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Aesthetic Experience Across Cultures: Evidence from Germany and Portugal

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Research Article

Keywords: Cross-cultural aesthetics, painting evaluation, Germany, Portugal, aesthetic experience; response tendencies

Posted Date: August 14th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10617719/v1

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Additional Declarations: No competing interests reported.

Abstract

Understanding how individuals from different cultural backgrounds perceive and evaluate visual art remains a central question in the psychology of aesthetics. This study presents a cross-cultural comparison of evaluations of human-made paintings between native-language samples recruited in Germany (*n* = 131) and Portugal (*n* = 131). Participants rated 101 paintings from the *WikiArt* database, systematically sampled to represent three content categories (people, objects, and places), across nine dimensions capturing perceptual (aesthetic appeal, visual complexity, concreteness), emotional (arousal, valence, felt involvement), and cognitive (creative inspiration, familiarity, memory evocation) components of aesthetic experience. Results revealed substantial cross-cultural agreement in the relative structure of evaluations across all dimensions, indicating consistent patterns in how paintings were perceived. At the same time, significant between-group differences emerged in the magnitude of overall ratings, with Portuguese participants consistently assigning higher ratings than German participants across most dimensions. Category-level analyses revealed a shared pattern whereby object-based paintings received comparatively lower overall evaluations, whereas paintings depicting people and places showed greater variability across dimensions. These findings suggest that aesthetic experience reflects a shared evaluative structure spanning perceptual, emotional, and cognitive domains, while remaining sensitive to culture-specific response tendencies in the use of rating scales or evaluative standards, and not merely to differences in the intensity of aesthetic experience.

This pattern is consistent with models that propose common principles of aesthetic processing alongside culture-specific evaluative tendencies. Moreover, the findings also support the suitability of the selected stimuli for cross-cultural research on aesthetic judgment.

1 Introduction

Aesthetic judgments influence many aspects of daily life, including perceptions of attractiveness, consumer choices, and social evaluation. They are also central to art perception, shaping how people engage with and appreciate artworks across cultures (Chatterjee & Vartanian, 2016). While theories of classical aesthetics often assumed a common foundation for aesthetic experience, contemporary neurocognitive models emphasize that such experiences arise from the interplay between universal perceptual and affective mechanisms and culturally shaped knowledge systems (Chatterjee & Vartanian, 2016; Leder et al., 2004). Understanding how these shared and culture-specific processes interact remains a central question in empirical aesthetics.

Behavioral and neuroimaging evidence converge on three broad domains underlying aesthetic experience – emotion-evaluation, sensorimotor, and meaning-knowledge – that support aesthetic judgments across sensory domains, including faces, music, and visual art (Brown et al., 2011; Chatterjee & Vartanian, 2014, 2016; Pegors et al., 2015). The emotion-evaluation and sensorimotor domains support broadly shared affective and embodied responses to aesthetic stimuli, engaging similar brain regions such as the orbitofrontal cortex, ventral striatum, and insula during positive aesthetic judgments (Aharon et al., 2001; Kawabata & Zeki, 2004) as well as motor simulation processes involved in perceiving expressive or dynamic features of artworks (Freedberg & Gallese, 2007). In contrast, the meaning-knowledge domain introduces strong contextual influences, such as cultural conventions, expertise, and interpretive framing (e.g., titles or authenticity cues), which shape both subjective experience and neural responses in regions associated with semantic processing, evaluation, and self-referential though, such as the medial and the lateral prefrontal cortex and temporoparietal areas (Gerger & Leder, 2015; Huang et al., 2011; Kirk et al., 2009). Accordingly, aesthetic judgments rest on shared underlying systems while remaining sensitive to cultural and experiential modulation.

Building on this framework, the present study investigates cross-cultural variation in the evaluation of paintings using a standardized set of human-made artworks and assessment procedures that enable systematic comparisons across cultural groups.

1.1 Standardized datasets of paintings

The development of standardized stimulus databases has substantially advanced empirical aesthetics. However, relatively few standardized databases of visual artworks are available, and most have been validated in samples drawn from a single country or language community, which only partially captures cultural variation. One notable example is the Vienna Art Picture System (VAPS; Fekete et al., 2023), developed with a German-speaking sample. The VAPS includes 999 paintings spanning five genres – scenes,

portraits, landscapes, still lifes, and abstract artworks – and provides normative ratings of liking, emotional valence, emotional arousal, visual complexity, and familiarity. These dimensions capture aesthetic preference, affective response (pleasantness and intensity), perceptual richness, and perceived recognizability. Although the VAPS provides an important foundation for empirical aesthetics research, it offers limited coverage of broader cognitive and associative dimensions relevant to aesthetic experience.

Likewise, the Art. Pics database (Thieleking et al., 2020), validated in a large, predominantly German-speaking sample, includes 2,332 AI-generated art-like images depicting animals, objects, and plants across eight artistic styles. This database includes ratings of liking, wanting, recognizability, arousal, and valence. While useful for studying affective and motivational responses to artwork stimuli, its reliance on artificially generated images and its relatively narrow range of evaluative dimensions limit its applicability to research on the broader cognitive and associative processes involved in evaluating human-made paintings.

To our knowledge, the most comprehensive normative dataset of human-made paintings in terms of the number of evaluative dimensions assessed is that developed by Ennahli et al. (2026) using a Portuguese sample. This dataset comprises 144 human-made paintings clustered into four categories: objects, places, people, and abstract works. This normative dataset provides ratings across a balanced set of perceptual (aesthetic appeal, visual complexity, concreteness), affective (arousal, valence, and felt involvement, creative inspiration), and cognitive (familiarity, memory evocation) dimensions of aesthetic experience, alongside subjective measures of meaning interpretation and recall of painting-related information (see Method section; Table 1). This multidimensional structure captures a broader range of processes involved in art perception and is particularly suitable for examining cross-cultural variation in perceptual, affective, and cognitive responses to paintings.

1.2 Cross-Cultural Variation in Aesthetic Evaluation

Cross-cultural research suggests that aesthetic judgments reflect both shared perceptual and affective processes and culture-specific preferences. Studies comparing responses to visual art across cultural groups have generally found substantial agreement in the factors underlying aesthetic judgments, alongside differences in how particular features are valued.

For example, Yang et al. (2019) compared the responses of European and Chinese participants to traditional landscape paintings across eight dimensions and found evidence of cultural modulation in aesthetic appreciation: European participants rated Western paintings more positively on several dimensions, whereas Chinese participants did not show an equally strong in-group preference. Still, both groups exhibited stronger neural responses to culturally familiar artworks. Likewise, Miller et al. (2025) reported that both Chinese and German participants base beauty judgments on affective and cognitive evaluations of artworks, but that affective responses were the stronger and more consistent predictors across cultures. At the same time, cognitive factors contributed more strongly among German participants. These findings suggest cultural variation in how evaluative components are weighted, even when overall beauty preferences are largely stimulus-dependent rather than culturally determined. Consistent with this pattern, Mikuni et al. (2024) report that Japanese and German participants shared several predictors of beauty judgments of Western paintings but differed in their relative importance: Japanese participants preferred simpler artworks, whereas German participants favored greater complexity. Cultural differences also emerged in the importance attributed to emotional expressiveness relative to brushwork and color-related features.

Although cross-cultural variation in visual processing has been documented across a range of stimulus domains (e.g., Brodeur et al., 2012; Duñabeitia et al., 2018; George & Mathuranath, 2007; Gomes et al., 2024; Mahayidin & Noor, 2026; Soares et al., 2015; Souza et al., 2021; Weigl et al., 2024), evidence specific to artworks remains comparatively limited. Moreover, most cross-cultural studies have contrasted geographically, linguistically, and culturally distant populations, particularly East Asian and Western samples. Comparatively little is known about aesthetic evaluation in Europe, where populations may share a broad Western cultural background yet differ in language, historical traditions, and artistic heritage.

Germany and Portugal provide an informative comparison for examining the balance between shared evaluative mechanisms and culturally acquired influences. Building on this rationale, the present study investigates shared and culture-specific patterns of aesthetic evaluation across German and Portuguese samples, broadening previous work in two complementary ways. First, it extends the normative validation of the painting database developed by Ennahli et al. (2026) by collecting normative data from a sample of native German speakers (from Germany). Second, it directly examines cross-cultural variation in aesthetic evaluation between Central and Southern European contexts. Based on neurocognitive models of aesthetic experience and previous cross-

cultural findings (e.g., Chatterjee & Vartanian, 2016; Mikuni et al., 2024), we expected to observe substantial agreement in the relative structure of evaluations across groups, alongside systematic differences in rating patterns.

2 Methods

2.1 Participants

An initial sample of 175 native German-speaking young adults from Germany (114 women, 52 men, and 9 undisclosed; M_{age} = 24.88 years, *SD* = 3.88 years) was recruited through university mailing lists and received course credit for their participation. The study was approved by the Research Ethics Committee of ISCTE - University Institute of Lisbon [15/2024].. Forty-four participants were excluded due to incomplete response to the entire questionnaire (*n* = 40), systematic response bias (*n* = 3), or being outside the predefined age range (*n* = 1). The final sample consisted of 131 participants (85 women, 40 men, and 6 undisclosed; M_{age} = 24.59 years, *SD* = 3.89).

Data from the German sample (*n* = 131) were compared with a selected subsample from the Portuguese normative study (Ennahli et al., 2026) comparable in sample size (*n* = 131) and age range (18–40 years; 68 women, 62 men, and one undisclosed; M_{age} = 28.80 years, *SD* = 5.42). To ensure stable normative estimates, we aimed to collect between 20 and 40 evaluations per painting.

2.2 Stimuli

The stimulus set comprised 101 representational paintings selected from the Portuguese normative database (Ennahli et al., 2026), distributed across three content categories: People (*n* = 36), Objects (*n* = 30), and Places (*n* = 35; see Fig. 1). The abstract category included in the original database was excluded because the present cross-cultural comparison focused on representational paintings, whose semantic content and recognizability can be more readily comparable across viewers (e.g., Vartanian & Skov, 2014).

All images were standardized to a resolution of 750 × 750 pixels using IrfanView. When necessary, a white background was added to preserve the original proportions and prevent image distortion. All images were adjusted for luminance (− 25%) while maintaining the original RGB distribution to preserve the ecological integrity and visual authenticity of the paintings.

Note

Example paintings from the People, Objects, and Places categories. Each artwork was presented within a square frame on a white background to preserve its original aspect ratio while ensuring a standardized display area across stimuli. All paintings were retrieved from WikiArt (www.wikiart.org), a publicly accessible online repository.

2.3 Procedure

The study was conducted online using Qualtrics (2024). The questionnaire was translated from Ennahli et al. (2026) and required approximately 30 minutes to complete. After providing informed consent, participants reported demographic information and rated each painting across nine evaluative dimensions using 7-point scales (see Table 1).

Table 1

Dimensions, Prompts, and Response Scales Used in the Rating Task

Component	Dimension	Participant prompt	Response scale
Perceptual	Aesthetic Appeal	Indicate how visually pleasing you find the painting, focusing on its perceptual qualities rather than its meaning or theme.	1 = Visually unpleasant/not appealing; 7 = Visually pleasant / very appealing
	Visual Complexity	Evaluate the degree of visual elaboration in the painting, considering the amount of detail, the interaction of lines and forms, and the diversity of colours.	1 = Very simple; 7 = Very complex
	Concreteness	Judge whether the painting depicts something clearly identifiable and concrete, or instead something abstract and difficult to recognize.	1 = Very abstract; 7 = Very concrete
Emotional	Arousal	Indicate whether the painting conveys a calm/passive quality or a more intense/activated quality.	1 = Very calm; 7 = Very intense
	Valence	Rate the extent to which the painting conveys a negative/unpleasant versus positive/pleasant impression.	1 = Very negative/unpleasant; 7 = Very positive / pleasant
	Felt Involvement	Assess how personally engaged, interested, or emotionally connected you feel while viewing the painting.	1 = Low involvement; 7 = High involvement
Cognitive	Creative Inspiration	Indicate the extent to which the painting encourages or enhances your creative thinking or imagination.	1 = Not inspiring; 7 = Very inspiring
	Familiarity	Report how familiar the painting seems to you.	1 = Not familiar; 7 = Very familiar
	Memory Evocation	Rate the extent to which the painting brings to mind personal memories or autobiographical associations.	1 = Does not evoke personal memories; 7 = Evokes many personal memories

Note. Rating dimensions and response scale anchors were translated from the original Portuguese version (Ennahli et al., 2026) into German.

The German version was produced through automatic translation and subsequently reviewed by native speakers to ensure conceptual equivalence, linguistic accuracy, and clarity. A pilot study verified comprehension of instructions, rating prompts, and response scales prior to data collection.

Each participant rated 30 paintings: 10 depicting people, 10 depicting objects, and 10 depicting places, systematically selected from the full set of 101 stimuli to preserve equal representation across the three categories. This sampling procedure minimized participant burden while ensuring that ratings were distributed across the entire stimulus set.

All materials and data are available in the Open Science Framework (OSF) repository: https://osf.io/vazhk/overview?view_only=150099e0ff1d42e5b6c3a8f5ce785d28.

2.4 Data analysis

Data analysis was conducted in JASP (JASP Team, 2026). Data quality was assessed at the participant level, resulting in the exclusion of three participants (1.71%) who selected the same response option on at least 80% of trials.

Descriptive statistics were computed separately for the German and Portuguese samples for each of the nine rating dimensions, including means (*M*), standard deviations (*SD*), standard errors (*SE*), 95% confidence intervals (*CI*), and one-sample *t*-tests against the scale midpoint (4).

Cross-cultural differences in painting evaluation were examined at the item level. Mean ratings were first computed for each painting, country, and evaluative dimension. These values were analyzed using a mixed factorial ANOVA with Category (objects, people, places) and Dimension (nine dimensions) as within-stimulus factors and Country (Germany, Portugal) as a between-group factor. Bonferroni-corrected pairwise comparisons were used to follow up on significant main effects and interactions.

Finally, to assess the similarity of evaluation patterns across cultures, Pearson correlations were computed between German and Portuguese item-level mean ratings for each dimension. These analyses indexed the extent to which the two groups shared similar relative evaluation structures across paintings. Correlations were interpreted according to Cohen (1988): .10 – .29 (small), .30 – .49 (moderate), .50 – .79 (strong), and ≥ .80 (very strong).

3 Results

3.1 Descriptive Statistics of the German and Portuguese samples

Across both countries, concreteness and visual complexity received consistently high ratings, whereas familiarity and memory evocation received comparatively low ratings. Arousal was rated near the scale midpoint, indicating moderate perceived overall activation. Aesthetic appeal, felt involvement, and valence were rated around the midpoint by the German sample but significantly above it by the Portuguese sample. The largest cross-cultural difference was observed for creative inspiration, which was rated below the midpoint in the German sample and above the midpoint in the Portuguese sample (see Table 2).

Table 2

Descriptive Statistics and Midpoint Comparisons for the German and Portuguese Samples

Dimension	Country	M	SD	SE	Min	Max	Skew.	Kurt.	95% CI Lower	95% CI Upper	*t* (midpoint)	*p*
Aesthetic Appeal	Germany	4.16	0.86	0.09	2.38	6.21	0.07	-0.80	3.99	4.33	1.83	.071
	Portugal	4.78	0.69	0.07	3.29	6.20	-0.18	-0.89	4.65	4.92	11.46	< .001***
Arousal	Germany	3.84	0.85	0.08	2.14	5.90	0.26	-0.68	3.67	4.01	-1.89	.062
	Portugal	3.98	0.78	0.08	2.16	6.23	0.14	-0.29	3.82	4.13	-0.29	.769
Concreteness	Germany	4.38	0.97	0.10	2.53	6.41	0.00	-0.90	4.19	4.57	3.92	< .001***
	Portugal	5.06	0.80	0.08	2.81	6.17	-0.81	-0.15	4.90	5.22	13.29	< .001***
Creative Inspiration	Germany	3.78	0.66	0.07	2.47	5.41	0.26	-0.46	3.65	3.91	-3.34	.001**
	Portugal	4.36	0.62	0.06	3.12	5.58	-0.07	-0.93	4.24	4.49	5.88	< .001***
Familiarity	Germany	2.95	1.28	0.13	1.57	6.89	1.71	2.14	2.70	3.21	-8.20	< .001***
	Portugal	3.80	0.98	0.10	2.38	6.56	0.82	0.15	3.61	3.99	-2.06	.042*
Felt Involvement	Germany	3.98	0.54	0.05	2.69	5.20	0.14	-0.73	3.87	4.08	-0.41	.682
	Portugal	4.31	0.59	0.06	3.00	5.65	-0.10	-0.73	4.19	4.42	5.21	< .001***
Memory Evocation	Germany	3.12	0.72	0.07	1.86	4.83	0.23	-0.80	2.98	3.26	-12.36	< .001***
	Portugal	3.44	0.70	0.07	2.20	5.23	0.60	-0.44	3.31	3.58	-8.01	< .001***
Valence	Germany	4.08	0.89	0.09	1.97	6.17	-0.08	-0.49	3.90	4.25	0.87	.387
	Portugal	4.65	0.70	0.07	3.05	6.10	-0.09	-0.62	4.51	4.79	9.28	< .001***
Visual Complexity	Germany	4.21	0.80	0.08	2.10	5.90	-0.25	-0.22	4.05	4.36	2.58	.011*
	Portugal	4.40	0.63	0.06	2.69	5.61	-0.13	-0.50	4.27	4.52	6.27	< .001***

Note. *M* = mean; *SD* = standard deviation; *SE* = standard error; *CI* = 95% confidence interval of the mean. One-sample *t*-tests were conducted against the scale midpoint (4). Asterisks indicate significant two-sided deviation from the midpoint: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

3.2 Mixed Factorial ANOVA of Painting Evaluations Across Category, Dimension, and Country

To further examine cross-cultural differences in painting evaluation, a three-way mixed ANOVA was conducted with Category (people, objects, places) and Dimension (nine dimensions) as within-stimulus factors and Country (Portugal, Germany) as the between-group factor (estimated marginal means and standard errors are available in the Supplementary Materials in the OSF).

The analysis revealed significant main effects of Category, $F(2, 116) = 22.61$, $p < .001$, $\eta^2 = .051$, Dimension, $F(3.32, 192.61) = 120.32$, $p < .001$, $\eta^2 = .237$ and Country, $F(1, 58) = 48.05$, $p < .001$, $\eta^2 = .067$. The main effect of Country indicated that ratings were overall lower in the German sample than in the Portuguese sample ($p < .001$).

Bonferroni-corrected pairwise comparisons for the main effect of Category showed that places received higher ratings than objects ($p < .001$) and people ($p = .002$), whereas people were rated higher than objects ($p = .010$). For the main effect of Dimension, several pairwise comparisons were not significant, including aesthetic appeal versus valence ($p = .076$) and visual complexity ($p = .066$),

creative inspiration versus felt involvement (p = .924), familiarity versus memory evocation (p = 1.000), and valence versus visual complexity (p = 1.000).

A significant Category × Dimension interaction, $F(6.44, 373.67) = 9.72$, $p < .001$, $\eta^2 = .043$, further showed that effects of painting category varied across dimensions (Fig. 2). Bonferroni-corrected comparisons indicated that, relative to objects, places received higher ratings for aesthetic appeal ($p < .001$), concreteness ($p = .011$), creative inspiration ($p < .001$), felt involvement ($p < .001$), memory evocation ($p = .022$), and valence ($p < .001$). Places also received higher ratings than people for aesthetic appeal ($p < .001$), creative inspiration ($p = .005$), and valence ($p < .001$). People were rated higher than objects on arousal ($p = .046$) and concreteness ($p = .029$). No significant category differences were observed for familiarity or visual complexity (all p = 1.000).

Note

Estimated marginal means for the German and Portuguese samples across the nine evaluative dimensions. AA = Aesthetic Appeal; A = Arousal; C = Concreteness; CI = Creative Inspiration; F = Familiarity; FI = Felt Involvement; ME = Memory Evocation; V = Valence; VC = Visual Complexity. Error bars represent 95% confidence intervals.

The Country × Dimension interaction was also significant, $F(3.32, 192.61) = 7.37$, $p < .001$, $\eta^2 = .015$ (see Fig. 3), indicating that cross-cultural differences varied across evaluative dimensions. Compared with German participants, Portuguese participants assigned significantly higher ratings for aesthetic appeal ($p < .001$), concreteness ($p < .001$), creative inspiration ($p < .001$), familiarity ($p = .002$), felt involvement ($p = .002$), and valence ($p < .001$). In contrast, the two groups did not differ significantly in arousal (p = 1.000), memory evocation ($p = .111$), or visual complexity (p = 1.000).

Neither the Category × Country interaction, $F(2, 116) = 1.61$, $p = .204$, $\eta^2 = .004$ nor the three-way Category × Dimension × Country interaction, $F(6.44, 373.67) = 0.94$, $p = .468$, $\eta^2 = .004$, reached statistical significance.

Note

Estimated marginal means for the Portuguese and German samples across the nine evaluative dimensions. AA = Aesthetic Appeal; A = Arousal; C = Concreteness; CI = Creative Inspiration; F = Familiarity; FI = Felt Involvement; ME = Memory Evocation; V = Valence; VC = Visual Complexity. Error bars represent 95% confidence intervals. Pairwise comparisons were Bonferroni-adjusted.

3.3 Cross-cultural Correspondence in Painting Evaluations

Pearson correlations between German and Portuguese mean ratings were computed for each evaluative dimension to assess the consistency of painting evaluations across cultures. Results indicated generally strong-to-very-strong positive correspondence across dimensions. The strongest agreement was observed for valence ($r = .86$, $p < .001$), aesthetic appeal ($r = .84$, $p < .001$), and concreteness ($r = .82$, $p < .001$). Strong correlations were also found for familiarity ($r = .79$, $p < .001$), visual complexity ($r = .74$, $p < .001$), creative inspiration ($r = .73$, $p < .001$), memory evocation ($r = .69$, $p < .001$), felt involvement ($r = .62$, $p < .001$), and arousal ($r = .59$, $p < .001$).

Table 3

Cross-cultural Pearson Correlations Between German and Portuguese Ratings

Dimensions	AA_PT	A_PT	C_PT	CI_PT	F_PT	FI_PT	ME_PT	V_PT	VC_PT
AA_GR	**.84*****	−.46***	.34***	.66***	.45***	.48***	.55***	.81***	.04
A_GR	−.04	**.59*****	−.15	.13	.02	.16	−.07	−.13	.40***
C_GR	.25*	−.26**	**.82*****	.19	.13	.21*	.29**	.19	.03
CI_GR	.71***	−.18	.16	**.73*****	.45***	.59***	.53***	.64***	.25*
F_GR	.34***	.15	.03	.44***	**.79*****	.38***	.43***	.28**	.24*
FI_GR	.58***	.07	.24*	.70***	.50***	**.62*****	.52***	.47***	.48***
ME_GR	.69***	−.29**	.39***	.61***	.62***	.54***	**.69*****	.67***	.13
V_GR	.80***	−.60***	.27**	.57***	.42***	.36***	.53***	**.86*****	−.15
VC_GR	.15	.40***	.13	.37***	.19	.40***	.20*	.01	**.74*****

Note. Values represent Pearson's correlation coefficients (*r*). GR = German sample; PT = Portuguese sample. AA = Aesthetic Appeal; A = Arousal; C = Concreteness; CI = Creative Inspiration; F = Familiarity; FI = Felt Involvement; ME = Memory Evocation; V = Valence; VC = Visual Complexity. Bold coefficients indicate cross-cultural correlations for the same dimension. : *$p < .05$, **$p < .01$, ***$p < .001$.

4 Discussion

The present study examined cross-cultural evaluations of paintings depicting people, places, and objects across perceptual, emotional, and cognitive dimensions in German and Portuguese samples.

Across both samples, concreteness and visual complexity received comparatively high ratings, whereas memory evocation remained relatively low and familiarity was generally modest. These findings are also broadly consistent with previous normative studies on painting evaluation (e.g., Fekete et al., 2023), suggesting that paintings are generally perceived as visually rich and semantically interpretable without necessarily evoking strong autobiographical memories or feelings of familiarity.

Overall, the results indicate substantial cross-cultural agreement in the structure of aesthetic evaluations, alongside systematic differences in rating magnitude. Although Portuguese participants generally assigned higher ratings than German participants across most dimensions, the relative organization of judgments across paintings remained highly consistent between groups. This pattern suggests a shared evaluative framework rather than qualitatively different modes of aesthetic processing.

These findings broadly align with neurocognitive models proposing that aesthetic experience emerges from interactions among perceptual, affective, and meaning-related systems (Brown et al., 2011; Leder et al., 2004; Chatterjee & Vartanian, 2014; Pelowski et al., 2017). Across both samples, the high ratings for concreteness and visual complexity suggest that the paintings were generally experienced as visually rich and semantically interpretable, whereas the comparatively low ratings for familiarity and memory evocation indicate limited autobiographical relevance. The absence of a country main effect on arousal is theoretically meaningful. Neuroimaging research suggests that arousal-related responses to visual stimuli rely on relatively automatic affective systems supported by subcortical and early cortical regions (e.g., the amygdala and anterior insula) that are less influenced by top-down cultural knowledge or interpretive context (Chatterjee & Vartanian, 2016). Consistent with this view, paintings depicting people elicited the highest arousal ratings in both samples, likely reflecting the perceptual salience of human faces and bodies, which are rapidly processed and prioritized across cultures (Freedberg & Gallese, 2007).

Despite higher overall ratings in the Portuguese sample for several dimensions-including aesthetic appeal, valence, felt involvement, creative inspiration, familiarity, and concreteness (but not on arousal, memory evocation, or visual complexity)- these differences occurred alongside strong cross-cultural agreement in the relative ranking of paintings. Two non-exclusive interpretations are possible. On the one hand, these differences may reflect genuine cultural variation in the intensity of aesthetic

experience. On the other hand, they may partly reflect culture-specific response tendencies, such as differences in the use of rating scales or in evaluative standards, rather than differences in the underlying experience itself. Because the present design did not include an objective anchor task (e.g., a perceptual estimation task with identical physical input across groups), these two accounts cannot be fully disentangled. In either case, the strong agreement in the relative organization of judgments across paintings indicates a shared evaluative framework rather than qualitatively different modes of aesthetic processing.

Indeed, all evaluative dimensions showed significant positive correlations between countries. The strongest agreement was observed for valence, aesthetic appeal, and concreteness, followed by familiarity, visual complexity, and creative inspiration. Such convergence supports the view that key components of aesthetic evaluation, particularly perceptual and evaluative aspects of aesthetic experience, are particularly stable across comparable cultural contexts. In contrast, dimensions more closely linked to subjective engagement and personal meaning, such as felt involvement, memory evocation, creative inspiration, and familiarity, showed comparatively lower correspondence. This pattern is consistent with the idea that later, meaning-based stages of aesthetic processing may be more susceptible to individual differences and cultural variation than earlier perceptual and affective stages (Leder et al., 2004; Pelowski et al., 2017).

Arousal also showed comparatively weaker cross-country correspondence, suggesting that although German and Portuguese participants assigned similar overall levels of activation to the paintings, they did not necessarily perceive the same paintings as equally arousing. This variability may reflect cultural differences in the relative contribution of perceptual salience, emotional tension, embodied responses to human presence or bodily cues, or visual dynamism to perceived activation (e.g., Xu et al., 2025).

Painting category also influenced evaluations, and these effects were remarkably consistent across countries. This finding suggests that participants from both countries appeared to rely on similar evaluative criteria when judging different categories of pictorial content. A category-based analysis further revealed that paintings depicting people, objects, and places were processed differently, particularly along affective-, mnemonic-, and concreteness-related dimensions. More specifically, places received consistently higher ratings than objects on aesthetic appeal, concreteness, valence, creative inspiration, felt involvement, and memory evocation, and were also rated higher than people on aesthetic appeal, valence, and creative inspiration. Images of people, in turn, were rated higher than objects on arousal and concreteness. No category differences emerged for familiarity or visual complexity, suggesting that category effects primarily reflect differences in affective engagement and semantic-autobiographical resonance rather than perceptual richness or recognizability. This pattern is consistent with neurocognitive models proposing that category-specific responses to visual content are largely driven by the affective and meaning-related systems of aesthetic processing (Chatterjee & Vartanian, 2016; Pelowski et al., 2017), and with evidence that scenes and human figures preferentially recruit neural systems involved in emotional evaluation, embodied simulation, and self-referential processing (Freedberg & Gallese, 2007; Vartanian & Skov, 2014).

Beyond extending previous normative work (Ennahli et al., 2026), the present findings indicate that the multidimensional pattern of perceptual, emotional, and cognitive evaluations of paintings is largely preserved across two European cultural contexts, despite systematic differences in overall rating magnitude. These findings provide further evidence for the cross-cultural stability of aesthetic experience.

A few limitations should be acknowledged. First, measures known to influence aesthetic evaluation, such as art expertise, education, cultural background, familiarity with Western artistic traditions, and interpretive framing, should be collected, systematically assessed, and compared (Gerger & Leder, 2015; Kirk et al., 2009). Incorporating these variables would provide a more nuanced understanding of the sources of cross-cultural variation in the evaluation of painting. Second, the present design does not allow us to fully separate genuine cultural differences in the intensity of aesthetic experience from culture-specific response tendencies (e.g., differential use of rating scales). Future studies could address this by including an objective anchoring task with identical physical input across groups (e.g., perceptual magnitude estimation), thereby providing a baseline against which cross-cultural differences in evaluative ratings could be interpreted. Finally, incorporating eye-tracking, physiological measures, or neuroimaging alongside behavioral data could help clarify whether the observed cultural differences arise at perceptual, affective, or meaning-based stages of aesthetic processing.

5 Conclusion

The present study shows that aesthetic evaluation of paintings combines substantial cross-cultural stability with subtle cultural variation. German and Portuguese participants showed highly similar evaluation patterns in perceptual, emotional, and cognitive dimensions, supporting the existence of a common framework for aesthetic judgment. At the same time, Portuguese participants consistently assigned higher ratings across most dimensions, suggesting differences in overall evaluative intensity rather than differences in the underlying organization of aesthetic experience.

The painting category also consistently shaped evaluation across both countries, with objects, people, and places eliciting distinct but culturally stable evaluative profiles. Together, these findings suggest that aesthetic experience reflects broadly shared perceptual, affective, and cognitive domains while remaining sensitive to culturally acquired response tendencies.

Within the European context examined here, common historical influences, visual traditions, and ongoing intercultural contact may contribute to convergent patterns of aesthetic evaluation, whereas cultural norms and experience still allow for culture-specific differences in the intensity of aesthetic responses. Moreover, these findings demonstrate that the selected stimuli serve as a robust resource not only for cross-cultural research on aesthetic judgment but also for experimental and intervention studies, in which standardized and culturally validated visual stimuli are essential.

Declarations

Authors contributions

KE: Conceptualization, Methodology, Formal analysis, Writing – Original Draft. LG: Formal analysis, Writing – Original Draft. AB: Conceptualization, Methodology, Investigation, Supervision, Writing – Review & Editing. CS: Conceptualization, Methodology, Supervision, Writing – Review & Editing. MG: Conceptualization, Methodology, Supervision, Writing – Review & Editing. TL: Resources, Writing – Review & Editing.

Funding

This work was supported by a fellowship awarded to Khaoula Ennahli from “la Caixa” foundation (ID 100010434). The fellowship code is (LCF/BQ/DR23/12000037). Laura Grazt was supported by a funding from the Research Initiative of the State of Rhineland-Palatinate, Germany.

Conflicts of interest

The authors declare that they have no known competing financial interests, personal interests, or personal relationships that could have influenced the work reported in this paper.

Ethics approval

The present study was approved by the Ethics Board of the host institution (ref. 15/2024).

Consent to participate

All participants provided informed consent electronically before participation. Participation was voluntary and anonymous, and no identifying information was collected.

Consent for publication

This study did not involve the publication of any individual person’s data, images, or other identifying information. Therefore, consent for publication was not required, as all data were collected and analyzed in anonymized form.

Data availability statement

The data and stimuli for this study are available on the Open Science Framework at https://osf.io/vazhk/overview?view_only=150099e0ff1d42e5b6c3a8f5ce785d28.

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Figures



Figure 1

Examples of paintings from the People, Objects, and Places categories

*Note***.** Example paintings from the People, Objects, and Places categories. Each artwork was presented within a square frame on a white background to preserve its original aspect ratio while ensuring a standardized display area across stimuli. All paintings were retrieved from WikiArt (www.wikiart.org), a publicly accessible online repository.

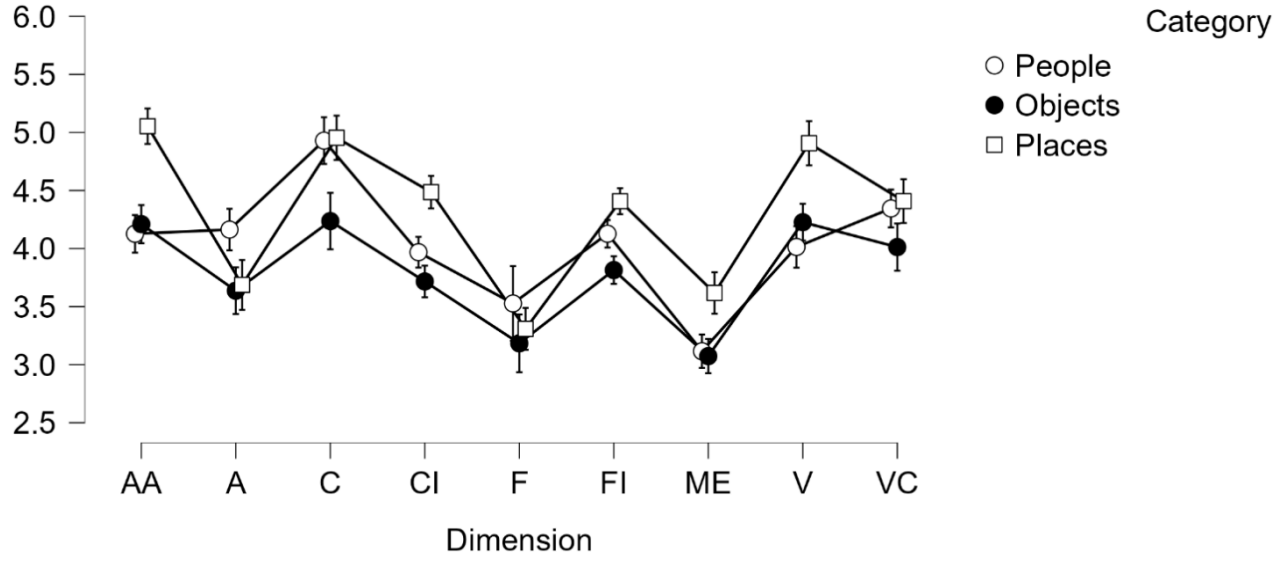


Figure 2

Estimated Marginal Means for the Category X Dimension Interaction

Note. Estimated marginal means for the German and Portuguese samples across the nine evaluative dimensions. AA = Aesthetic Appeal; A = Arousal; C = Concreteness; CI = Creative Inspiration; F = Familiarity; FI = Felt Involvement; ME = Memory Evocation; V = Valence; VC = Visual Complexity. Error bars represent 95% confidence intervals.

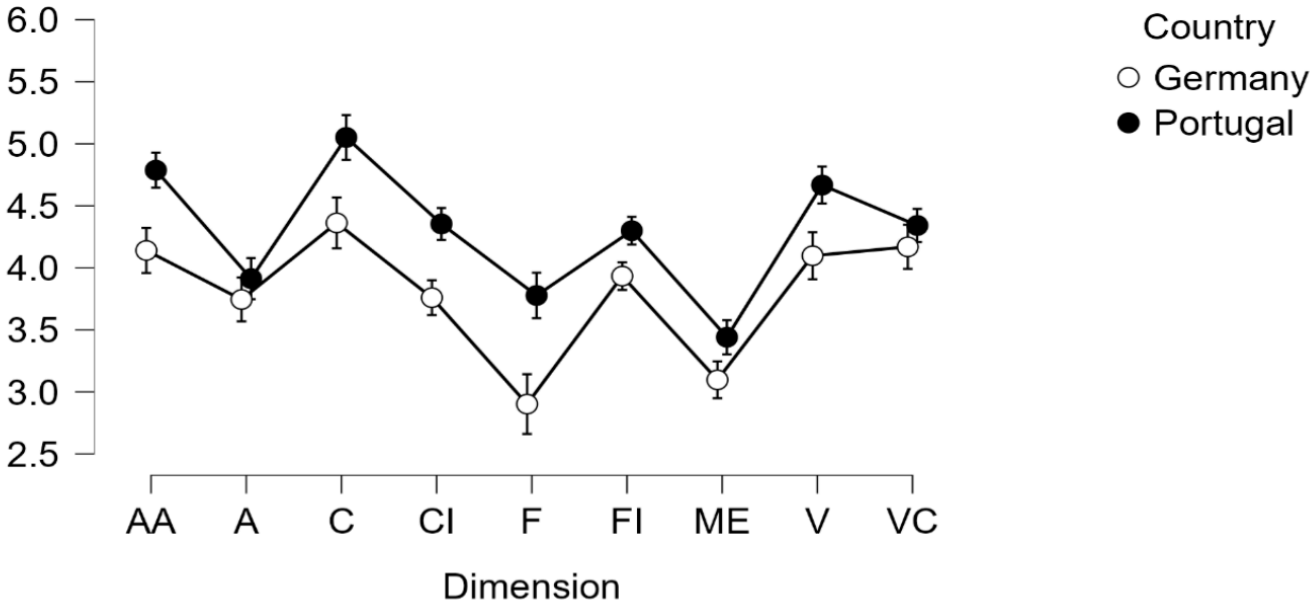


Figure 3

Estimated Marginal Means for the Country x Dimension Interaction

Note. Estimated marginal means for the Portuguese and German samples across the nine evaluative dimensions. AA = Aesthetic Appeal; A = Arousal; C = Concreteness; CI = Creative Inspiration; F = Familiarity; FI = Felt Involvement; ME = Memory Evocation; V = Valence; VC = Visual Complexity. Error bars represent 95% confidence intervals. Pairwise comparisons were Bonferroni-adjusted.