scientific reports

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Comparative analysis of aesthetic preferences in Chinese freehand paintings among Chinese retired elders beyond gender

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Using the nominal group technique (NGT) and a structured questionnaire, this study investigates whether gender differences influence preferences for various attributes of Chinese freehand painting, a traditional Chinese painting technique, among retired Chinese individuals. First, the NGT was used to identify 17 attributes desired by the population. These attributes were then used to formulate the questionnaire, which allowed for the identification and prioritization of key characteristics through group discussion. The questionnaire was completed by 116 male and 117 female participants, enabling a comparative analysis of preferences between genders. The findings indicate that gender does not significantly affect preferences for most attributes of Chinese freehand painting. Specific characteristics, such as "the colour should not be too bright;" "relaxed, simple, and flexible brushwork;" and "natural scenery," showed no significant gender-based differences, suggesting a shared appreciation among male and female participants. Although minor variations were observed for certain attributes, these differences were not substantial enough to suggest that gender is a primary factor in shaping aesthetic preferences. This study concludes that retirees' preferences regarding Chinese freehand painting are not significantly influenced by gender. This study provides new insights into the art preferences of retired individuals, supporting the development of marketing strategies and art education programmes for older populations. By exploring retirees' perceptions of Chinese freehand painting, this study contributes to the promotion and cultural inheritance of this traditional art form. The findings highlight consistent patterns of appreciation across genders rather than significant gender-based differences.

Keywords Gender differences, Retired elderly, Chinese freehand brushwork, Art preferences

Human interest in art has grown alongside the advancement of civilization and the diversification of lifestyles[1]. As an essential component of traditional Chinese art, Chinese freehand painting has a rich creative history and cultural significance. Through this art form, artists express their thoughts, emotions, and aesthetic preferences, which also defines the creative essence of freehand painting[2]. Recent research has focused on describing variations in artistic preferences among different populations. Some studies suggest that gender has minimal influence on individual artistic tendencies[3–7] have examined differences in children's enjoyment of art, revealing gender-based variations in appreciation across different art genres. However, comprehensive research on the impact of gender differences on the preferences of retired elderly individuals with respect to the characteristics of Chinese freehand painting remains limited. The primary aim of this study is to explore whether gender differences among retired Chinese elderly individuals influence their preferences regarding Chinese freehand painting.

Analysing gender differences among retirees offers valuable insights for art educators. It enables the development of tailored educational approaches that address the cultural needs of elderly individuals across genders, thereby promoting the popularization and development of traditional Chinese art. This study contributes to the preservation and evolution of traditional Chinese art by emphasizing its role in fostering cultural resonance across genders. The findings can guide future art education for older individuals, enhancing their engagement with cultural heritage.

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Chinese freehand painting, recognized as a distinctive and significant form within the history of Chinese art, has evolved over millennia to play a central role in Chinese culture, and its unique appeal and importance have been shown on the global stage[2]. The concept of "conveying the spirit before the brush" is a defining characteristic of Chinese freehand painting, in which artists aim to capture the essence of their subject through concise brushwork and ink. As noted by[8], sketching artistic concepts with minimal strokes reflects a pursuit of beauty that transcends physical limitations.

Personal creative taste, cultural knowledge, social status, education level, and personality traits may influence artistic preferences[9]. This study seeks to identify the preferences of Chinese retirees in terms of the attributes of Chinese freehand painting, which may provide insights into how individuals connect with traditional culture through art. It also explores how this connection fosters cultural identity and a sense of community[10,11].

Research has demonstrated that older individuals' participation in cultural and creative activities can enhance their mental health and overall quality of life[12]. Therefore, understanding the artistic preferences of retired older individuals is particularly important, as these preferences can effectively promote their engagement in cultural activities. Despite the significance of cultural consumption, limited scholarly attention has been devoted to investigating the preferences of retired older individuals for Chinese freehand painting, as well as the factors that shape these preferences.

Owing to gender considerations, whether retired older adults' creative preferences are influenced by gender has not been thoroughly studied. Previous research has demonstrated that gender significantly affects aesthetic preferences in areas ranging from art to everyday objects. For example, Chamorro-Premuzic et al.[13] reported that personality traits, such as openness and neuroticism, predict artistic preferences on the basis of the emotional valence and perceived complexity of paintings. These traits often vary by gender, with women tending to prefer emotionally positive art and men gravitating towards complex or abstract works[4,14]. Similarly, Hur et al.[15] identified "feminine styles" as a key factor in everyday clothing preferences, highlighting how cultural norms and gender roles shape aesthetic choices even in mundane contexts.

The root cause of gender differences in aesthetic preferences can be attributed to a combination of biological, psychological, and sociocultural factors. Biological differences, such as hormonal influences, may affect emotional responses to art[16]. Psychological factors, including personality traits, further contribute to these differences, as certain traits (e.g., openness) are more pronounced in one gender than in the other[13]. Sociocultural factors, such as socialization processes and cultural norms, also play a significant role. From an early age, individuals are socialized into gender roles that influence their aesthetic tastes, with women often encouraged to engage with art forms emphasizing beauty and emotional expression, whereas men are steered towards art conveying power or technical skills[17,18].

By understanding the effect of gender on creative preferences, the cultural variations among retired older adults of different genders can be better recognized[4,7,19]. Hence, examining the impact of gender disparities on the preferences of retired elderly Chinese individuals towards Chinese freehand paintings can yield valuable insights into the combined influence of gender and age on art choices. Moreover, it can facilitate a deeper comprehension of the cultural requirements and artistic preferences of elderly individuals, helping increase their cultural engagement. These studies inform the present work by providing a theoretical framework to understand the mechanisms behind gender-based differences in artistic preferences. By integrating these perspectives, our study explores whether similar gender-based patterns exist in the preferences of retired Chinese elders for traditional Chinese freehand paintings. This approach allows us to examine the interplay among gender, cultural heritage, and age-related factors in shaping aesthetic preferences, offering valuable insights for enhancing cultural engagement and art education for elderly individuals.

Preferences for art forms are largely influenced by cultural background, educational level, and socioeconomic status[17,20–22]. Additionally, cultural identity and aesthetic education play crucial roles in shaping artistic preferences and choices. Individuals familiar with Chinese traditional culture and history are often better equipped to appreciate the profound connotations and artistic merits of Chinese freehand painting[2]. When appreciating Chinese freehand painting, it is essential not only to observe the visual appearance of the artwork but also to understand its cultural background and historical significance[23]. According to recent studies by[10,11], appreciation for Chinese freehand painting appears to be influenced primarily by shared cultural characteristics rather than individual gender identities.

With the advancement of globalization and cultural exchange, many non-Chinese individuals have begun to engage with Chinese freehand painting, leading to increased research on this art form. Studies indicate that non-Chinese audiences may struggle to fully understand Chinese freehand paintings because of cultural unfamiliarity. However, this does not prevent them from developing an appreciation for this art form[2].

While there is extensive research on Chinese freehand painting, studies examining gender differences in preferences for this art form are scarce. Additionally, there is limited in-depth discussion on how different genders perceive Chinese freehand painting or the sociocultural reasons underlying these perceptions. Further research is needed to address these gaps.

The impact of gender differences on art preferences has been a subject of significant interest. Theoretical and empirical evidence suggests that there are notable differences between the types of art preferred by men and women. According to[24], studies have shown that gender differences can significantly influence individual preferences. Research has also demonstrated that aesthetic preferences are shaped by various factors, including personality traits, cultural norms, and gender roles[25]. For example, studies have shown that women tend to prefer abstract art more than men do, highlighting the clear influence of gender differences on artistic taste[7]. Feist and Brady, Baudin and Hiller[26,27] reported that men and women tend to appreciate art differently: women often prefer artwork with muted colours and harmonious themes, whereas men are more drawn to art featuring dramatic conflict and dynamic scenes. Furthermore, Buchmann et al.[28] argue that women are more likely to seek emotional resonance and personal introspection through art, whereas men tend to focus on the technical

details and historical context of the artwork. Similarly, Szostak[4] noted that women are more inclined to express emotions through art.

However, other studies have shown that gender does not significantly influence artistic preferences, such as[5]. Similarly, a study by[25] investigated the effect of gender differences on the appreciation of various art forms and reported no significant variations between men and women. Artistic preferences can be influenced by numerous factors, including personality traits, ethnic background, and prior artistic experience, rather than being limited to gender differences[24,29]. Additionally, Ercegovac et al.[29] reported that societal changes can shape aesthetic preferences, regardless of gender. While some studies highlight gender differences in art preferences, particularly within specific age groups or art genres, many suggest that gender does not play a significant role in how art is appreciated.

Research has not provided strong evidence to support significant gender differences in art preferences. It may be inferred that gender is not the primary factor influencing individuals' preferences for Chinese freehand painting. Therefore, further research is needed to determine whether gender affects preferences for this art form.

These findings are important because understanding gender differences in artistic preferences can provide valuable insights into the art choices of different groups. This understanding can help art educators, creators, and cultural policy-makers better address the needs of diverse audiences. Additionally, these insights lay an important foundation for promoting gender equality and fostering a broader appreciation of the arts, ultimately contributing to a more inclusive arts environment.

With the ageing of society, an increasing number of studies have focused on the cultural needs and artistic preferences of older adults. The artistic tastes of older individuals are influenced by their visual preferences, life experiences, cultural heritage, and psychological needs[30]. Greater participation in artistic activities can not only enhance retirees' sense of fulfilment but also provide them with a means to express their inner thoughts and emotions[31].

Older adults tend to exhibit a distinct preference for traditional art forms. As suggested by[32], retired individuals often show a strong inclination towards traditional art, such as Chinese freehand painting and classical music. These art forms extend beyond visual and auditory elements, evoking cultural identity and providing emotional comfort and psychological satisfaction[33].

Although some studies have explored older individuals' preferences for traditional art and the reasons behind these preferences, there is limited research on whether gender influences the preferences of retired Chinese older adults regarding the attributes of Chinese freehand painting, particularly in a culturally rich context such as China. Furthermore, there has been no comprehensive investigation into how gender and cultural heritage collectively shape individual artistic preferences. Such research is essential to gain insights into and better address retirees' spiritual, psychological and cultural needs.

The aim of this study is to examine whether gender differences influence the preferences of retired Chinese older adults for the attributes of Chinese freehand painting. By combining the nominal group technique (NGT) and a questionnaire survey, this research aims to provide a comprehensive understanding of how gender shapes artistic preferences within a specific cultural context. The NGT was selected for its ability to address the complexity and subjectivity of artistic taste, facilitating in-depth discussion and consensus-building among participants[34]. This study has significant implications for art educators, creators, and cultural policy-makers in understanding and meeting the artistic needs of older adults, thereby promoting their cultural participation and well-being.

Methods

Research design

To achieve the research objectives, this study employed a mixed-methods approach, combining the nominal group technique (NGT) and a structured questionnaire survey. The mixed-methods design was selected to integrate the strengths of both qualitative and quantitative techniques, enabling a thorough investigation of gender-related differences in artistic preferences among retired Chinese older adults. The study was conducted in two phases. In the first phase, the NGT was utilized to identify and prioritize the key attributes of Chinese freehand painting preferred by retired older adults. In the second phase, a questionnaire survey was developed on the basis of the NGT findings and administered to 233 participants to collect detailed data on their preferences. This approach facilitated a comprehensive analysis of gender-related differences in artistic preferences within this population. This study employed the nominal group technique (NGT) to identify the key attributes preferred by retired elderly men towards Chinese freehand paintings. Subsequent discussions led to the inclusion of additional preference categories. The study aims to determine whether there are notable differences in preferences between genders and to evaluate the alignment of male preferences with the outcomes derived from the NGT.

The nominal group technique (NGT) is a structured and participatory group method designed to ensure equal input from all participants, making it particularly suitable for identifying the key attributes of Chinese freehand painting. In this method, participants first generate ideas individually and then engage in collective discussions to prioritize them. The NGT is highly effective in capturing diverse perspectives and revealing subtle, gender-based differences in preferences that may not emerge through more traditional methods. Previous studies have successfully utilized the NGT to uncover preferences across various domains, demonstrating its effectiveness in preference-related decision-making[35–38]. Following the NGT, a questionnaire survey was employed to quantify aesthetic preferences and examine gender differences. The survey facilitated cross-group comparisons, providing a statistical foundation to validate and generalize the findings. By collecting data from a large sample, the survey enabled the identification of gender-based trends in art appreciation across different demographic groups, enhancing the reliability and representativeness of the results. Similar approaches have been successfully applied in studies of art preferences[39–46] highlighting the method's utility in cross-cultural and gender-related research.

The study received ethical approval from the Human Research Ethics Committee of Universiti Putra Malaysia (JKEUPM) under project identification number JKEUPM-2023-1342. All the procedures were conducted in accordance with relevant guidelines and regulations, including compliance with the Declaration of Helsinki. Informed consent was obtained from all the participants prior to their voluntary participation in the study.

Participants

This study employed snowball sampling to select participants, following the purposive methodology described by[47]. Snowball sampling was utilized to address the challenges of reaching potential participants and expanding the sample size through referrals and network connections[48]. After each successful interview, the participants were asked to recommend friends or acquaintances who might be interested in participating, thereby generating a pool of potential candidates for subsequent rounds. As noted by[49], individuals referred through this method are often more open and willing to participate, as they are approached on the basis of the recommendation of someone they know and trust. According to[50], a sample size of eight participants is considered appropriate for NGT-based investigations. The study sample included eight male participants, aged between 55 and 75 years, all of whom had at least five years of experience in Chinese painting. This criterion was established to ensure that participants in the NGT discussions possessed sufficient knowledge or expertise in the subject matter[51].

A total of 239 questionnaires were distributed, with 233 valid responses collected. The survey aimed to gather the preferences of 233 retired older adults, comprising 116 males and 117 females, regarding 17 attributes of Chinese freehand painting. A common rule of thumb suggests a minimum of 5-10 participants per question or variable. With 17 questions and assuming a minimum of 10 participants per question, the required sample size was 170 participants. Thus, the 233 responses obtained were sufficient to ensure the reliability of the statistical results. As highlighted by[52], a sample size ratio of 1:5 to 1:10 per item is recommended for exploratory factor analysis, further emphasizing the importance of an adequate sample size for reliable outcomes[52]. Males accounted for 49.79% of the sample, whereas females represented 50.21%. The age distribution revealed that the largest cohort consisted of individuals in the early retirement phase (55-64 years), comprising 39.91% of the sample. This was followed by the mid-retirement phase (65-74 years), at 35.62%, and the late retirement phase (75 years and above), at 24.46%. The study was titled "Preferences for Attributes of Chinese Freehand Painting" to minimize the influence of preexisting gender biases on the participants' responses. The participants were randomly selected from community centres and senior citizen activity groups to ensure the representativeness of the sample. All the participants completed an online informed consent form, confirming their voluntary agreement to participate in the study.

Data collection

The nominal group technique (NGT) was employed to conduct group discussions with a sample of eight retired older males. The primary objective of this phase was to identify the most significant attributes associated with preferences for Chinese freehand painting while also allowing for the inclusion of additional attributes during the discussions. The sessions were conducted under the supervision of experts to ensure that each participant's perspective was thoroughly considered.

The NGT process consists of five key steps. First, the participants were briefed on the study objectives, completed a demographic questionnaire, and provided informed consent. Next, the facilitator introduced the topic, established ground rules, and outlined session expectations. The participants then spent 10 minutes silently generating ideas about their preferred attributes of Chinese freehand painting, which they recorded on flip cards. The participants subsequently shared and clarified their ideas, resulting in an initial list of 11 attributes. Finally, group discussions refined these ideas and added six new attributes, culminating in a final list of 17 attributes.

Data saturation was achieved through the iterative process of the NGT. During the sessions, the participants engaged in multiple rounds of discussion and consensus-building to identify and prioritize the key attributes of Chinese freehand painting preferences. The process continued until no new attributes were proposed, indicating that data saturation had been reached. This approach ensured that a comprehensive range of perspectives was captured and that further discussion would not yield additional insights.

A questionnaire survey was developed on the basis of the attributes identified during the NGT phase. The survey included essential demographic questions and asked participants to rate their preferences for the 17 attributes of Chinese freehand painting using a 5-point Likert scale ranging from 1 (strongly dislike) to 5 (strongly like). To ensure broad participation, the survey was distributed electronically.

Data analysis

The collected data were analysed using SPSS statistical software version 29.0. Descriptive statistics were first applied to examine the participants' basic demographic characteristics. The study subsequently explored patterns in preferences for attributes of Chinese freehand painting among male and female participants. To identify any significant differences in preferences for these attributes between males and females, a Pearson correlation analysis was conducted using SPSS. While both Pearson correlations and independent t tests produce identical results when a dichotomous variable (e.g., gender) is compared with continuous variables, Pearson correlations were selected to align with the broader analytical framework of the study, which also incorporated other continuous variables. However, independent t tests could serve as an alternative approach for readers who find this method more intuitive.

Results

The nominal group technique (NGT)

Each participant was provided with a questionnaire and 15 flip cards and was instructed to independently record one idea per card. After a 10-minute writing period, the cards were collected and displayed. Although fewer

than 15 cards were typically collected, the recorded ideas demonstrated a focused inclination towards specific, often overlapping, categories of hand paintings. The attributes were documented and are illustrated in Fig. 1. Additional perspectives were incorporated with the explicit consent of the participants during the discussion.

As reported by the participants, Fig. 1 shows the distribution of preferred attributes in Chinese freehand paintings. The attribute "free and easy" was the most frequently mentioned, noted by 13.3% of the participants. The next most cited attributes, "feeling good" and "flexible writing skills," were reported by 8.9% of the respondents. Other attributes, such as "the picture is clean and free," "the artistic conception of the picture has a connotation," "bold and flexible with pen," and "simple," were also mentioned, with each accounting for 4.4% of the responses. The remaining attributes, including "interesting," "orderly ink colour levels," "fresh and beautiful," and "clear picture," were each cited by 2.2% of the participants

The researchers and participants conducted a thorough evaluation and clarification process for each attribute in the chart. Participant feedback was monitored, and revisions were made as necessary. Certain attributes of Chinese freehand painting were excluded with the participants' approval. The filtered and organized attributes were subsequently grouped and assigned thematic labels, as shown in Table1.

Next, a focused group discussion was held, during which the participants were encouraged to elaborate on ambiguous attribute concepts. The discussion aimed to remain impartial, fostering a nonevaluative environment where all contributions were considered and categorized without dismissal. During the deliberations, several new attribute concepts emerged, leading to a consensus on the need to include six additional traits in the subsequent voting process. The researchers recorded these proposed attributes in an Excel file, a process that took approximately 15-30 minutes. The newly identified attributes are presented in Table 2.

Results from the questionnaires

The 17 key attributes were identified from the outcomes of voting and deliberation, as shown in Table 3. These attributes were subsequently incorporated into a survey instrument, in which the participants were asked to rate each attribute of Chinese freehand painting using a 5-point Likert scale ranging from 1 (strongly dislike) to 5 (strongly like).

To assess the reliability of the questionnaire, Cronbach's alpha was calculated to evaluate the internal consistency of the 17 items measuring the participants' preferences for the attributes of Chinese freehand painting. The Cronbach's alpha coefficient was 0.951, indicating a high level of internal consistency, as presented in Table 4. According to[53], alpha coefficients greater than 0.70 are considered acceptable. While Cronbach's alpha is commonly used to assess the reliability of multiple items representing a single latent construct, this study did not aggregate the items into a single measure. Instead, the analysis was conducted to ensure the overall reliability of the questionnaire as a tool for capturing participants' preferences across multiple attributes. This approach

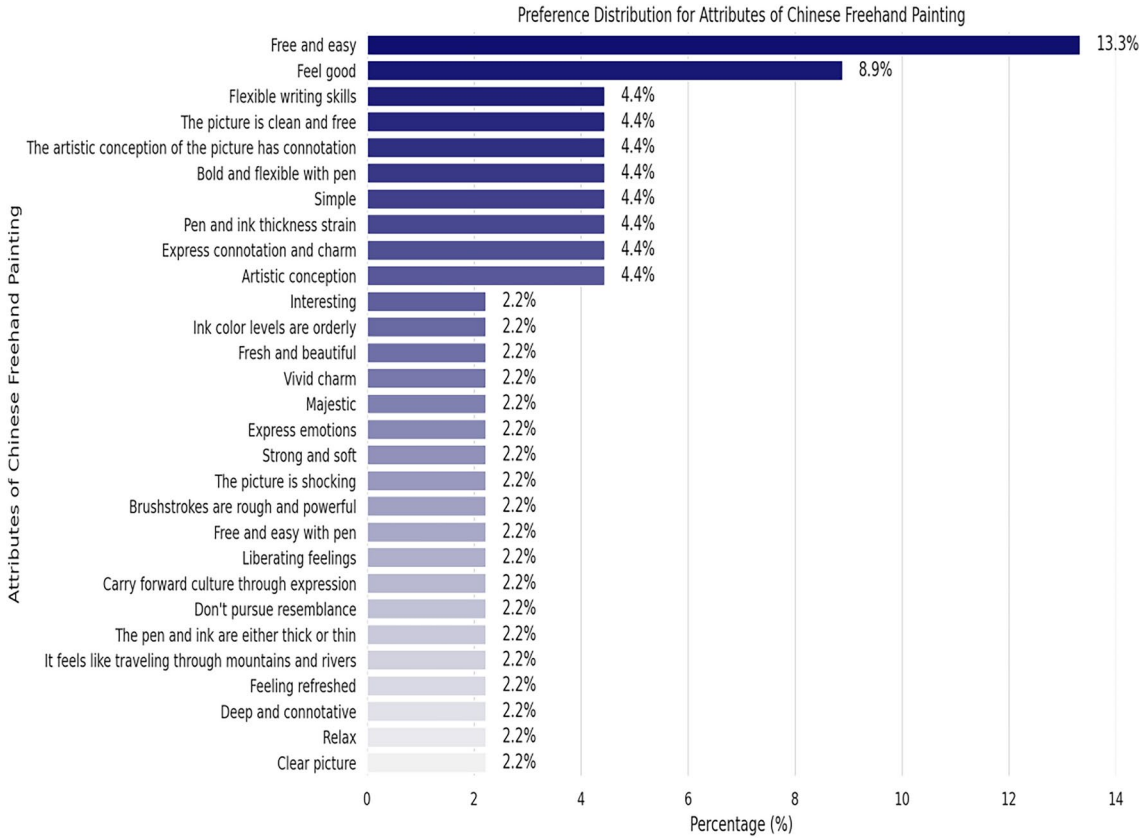

Fig. 1. Frequency distribution of preferred Chinese freehand painting attributes.

Filtered and finalized attributes
Combination of pen and ink thickness
Free and easy
Brushstrokes are rough and powerful
Pleasure (expression of emotions)
Relaxed, simple, and flexible with the brush
Fresh and beautiful
Vivid charm
Emotional expression is better than form
The ink colour has clear layers; pay attention to the ink colour
Expression of emotional sentiments
Interesting picture

Table 1. Filtered and finalized attributes.

Some new supplementary generalizations generated during the group discussion
The colour should not be too bright, with a simple ink colour
Raising one's ideological and spiritual level
Have a sense of achievement, satisfaction, and self-confidence
Like nature scenery
Make people calm and avoid impetuousness
Regulate emotions and mood

Table 2. Additional generalizations generated during the group discussion.

Finalized attributes
The combination of pen and ink thickness
Free and easy
Brushstrokes are rough and powerful
Pleasure (expression of emotions)
Relaxed, simple, and flexible with the brush
Fresh and beautiful
Vivid charm
Emotional expression is better than form
The ink colour has clear layers; pay attention to the ink colour
Expression of emotional sentiments
Interesting picture
The colour should not be too bright, with a simple ink colour
Raising one's ideological and spiritual level
Have a sense of achievement, satisfaction, and self-confidence
Like nature scenery
Make people calm and avoid impetuousness
Regulate emotions and mood

Table 3. Finalized attributes.

Sample size	Number of items	Cronbach's alpha
239	17	0.951

Table 4. Reliability analysis.

aligns with the research objective of exploring gender-related differences in preferences for specific attributes rather than reducing the data to a single construct.

Although a high Cronbach's alpha value indicates strong internal consistency, this is only one aspect of ensuring the reliability and validity of the research findings. Owing to the exploratory nature of this study and the limitations of the available data, additional validity and reliability checks, such as content validity or test-retest reliability, were not conducted. However, future studies should incorporate these measures to further validate the questionnaire.

To explore the underlying structure of the data, an exploratory factor analysis (EFA) was conducted. The Kaiser-Meyer-Olkin (KMO) value was 0.965, significantly exceeding the widely accepted threshold of 0.6, indicating that the sample data were highly suitable for factor analysis. Additionally, Bartlett's test of sphericity yielded a significant result ($\mathcal{X}^2 = 2623.673, df = 136, p < 0.001$), confirming the factorability of the correlation matrix, as shown in Table 5.

The factor analysis was performed using principal axis factoring (PAF) as the extraction method, with varimax rotation applied to achieve a simpler and more interpretable factor structure. The analysis identified two factors with eigenvalues greater than 1, accounting for 40.862% of the total variance. Factor loadings, which quantify the strength of the relationship between individual items and their underlying latent components, were interpreted using a threshold of 0.4, as recommended by[54]. For example, "the colour should not be too bright, with a simple ink colour" had a high loading on Factor 2 (0.80), whereas "make people calm and avoid impetuousness" had a high loading on Factor 1 (0.77). However, a few items had factor loadings below 0.5, suggesting a weaker association. These items were retained because of their theoretical relevance and contribution to the overall factor structure.

The results of the factor analysis suggest that the questionnaire structure is relatively robust and suitable for further analysis. However, the identified factors should be interpreted in the context of the specific attributes of Chinese freehand painting preferences and the study's objectives. Factor analysis was conducted to explore the potential grouping of attributes on the basis of the participants' responses rather than to aggregate the items into a single construct.

The analysis identified two distinct factors, as shown in Table 5, which provide valuable insights into the underlying structure of the participants' preferences for Chinese freehand painting attributes. Factor 1, which includes items such as "make people calm and avoid impetuousness" (loading = 0.77) and "the ink colour has clear layers; pay attention to the ink colour" (loading = 0.76), appears to represent attributes related to emotional regulation and aesthetic clarity. Factor 2, which includes items such as "the colour should not be too bright, with a simple ink colour" (loading = 0.80) and "relaxed, simple, and flexible with the brush" (loading = 0.79), seems to represent attributes related to simplicity and natural expression.

These factors are highly relevant to the research objective of exploring gender-related differences in preferences for specific attributes of Chinese freehand painting. By grouping the 17 attributes into these two factors, we gain a deeper understanding of the multidimensional nature of the participants' preferences, which enhances the interpretation of the findings. For example, the identification of Factors 1 and 2 allows for a discussion of how

Attributes	Factor 1	Factor 2	Communality
The colour should not be too bright, with a simple ink colour	0.17	0.80	0.665
Relaxed, simple, and flexible with the brush	0.26	0.79	0.690
Emotional expression is better than form	0.45	0.68	0.667
Nature scenery	0.35	0.73	0.662
Raising one's ideological and spiritual level	0.36	0.64	0.548
Combination of pen and ink thickness	0.69	0.34	0.585
Free and easy	0.71	0.38	0.648
Brushstrokes are rough and powerful	0.70	0.36	0.623
Pleasure (expression of emotions)	0.59	0.46	0.569
Expression of emotional sentiments	0.71	0.30	0.592
Regulate emotions and mood	0.72	0.38	0.663
Make people calm and avoid impetuousness	0.77	0.19	0.627
Have a sense of achievement, satisfaction, and self-confidence	0.73	0.35	0.656
Interesting picture	0.75	0.33	0.669
The ink colour has clear layers; pay attention to the ink colour	0.76	0.37	0.720
Vivid charm	0.75	0.22	0.616
Fresh and beautiful	0.78	0.23	0.660
Kaiser-Meyer-Olkin (KMO) value	0.965	–	–
Bartlett's test of sphericity	2623.673	–	–
df	136.000	–	–
P value	0.00	–	–

Table 5. Analysis of validity.

different gender groups may prioritize emotional regulation versus simplicity in their preferences for Chinese freehand painting.

The present questionnaire survey demonstrated strong construct validity in assessing individuals' preferences for Chinese freehand painting, establishing a robust foundation for examining gender-related differences. Future studies can utilize this framework to explore potential variations in preferences between males and females.

Further investigation is needed to connect these descriptive findings to the research questions and examine the impact of gender on preferences. This will involve analysing patterns in preferences for Chinese freehand painting attributes among males and females, as indicated in Table 6.

The findings revealed that both genders preferred the attribute "the colour should not be excessively bright, with a simple ink colour." Compared with males, females showed a slightly greater preference (M = 3.93, SD = 1.187) (M = 3.83, SD = 1.253), suggesting that while both genders value muted hues, females may have a stronger inclination towards this characteristic.

Further analysis indicated that females consistently expressed slightly greater enjoyment across all painting attributes than males did. The overall mean scores were 3.66 (SD = 1.23) for males and 3.71 (SD = 1.13) for females. Notably, females rated specific attributes higher than males did, such as "relaxed, simple, and flexible with the brush" (females: M = 3.90, SD = 1.094; males: M = 3.83, SD = 1.225) and "pleasure (expression of emotions)" (females: M = 3.69, SD = 1.118; males: M = 3.58, SD = 1.195). Similarly, for "interesting picture," females scored higher (M = 3.72, SD = 1.231) than males did (M = 3.50, SD = 1.191).

Despite these differences, the variability within each gender group, as indicated by the standard deviations, suggests that preferences may be influenced by individual experiences and interpretations of the art form.

In summary, while the data show some gender-based variation in ratings for specific attributes, they do not provide strong evidence of significant gender differences. Therefore, any observed gender-based distinctions should be interpreted cautiously, as the findings do not suggest that gender plays a substantial or universal role in shaping preferences for Chinese freehand painting attributes. The results reflect individual variability rather than broad gender-based trends.

This study employed Pearson correlation analysis in SPSS to investigate potential disparities in preferences for attributes of Chinese freehand painting among retired male and female older adults. The results are presented in Table 7.

The primary objective of this analysis was to evaluate the associations between gender and preferences for various characteristics of Chinese freehand painting among a sample of 233 participants. The analysis of Pearson correlation coefficients revealed no significant associations between gender and any of the painting attributes investigated.

For example, the attribute "the colour should not be too bright, with a simple ink colour" had a Pearson correlation coefficient of 0.043 with gender (p = 0.516). Similarly, the correlation coefficients for "relaxed, simple, and flexible with the brush" and "emotional expression is better than form" were 0.030 (p = 0.647) and -0.033 (p = 0.619), respectively, both of which were statistically insignificant.

Other attributes, such as "nature scenery" and "fresh and beautiful," also presented very low and nonsignificant correlation coefficients. For example, the coefficients for "free and easy" and "brushstrokes are rough and powerful" were -0.037 (p = 0.571) and -0.032 (p = 0.625), respectively.

Weak correlations were observed between gender and specific attributes related to emotional expression, such as "pleasure (expression of emotions)" (r = 0.050, p = 0.450) and "expression of emotional sentiments" (r = 0.070, p = 0.291). Additionally, attributes such as "regulate emotions and mood" (r = -0.056, p = 0.396)

Attributes of paintings	Males mean (SD) (n = 116)	Females mean (SD)(n = 117)
The colour should not be too bright, with a simple ink colour	3.83(1.253)	3.93(1.187)
Relaxed, simple, and flexible with the brush	3.83(1.225)	3.90(1.094)
Emotional expression is better than form	3.83(1.232)	3.75(1.074)
Nature scenery	3.79(1.234)	3.84(1.025)
Raising one's ideological and spiritual level	3.78(1.243)	3.62(1.073)
Combination of pen and ink thickness	3.64(1.288)	3.57(1.184)
Free and easy	3.62(1.276)	3.53(1.164)
Brushstrokes are rough and powerful	3.61(1.193)	3.54(1.103)
Pleasure (expression of emotions)	3.58(1.195)	3.69(1.118)
Expression of emotional sentiments	3.57(1.266)	3.73(0.988)
Regulate emotions and mood	3.64(1.226)	3.50(1.324)
Make people calm and avoid impetuousness	3.57(1.232)	3.54(1.134)
Have a sense of achievement, satisfaction and self-confidence	3.61(1.140)	3.68(1.143)
Interesting picture	3.50(1.191)	3.72(1.231)
The ink colour has clear layers; pay attention to the ink colour	3.54(1.233)	3.50(1.215)
Vivid charm	3.66(1.237)	3.54((1.178)
Fresh and beautiful	3.60(1.149)	3.55(1.249)
	M= 3.65 (1.22)	M= 3.70 (1.15)

Table 6. Gender-based differentiation in the preferences for qualities of Chinese freehand painting.

Attributes	Pearson correlation	Sig. (2-tailed)	N
The colour should not be too bright	0.043	0.516	233
Relaxed, simple, and flexible with the brush	0.030	0.647	233
Emotional expression is better than form	-0.033	0.619	233
Nature scenery	0.020	0.765	233
Raising one's ideological and spiritual level	-0.069	0.292	233
Combination of pen and ink thickness	-0.026	0.687	233
Free and easy	-0.037	0.571	233
Brushstrokes are rough and powerful	-0.032	0.625	233
Pleasure (expression of emotions)	0.050	0.450	233
Expression of emotional sentiments	0.070	0.291	233
Regulate emotions and mood	-0.056	0.396	233
Make people calm and avoid impetuousness	-0.013	0.844	233
Have a sense of achievement	0.028	0.673	233
Interesting picture	0.090	0.171	233
The ink colour has clear layers	-0.016	0.809	233
Vivid charm	-0.052	0.429	233
Fresh and beautiful	-0.024	0.720	233

Table 7. Correlation between gender and preferences for Chinese freehand painting attributes.

and "make people calm and avoid impetuousness" (r = -0.013, p = 0.844) also presented low, nonsignificant correlations.

In summary, the findings indicated no statistically significant gender differences in participants' preferences for various attributes of Chinese freehand painting. The data suggested that the male and female participants in this sample had similar levels of appreciation for qualities such as simplicity of colour, emotional expression, and brushstroke techniques. However, these results should be interpreted with caution, as they reflect the preferences of this specific group and do not imply that gender does not influence artistic preferences more broadly. Instead, the findings show that within this sample, gender did not significantly impact responses to the selected attributes of Chinese freehand painting.

Discussion

The objective of this study was to examine the impact of gender on preferences for attributes of Chinese freehand painting among a sample of 233 individuals. In contrast to existing research that suggests gender disparities in art perception and appreciation[7], the results of this study indicated no statistically significant associations between gender and preferences for the evaluated attributes. While gender differences in art appreciation may exist, they appear to be less pronounced in older populations. The perception and appreciation of art are influenced by various factors, including cultural background, individual characteristics, and the use of technology[55,56].

The absence of significant gender-based differences challenges certain traditional assumptions about gendered responses to art and suggests a more complex relationship between gender and cultural art forms. Chinese freehand paintings possess a transcultural appeal that transcends gender boundaries, likely due to the universal themes and values embedded in these artworks[57]. The role of cultural heritage and aesthetic education in promoting diversity and tolerance within the arts has been emphasized by[58]. By exposing individuals to a wide range of cultural ideas and artistic styles, cultural heritage and aesthetic education can foster a shared appreciation that goes beyond gender and embraces diverse artistic expression.

The findings suggest that art education programmes could benefit from emphasizing the shared cultural appreciation of Chinese freehand painting rather than focusing solely on gender-specific preferences. The results support an integrated approach to promoting and preserving traditional art forms, recognizing the importance of creating an inclusive environment for individuals regardless of gender. By highlighting gender-neutral and universally impactful aspects of Chinese freehand painting, educators can engage a broader audience and enhance cultural participation.

The factor analysis identified two distinct factors in Table 5, providing valuable insights into the underlying structure of the participants' preferences for Chinese freehand painting attributes. These findings suggest that different gender groups may prioritize different aspects of Chinese freehand painting, such as emotional regulation versus simplicity, aligning with the research objective of exploring gender-related differences in preferences.

Despite its contributions, this study has several limitations. The generalizability of the findings may be constrained by the relatively homogeneous cultural background of the participants, specifically retired Chinese older adults, who may not reflect broader age groups or cultural contexts. Additionally, the reliance on a quantitative approach may not fully capture the nuanced, qualitative aspects of individual art appreciation. Future research could incorporate qualitative methods such as interviews or focus groups to gain deeper insights into personal and emotional connections with Chinese freehand painting. Expanding the demographic scope to include participants from diverse cultural backgrounds would also allow for the exploration of universal versus

culturally specific dimensions of art appreciation. Longitudinal studies could further provide valuable insights into how aesthetic preferences evolve over time, potentially influenced by cultural exposure and personal development.

This study not only explored gender differences in preferences for Chinese freehand painting attributes but also demonstrated notable consistency between the questionnaire responses of male participants and their initial preferences identified through the nominal group technique (NGT). This alignment indicates that the NGT effectively captured the prominent preferences of male participants, enhancing the validity of the identified attributes. However, the NGT was conducted exclusively with male participants, whereas the questionnaire included both male and female participants. This discrepancy highlights the need for caution when generalizing the findings to female participants. Future research could address this limitation by conducting separate NGT sessions for male and female participants to ensure a more balanced and representative exploration of gender-related differences in aesthetic preferences.

Although the overall analysis did not reveal significant gender-based differences in preferences across the entire sample, the alignment between the NGT results and the questionnaire responses among male participants suggests that the preference framework for Chinese freehand paintings within this subgroup is well defined and may be influenced by cultural or educational factors, warranting further investigation[59]. It is reasonable to infer that these individuals share a common set of criteria for evaluating Chinese freehand paintings, potentially rooted in shared artistic principles or cultural heritage[10,60].

The observed consistency necessitates a more thorough investigation of the educational and cultural backgrounds unique to the male participants, which may influence these shared preferences. Furthermore, this study presents an opportunity for future research to examine whether comparable trends arise among female cohorts or mixed-gender cohorts when methodologies such as the NGT are employed. This would contribute to a more detailed comprehension of the gender dynamics at play.

The lack of significant differences in the broader sample suggests the potential universality of certain aesthetic preferences. However, the NGT results indicate a structured preference hierarchy among the male participants. This methodological approach could have practical implications for targeted art education and art therapy tailored to specific audience segments. It also underscores the potential of structured group methods, such as the NGT, for initial data collection in research areas focused on subjective preferences. Nevertheless, the overall absence of gender disparities in broader studies calls for a reassessment of the role of gender in the appreciation of traditional art forms. Future research should adopt a holistic approach, incorporating qualitative methods to comprehensively examine the social and cultural factors that shape individual preferences.

Further exploration of the NGT in diverse groups could clarify whether the observed patterns are specific to this sample or indicative of broader trends. Longitudinal studies could also evaluate the stability of these preferences over time and the impact of evolving societal narratives on art perception.

In summary, while gender may not significantly influence the overall evaluation of Chinese freehand paintings, the alignment between male preferences identified through the NGT and subsequent questionnaire results presents a notable contrast within the findings. This duality highlights the complexity of art appreciation, suggesting that individuals' engagement with art is shaped by a combination of universal and group-specific factors.

Conclusion

This study aimed to investigate gender-based differences in preferences for attributes of Chinese freehand painting among retired older adults. The nominal group technique (NGT) was employed alongside a comprehensive questionnaire survey involving 233 participants to assess their preferences for various artistic characteristics.

The questionnaire results showed a significant correlation with the NGT findings, particularly among the male participants, indicating a consistent preference pattern that warrants attention. However, the broader analysis revealed no notable gender-based differences in preferences. This suggests that, within this specific cultural and demographic group, preferences for Chinese freehand painting attributes are not significantly influenced by gender.

The findings point to a shared cultural appreciation for Chinese freehand painting within this sample rather than a universal trend applicable to broader populations. This shared appreciation may stem more from common cultural backgrounds and collective exposure to traditional art forms than from gender identity. The absence of significant gender associations underscores the potential importance of cultural experience and aesthetic education in shaping individual art preferences.

This study has several limitations. First, while it provides valuable insights into the preferences of retired older adults for Chinese freehand painting, the results are specific to the sample studied. Data saturation achieved through the NGT process ensures the robustness of the findings within this context. However, the generalizability of these findings to broader populations may be limited because of the specific demographic characteristics of the sample. Future studies with larger and more diverse samples are needed to validate these findings and explore their applicability to other populations.

Second, the NGT was conducted with eight male participants, whereas the subsequent questionnaire survey included both male and female participants. Although the questionnaire responses of the male participants closely aligned with their initial NGT-derived preferences, this methodological approach may limit the generalizability of the findings to female participants. The primary objective of the study was to determine whether notable gender differences exist in preferences and to evaluate the alignment of male preferences with NGT outcomes. While the initial focus on male participants in the NGT phase was justified, future studies could conduct separate NGT sessions for male and female participants to further validate the findings and ensure a more comprehensive understanding of gender-related differences in aesthetic preferences.

Additionally, this study highlights the importance of adopting gender-neutral approaches in designing educational programmes and promoting traditional Chinese art. By emphasizing universal aspects of art appreciation, institutions can create an inclusive environment that appeals to diverse audiences.

In summary, this study contributes to the academic discourse on art appreciation by challenging the assumption that gender is the primary factor influencing artistic preferences. Instead, it advocates for a broader and more inclusive understanding of the cultural value of art.

Data availability

All data generated or analyzed during this study are included in this published article [and its supplementary information files].

Received: 9 January 2025; Accepted: 27 March 2025
Published online: 04 April 2025

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Acknowledgements

The study received approval from the Human Research Ethics Committee of Universiti Putra Malaysia (JKE-UPM) under project identification number JKEUPM-2023-1342. Prior to their voluntary involvement, all participants were provided with comprehensive information regarding the research aims and methodology.

Author contributions

WU made substantial contributions to the work's conception or design and to the acquisition, analysis, and interpretation of data; Abd. Shukor, Hasna and Daud have substantively revised it. All authors reviewed the manuscript.

Declarations

Competing interests

The authors declare no competing interests.

Additional information

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