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COMPARATIVE STUDY ON SOUND PREFERENCES BETWEEN CHINESE AND ENGLISH RURAL TOURISTS

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In recent years, with the increase of rural tourism, simple and natural landscape experience has already become people's demand. A questionnaire survey was carried out for a comparative study between Chinese and English rural tourists. The results show that there are considerable differences between Chinese and English rural tourists in terms of sound preferences of mechanic sound, livestock sounds, as well as melody sounds. The effects of dominant sound sources on sound preferences are also different, as Chinese tourists' main attentions are on livestock sounds and natural sounds, followed by traffic sounds, mechanic sounds, and melody sounds; whereas the rural soundcape expectation of English tourists are mainly influenced by the significance of people's participation and the interaction between human and nature.

Keywords: Rural tourism, sound preference, soundscape, soundscape expectation

1. Introduction

As the rural planning requirement on speeding up the construction of the idyllic, beautiful, and liveable rural environment was presented in the State Science and Technology 'Thirteenth Five Year Plan' Program in China, countryside has further demonstrated its spiritual and cultural value. In recent years, the number of people visiting their countryside is increasing with the rising demand of the simple and natural landscape experience. An important reason given for visiting rural spaces was that these areas can be considered as restorative or tranquil environments, where the soundscape that differentiates it from urban environments, giving relief from cognitive overload and reduction of stress [1-2].

Soundscape research began with rural soundscape. Schafer conducted rural investigation as early as 1975 and published two classics, "Five Village Soundscape" and "European Sound Diary", which has far-reaching influence on the dissemination and research of this field [3-4]. Rural soundscape began to capture increasing attention in recent years in China. Lam et al carried out a questionnaire survey in countryside of Hong Kong, showing that human preference is not statistically related to common acoustical and psychoacoustical metrics, but has higher correlations with the absence or presence of wanted and unwanted sounds [5]. Gan et al found that landscape evaluation is affected much more by soundscape perception than visual landscape perception along the urban-rural gradients [6]. Ren et al found that rural residents show higher sound preferences on the sounds in rural environment than in urban ones [7].

While there are already some interesting results for rural soundscape, as mentioned above, there is still a recognised need to consider more types of sound as well as users' aural perception. For sound preference, a key element in soundscape evaluation [8] and the preference of acoustic envi-

ronment, there is still a lack of systematic cross-culture study. Such studies would provide more evidence for the rural acoustic perception, and is also of significance for rural landscape design and noise management.

The aim of this study is therefore to examine the preferences of sounds and soundscape expectation of Chinese and English rural tourists. A questionnaire survey has been carried out with carefully selected sounds in countryside, considering traffic sounds, voices, melody sounds, industrial sounds and natural sounds.

2. Methodology

A questionnaire survey was made for two groups of participants, 153 Chinese and 149 English, and they were randomly selected students at the University of Sheffield. The questionnaire was in both Chinese and English, where the contents in the two languages are identical, although they are asked to evaluate their own country's rural soundscape, respectively. In the questionnaire, some typical places are mentioned relating to rural soundscapes, so that the participants can better relate soundscape with landscape. For example, in the English questionnaire, villages Hathersage and Hope in the Peak District near Sheffield were mentioned.

Firstly, based on the purpose of rural tourism, the participants were asked to indicate the sound preference of a series sounds in the questionnaire. The sounds, which are frequently-heard sounds in rural environments, include traffic sounds (tractor, motorcycle, road traffic, etc.), voices (chat and children playing), melody sounds (music, instruments, temple bell, etc.), industrial sounds (machinery and construction), natural sounds (bird, water, rustle of leaves, etc), livestock sounds (cock cowing, dog barking, etc.). Corresponding to previous studies [9-15], a five-point Liket scale was used, with descriptions of "like" and "dislike": 1, really dislike; 2, dislike; 3, medium; 4, like; and 5, really like.

Secondly, the semantic differential method was applied to determine key factors that characterise the rural soundscape expectation. The participants were asked to give further comments on the audio perception of soundscape expectation according to the evaluation form, where 18 indices were used with a 5-point bipolar rating scale. Some of the indices were based on previous research relating to urban soundscape as well as product sound quality, and some were compiled specifically for this study according to the actual situations [16].

A reason for choosing students was that young people have relatively high auditory sensitivity [17-18]. As they have similar age and education level, the sample heterogeneity is low [19] . A database was then established in SPSS for further analysis on reliability and validity. The results showed that the reliability coefficient alpha = 0.731 > 0.7, suggesting the survey data has good validity. Simultaneously, KMO test as well as the corresponding Bartlett's spherical test results were also found to satisfy the validity of the questionnaire ($0.6<KMO<0.7$) [20-21].

3. Results

3.1 Sound preference

Figure 1 and Figure 2 show the results of sound preferences of Chinese and English participants, including road traffic, industrial, voices, natural, livestock, and melody sounds. Corresponding to the results by other researchers, people showed a very positive attitude towards natural sounds. More than 65% of the interviewees chose "like" and "very like", in which more Chinese reacted favourably to the sounds of leaves rustling, wind, flowing water, and bird singing. Similarly, Chinese preferred melody sounds more than English, with a higher percentage of evaluations above "medium". On the contrary, the most unpopular sounds were industrial sounds for Chinese, such as construction and machinery, as up to 90% of interviewees chose "dislike" and "really dislike". However, most English dislike traffic sounds, as more than 65% of them showed relatively low levels ("dislike" and "really dislike") of preference to motorbikes and road traffic sounds.

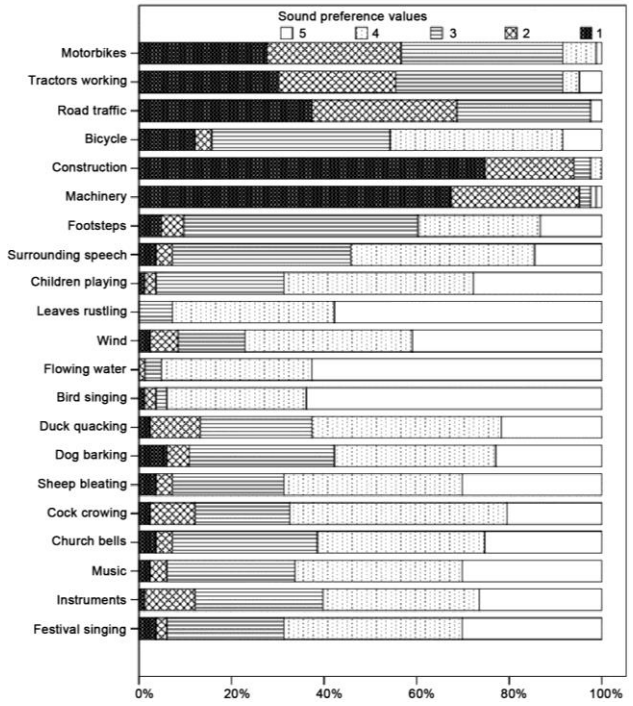

Figure 1: Sound preference of Chinese tourists

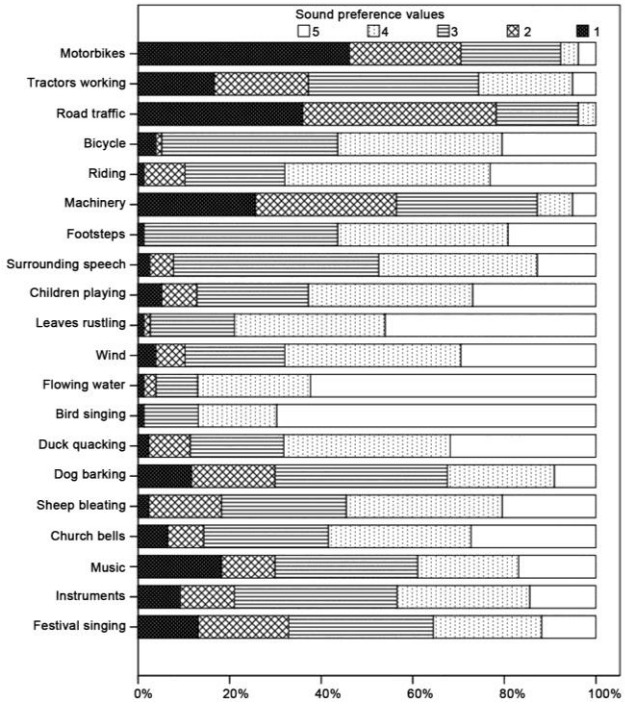

Figure 2: Sound preference of English tourists

Figure 3 compares the mean values of sound preference between Chinese and English. Again it can be seen that although generally speaking, people from the two different cultures showed similar tendencies in their sound preferences, for certain sounds there are considerable differences. It is therefore important to consider design issues which would have impact on encouraging these positive sounds with relative high preferences.

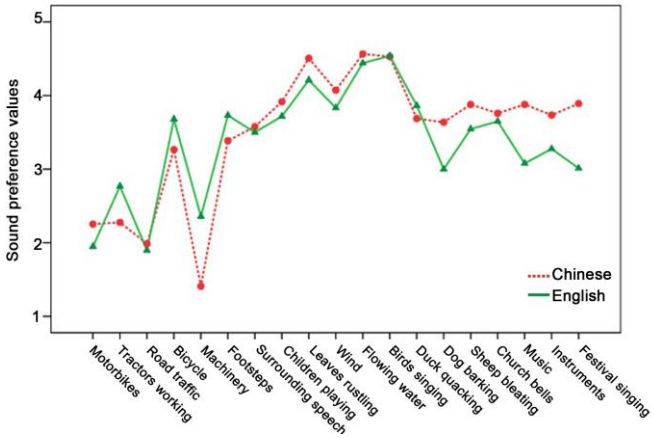

Figure 3: Comparison in sound preferences between Chinese and English tourists

3.2 Sounds with main attention

To examine the sounds with main attention to rural tourists, factor analysis was first made using all the data of Chinese sound preferences. Varimax rotated principal component analysis was employed to extract the orthogonal. With a criterion factor of eigenvalue >1, six factors were determined, as shown in Table 1. It can be seen that factor 1 (18.59%) is mainly associated with livestock and natural sounds. Factor 2 (12.64%) is generally associated with traffic and industrial sounds. Factor 3 (11.75%) is mostly associated with melodic sounds.

Table 1: Factor analysis of sound preferences of Chinese rural tourists

Sounds	Factors					
	1(18.59%)	2(12.64%)	3(11.75%)	4(11.36%)	5(9.17%)	6(6.11%)
Duck quacking	0.82	0.02	-0.10	0.01	-0.34	-0.19
Cock crowing	0.81	-0.08	-0.20	0.08	-0.34	-0.18
Dog barking	0.76	-0.01	-0.32	0.23	-0.09	-0.17
Sheep bleating	0.75	-0.01	-0.26	0.15	-0.23	-0.24
Children playing	0.67	0.08	0.19	-0.43	0.21	0.12
Wind	0.65	-0.05	-0.04	-0.38	0.04	0.24
Flowing water	0.65	-0.34	-0.02	0.11	0.41	0.00
Leaves rustling	0.63	-0.18	-0.25	-0.06	0.18	0.28
Birds singing	0.56	-0.49	-0.23	0.04	0.21	-0.09
Motorbikes	0.32	0.64	0.24	0.28	0.26	0.10
construction	0.18	0.60	0.26	-0.01	-0.34	0.08
Tractors working	0.54	0.59	-0.04	0.29	0.24	0.20
Music	0.24	-0.57	0.40	0.38	0.03	0.00
Machinery	0.20	0.49	0.35	-0.09	-0.44	-0.06
Road traffic	0.35	0.48	-0.08	0.28	-0.06	0.45
Church bells	0.34	-0.43	0.38	-0.23	-0.21	0.15
Bicycle	0.17	0.42	0.25	0.38	0.35	-0.37
Instruments	0.16	-0.48	0.61	0.33	-0.01	0.04
Festival singing	0.47	-0.31	0.49	0.04	-0.13	0.18
Surrounding speech	0.45	0.25	0.10	-0.53	0.20	0.07
Footsteps	0.27	0.26	0.35	-0.41	0.24	-0.56

Correspondingly, the factor analysis of the English sound preferences is shown in Table 2. It is interesting to note that different from the Chinese results, factor 1 (16.77%), including flowing water, surrounding speech, birds singing and footsteps, principally relates to the experience in environment with nature and activities. Factor 2 (13.12%) mainly contains culture-related melody. Factor 3 (10.15%) suggests that people are more concerned about the aural perception of field activities, with bicycle, riding, wind, etc.

Table 2: Factor analysis of sound preferences of English rural tourists

Sounds	Factors						
	1 (16.77%)	2 (13.12%)	3 (10.15%)	4 (8.71%)	5 (8.47%)	6 (8.22%)	7 (7.95%)
Flowing water	0.82	-0.04	0.11	-0.10	-0.07	0.08	0.05
Surrounding speech	0.81	-0.04	-0.02	0.27	0.11	-0.10	0.17
Birds singing	0.81	0.01	0.01	-0.13	0.29	-0.01	0.16
Footsteps	0.58	0.11	0.44	-0.15	0.24	0.06	-0.03
Children playing	0.46	0.41	0.27	0.16	0.21	0.42	-0.24
Morris dancing	-0.14	0.87	0.10	0.00	-0.01	-0.03	-0.03
Brass band music	-0.05	0.82	0.14	0.07	-0.13	-0.02	0.14
Church bells	0.11	0.60	-0.42	0.14	0.17	-0.23	0.16
Street Music	0.31	0.55	-0.20	0.45	-0.19	-0.05	-0.01

Dog barking	0.35	0.41	0.03	-0.40	0.23	0.16	0.15
Bicycle	0.17	0.13	0.85	-0.09	-0.03	-0.02	-0.12
Riding	-0.08	-0.02	0.62	0.52	0.18	0.17	0.03
Wind	0.50	-0.10	0.57	-0.01	0.07	-0.17	0.36
Machinery	-0.07	0.17	0.00	0.83	-0.11	0.08	0.07
Sheep bleating	0.43	0.13	0.06	-0.08	0.71	0.33	0.05
Motorbikes	-0.05	0.24	-0.14	0.19	-0.70	0.29	0.08
Duck quacking	0.22	0.03	-0.22	0.44	0.55	0.02	0.41
Road traffic	-0.07	-0.19	-0.03	0.04	-0.01	0.89	-0.08
Tractors working	0.14	0.09	0.10	0.07	-0.07	0.57	0.51
Leaves rustling	0.17	0.13	-0.07	0.03	0.04	-0.04	0.90

3.3 Soundscape evaluation

Figure 4 shows the soundscape evaluations in terms of expected soundscape, from Chinese and English, covering various aspects of evaluation including satisfaction (comfort–discomfort, quiet–noisy, pleasant–unpleasant, interesting–boring, like–dislike, calming–agitating), strength (gentle–harsh, hard–soft), fluctuation (sharp–flat, directional–everywhere, varied–simple, fast–slow, echoed–deadly, far–close, smooth–rough), and social aspect(meaningful–meaningless, social–unsocial) [16]. It can be seen that the evaluations of Chinese and English are generally similar. A notable difference occurs for varied—simple, relating to the fluctuation of rural soundscape. A possible reason is that the aural perception of 'varied' is more expected by English.

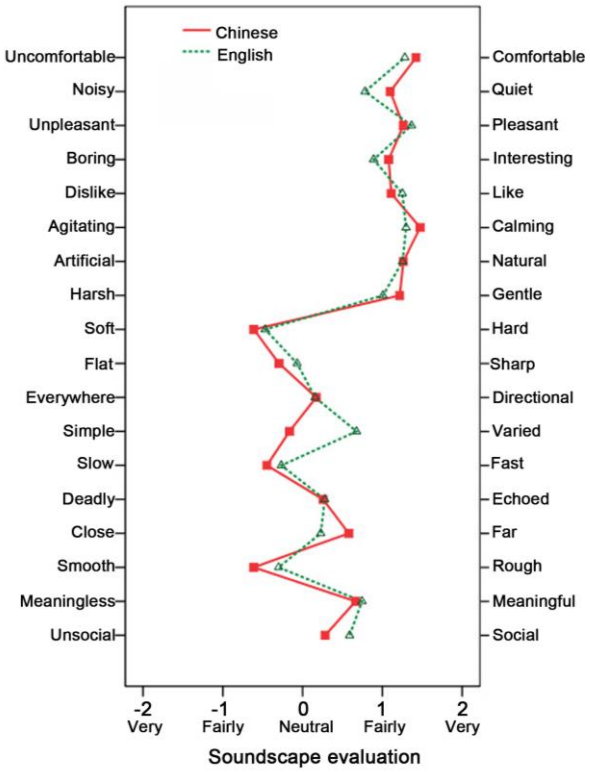

Figure 4: Comparison in soundscape between Chinese and English based on soundscape expectation

3.4 Soundscape characterisation

The rural soundscape expectation is further the analysed through factor analysis. The factor analysis of the Chinese tourists' soundscape expectation is shown in Table 3. It can be seen that factor 1 (17.20%) is related to the fluctuation of relax experience, including Artificial-Natural, Noisy-Quiet, Boring-Interesting. Unpleasant-Pleasant, Harsh-Gentle, Dislike-Like. Factor 2 (12.99%) is associated with dynamics, including Sharp-Flat, Slow-Fast, Hard-Soft, Rough-Smooth, Deadly-Echoed; factor 3 (12.03%) is concerned with environmental perception as Agitating-Calming, Uncomfortable-Comfortable; factor 4 (8.92%) is related to communication, including Unsocial-Social; and factor 5 (8.83%) tends to connect with spatiality, including Everywhere-Directional, Close-Far.

Table 3: Factor analysis of rural soundscape perception by Chinese

Indices	Factors				
	1 (17.20%)	2 (12.99%)	3 (12.03%)	4 (8.92%)	5 (8.83%)
Artificial—Natural	0.80	-0.02	0.04	-0.08	0.05
Noisy—Quiet	0.78	-0.13	0.04	-0.10	0.07
Unpleasant—Pleasant	0.72	-0.19	0.29	-0.09	0.21
Harsh—Gentle	0.59	-0.33	0.27	-0.02	-0.08
Dislike—Like	0.56	0.02	0.48	0.13	0.31
Boring—Interesting	0.49	-0.07	0.47	0.32	0.28
Sharp—Flat	-0.05	0.71	0.00	0.21	-0.17
Slow—Fast	-0.08	0.64	-0.16	-0.09	-0.01
Hard—Soft	-0.26	0.64	-0.10	0.11	0.10
Rough—Smooth	-0.32	0.58	-0.03	0.41	-0.13
Deadly—Echoed	0.32	0.55	-0.11	-0.42	0.27
Agitating—Calming	0.16	-0.24	0.80	-0.20	0.01
Uncomfortable—Comfortable	0.23	-0.13	0.80	-0.13	0.10
Unsocial—Social	0.04	-0.02	-0.17	0.78	0.04
Simple—Varied	-0.14	0.31	-0.03	0.58	-0.11
Meaningless—Meaningful	0.25	0.02	0.21	0.16	0.74
Everywhere—Directional	0.07	-0.15	-0.34	-0.08	0.58
Close—Far	-0.01	0.03	0.18	-0.14	0.58

To examine the difference between Chinese and English tourists' soundscape expectation, the results of factor analysis of English are presented in Table 4. It can be seen that there are some differences in the order and significance of the factors. Factor 1 (15.33%) is related to the aural perception of sound quality, including Hard-Soft, Sharp-Flat, Rough-Smooth, Harsh-Gentle. Moreover, factor 3 (13.69%) , including Boring-Interesting, Unsocial-Social, Meaningless-Meaningful, is more associated with emotional response rather than ecology consciousness as Agitating-Calming, Uncomfortable-Comfortable which can be seen from the Chinese results.

Table 4: Factor analysis of rural soundscape perception by English

Indices	Factors				
	1 (15.33%)	2 (14.31%)	3 (13.69%)	4 (9.42%)	5 (7.10%)
Hard—Soft	0.76	-0.26	0.08	0.07	0.07
Sharp—Flat	0.75	0.29	0.00	0.13	0.07
Rough—Smooth	0.73	-0.23	-0.14	0.17	-0.20
Harsh—Gentle	-0.55	0.37	0.12	0.35	-0.19

Noisy—Quiet	0.12	0.68	0.09	0.06	-0.09
Uncomfortable—Comfortable	-0.22	0.63	0.14	0.36	0.19
Artificial—Natural	-0.30	0.61	0.18	0.11	-0.17
Simple—Varied	0.08	-0.60	0.45	0.16	-0.08
Unpleasant—Pleasant	-0.33	0.57	0.46	-0.03	-0.12
Boring—Interesting	-0.05	0.03	0.80	0.07	-0.15
Unsocial—Social	0.10	0.01	0.75	-0.13	0.10
Meaningless—Meaningful	-0.06	0.16	0.66	0.23	0.03
Dislike—Like	-0.37	0.29	0.47	0.26	0.02
Everywhere—Directional	0.16	-0.11	0.00	0.69	0.00
Deadly—Echoed	0.18	0.17	0.17	0.60	0.16
Agitating—Calming	-0.34	0.38	0.05	0.56	-0.07
Close—Far	-0.24	-0.04	-0.18	0.23	0.72
Slow—Fast	0.39	-0.11	0.15	-0.11	0.72

4. Conclusions

Through this questionnaire study on how tourists evaluate rural soundscape, the sound preference and soundscape expectation have been explored, considering the difference between Chinese and English rural tourists. The results of this study reveal that:

（1）Chinese tourists showed relatively more favourably to natural and melodic sounds. Moreover, the most unpopular sounds are industrial sounds for Chinese (up to 90% evaluations were “dislike” and “really dislike”), while those for English are traffic sounds (more than 65% interviewees evaluated “dislike” and “really dislike”).

（2）The dominant sound sources for Chinese tourists’ main attentions are livestock sounds and natural sounds, whereas the experience in environment with nature and activities is the major concern for English tourists.

（3）The soundscape expectations of Chinese and English are generally similar, although a notable difference occurs for varied—simple, relating to the fluctuation of rural soundscape.

（4）The fluctuation of relax experience is the most effective factor for Chinese rural soundscape expectation, compared with the aural perception of English, whose expectation is more associated with emotional response rather than ecology consciousness as Chinese.

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