Tourists' perception of agricultural cultural experience at Wuyistar Chinese tea garden: an empirical analysis based on 217 questionnaires

Jiaying Fang[1], *Yile* Chen[2*], and *Lei* Zhang[2,3]

[1]School of Humanities, Universiti Sains Malaysia, Jalan Universiti, Gelugor, George Town 11700, Pulau Pinang, Malaysia
[2]Faculty of Humanities and Arts, Macau University of Science and Technology, Avenida Wai Long, Taipa, Macau, 999078, China
[3]School of Civil Engineering and Architecture, Wuyi University, No. 358 Baihua Road, Wuyishan 354300, China

Abstract: This study focuses on Wuyistar Chinese Tea Garden to explore tourists' cognition, recognition, and behavioral intentions toward tea garden cultural elements, aiming to provide insights for optimizing cultural experiences in agricultural tourism settings. On-site surveys and contactless questionnaire surveys were conducted, with 217 valid samples collected. The research targeted tourists visiting the tea garden, investigating their demographic characteristics, ability to identify cultural elements (e.g., traditional tea-making tools, cultural allusions), and related behavioral tendencies. The core customer group comprises middle-aged and elderly tourists (46–60 years old), accounting for 41.5% of respondents. This group demonstrated significantly higher recognition of traditional tea-making tools compared to younger visitors. However, first-time visitors showed low understanding of cultural allusions, with a mean score of 2.9±1.1. A notable gap was identified: tourists performed well in recognizing specific tea-making tools but struggled with broader cultural concepts. The findings highlight the need to enhance tourists' comprehension of tea garden cultural connotations beyond tangible elements. Strategies such as storytelling and reward mechanisms are proposed to bridge the cognitive gap, contributing to more effective design of cultural experiences in agricultural tourism tea gardens.

1 Introduction

Wuyishan, as a UNESCO World Cultural and Natural Heritage site, serves as a pivotal carrier for the inheritance of tea culture through its tea garden cultural experiences [1-3]. The tea garden is the core production space for rock tea (such as Dahongpao, Rougui and other Wuyi rock tea varieties) [4], and directly undertakes agricultural production activities such as tea planting, maintenance, picking and primary processing [5]. However, current tea gardens commonly face the issue of "prioritizing landscape display over cultural

* Corresponding author: chenyile@must.edu.mo

interpretation", leading to tourists' insufficient perception of profound cultural connotations. By employing empirical research, this study aims to analyze the key dimensions and disparities in tourists' cultural perception, providing a scientific foundation for optimizing cultural presentation in tea gardens.

As one of the few dual UNESCO heritage sites in China, Wuyishan's tea gardens embody the symbiosis of human history and natural ecology, particularly the millennia-old tradition of rock tea (Yancha) cultivation and processing [6]. The "landscape-over-interpretation" paradigm prevalent in many heritage sites worldwide often reduces cultural experiences to superficial aesthetics, risking the erosion of intangible cultural values (e.g., tea-making techniques, tea ceremony philosophy). This study addresses this gap by systematically decoding tourists' cognitive processes, thereby contributing to global debates on sustainable heritage management in the era of mass tourism. On the other side, existing literature on agricultural heritage tourism tends to focus on economic impacts or spatial planning while neglecting the psychological mechanisms of cultural perception. This research looks at how tourists' hands-on experiences with physical items (like traditional tea tools and garden landscapes) affect their understanding of deeper cultural meanings (such as tea-related sayings and historical references) by using embodied cognition theory, which suggests that our physical experiences shape how we think.

2 Materials and Methods

2.1 Study Area: Wuyistar Chinese Tea Garden

The Wuyistar Chinese Tea Garden is situated on the northwest side of No. 368 Baihua Road, Wuyishan City, Nanping City, Fujian Province, China (Fig.1). The project site links to the city's primary thoroughfare, Baihua Road, in the southeast, and to Huangbo Avenue, the proposed main road of the city, in the northwest. The direct distance to the airport is around one kilometer. It is encircled by tourist tea highlands and spans approximately 350 acres.

Fig. 1. Agricultural landscape presented by tea mountains.

2.2 Methods

This study adopts a mixed research method, with paper questionnaires as the core tool, combined with field observations and in-depth interviews, to systematically collect tourists' cultural perception data on Wuyistar Chinese Tea Garden (Fig.2) [7-9]. Considering the high proportion of middle-aged and elderly tourists in the park (23.5% of the group is over 60 years old), paper questionnaires avoid obstacles to the use of digital technology and ensure the accessibility and authenticity of data collection.

Fig. 2. Overall scope of the survey (3D model illustration).

The survey site is located at the exit of the garden, which is the end of the tourist route. It can minimize interference during the tour and ensure the completeness of the questionnaire. This is achieved by posting a QR code containing a questionnaire link at the entrance of the scenic spot (such as next to the ticket office, the bulletin board of the tourist service center, and other public areas), without any offline meetings, physical contact or on-site intervention. Visitors can scan the code to enter the online questionnaire system and complete it independently on a voluntary basis, without face-to-face contact or direct communication with the investigators. The survey period covers the 2023 spring tea season (March-May) and the autumn tourist peak season (October-December), lasting a total of 6 months, to capture the differences in experience of tourists in different seasons. Due to the long duration, face-to-face collection will cause many uncertainties for this research site. This study uses a non-contact questionnaire survey method. All data are collected through online platforms (such as powered by www.wjx.cn, email, etc.). There will be a pop-up window on the first page of the questionnaire, informing you that you can only enter the questionnaire after agreeing to fill it out. There is no physical contact or intervention in the normal life of the subjects in the process. The questionnaire content only contains non-sensitive information such as general social cognition and behavioral tendencies and does not involve personal privacy (such as ID number, specific address, etc.), psychological trauma, illegal and irregular behavior, and other content that may cause risks. All respondent information is recorded anonymously. After data collection, it will be de-identified (such as deleting IP addresses, device information, etc.) and will only be used for statistical analysis. The research results are only presented in an aggregated form and will not disclose any individual information. For some elderly respondents who are not familiar with online operations, investigators assisted in completing the questionnaire over the phone, and only anonymized information (such as age group, visit number) was recorded during the process, and private data such as ID number and home address were not collected. The overall study did not involve the participation of minors.

3 Results

The 217 respondents in this survey showed a significant dominance of middle-aged and elderly customers, with people aged 46 and above accounting for 69.1%, of which 41.5%

were aged 46-60 and 27.6% were aged 60 and above (Table 1 and Fig.3). This structure shows that tea garden tourists are mainly seniors, whose farming experience and life experience make their average recognition ability of traditional tea-making tools reach 4.7±0.6, significantly higher than the 3.0±1.3 of the 18–30-year-old youth group ($p<0.001$). However, due to the lack of cultural background, the first-time visitors' understanding of allusions such as "tea and the world" is only 2.9±1.1, significantly lower than the 4.3±0.8 of repeat visitors ($p<0.001$), highlighting the lack of background knowledge transfer in the first experience design.

Table 1. Characteristics of the Respondents (n=217).

Category	Option	Number	Percentage
Age	>18	12	5.50%
	18-30	30	13.80%
	31-45	25	11.50%
	46-60	90	41.50%
	>60	60	27.60%
Visit frequency	1	90	41.50%
	2~3	100	46.10%
	>4	27	12.40%

Source: Author's statistics

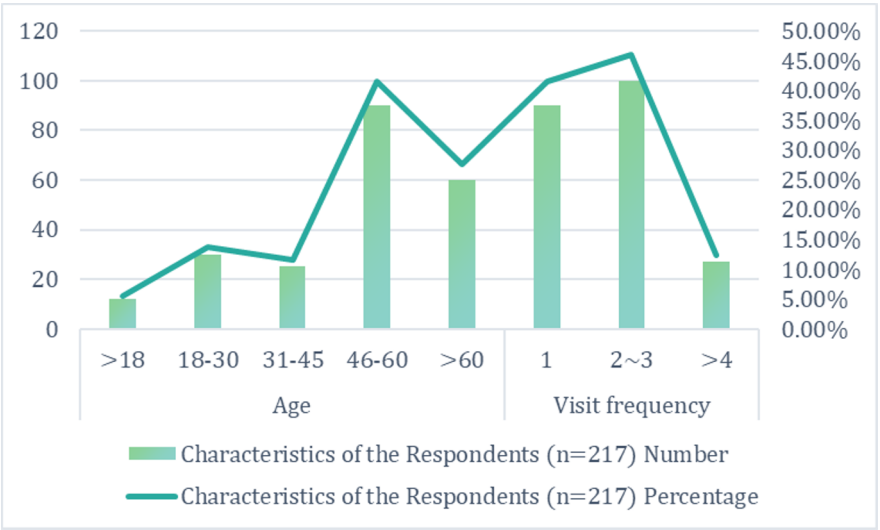

Fig. 3. Characteristics of the Respondents.

In terms of cultural identity, tourists gave the highest score to the immersion of landscape design (4.3±0.7, high recognition rate 82%), and architectural style and vegetation configuration became the main driving factors, with $\beta=0.38$ and $\beta=0.34$, respectively (Table 2).

Table 2. Analysis of Cultural Cognition Level.

Item	Overall Mean ± SD	High Cognition Rate (4-5 Points)	Key Difference Analysis (p-value)
Q3 Traditional Tool Recognition Ability	4.0 ± 1.1	58%	Age: 46-60 Group (4.7 ± 0.6) > 18-30 Group (3.0 ± 1.3) ($p < 0.001$)
Q4 Understanding of Cultural Allusions	3.5 ± 1.2	42%	Visit Frequency: Repeat Visitors (4.3 ± 0.8) > First-time Visitors (2.9 ± 1.1) ($p < 0.001$)

Source: Author's statistics

The tea art display was highly interactive (β=0.45***) and received a high recognition rate of 88%, but the mean value of cultural symbols stimulating interest was only 3.7±1.0, and the low appeal of abstract elements such as poetry (β=0.29*) exposed the lack of deep cultural interpretation (Table 3).

Table 3. Cultural Identity Assessment (5-Point Scale).

Item	Overall Mean ± SD	High Identity Rate (4-5 Points)	Key Driving Factors (β-value)
Q5 Landscape Immersion	4.3±0.7	82%	Architectural Style (β= 0.38**)
Q6 Value of Tea Art Display	4.6±0.5	88%	Interactivity (β= 0.45***)
Q7 Symbols Stimulating Interest	3.7±1.0	57%	Poetry (β= 0.29*)
Q8 Integration of Ecology and Humanities	4.2±0.6	78%	Vegetation Arrangement (β= 0.34**)
*Note: $p < 0.05$, *$p < 0.01$, *$p < 0.001$			

Source: Author's statistics

In terms of behavioral intention, more than 70% of tourists (30% very willing + 43.8% relatively willing) are willing to recommend tea gardens, and "may participate" and "very much look forward to" account for 57.6% of the willingness to participate in research and study, but there is a significant differentiation between young and middle-aged groups (Table 4). The former prefers short video creation activities (68%), while the latter pay more attention to tea therapy health lectures (78%).

Table 4. Behavioral Intention Distribution.

Item	Option	Number of People	Percentage
Recommendation Willingness	Very Willing	65	30.00%
	Relatively Willing	95	43.80%
	Neutral	45	20.70%
	Not Very Willing	10	4.60%
	Very Unwilling	2	0.90%
Study Tour Participation	Very Expectant	55	25.30%
	May Participate	70	32.30%
	Uncertain	60	27.60%
	Unlikely	25	11.50%
	Absolutely Not Participating	7	3.20%

Source: Author's statistics

Table 5. High-Frequency Words in Suggestions for Improvement.

High-Frequency Word	Frequency	Typical Feedback Example
Tour Guide System Optimization	28	"Hope to add multilingual audio tour devices"
Interactive Experience	25	"Suggest setting up a DIY tea-making experience area"
Resting Facilities	18	"Need to add more shaded seating and water stations"
Barrier-Free Access	15	"Some ramps are too steep, making it inconvenient for the elderly to walk"
In-depth Cultural Interpretation	12	"Allusion explanations are too brief and lack depth"

Source: Author's statistics

In the open feedback, many people mentioned wanting to improve the guide system (28 times), add more interactive experiences (25 times), and enhance rest areas and accessible paths (18 times and 15 times, respectively), showing that the current park can do better in providing services for older visitors, creating engaging experiences, and sharing information effectively. The overall data reveals the cognitive gap of "strong concrete perception and weak abstract understanding" in the tea garden cultural experience, as well as the design challenges brought about by the differences in generational needs (Table 5). It is necessary to bridge the experience gap and enhance the depth and inclusiveness of cultural interpretation through multimodal narrative, aging-friendly transformation, and precise activity design.

4 Discussion

In view of the concrete and abstract cognitive gaps shown by tourists during the tea garden cultural experience, "narrative layered design" can be tried as a solution strategy. This strategy is implemented in stages: in the initial stage, the "scan code to listen to stories" function is used to provide tourists with concise and captivating cultural stories through mobile phones or on-site scanning technology as a preliminary guide for their contact with tea culture. Subsequently, virtual reality (VR) situational dramas are introduced to reproduce historical scenes or tea ceremony ceremonies with the help of immersive technology, allowing tourists to immerse themselves in the atmosphere of tea culture. In the final stage, seminars or workshops on the philosophy of the tea ceremony are organized, and experts or senior practitioners in the field of tea culture are invited to conduct in-depth explanations and interactive exchanges, aiming to guide tourists to think deeply about the philosophical implications and humanistic spirit behind tea culture, thereby filling their cognitive gaps.

To effectively stimulate tourists' enthusiasm for participating in tea culture and their awareness of inheritance, this study recommends the implementation of a "cultural points system". For example, this system gives tourists corresponding cultural points based on the frequency and quality of their participation in research and study activities and completion of cultural tasks (including watching VR situational dramas, participating in tea ceremony experiences, answering cultural questionnaires, etc.). These points can be used to exchange special teas or souvenirs or to participate in higher-level cultural experience activities as a recognition and incentive for tourists' cultural contributions.

This study advocates the use of differentiated operation strategies for the two core tourist groups of young people and middle-aged and elderly people. For young tourists, a “national trend tea travel package” can be launched, which cleverly integrates fashion elements such as Hanfu experiences and short video creation to create tea travel products with both fashion and cultural heritage, aiming to satisfy young tourists' desire to explore new things and guide them to find identity and pride under the influence of traditional culture. For senior tourists, a “tea therapy and health care route” can be designed, which deeply integrates the health care concept of tea culture with local natural scenery and provides a slow-paced tea therapy experience, health care lectures, tea and food tasting, and other activities, aiming to enable senior tourists to pay attention to their health while enjoying tea culture and achieve a harmonious unity of body and mind.

Fig. 4. Agricultural tea garden sightseeing area design.

In response to the lack of barrier-free facilities and insufficient rest areas reported by elderly tourists, this study recommends a comprehensive assessment and upgrade of existing facilities. Specific measures include adding barrier-free facilities such as elevators and ramps to ensure that elderly tourists can easily reach various parts of the park and setting up sufficient rest areas at key locations, equipped with comfortable seats and drinking water facilities to meet the rest needs of elderly tourists. In addition, staff training should be strengthened to enhance their service awareness and professional ability for elderly tourists, ensuring that every elderly tourist can enjoy a meticulous, thoughtful, and caring service experience, thereby enhancing their satisfaction and sense of belonging to the tea garden cultural experience.

5 Conclusions

Comprehensive data analysis indicates that the cultural experience of Wuyistar Chinese Tea Garden presents the characteristics of “embodied cognition dominance, generational demand differentiation, and weak abstract interpretation”. The middle-aged and elderly

customers have a strong understanding of traditional tea-making tools because of their farming background (Q3 mean 4.7±0.6), but they find it hard to grasp cultural references due to the complicated way they are explained (Q4 mean 3.5±1.2), which is especially true for first-time visitors (2.9±1.1). The landscape design creates a strong feeling of being part of the environment through its building style and plant arrangement, and the tea art display is the most popular feature because it is interactive, but the lack of interest in abstract symbols like stone-carved poems shows that the cultural story is not very deep. Behavioral intentions show that more than 70% of tourists are willing to recommend the park, but there is a generational gap in the preference for study and research participation—young people are particularly interested in short video creation (68%), while middle-aged and elderly people are more concerned about health-related activities (78%). Suggestions for improvement focus on optimizing the guide system, adding interactive experiences, and improving facilities suitable for the elderly, reflecting tourists' expectations for "perceptible, participatory, and adaptable" experiences. The study shows that tea gardens should create a three-part plan that includes "hands-on experiences + detailed stories + adjustments for different age groups", which helps bridge understanding gaps and strengthen the cultural identity of various visitors by designing engaging sensory experiences, simplifying cultural references, and offering unique activities, thus providing a way to improve the ongoing preservation of agricultural heritage.

6 Funding

This research was funded by the Nanping Natural Science Joint Funding Project "Study on Mechanical Properties of Prefabricated Recycled Micro powder Concrete Pavement" (grant number: N2023J008); the Fujian Provincial Education and Research Project for Young and Middle-Aged Teachers (Science and Technology) "Study on me-chanical properties of restructured bamboo-concrete composite beams" (grant number: JAT200656); the Fujian pro-vincial first-class undergraduate course "Architectural Surveying" (grant number: SJYLKC202111); and the Minis-try of Education Industry–University Cooperation and Collaborative Education project "Construction and Practice of First-Class Courses in Information-Based Surveying of Architectural Heritage Based on PIE Software Support" (grant number: 220902313272006). Lei Zhang (zhanglei@wuyiu.edu.cn) is the leader of the above projects. Other people were also involved in the research. The funders had no role in the study conceptualization, data curation, formal analysis, methodology, software, decision to publish, or preparation of the manuscript. This study received no additional external funding.

References

1. W.B. You, D.J. He, W. Hong, C. Liu, L.Y. Wu, Z.R. Ji, S.H. Xiao, Local people's perceptions of participating in conservation in a heritage site: A case study of the Wuyishan Scenery District cultural and natural heritage site in Southeastern China. Natural Resources Forum **38**, 4, 296 - 307 (2014). https://doi.org/10.1111/1477-8947.12057
2. Wuyishan National Park: Cultivating Sustainability in China's Tea Sector, https://www.fertilizerdaily.com/20250418-fridays-insider-fertilizer-affordability-its-all-about-the-tariffs/, (date of access: 21.04.2025)
3. Wuyishan National Park strikes balance between ecological conservation, local development, https://lapost.us/?p=54985, (date of access: 21.04.2025)

4. C. Liu, The Majestic Wuyi Mountains and the Rich, Fragrant Charm of Its Teas (2025). https://www.redrockteahouse.com/blogs/grandmas-tea-tales/the-majestic-wuyi-mountains-and-the-rich-fragrant-charm-of-its-teas?srsltid=AfmBOoqpaa4T4iOA_cZAO6jga1YlXBM0rSMFJmcXpWHcz5P6ysMBL-ZT (date of access: 21.04.2025)
5. R. Wang, C. Jiang, Y. Wang, et.al., Examining Ecology–Agriculture–Economy Nexus Shifts to Propose Win–Win–Win Pathways for Sustainable Development in Mountainous Areas: Insights From the Greenest City in China. Land Degradation & Development **36(5),** 1750-1768 (2025)
6. F. Weng, Y. Wang, X. Li, Z. Ding, Construction of landscape ecological tea garden based on homeostasis theory: A case study of Wuyishan National Forest Park. In Proceedings of the 8th International Conference on Architectural, Civil and Hydraulic Engineering (ICACHE 2022), Guangzhou, China, 12–14 August (2022). https://doi.org/10.1201/9781003344209-65
7. A. Adams, A. L.. Cox, Questionnaires, in-depth interviews and focus groups. In: Cairns, Paul and Cox, Anna L. eds. Research Methods for Human Computer Interaction. Cambridge, UK: Cambridge University Press, pp. 17–34. (2008)
8. M. Zohrabi, Mixed method research: Instruments, validity, reliability and reporting findings. Theory and practice in language studies, **3(2),** 254-262 (2013). http://dx.doi.org/10.4304/tpls.3.2.254-262
9. L.A. Curry, I.M. Nembhard, E.H. Bradley, Qualitative and mixed methods provide unique contributions to outcomes research. Circulation **119(10),** 1442-1452 (2009). https://doi.org/10.1161/CIRCULATIONAHA.107.742775