# The Influence of General Music Education on the Perception of Soundscape

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Music is closely related to soundscape. The present study employs methods and tools for assessing soundscape perception to compare the evaluation of soundscape perception between students who had not been taught general music courses ($n = 80$, equal into N1, N2) with that of students who had been taught general music courses ($n = 40$, MU) in four distinct audio-visual environments. According to the results of the questionnaire in four scenes and eight perceptual dimensions, there are significant differences between MU and N1 N2 (4-5 items), whereas there is only a slight difference between N1 and N2 (1 item). The difference in soundscape perception is reflected in those students who had been taught general music courses having a higher evaluation of the diversity of soundscape elements (as eventful), and different emotional judgments of the sound environment (as calm). These differences are visualized using the soundscape analysis tool, Soundscapy. Overall, the findings suggest that taking a general music course promotes richer sound perceptions and clearer affective associations with sound and that these enhancements could be presented using the soundscape perception measurement method. The findings also presented could inform the effectiveness of teaching in a general music course.

## 1. INTRODUCTION

The United Nations Sustainable Development Goal 4 (SDG4) is intended to globally advance inclusive and equitable quality education.[1] As an integral part of quality education, music education plays an important role in promoting emotional discovery and natural perception.[2,3] Music education not only provides students with the ability to express their emotions through sound but also stimulates their ability to use auditory observation to perceive the world,[4] which contributes to the sustainable and healthy development of a human living environment.

Music education includes professional and general music education in China. Professional music education includes training in instrument playing methods, vocal singing methods, and other specialized activities. This educational approach aims to train professional musicians,[5] and requires professional venues, appropriate facilities, and high levels of music expert guidance.[6] It is often undertaken in professional music education institutions and music schools,[7] benefiting only a small percentage of students. Professional music education tends to result in outstanding pedagogical outcomes, and the quality of a student's artistic performance reflects the student's academic achievement and the teacher's teaching standards. However, in relation to the education system, the music education that most students receive comprises general music education, studied once or twice a week, with content that is mostly related to music in the form of appreciation or simple performance. This type of music education does not require a high level of financial investment, requires a broader range of musical literacy, and is a common program of music education for all students in general schools.[8] However, general music education faces various challenges, such as the ineffectiveness of teaching and learning due to high teacher-student ratios,[9] the lack of objective criteria for assessing the quality of education,[10] and the relative lack of educational resources available.

Despite these challenges, educators have persistently promoted the development of general music education. Specifically, promoting the awakening of students' individuality through aesthetic concepts and the diversified development of artistic abilities is gradually receiving attention from music education scholars. There has been an emergence of music education involving multi-cultural music education with the goal of enhancing understanding.[11–14] The term 'multi' refers not only to the diversity of musical cultures but also to the diversity of aesthetic perceptions, and artistic expressions, as well as to the diversity of teaching evaluations and educational goals in music education. One of the obligations of music educators is to help students develop the will to think independently, so that the focus of music education shifts from music as an object of study to the development of comprehensive human-centred musical abilities. This approach enables students to gain aesthetic experience through what they hear and see in their daily lives,[15] and improves their ability to make aesthetic judgments about nature.[4,16] As Bennett Reimer describes the educational goals of a general music course, a music course needs to develop each student's ability to experience and create the inherent expressiveness of sound to the fullest extent possible.[17] Since the 20th century, as the field of music ecology has been expanded and improved, music education not only involves the transmission of musical works and the inspiration of musical thinking, but also addresses the entire sound world and the cultivation of comprehensive aural skills.

From the perspective of auditory development, the training of pitch, rhythm, and tempo in musical exercises stimulates individual neural responses.[3,18,19] Studies conducted in elementary and secondary schools have demonstrated that instrumental training can make students faster at recognizing sound frequencies.[20,21] In addition, instrumentalists have a different understanding of acoustic characteristics in relation to emotional perception.[2,22] However, these studies have been based more on groups with professional music training, and it remains to be assessed whether similar effects can be obtained in the broader study of general music. This study aimed to measure the effects of general music courses on the development of auditory perceptual skills.

The ABC model (Activating events, Beliefs, Consequences) used in cognitive behavioural therapy (CBT) shows that the outcome of behaviour is not based on the reality of the situation but on people's evaluation and interpretation of the situation.[23,24] The idea behind the ABC model is that a person does not necessarily have to change their environment to feel better. Instead, they can feel better by acknowledging and changing their reactions to their environment. Jahncke et al. found that individual subjective restorative scores and perceptions of pleasantness decreased when natural scenes were filled with ambient noise, suggesting that auditory information largely determines human perception of the external world.[25] As the strongest environmental factor associated with auditory perception, environmental sound continually affects people's auditory emotions.

Currently, soundscape is defined as an 'acoustic environment as perceive or experienced and/or understood by a person or people, in context'.[26] In the field of soundscape research, it is known that not only sound levels, but also many other factors including sound types[27,28]in the daily environment, influence people's evaluation of the environmental soundscape.[29] The International Organization for Standardization (ISO) has published an ISO standard for the perceptual evaluation and measurement of soundscapes, which provides a more scientific approach to the measurement of soundscape perception.[30,31] A toolbox known as Soundscapy, recently developed by the University College London soundscape research team, presents the results of individual soundscape perception evaluations of the environment through visual effects.[32] Using this soundscape perception analysis tool, we previously found that students with more than three years of professional instrumental experience in the same environment differed in their soundscape perception ratings compared to students who had not undergone instrument training.[33] We explored whether the same difference could be found for students who had undergone or not undergone a general studies music course, using the following


**Figure 1.** Audio-Visual Material Screen.

three research questions:

RQ1: Are there any differences in soundscape perception between students taking general music courses and those not taking general music courses?

RQ2: If there is a difference, what are the characteristics of the difference?

To answer these questions concerning the effects of general music education on soundscape perception, we measured the soundscape perception of students taking general music courses and of students not taking general music courses, us-

**Table 1.** Audio-Visual Material Acoustic Parameters.

| Scenes | Soundscape characteristics | $L_{Zeq}\dot{T}*$ (dB) | $L_{Zeq}\dot{T}*$ (dBA) | $L_{Zeq}\dot{T}*$ (dBA) | $L_{Zeq}\dot{T}*$ (dBA) | $L_{Zeq}\dot{T}*$ (dBA) |
|---|---|---|---|---|---|---|
| Construction site | Eventful-Annoying | 72.4 | 63.2 | 71.6 | 53.8 | 8.0 |
| Urban road | Uneventful-Annoying | 71.4 | 62.2 | 72.7 | 54.8 | 7.5 |
| Beach | Uneventful-Pleasant | 70.9 | 61.9 | 74.5 | 44.9 | 16.4 |
| Park | Eventful-Pleasant | 67.3 | 56.8 | 72.4 | 44.2 | 12.4 |

*T = 3 minutes

ing the soundscape ISO standard measurement method. The analysis and presentation of the results were carried out using conventional statistical methods and soundscape perception analysis method.

## 2. METHODS

This study used the soundscape indices (SSID) questionnaire[34] as a soundscape perception evaluation scale. Students taking a general music course and those not taking a general music course were divided into two categories to compare the differences in soundscape perception on eight dimensions. Descriptive statistics, and U-test were used to detect differences in grouping. Finally, the difference characteristics between them were presented in visual form using the Soundscapy tool.

### 2.1. Experimental Procedures

The experiment was conducted in compliance with ISO 12913. Participants listened to and watched ambient scene material through their personal terminals, after which they completed the SSID questionnaire and rated their own sound perception impressions. According to the consensus of practice in the music production industry, personal long-term use of headphones ensures subjective consistency in sound evaluation, thus, the ambient samples were played using the participants' usual personal cell phones and headphones, and the headphones were not changed during the experiment. To avoid interference between scenes, participants were asked to complete the scoring of each scene before starting the next scene. Before the experiment began, the research team provided a detailed explanation of the experiment, participants could voluntarily abstain from participating in the experiment, and those who decided to participate in the experiment were required to sign an informed consent form.[35]

### 2.2. Questionnaire

The SSID questionnaire was derived from the soundscape perception questionnaire in Method A of the soundscape measurement standard document ISO/TS-12913-230. The questionnaire included three sections, namely, the individual's judgment of how many different categories of sound elements are in the environment, eight sound perception dimension questions, and overall evaluation. For the purposes of this study, the questionnaire was simplified, with the focus being on the eight core soundscape perception evaluation questions, including pleasant, annoying, vibrant, monotonous, calm, chaotic, eventful, and uneventful. Each perceptual dimension was evaluated using a 5-point Likert scale, with answers ranging from 5 (Strongly Agree) to 1 (Strongly Disagree). Questionnaire details are presented in the Appendix.

### 2.3. Audio-Visual Material

To provide audio-visual samples with sufficient variation for the experiment, local scenes with different soundscape attribute dimensions were selected for audio and video recording, including a construction site, an urban road, a beach, and a park. Drawing on work in the fields of musicology[36] and soundscape studies[27,37] and taking into account the stability and suddenness of each sonic element in the environment, a three-minute recording was used to carefully reflect the differences in the eventful properties of the scenes. The video recording device used was an iPhone 12 (wide-angle mode, 1080P), the audio recording device was a Mu6 binaural recording microphone, and a Type II sound level meter was used for the scene noise measurement (model AWA5688), which was calibrated before the formal measurement. The scene and noise index information corresponding to the final selected material is shown in Table 1, and the screenshot of the scene is shown in Fig. 1.

### 2.4. Participants

Participants from a university in southern China were divided into two categories. The first category consisted of students who were recruited through the public service platform of the university. The second category was comprised of students in an Opera Appreciation course. The course content was comprised of approximately 70 % of audio-visual appreciation, 20 % of history and culture, and 10 % of singing practice. All participants in both groups were asked to take an online hearing test before proceeding to the subsequent experiment.[38] A total of 300 students were enrolled and 177 completed all the tests, after which 28 responses were removed for those who had musical instrument learning experience or who did not pass the listening test, leaving 149 valid samples in the final ordinary group. A total of 45 students who took the general music course were initially selected. To avoid the influence of instrumental learning[39] and hearing impairment on this study, those with instrumental learning experience and those who did not pass the hearing test were removed, leaving 40 valid samples in the music group. Hemple et al. noted that the test results of 20 individuals could satisfy the requirements for general hearing assessment,[40] the sample size met the experimental design requirements.

To meet the needs of statistical analysis, 80 students were randomly selected from ordinary group and divided into two groups for statistical analysis of equal sample size (N1 and N2 respectively; 40 people in each group), which provided the same number of participants as those taking the general education music course (MU). In the subsequent sections of this paper, these group divisions (N1, N2 and MU) were used to represent the corresponding sample groups. Details of participants are shown in Table 2.

### 2.5. Analysis

The first step in the analysis comprised a descriptive statistical analysis of the questionnaire options using SPSS software. A Mann-Whitney U Test[41] was applied for pairwise difference detection. Quantitative outcome statistics for $p < .05$

**Table 2.** Demographics of the participants.

| Groups | Item | Options | N | Percentage (%) |
|---|---|---|---|---|
| N1 | Gender | Male | 23 | 57.5 |
| | | Female | 17 | 42.5 |
| | Age | 18 | 6 | 15 |
| | | 19 | 18 | 45 |
| | | 20 | 11 | 27.5 |
| | | 21 | 5 | 12.5 |
| N2 | Gender | Male | 25 | 62.5 |
| | | Female | 15 | 37.5 |
| | Age | 18 | 6 | 15 |
| | | 19 | 20 | 50 |
| | | 20 | 10 | 25 |
| | | 21 | 4 | 10 |
| N3 | Gender | Male | 22 | 55 |
| | | Female | 18 | 45 |
| | Age | 18 | 8 | 20 |
| | | 19 | 12 | 30 |
| | | 20 | 12 | 30 |
| | | 21 | 6 | 15 |

items were used to reflect between-group variability and analyse the characteristics of the differences. In the second step, Soundscapy was applied to calculate a two-dimensional array of ISO coordinates, and NumPy[42]was used to calculate the global standard deviation of the coordinate array for each group of samples to determine the dispersion differences. Finally, the difference characteristics between groups were visually represented using Soundscapy's powerful visualization function.

# 3. RESULTS

## 3.1. Overall Differences in the Mean, Median and Std

The basic statistics of the soundscape perception questionnaire results were first determined. The questionnaire answers given by each group in all scenes for the eight perceptual attributes were calculated to determine the mean, median, and standard deviation of the options for each group, as shown in Table 3. There are three perceptual attributes in the MU group, namely, annoying, chaotic, and eventful attributes whose medians differ from the other ordinary groups, while the N1 is primarily calm and is the only one perceptual attribute in the ordinary groups that differed from the others. Further, the standard deviations of all seven options in the MU group, except for the annoying option, are higher than that of the ordinary groups, indicating that in most of the soundscape perception dimensions, the evaluation dispersion of the students taking the general music course is greater than that of the other students.

## 3.2. Differences in Various Dimensions of Soundscape Evaluation

Because the data from multiple option groups did not satisfy a normal distribution, the Mann-Whitney U test was applied to analyse the differences in paired groups of the two categories of students. The results (Table 4) show that the number of significantly different items between N1 and N2 is just 1 item, indicating that the differences in soundscape perception between the ordinary students are small. The number of significant difference items between the MU and general two groups reached 4 items and 5 items. This finding indicates that there are significant differences in the evaluation of soundscape perception between students who had undergone general music study and ordinary students who had not undergone such study.

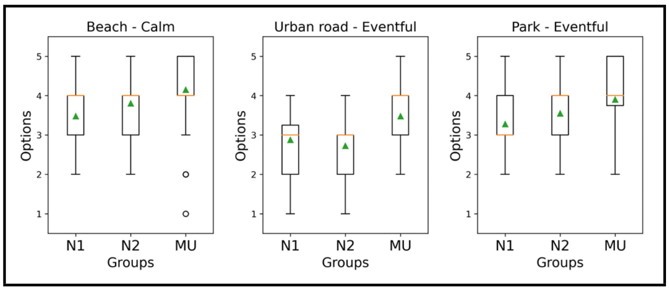


**Figure 2.** Boxplot of Significant Difference.

A more detailed comparison of the results in Table 4 shows that the MU group has consistent differences from the two ordinary groups for the Calm option in the beach scenario and for the Eventful option in the urban road and park scenarios, but there is no difference between N1 and N2. The distribution of the questionnaire data for the three difference items above is shown in a boxplot (Fig. 2), and these differences are significant. This suggests that the students who had taken a general music course heard more elements than the other students and produced more calm emotions in the beach bodies with fewer sound elements.

## 3.3. Difference in Distributions of Soundscapy

The questionnaire data was imported into Soundscapy and ISOpleased-ISOeventful coordinates were calculated. Soundscapy projects the coded values from the individual PAs down onto the primary Pleasantness and Eventfulness dimensions then adds them together to form a single coordinate pair. In theory, this coordinate pair then encapsulates information from all 8 PA dimensions onto a more easily understandable and analyzable two dimensions. According to the developer's instructions, this array of coordinates can represent the soundscape perception characteristics of a sample and can be used for further analysis. This batch of arrays was imported into NumPy for array standard deviation calculation; the results are shown in Table 5. The findings indicate that the standard deviation of the MU group is higher than that of any of the ordinary groups, this is in line with the results of the descriptive statistics. Finally, the above difference was visualized using Soundscapy's powerful functions, as shown in Fig. 3. The perceptual range of the group soundscape for different scenes is shown in various colors in Fig. 3, with the color block boundary being the 50th percentile, which shows the perceptual response of the soundscape in the 50 % trend set, making it easy to provide an intuitive assessment of the overall soundscape of the environment. It is clear from Fig. 3 that the difference between the MU group and the ordinary groups was significant. On the one hand, the MU group contains a greater range of contours in all scenes, suggesting that the students taking a general music course had a broader assessment of soundscape perception, which is consistent with the statistical test results presented above. On the other hand, the evaluation range of the ordinary groups for the park scene covered four quadrants, but the MU group occupied only two quadrants located in the interval of positive values related to the eventful coordinates, indicating that the students taking a general music course had a clearer tendency to evaluate this environment as eventful.

**Table 3.** Descriptive statistics of questionnaire

| | | | Pleasant | Annoying | Vibrant | Monotonous | Calm | Chaotic | Eventful | Uneventful |
|---|---|---|---|---|---|---|---|---|---|---|
| N1 | N | Valid | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| | | Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mean | | 3.09 | 2.84 | 3.14 | 3.01 | 2.66 | 3.21 | 3 | 3.02 |
| | Std. Error of Mean | | .08 | .083 | .078 | .078 | .086 | .087 | .076 | .072 |
| | Median | | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |
| | Std. Deviation | | 1.014 | 1.049 | .987 | .981 | 1.092 | 1.101 | .958 | .907 |
| N2 | N | Valid | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| | | Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mean | | 3.21 | 2.77 | 3.17 | 3.06 | 2.91 | 3.03 | 3.06 | 3.2 |
| | Std. Error of Mean | | .083 | .078 | .074 | .068 | .09 | .073 | .066 | .074 |
| | Median | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | Std. Deviation | | 1.047 | .992 | .94 | .859 | 1.135 | .925 | .841 | .93 |
| MU | N | Valid | 160 | 160 | 160 | 160 | 160 | 160 | 160 | 160 |
| | | Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Mean | | 3.07 | 2.42 | 3.18 | 2.78 | 2.91 | 2.69 | 3.36 | 3.14 |
| | Std. Error of Mean | | .091 | .08 | .089 | .089 | .106 | .098 | .089 | .089 |
| | Median | | 3 | 2 | 3 | 3 | 3 | 2 | 4 | 3 |
| | Std. Deviation | | 1.15 | 1.013 | 1.125 | 1.125 | 1.336 | 1.239 | 1.124 | 1.126 |

**Table 4.** Mann-Whitney U Test Statistics$^a$.

| Group | N | Scenes | Pleasant | Annoying | Vibrant | Monotonous | Calm | Chaotic | Eventful | Uneventful |
|---|---|---|---|---|---|---|---|---|---|---|
| N1-MU | 5 | Construction site | 915.5 | 971.5 | 1035.5* | 613 | 751 | 990.5 | 546.5* | 505** |
| | | Urban road | 776.5 | 986.5 | 722.5 | 940 | 673.5 | 1120** | 525** | 808.5 |
| | | Beach | 645.5 | 1158** | 818 | 980.5 | 476.5** | 1152** | 966 | 748.5 |
| | | Park | 935.5 | 832 | 901 | 1115.5** | 898 | 854 | 498** | 869 |
| N2-MU | 4 | Construction site | 1037* | 963 | 1064** | 637 | 876.5 | 728.5 | 609.5 | 651.5 |
| | | Urban road | 729.5 | 1000.5* | 769.5 | 1023.5* | 761.5 | 1160.5** | 439.5** | 964 |
| | | Beach | 756.5 | 1091.5** | 713 | 955.5 | 589.5* | 1151** | 942.5 | 689 |
| | | Park | 991.5 | 848.5 | 591* | 1108.5** | 940 | 842 | 594* | 913 |
| N1-N2 | 1 | Construction site | 674 | 817 | 739 | 752 | 681 | 1117.5** | 695 | 625 |
| | | Urban road | 846 | 805 | 748.5 | 711 | 701 | 770 | 876.5 | 605.5* |
| | | Beach | 698 | 893.5 | 905 | 862 | 670.5 | 813.5 | 835 | 846.5 |
| | | Park | 754 | 778.5 | 678 | 789.5 | 751.5 | 822 | 673 | 757 |

$^a$ - The values in the table are U-values.
$^b$ - N is the number of items in each pairing group with $p < .05$ and U-values $< 800$ (critical value).
* - $p < 0.5$
** - $p < .01$

**Table 5.** Standard Deviation of ISO Coordinates for Each Group.

| Scenes | N1 Std | N2 Std | MU Std |
|---|---|---|---|
| Construction site | .306 | .268 | .344 |
| Urban road | .325 | .346 | .427 |
| Beach | .278 | .252 | .319 |
| Park | .263 | .251 | .318 |

## 4. DISCUSSION

### 4.1. General Music Education Affects Soundscape Perception

Both statistical analysis and Soundscapy presentation results show differences in soundscape evaluations between the students taking a general music course and ordinary students in the same setting. These findings provide strong evidence for an affirmative answer to RQ1. A general music appreciation course involves an immersion approach to learning, using audio and video materials as the main content of the course to develop appreciation. The teaching content combines the transfer of musical knowledge (behaviorism paradigm) and the inspirations of sound perception (constructivism paradigm).[43] In a general music course with musical appreciation as the main objective, students are exposed to music using composite audiovisual material to develop appreciation under the guidance of teachers, which is equivalent to experiencing complex cross-modal cognitive processing training.

In this experiment, the difference of soundscape perception brought by this enhancement is richer sound perceptions and clearer affective associations (RQ 2). The ISO quadrant distribution of the music group in the park scene differed from the eventful trend found among the ordinary groups. In the questionnaire result statistics, only the music group has a significant increase in the eventful option median, and in the Soundscapy analysis, the positive trend of the music group's evaluation of the park scene as eventful is significant, indicating that the music group students have a higher discrimination of sound elements than the ordinary group students. Many studies have indicated that professional music training can facilitate sound frequency discrimination,[19–21,44] and similar results were obtained in the general music appreciation course in this study. This suggests that general music education also has the effect of expanding the range of frequency perception, which extends the applicability of previous related results.

In addition, the music group identifies more with the calm option in the beach scene than the two ordinary groups. This finding indicates that, after being taught music appreciation, these students had different sound-emotion judgments compared with the ordinary students, which accords with the results of Juslin's study on musicians45. Unlike music education for children and teenagers,[46] teachers in university general music appreciation courses often talk about musical ups and downs or changes in music dynamics from forte to piano using emotional language, and students enhance their understanding of emotional language during the learning process. This training process allows students to establish symbolic associations between auditory perception and emotional language that differ from those who are not trained.[47,48]

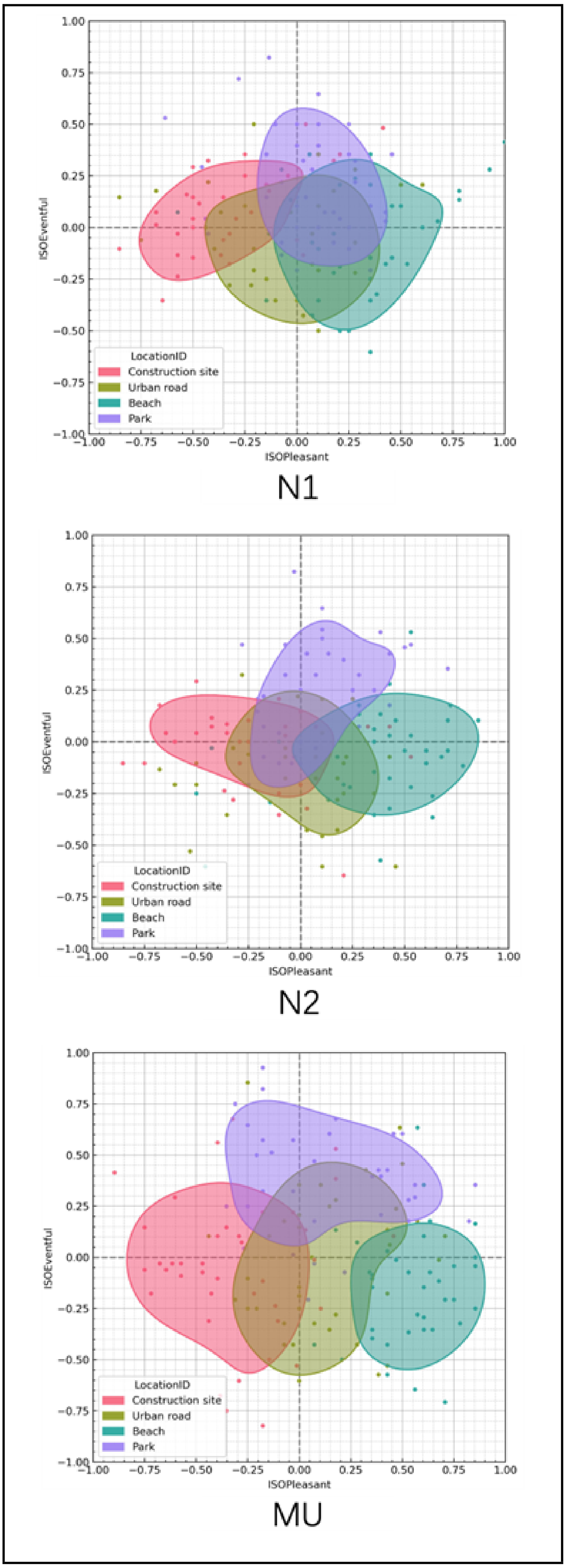


**Figure 3.** Soundscapy Visualization Results for Soundscape Perception.

## 4.2. Implementations

When we sent the Soundscapy visualization to the Opera Appreciation course instructor to view and explain its meaning, she believed that methods of analyzing soundscape perception can provide strong evidence of the effectiveness of her work, whether presented through statistical methods or Soundscapy visualizations. This type of feedback suggests that the soundscape assessment approach adopted in this study may help to address the assessment challenges in general music courses.[10,49,50]

The results in this study suggest that this soundscape perception evaluation method could be used as a reference for assessing the overall teaching effectiveness of a general music course, that is, adding an objective evaluation dimension to the teacher's subjective evaluation, to have a more comprehensive presentation of the teaching evaluation. In China, general music courses do not aim to achieve student mastery of music performance skills, and some courses do not even require students to know music scores. The purpose of these courses is more regarding cultivating students' aesthetic sensibilities and enhancing their ability to empathize with music and cultural associations.[51,52] The examination method for such courses is often conducted through a thematic essay format, but this also poses certain limitations for teachers to evaluate the effectiveness of their teaching. However, when using the soundscape measurement method and Soundscapy's visual presentation of soundscape perception, it is possible to visualize and display the results of general music teaching that are not otherwise easy to quantify, but that are needed by teachers of general music courses.

## 4.3. Limitations and Future Work

The limitation of this study was that the sample was selected from a group of Chinese university students only. As general music education policies and curriculum planning varies across countries, the results obtained using the methodology of this study may vary depending on the general music education received by the participant group. Depending on the needs and economics of this work, the audiovisual equipment and the production of the footage was relatively simple, and high-precision equipment may contribute to further accuracy of the data in future research endeavors. It would be worth exploring further whether soundscape perception measures, as quantifiable validation tools, can be used to guide music or sound education in relation to teaching sound creativity and perception.

# 5. CONCLUSIONS

General music education is an important and indispensable part of SDG4, and the study of general music appreciation can bring about changes in auditory perception. This study shows that students who had taken a general music course differed in their perception of the natural environment soundscape compared from those who had not taken a general music course.

This difference is reflected in the results analyzed by the Soundscape Perception Questionnaire. By analyzing the results of the questionnaire for the four scenes and the eight perceptual dimensions, students who have taken general music courses are richer than those who have not taken general music courses in terms of sound frequency perception (as eventful) and emotional association (as calm). There are differences between students who have taken general music courses and students who have not taken general music courses (4-5 items), and the number of differences is more than that between the two groups of students who have not taken general music courses (1 item). These differences were made more intuitive by Soundscapy's visualization of the differences.

Although this study could not determine whether there was a consistent association between individual students' soundscape evaluations and individual general music learning effectiveness, the use of soundscape perception measurement tools can be considered as offering an objective evaluation dimension, which supports the overall diversified and process evaluation of general music courses as well as enabling a more effective overall assessment and quantification of the effectiveness of course teaching and learning.

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# APPENDIX: QUESTIONNAIRE

| Please tick off one respones alternative per type of sound | Not at all | A little | Moderately | A lot | Dominates completely |
|---|---|---|---|---|---|
| Noise (e.g., traffic, construction, industry) | ☐ | ☐ | ☐ | ☐ | ☐ |
| Sounds from human being (e.g., conversation, children at play, footsteps) | ☐ | ☐ | ☐ | ☐ | ☐ |
| Natural sounds (e.g., singing birds, flowing water, wind in vegetation) | ☐ | ☐ | ☐ | ☐ | ☐ |
| For each of the 8 scales below, to what extend do you agree or disagree that the present surrounding sound environment is... | Strongly agree | Agree | Neither agree, nor disagree | Disagree | Strongly disagree |
| Pleasant | ☐ | ☐ | ☐ | ☐ | ☐ |
| Chaotic | ☐ | ☐ | ☐ | ☐ | ☐ |
| Vibrant | ☐ | ☐ | ☐ | ☐ | ☐ |
| Uneventful | ☐ | ☐ | ☐ | ☐ | ☐ |
| Calm | ☐ | ☐ | ☐ | ☐ | ☐ |
| Annoying | ☐ | ☐ | ☐ | ☐ | ☐ |
| Eventful | ☐ | ☐ | ☐ | ☐ | ☐ |
| Monotonous | ☐ | ☐ | ☐ | ☐ | ☐ |
| | Very good | Good | Neither good, nor bad | Bad | Very bad |
| Overall, how would you describe the present surrounding sound environment? | ☐ | ☐ | ☐ | ☐ | ☐ |