Western classical music and the preservation of interest in traditional Chinese music among students. Nevertheless, even though many articles display the growing interest in Chinese classical music, Chinese music education experiences significant problems regarding the provision of services for the study of classical music. Hence, it is one of the reasons for the mass education of students studying Chinese music abroad. Another article (HUIFANG and HAO, 2021) highlighted several major problems in modern Chinese music education related to classical music. Thus, it confirmed the following statements: Chinese schools lack competent teachers, classical music is quite difficult for students, and studying Chinese classical music is underemphasized. In addition, students often do not feel the importance of studying classical music or they are not sufficiently interested in doing that. Some studies prove that classical music in China attracts a much smaller audience than in Western Europe (SHI, 2021). The author of this research noted that in modern China there is an urgent need to disseminate information about classical music via the Internet or through mass media. Consequently, new technologies will significantly expand the circle of classical music listeners in China.

Moreover, many studies aimed at studying Chinese classical music using various new technologies. For example, some research (YANG, 2021) studied the feasibility of using artificial intelligence during online music classes. According to the results obtained under that research, artificial intelligence can be successfully integrated into the learning and training process. It may contribute to helping

both students and teachers to cope with the tasks set during the educational process. The results obtained using the reinforcement algorithm showed that the Q-learning algorithm has high accuracy and facilitates measuring various features of classical music.

Despite the many benefits of studying classical music, several studies have shown that student participation rates in musical events in developed countries quite low compared to other subjects (CHEN and O'NEILL, 2020). One explanation for this reluctance to study music may be due to the emphasis on the study of Western "classical" musical notation, often to the exclusion of other musical styles and activities. Therefore, students must find these activities personally meaningful if they are to maintain their involvement with music over time. This form of involvement in music aims to participate meaningfully in learning activities with understanding and appreciation of the activities from which they get a sense of relevance, purpose, and fulfillment. The study was conducted in America (VANWEELDEN, 2012) to examine what repertoire constitutes "popular" classical music for teenagers, to compile a list of the classical repertoire. Most of the pieces in this study were found to meet these criteria, and students are encouraged to explore deeply the music they prefer to listen to.

The study of GUAN (2021) shows that music, especially classical music, can serve as an effective means of psychological protection for students who are exposed to a lot of stress in the learning process. Classical music provides them with a sense of psychological comfort, and allows them to break away from the surrounding reality and concentrate on the task without being distracted by the background that sounds around.

The objective of this research is to conduct a quantitative comparative analysis of the musical scores of Chinese and European composers in order to confirm the hypothesis and prove that Chinese and Western classical music have significant differences.

To achieve this objective, the following tasks are required:



- Creation of conditions for students to evaluate the proposed conditions.
- Collection and analysis of quantitative results.

## Materials and methods

### Data collection method

The present research presupposed using a quantitative analysis of the data obtained through analyzing various musical scores. The excerpt *Appendix* contains detailed information on the selected compositions. This study presupposed using music pieces of various Chinese and Western European composers of the 20th century. The copyright reliability of the materials used in this study is satisfactory. The analysis of these pieces implied defining the main differences using 6 objective mathematical parameters. It is important to note that this research studied only fragments of song compositions intended for performance in the middle register (the first octave, the beginning of the second octave, and the end of the small octave). This limitation contributed to simplifying the comparison of studied compositions. The present research builds on the previously elaborated methodology (LIU *et al.*, 2021), based on mathematical analysis and statistical processing methods. The methodology of their research is represented by a statistical analysis of qualitative and quantitative indicators of music. The method allows to explore the common and distinctive features of composers' music in accordance with their performing style, as well as to analyze a large number of variations that arise when different composers perform music. Thus, this study includes the following parameters:

- **Excerpt length L**

At first glance the excerpt length may seem to be a biased parameter that cannot describe the composition. However, as previous research in this field has shown, the use of this indicator is

justified, and thus, it can be used to classify selected compositions. Defining this parameter necessitates counting notes in a musical excerpt (excluding ornaments). It is worth noting that notes united by the upper sign “legato” are considered to be one note.

- **Compass h**

This indicator specifies the distance between the highest and lowest note, which is measured in semitones (in this case, integers are also obtained for such a score).

- **Number of repetitions r**

In this case, it regards calculating the maximum number of identical notes repeating one after another.

- **Initial interval I**

The mathematical features of the initial interval are equal to the number of semitones between the first and second notes in the excerpt under study.

- **Unique intervals U**

This value regards the number of all jumps in the excerpt (repetitions are not taken into account). Thus, all intervals starting from a minor second (excluding the prima) are unique intervals.

- **Maximum interval M**

The maximum interval is the maximum distance between two adjacent notes. They are measured in semitones.

## Data analysis methods

The Shapiro-Wilk criterion and the Student’s two-sample criterion for independent variables contributed to analyzing the sample. The Shapiro-Wilk criterion facilitated testing the hypothesis



on the subordination of the obtained data to the Gaussian (normal) distribution law. It is significant since compliance with the normal distribution law is a necessary condition for further verification of the hypothesis using the Student's criterion. The empirical value of the Shapiro-Wilk criterion presupposes using the formula:

$$W = \frac{1}{s^2} \left[ \sum_{i=1}^n a_{n-i+1} (x_{n-i+1} - x_i) \right]^2 \quad (1)$$

where  $s^2$  is the variance of the sample under study –  $a_{n-i+1}$  – tabular coefficients for differences in values,  $x$  is a certain value from the sample,  $i$  is a variable index,  $n$  is the dimension of the sample. In this instance, the hypothesis is confirmed if the empirical values of the Shapiro-Wilk criterion do not exceed the tabular value equal to 0.8298.

The Student's criterion is the main analysis tool for testing an alternative hypothesis. The value of the Student's criterion presupposes using the following formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{s} \quad (2)$$

where  $\bar{x}_1$  and  $\bar{x}_2$  are the mean values of the compared samples,  $s$  is the variance of the difference of the sample mean values.

Since the empirical value of the Student's criterion exceeds the tabular one (2.26), it confirms an alternative hypothesis about the existence of differences between the studied samples. Otherwise, the study accepts the null hypothesis, which presupposes that there are no differences between the samples and, consequently, the studied correlation is absent.

## Limitations

The main limitation of this study is the relatively small size of the samples (9 in total). However, it is worth noting that this dimension is sufficient for the analysis of samples using the Student's criterion. Additionally, the present research presupposed analyzing only excerpts of the musical works. Nevertheless, the results of the previous studies using the same method demonstrated that the analysis of a small excerpt of compositions is sufficient to compare musical compositions.

It is also important to note that the results obtained under the present study may largely depend on the individual features of the musical works. However, this limitation is leveled by randomization of the choice of musical scores.

## Results

The present study presupposed conducting quantitative data collection and its further analysis using the Shapiro-Wilk criterion and the Student's criterion. The tables presented below display the results of the data collection and analysis using various statistical methods. Table 1 shows the results of data collection during the analysis of scores of Chinese classical compositions, and Table 2 displays Western European classical compositions. The first column contains the numbers of the analyzed compositions according to their numbers in the list provided in Appendix 1. Columns from the second to the seventh one indicate the values obtained (excerpt length, compass, number of repetitions, initial interval, and unique intervals).

The Chinese classical compositions have specific features. Accordingly, the parameter  $L$  varies from 20 to 24 (the minimum value is obtained for compositions 1 and 6, while the maximum value is reached for compositions 5 and 9). For the parameter  $h$ , the smallest value 13 corresponds to composition 5, and the largest value 17 corresponds to composition 7. For the parameters  $r$  and  $l$ , the smallest value 0 belongs to the composition 5 (for the first parameter) and 1, 2, 4, and 8 (for the second parameter). For the

parameter  $r$ , the largest value 4 belongs to composition 6, and for the parameter  $l$ , the value 5 corresponds to the compositions 5 and 7. The value  $U$  has the smallest value equal to 1 for composition 9, and the largest is 4 for compositions 2 and 8. The maximum value for  $M$  is 8 (compositions 2, 7, and 9), and the minimum value is 5 (compositions 1, 5, and 8).

In this case, there is no correlation between the results obtained depending on the analyzed composition. Thus, it indicates the probable independence of these parameters.

**Table 1 - Results of the analysis of musical scores of Chinese classical composers**

Chinese classical music						
Number	L	h	r	l	U	M
1	20	16	3	0	2	5
2	23	15	2	0	4	8
3	22	16	2	3	3	6
4	22	14	2	0	2	6
5	24	13	0	5	2	5
6	20	14	4	4	3	8
7	21	17	1	5	3	7
8	22	16	2	0	4	5
9	24	15	3	4	1	8

Accordingly, Table 2 displays the values of the same indicators for the compositions of Western European classical composers. On average, European music has the values of the  $L$  parameter that exceed the values of the same parameter for the compositions of Chinese authors. In this case, the smallest value is 27 (composition 9), the largest is 31 (compositions 3 and 8). Furthermore,  $h$  values have the same dynamics. In this case, the largest value is 26 (compositions 4 and 8), the smallest is 22 (composition 9). For parameter  $r$ , the given largest and smallest values are equal to 0

(compositions 1, 2, 3, 6, 7, and 9) and 2 (compositions 5 and 8). Given that, the average value of this indicator for Western European authors is less than for Chinese composers. For the following three parameters L, U and M, there is an increase in the average value for Western European authors compared to Chinese ones. Hence, for parameter L, the minimum and maximum values correspond to 3 (compositions 1 and 6) and 7 (composition 7). For the parameters U and M, the minimum and maximum values correspond to 10 (compositions 3 and 6) and 7 (composition 7), 16 (composition 3) and 12 (compositions 1 and 9), respectively.

**Table 2 - The results of the analysis of musical scores of Western European classical composers**

European classical music						
Number	L	h	r	l	U	M
1	28	23	0	3	8	12
2	29	25	0	6	9	14
3	31	24	0	4	10	16
4	30	26	1	5	8	15
5	27	23	2	6	7	13
6	29	25	0	3	10	13
7	28	24	0	7	8	15
8	31	26	2	4	9	14
9	27	22	0	5	7	12

Consequently, in the samples characterizing European classical music, there is also no connection between these compositions and the values of the studied features. In addition, it is worth noting that there is no relationship between the values obtained for the compositions of the same number in different tables since the compositions are not related.

Furthermore, Tables 3 and 4 show the results of the analysis of the data obtained using the Shapiro-Wilk criterion. Using this

method facilitated confirming that all the samples obtained are subject to the law of normal distribution. This factor is important for the possibility of further analysis of samples using the Student's two-sample criterion for independent samples. Hence, the first column contains the obtained values (the mean value of the sample, the standard deviation, as well as the empirical and critical values of the Shapiro-Wilk criterion).

**Table 3 - The results of the analysis of the samples obtained for Chinese authors using the Shapiro-Wilk criterion**

Chinese classical music						
Value	L	h	r	l	U	M
<x>	22	15.11111	2.111111	2.333333	2.666667	6.444444
s <sup>2</sup>	18	12.88889	10.88889	42	8	14.22222
Wemp	1.2345	1.3083	2.090724	1.9384	1.7583	1.994856
Wcr	0.8298					

*emp - empirical value; cr - critical value*

**Table 4 - The results of the analysis of the samples obtained for Western European authors using the Shapiro-Wilk criterion**

European classical music						
Value	L	h	r	l	U	M
<x>	28.88889	24.22222	0.555556	4.777778	8.444444	13.77778
s <sup>2</sup>	18.88889	15.55556	6.222222	15.55556	10.22222	15.55556
Wemp	1.0945	1.0284	1.4875	1.7634	1.09475	1.4567
Wcr	0.8298					

*emp - empirical value; cr - critical value*

A comparison of the data obtained demonstrated that the mean values for the value h have the largest gap (for Western European music, this parameter is much larger than for Chinese music). The M parameter also varies greatly (for Western European music, this parameter is also larger than for Chinese music). Other

parameters, except for parameter  $r$ , are also larger for Western European music than for Chinese music, however, the differences are not significant. As for the  $r$  parameter, its value is larger for Chinese music than for European music.

Table 5 provides the final results from the Student's test. In this case, the empirical value of the Student's criterion is larger than the tabular value for all the values except  $l$  and  $r$ . Accordingly, it means that all the studied values vary significantly depending on whether they belong to Chinese or Western European classical music (except for the parameter  $l$  and  $r$ ). The largest difference has the parameter  $h$ . The parameters  $U$  and  $M$  also have large differences. Moreover, the empirical values of the Student's criterion for the parameters  $U$  and  $M$  are almost the same.

**Table 5 - The results from a comparative analysis of the samples obtained using the Student's test**

Student's test						
Value	L	h	r	l	U	M
temp	3.40	5.13	1.13	0.97	4.06	4.03
tcr	2.26					

*emp - empirical value; cr - critical value*

Consequently, an alternative hypothesis about the existence of differences between the studied values is confirmed for all parameters except  $l$  and  $r$ . It suggests that the length of the excerpt, compass, the number of repetitions, the number of unique intervals, and the initial interval depend on whether the author's composition belongs to the Chinese or Western European music school. In other words, Chinese classical music is characterized by a shorter duration of the theme and a smaller amplitude of the composition. Additionally, the number of repetitions of the same note in Chinese works is longer than in Western European compositions. Nevertheless, the differences are insignificant on

average (as proved by the Student's criterion). However, in Western European music, there are much more unique intervals in the aisles of the considered musical excerpt, and the maximum interval is much wider. Despite that, the initial interval of the composition does not indicate the composer's belonging to a particular school. As the analysis showed, Chinese music is somewhat simpler than Western European music, and repetition of the same note is more common in Chinese compositions. A larger amplitude and a long excerpt, as well as a large number of unique intervals for Western European music, prove the abovementioned statement. Thus, despite the huge contribution of Western European classical music to Chinese classical music, these music schools still have many differences. In addition, the results suggest that all parameters except  $l$  and  $r$  can be successfully used in the analysis and comparison of Chinese and Western European compositions.

## Discussion

Many researchers use the methodology based on comparison for studying classical music. For example, some research (FAN *et al.*, 2020) conducted a comparative analysis of Western and Chinese classical music through the Soundscape Models. Such musical features as emotional valence and arousal contributed to its analysis. This research revealed that the developed analysis methodologies, namely SED and SER, proved to be well applicable in the study of not only Chinese but also European classical music. However, it is important to note that these approaches are more suitable for the study of Chinese music. It indicates that Chinese classical music and soundscape recordings have certain similarities. Other researchers studied (WANG *et al.*, 2021) the difference in perception of Chinese and European classical music. During this experiment, all respondents were divided into 4 groups depending on their race (Europeans and Chinese) and the availability of music education. Analyzing the evaluation of music by respondents, this study revealed that the nationality of listeners significantly



affects the perception of particular music. Meantime, the musical background has no impact on this perception. However, it is worth noting that musicians recognize valence and preference of music much better than nonmusicians. Moreover, quantitative analysis of the data obtained by the linear partial least squares regression method proved that all respondents equally evaluated most studied features (such as, for example, valence and energy arousal). Accordingly, it may be due to the similarity of the musical performance techniques and musical instruments used.

Another study regards a similar issue (YANG *et al.*, 2015), providing a comparative analysis of traditional Chinese and Western classical music. Thus, this study proved that these music types have a fairly large difference in design, tonality, tempo and rhythm, and texture. However, this research compares different directions of music (folklore Chinese and classical Western music). Accordingly, it differs from the present study. Nevertheless, even though the study mentioned above builds on a different methodology of data analysis, it is quite exhaustive and has a similar approach.

Additionally, it is worth paying attention to studies that demonstrate indirect differences between Chinese and Western classical music. Thus, another study (GUO *et al.*, 2021) shows the influence of these types of music on Auditorium and Reward Systems. This study proves that while Chinese classical music activates the right part of the STG, Western European classical music activates the left part of the STG. It is important to note that in addition to the research method used in this article, there are a number of other equally compelling approaches. For example, an approach using the NMF method is quite compelling (MIRON *et al.*, 2017).

Another research (CAI, 2020) qualitatively explores Ecological Aesthetics in Chinese classical music. As the results showed, classical Chinese music contains references to the relationship between human existence and nature. As a result, the problems of human existence are not an independent subject of musical works since it is exclusively interrelated with the problems of nature. Moreover, it is presented from an ecological point of view. In turn, in the

theoretical study (ZHANG, 2017), Chinese classical music is classified into four main categories (Qin and Xiao duets, Jiang Nan ensembles, Cantonese ensembles and contemporary Chinese orchestras). Subsequently, these categories should be analyzed separately. The experiment, based on listening to musical works and performing other tasks related to the auditory perception of music without using any musical instruments, proved that any classical music caused a desire among respondents to create or recreate classical Chinese music. Moreover, it directly generates interest in this music genre. In addition, as it turned out later, all classes of Chinese classical music are subject to the National Core Arts Standard. Some of the previous studies (CHI, 2020), using a similar research methodology, analyzed the influence of classical Chinese music on the psychological state of respondents. During such an experiment, all participants were divided into three groups, two of which listened to various Chinese classical works, and the third was a control group. The results obtained under the electroencephalogram analysis proved that different classical Chinese music affects the psychological state of students in different ways. Accordingly, soothing classical music makes students nervous, and fast-paced classical music eliminates nervousness and positively affects the mental health of respondents. The studied issue also has a biologically based point of view, which is covered in this article (LIN, 2017). However, those findings remained unchanged, complying with the previously described studies.

## Conclusions

The present research presupposed using a quantitative analysis of the data obtained through analyzing various musical scores of Chinese and Western European classical music schools. This research aimed at identifying differences between the studied schools. The mathematical approach within the quantitative analysis of the data revealed that the length of the musical theme in Western European compositions is much longer than in Chinese compositions (the mean values are 28.9 and 22, respectively).

In addition, the amplitudes of the studied excerpts for Western European music are much higher than for Chinese music - 24.2 and 15.1. The number of repetitions of the same note within the studied musical excerpts for Chinese and Western European music is almost the same. The value characterizing the initial interval of a musical piece is also almost the same for all compositions under the study, regardless of belonging to a particular music school. Consequently, it indicates that it is impossible to use this parameter to identify or compare musical compositions, depending on the music school of the author. The number of unique intervals for European music is larger and is 8.4 while for Chinese music this parameter is 2.6. The maximum interval for Chinese music is on average 6.4, and for European music - 13.7. As a result, the alternative hypothesis confirmed the existence of differences between musical compositions depending on belonging to a particular music school for almost all the studied parameters (except for the parameter indicating the number of unique intervals in the excerpt and the number of repetitions of the same note). The Student's two-sample criterion for independent samples contributed to the aforementioned statement. The results of the analysis indicate that, even though there is a huge influence of Western European classical music on Chinese classical music, there are large differences that can be objectively assessed by special mathematical parameters. In addition, the results showed that Western European classical music is usually more complex than Chinese classical music. The obtained results also confirm the expediency of further application of the parameters used (except for the parameter indicating the features of the initial interval of the composition) for the analysis and identification of compositions depending on belonging to a particular music school. Ultimately, despite a significant contribution of European classical music to Chinese music, these music types have significant differences. As a rule, Western European music is more complex than Chinese classical music. This research has a scientific and practical value as the data obtained under the present study can be useful in the field of musicology and music theory. Moreover, the study

findings may contribute to opening up new perspectives in further research. It offers a methodology for researching the music of different cultures and times. Since the present study formed a relatively small sample, the study findings may not be universal. It is also important to note that the results obtained under the present research may largely depend on the individual features of the musical works. However, this limitation was leveled by randomization of the choice of musical scores.

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## Appendix 1

### Chinese classical music

1. N.1 (quantity of notes: 56-60) from file
2. N.2 (temp: Listesso tempo) from file
3. Var. IV from file
4. Jasmine Flower, Mo Li Hua
5. Happy Ending, Ashley Rowe
6. Wa Ha Ha, Chinese Traditional (contemporary interpretation)
7. Chinese String Fantasy, Chinese traditional (contemporary interpretation)
8. Lady Meng Jian, Chinese traditional (contemporary interpretation)
9. The Moon Represent my Heart, Chinese traditional (contemporary interpretation), easy version

### Western European classical music

1. Footsteps in the snow, Claude Debussy
2. Folk song, Op. 12, No. 5, Edvard Grieg
3. Jumping Dance, Op. 38, No. 5, Edvard Grieg
4. Spring sounds, N. Wilm
5. Atys, F. Schubert
6. Thanksgiving to the brook, F. Schubert
7. March (The Ruins of Athens), L. Beethoven
8. La marmotte, L. Beethoven
9. Cuckoo, A. Gretry

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