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The Influence of Emotional Response and Aesthetic Perception of Shopping Mall Facade Color on Entry Decisions—Evidence from the Yangtze River Delta Region of China

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Abstract: Color is one of the essential visual aesthetic design elements for shopping mall building facades, dramatically influencing customers' aesthetic perceptions, emotions, and behavioral responses. This study explains the relationship between shopping mall facade color and customers' emotions, aesthetic perceptions, and behavioral responses by applying the S-O-R model. A total of 149 subjects evaluated ten computer-generated shopping malls with different façade colors, and each subject was asked to rate their emotional and aesthetic perceptions and decide whether or not to enter the shopping mall. The results indicate that neutral colors lead to higher pleasure and higher aesthetic perceptions; warm tones and high brightness lead to more positive emotions and aesthetic perceptions; color is positively correlated with aesthetic perceptions; and emotions and aesthetic perceptions positively influence entry decisions, with pleasure being a key predictor of entry decisions. This study elucidates for the first time the process by which shopping mall façade color affects shoppers' aesthetic perceptions, emotions, and entry decisions; expands the theoretical literature related to environmental psychology; and at the same time, bridges the theoretical gap of shopping mall façade color as a stimulus in the S-O-R model, and provides designers and operators with a strategy for visual attractiveness in the color of the shopping mall's architectural façade.

Keywords: shopping mall façade color; emotion; aesthetic perception; entry decision

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1. Introduction

Shopping malls are crucial in physical retail [1] and are essential shopping destinations [2]. The initial visual impact of a retail setting can evoke impulsive buying tendencies [3,4]. As a predominant element shaping vision, color prominently features in visual representation and is a critical aesthetic factor influencing customers' emotional and behavioral reactions [5–7]. The existing literature extensively explores the interplay among color, emotion, and behavior. For example, the color scheme within interiors is associated with eliciting emotions and feelings [8–10] and shaping customers' decisions regarding products and retail choices [5,11]. Studies have explored the influence of wall colors in various settings, such as restaurants [12] and clothing stores [7], scrutinizing shoppers' attitudes and intentions to enter these spaces. Yi and Kang explored the influence of color hue, saturation, and value on evaluations, behaviors, and emotions within the interior spaces of malls [13]. However, more attention must be paid to research exploring the connection between emotions and customers' behavioral responses triggered by the color of shopping mall building facades.

The existing body of literature emphasizes the crucial role of aesthetics in influencing the design and development of a company's products, influencing consumer choices, experiences, and behaviors [14–18]. Aesthetic perceptions of brick-and-mortar businesses, such as hotels [19], restaurants [20], and retail stores [21] play a crucial role in shaping

consumer behavior. Therefore, this study further explores the connection between aesthetic perception in color, emotion, and behavior to predict customers' behavioral responses to color stimuli on shopping mall facades.

The increasing closure of shopping malls, driven by intensifying competition [22], coincides with declining vacancy rates and footfall [23]. In traditional retail settings, the store's ambiance significantly influences shoppers' approach behavior [24]. To excel in this competitive landscape, operators need to implement inventive approaches that attract the gazes of potential shoppers. A particularly impactful and cost-effective strategy is carefully selecting or modifying the shopping mall's façade color. Notably, the existing literature has yet to explore facade colors that attract customers' visual attention in the exterior environment of shopping mall buildings.

Employing the S-O-R framework, this research investigates the impact of shopping mall façade colors on customers' emotions, aesthetic perceptions, and entry decisions. The research contributes both theoretically and practically. Theoretically, it introduces a predictive framework to unravel the dynamics between shopping mall façade color, customer emotions, aesthetic perceptions, and entry decisions, particularly for first-time shoppers. From a practical perspective, the results guide designers and operators on utilizing color to attract visual attention within the shopping mall environment.

2. Literature Review and Formulation of Hypotheses

2.1. "S-O-R" Framework

Mehrabian and Russell pioneered the S-O-R framework [25]. This framework presents a comprehensive explanation through three key phases: environmental factors, emotional factors, and consumer behaviors experienced in the retail environment.

Prior research has thoroughly explored the influence of color on emotions and behavioral responses across diverse retail environments and industries. The S-O-R framework, employing pleasure, arousal, and dominance (PAD) to characterize emotional states, has been applied to analyze customer behavior in these contexts [7,12,26]. Research has also affirmed the importance of color hue, saturation, and value in shaping customers' aesthetic perceptions [26]. The S-O-R framework has been employed in studies examining emotional and behavioral reactions to different color schemes in luxury hotel rooms [26] and investigating the correlation between emotional reactions to room color and customers' choices to enter a restaurant [12]. All of these studies defined color as a stimulus and emotional/aesthetic perception as an individual evaluation of the stimulus (O) within the S-O-R framework, thus supporting the framework's applicability in the study (Figure 1).

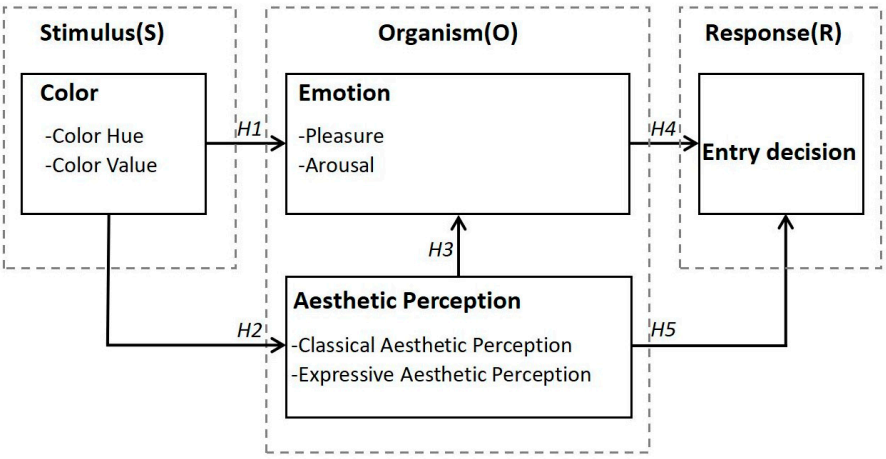

Figure 1. The research framework based on the S-O-R model shows the link between building façade color, emotions, aesthetic perceptions, and entry decisions.

2.2. Color Emotions and Aesthetic Perceptions (S-O)

2.2.1. Stimulus: Color

The external environment is essential in the customer's impression and stimulates emotional and behavioral responses [27,28]. The color of a building is the most noteworthy of the external environment and is recognized as an essential design feature in the built environment [29]; it is the first impression that is usually seen and is one of the essential things that architects need to prioritize.

A building's color primarily encompasses the roof and façade. Typically, the façade's color dictates the overall color theme, as it constitutes the most visually prominent aspect of the building. Moreover, building facade color design is extremely important in architectural research [30]. This study conforms to the Chinese architectural color standard derived from the "Munsell Color System" outlined in GB/T 15608-2006 [31]. To conduct the research, the study utilizes the "HSV color space" (hue-H, saturation-S, and brightness-V) from the "CBCC Chinese Architectural Color Card" [32].

Research on the influence of hue (H) in service environments has predominantly centered on hue [33]. Hue is defined by the wavelength of light, with reds and yellows classified as warm due to their relatively long wavelengths. At the same time, blues and greens are considered cool due to their shorter wavelengths [34]. Prior studies on hue influence have primarily centered on how individuals perceive and respond, often comparing warm, neutral, and cool colors rather than individually analyzing each hue [33].

As for the study of saturation (S) in the color of building facades, due to the control of urban colors, architectural colors are characterized by an overall low saturation [35]. Moreover, Serra et al. also indicated that, for the selection of architectural colors, colors with low saturation are preferred [36]. Therefore, the samples selected for this study meet the low saturation requirement for architectural colors. Hence, there is no necessity to investigate the impact of low and high color saturation on customers in this study.

The lightness (V) value in color represents the degree of black or white in the base color. Lower color values indicate darkness, with a higher concentration of black. In comparison, higher color values indicate brightness with a higher proportion of white [37]. According to previous research, differences in luminance across colors can lead to changes in satisfaction, behavioral intentions, and emotions [13]. This is also an essential dimension of color in this study.

In summary, this research explores how the color of a building facade influences customers' emotions, aesthetic perceptions, and behavioral responses. It specifically examines the impacts of warm, neutral, and cool colors in hues and the effects of color values.

2.2.2. H1: Color and Emotions

Environments largely influence behavior because they influence emotions [38]. Mehrabian and Russell's emotion framework categorizes emotions into three dimensions: "pleasure", representing happiness or contentment; "arousal", signifying stimulation from the environment; and "dominance", reflecting a sense of control [25]. The PAD framework has found widespread application in consumer research [12,26,39–41]. Donovan and Rossiter found that pleasure and arousal dimensions adequately represented customers' emotional responses in retail environments, with shopping behaviors unrelated to feelings of dominance [39]. This bi-dimensional characterization of emotion (pleasure vs. arousal) has gained considerable consensus [42]. Eroglu et al. contended that pleasure and arousal effectively encompass various emotions expressed in the environment [43]. Consequently, this study concentrates on the two emotion dimensions of pleasure and arousal.

Research into color psychology has shown that colors have meaning in and of themselves and that specific colors can influence emotions and behavior [44,45]. Hue, value, and saturation in colors affect perception, emotional responses, and behavioral intentions [46–49]. Moreover, it has been confirmed in architecture that architectural color is an essential factor in affecting emotions [50]. Söker found that warmer tones were higher on mood scores than cooler hues [51]. Emotions are aroused in warm environments and are

depressed in cool environments [52]. Also, Wilms and Oberfeld's emotion rating study showed that brighter colors are associated with more positive emotions [53]. Therefore, it can be hypothesized that:

Hypothesis 1 (H1). *Shopping mall façade colors significantly affect emotions.*

Hypothesis 1a (H1a). *Warmer colors positively influence emotions more than cooler colors.*

Hypothesis 1b (H1b). *The brightness of color more positively influences emotions than darkness.*

2.2.3. H2: Color and Aesthetic Perceptions

Cue theory highlights the impact of environmental stimuli on perceived aesthetic value [54,55]. Color and composition consistently influence aesthetic assessments [56–59]. In hospitality landscapes, color significantly shapes customer aesthetics [18]. A recent study by Hauser et al. confirms that color has the most substantial positive impact on aesthetic perceptions among all visual elements [60].

Aesthetic values, stemming from the appreciation of beauty, can be categorized into two primary dimensions: objective aesthetics, marked by balance and order, and subjective aesthetics, subject to individual preferences [61]. Lavie and Tractinsky define "classical" aesthetics as representing a design characterized by neatness and orderliness. In contrast, "expressive" aesthetics encapsulates innovative and creatively perceived design, frequently linked to innovation and sophistication [62]. Research on color hues indicates that cool colors evoke a calming effect [63]. Conversely, warm colors are often linked more to expressive aesthetics than classical aesthetics, considered stimulating colors that enhance customer focus [63]. Therefore, it can be hypothesized that:

Hypothesis 2 (H2). *Shopping mall facade color significantly affects aesthetic perception.*

Hypothesis 2a (H2a). *Warm tones more positively influence expressive aesthetic perception than cool tones.*

Hypothesis 2b (H2b). *Cool tones more positively influence classical aesthetic perception than warm tones.*

For color value, the previous literature confirms that customer arousal decreases as the color value increases. The expressiveness of the color decreases [64], suggesting that the perception of expressive aesthetics decreases as the color value increases. Another piece of the literature confirms that bright colors of luminance are similar to cooler colors of hue in terms of how they are perceived by customers [65], implying that brighter colors would be more favorable for classic aesthetics. In summary, brightness is positively associated with classic aesthetics and inversely correlated with expressive aesthetics.

Hypothesis 2c (H2c). *Color brightness is more positively perceived in classical aesthetics than dark.*

Hypothesis 2d (H2d). *Darker, rather than lighter, color brightness is more favorable for expressive aesthetic perception.*

2.2.4. H3: Aesthetic Perceptions and Emotions

The literature on brick-and-mortar businesses confirms the vital link between environmental aesthetics and consumer perceptions [18,20]. Environmental aesthetics have positively influenced emotional pleasure and arousal [66]. In the hospitality domain, aesthetic perceptions have been shown to elicit satisfaction and more positive emotions [19]. Customers' aesthetic perceptions influence their approach responses through the pleasurable sensation of being in a luxury hotel environment [26]. The above shows that aesthetic values are communicated through cognition and emotion [67]. Aesthetic perception pos-

itively affects customers' emotional responses [17]. Porat and Tractinsky also confirmed that aesthetic perception positively affects customers' emotions and verified that expressive aesthetics have less of an impact on customers' emotions than classical aesthetic perception [68]. Another study affirmed that classical aesthetic perception positively influences emotions. In contrast, expressive aesthetic perception has less impact on emotions than classical aesthetic perception [26]. Therefore, a hypothesis can be formulated:

Hypothesis 3 (H3). *Aesthetic perception significantly affects emotion.*

Hypothesis 3c (H3a). *Classical aesthetic perception positively influences emotion.*

Hypothesis 3b (H3b). *Expressive aesthetic perception significantly affects emotion.*

Hypothesis 3c (H3c). *Expressive aesthetic perception has a lower emotional impact than classical aesthetic perception.*

2.3. Emotions and Aesthetic Perceptions—Entry Decisions (O-R)

2.3.1. H4: Emotions—Entry Decisions

People approach objects they find pleasant [69]. The intention to approach a store is positively influenced by the pleasure and arousal induced by the store's color [5]. Another study found that pleasure and arousal can influence customers' decisions to enter a restaurant, with pleasure being the most critical predictor [12]. The previous literature has also confirmed that pleasure is a critical variable in decision making [51,70]. As for arousal, it is also positively related to approach behavior, although it does not predict customer behavior as positively as pleasure [71]. Excessive arousal can intensify avoidance motivation, yet at moderate levels, customers tend to exhibit approach behavior [39]. Accordingly, it can be hypothesized that:

Hypothesis 4 (H4). *Emotions positively influence entry decisions, with pleasure being the most critical variable.*

2.3.2. H5: Aesthetic Perceptions—Entry Decisions

Early research by Baker et al. provides ample evidence that aesthetics induces cognitive changes, subsequently influencing consumers' behavioral responses [21]. Aesthetic perception, a consumer's initial impression [72], positively impacts purchase intention through perceived value [73]. It also directly and significantly influences behavior [74]. Recent research has also indicated that individuals' positive perceptions of aesthetic value influence aesthetic judgment (attitude) and directly contribute to approach behavior [75]. Therefore, a hypothesis can be posited:

Hypothesis 5 (H5). *Aesthetic perception positively influences entry decisions.*

3. Materials and Methods

3.1. Participants in the Research

The study involved working professionals aged 25–60, with 149 participants (94 males and 55 females) from Nanjing Kingdom Commercial Management Co. (Nanjing, China). All participants passed the Ishihara colorblindness test [76]. Given the impact of gender and age on color preference [77], these variables were examined as covariates.

3.2. Materials and Settings

The study employed 3D computer rendering to create lifelike perspective views, which is a method validated in prior research [5,12,26,78] and confirmed for its precision in portraying authentic scenes [79]. Regarding the selection of architectural frameworks, six typical modern shopping mall architectural frameworks were initially selected and

evaluated by five architectural experts with full senior titles from the Kingdom Architectural Design Institute to finalize the framework for this study. The shopping mall framework has glass-curtain walls and solid-curtain walls distributed on each floor, which is simple in form and uniform in the distribution of solid-curtain walls, which are conducive to studying color impact. At the same time, to enhance the realism of the external environment of the shopping mall, some scenes are constructed in the image, such as sculptures, roads, greenery, pedestrians, traffic, and so on, to simulate the immersion feeling of the customers more realistically.

The color selection for the mall facade adhered to Chinese architectural color standards, utilizing the Munsell color system and "HSV color space" [32] from "CBCC Chinese Architectural Color Card" (hue-H, saturation-S, value-V). Cheerful red (5R) and positive yellow (5Y) represent warm colors. In contrast, positive green (5B) and cheerful blue (5G) represented cool colors. Shades were excluded outside the four mentioned (red–yellow, yellow–green, green–blue, blue–violet, violet, and fuchsia). Neutral colors, represented by all gray (N5) and all white (N10), were included [80]. Each color's saturation adhered to the building's low saturation profile (C $\leqq$ 14) [35,36]. Five architectural experts from the Kingdom Architectural Design Institute with full senior titles evaluated color samples within each Munsell color longitude space to ensure the selection met the specified conditions. They selected colors that harmonized with the building facades of the shopping malls. The hue attributes (warm, cool, and neutral), values (lightness and darkness), and color specifications (HV/C and H:S:V) are detailed in Table 1. Figure 2 displays images of the ten color samples within the same shopping mall scene.

Table 1. Characteristics and specifications of primary colors in the simulated scenes for each scenario.

Scenario	Color	Color Attribute		Color System	
		Hue Tone	Value	HV/C	H:S:V
1		W(5R)	H(8)	5R8/10	4:35:95
2		W(5R)	L(4)	5R4/14	350:83:70
3		W(5Y)	H(9)	5Y8/2	50:65:96
4		W(5Y)	L(5)	5Y5/4	45:46:52
5		C(5B)	H(8)	5B8/8	193:55:88
6		C(5B)	L(4)	5B4/4	193:54:45
7		C(5G)	H(7)	5G7/10	155:65:80
8		C(5G)	L(4)	5G4/6	158:78:42
9		N	H(10)	N10	158:0:100
10		N	L(5)	N5	159:0:56

Note: 1. Color hue tone is divided into neutral (N), warm (W), and cool (C). 2. Color value is divided into high (H: color brightness value is greater than 5) and low (L: color brightness value is lesser than or equal to 5).

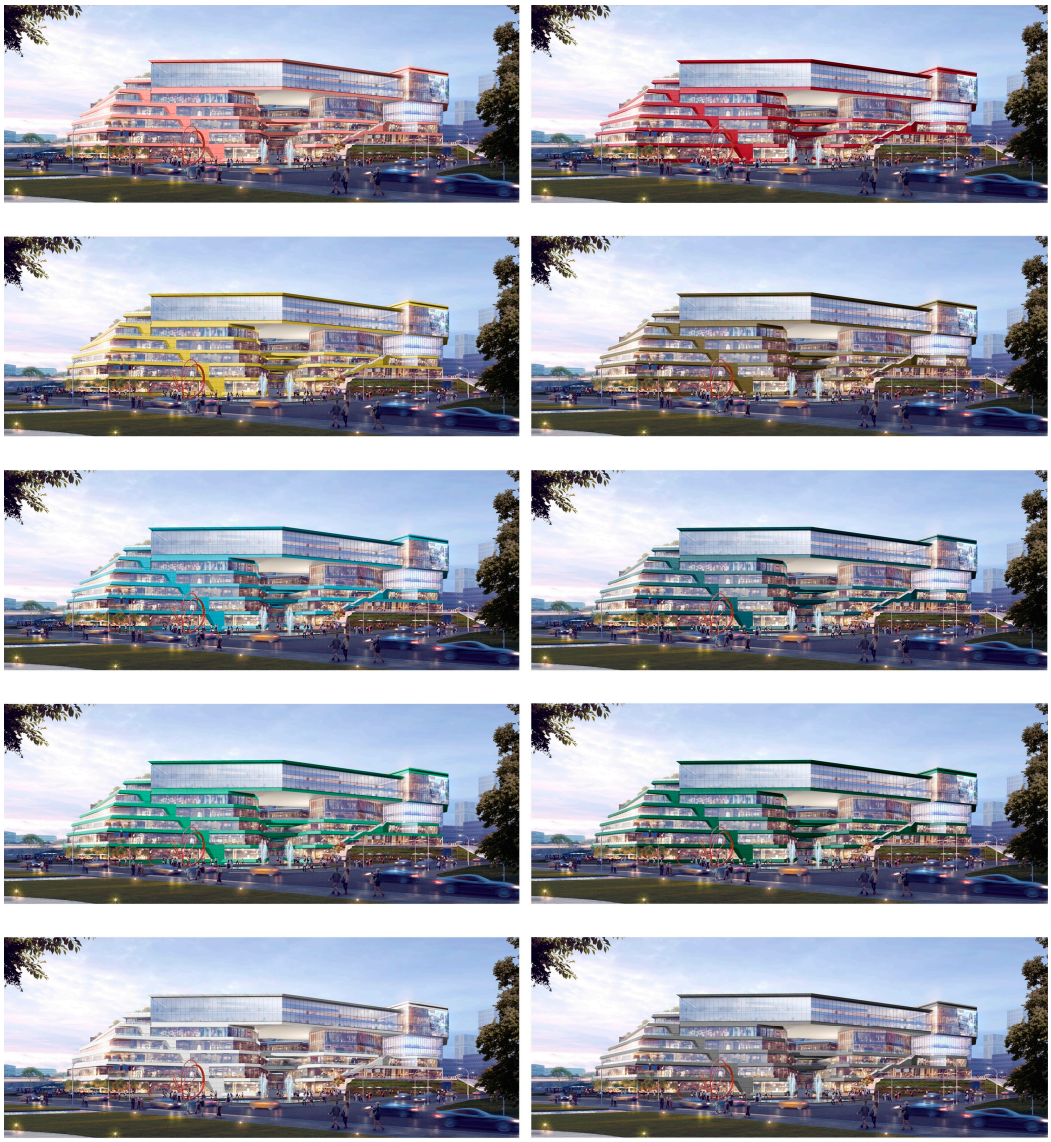

Figure 2. Perspective view of 10 scenes under different color conditions.

3.3. Procedures and Measures

The experiments were conducted between June and September 2023 and tested under an indoor lighting environment of 500–800 lx. The space was a small enclosed conference room (approximately 15 m^2). The experiments were conducted in different sectors and batches during different periods. First, each participant was asked to take the Ishihara colorblindness test [76] and then to fill out a paper questionnaire with the individual's essential background. Before the experiment, participants acclimated their eyes by looking at a black TV screen. Then, they were asked to watch ten simulated scenes of building facades in shopping malls on a television screen (70-inch screen, 3840 × 2160-pixel resolution) to assess their impressions of the scenes and their entry decisions and answered on a paper questionnaire. Each test will have the same opening introduction: "Now, please imagine that you are walking in the busy commercial center of an unfamiliar city, and you are looking for a shopping mall, and you see this shopping mall from the street; please evaluate your emotional state and aesthetic perception based on the color of this shopping mall's façade and decide whether to enter or not to enter this shopping mall according to this". A black screen is shown for 10 s between the simulated scenes to refresh perception. The entire session takes approximately 25 min per participant to complete.

This study evaluated emotions (pleasure and arousal) through a five-point semantic differential scale comprising six items [81]. Pleasure items included happy–unhappy, satisfied–unsatisfied, and contented–melancholic. In contrast, arousal comprised relaxed–stimulated, calm–excited, and sleepy–awake. Additionally, participants evaluated the aesthetic perception of the building facade's color using a five-point Likert scale. This measurement included six dimensions: elegance, comfort, and handicraft for classical aesthetic perception and sophistication, creativity, and innovativeness for expressive aesthetic perception [26]. To explore the correlation among emotions, aesthetic perceptions, and entry decisions, participants indicated whether they chose to enter the shopping mall, providing two options: yes or no. The core sections of the questionnaire are detailed in Appendix A.

This study employed SPSS 27.0 for data analysis, including descriptive statistics, reliability and validity analysis, differential validity, Pearson correlation analysis, analysis of variance, and logistic regression analysis. Logistic regression analysis, widely acknowledged for predicting behavior, has been utilized in previous research [12,24,82].

4. Results

4.1. Descriptive Statistics

As can be seen from Table 2, of the 149 study participants, 94 (63.09%) were male and 55 (36.91%) were female. The "25–35 years old" percentage was 55.03%, and "36–45 years old" was 38.93%. Among the participants, 69.13% are married, and 30.87% are unmarried. Regarding education, 71.14% are undergraduates. Concerning the distribution of average monthly income, the majority fall within the range of "5000–10,000 yuan," constituting 48.32% with 72 cases, followed by "10,001–20,000 yuan," accounting for 32.21%.

Table 2. Demographic profile.

Items	Categories	N	Percent (%)
Gender	Male	94	63.09
	Female	55	36.91
Age	25–35 years old	82	55.03
	36–45 years old	58	38.93
	Over 45 years old	9	6.04
Marital status	Singleton	46	30.87
	Married	103	69.13
Educational level	Junior college	9	6.04
	Undergraduate	106	71.14
	Master's degree or above	34	22.82
Average monthly income level (including bonuses, benefits, and other forms of income)	5000 and below	22	14.77
	5001–10,000	72	48.32
	10,001–20,000	48	32.21
	20,001–30,000	7	4.70
Total		149	100.0

4.2. Reliability Testing

This research evaluated the questionnaire's reliability through Cronbach's alpha. Typically, when Cronbach's alpha value exceeds 0.7, it indicates good internal consistency of the variables constructed by the scale [83]. As shown in Table 3, the Cronbach's alpha values for the four dimensions are 0.917, 0.859, 0.893, and 0.871, respectively. All values surpass 0.7, indicating strong internal consistency within the dimensions of the questionnaire, signifying higher reliability.

Table 3. Reliability and convergent validity scale.

	Variable	Item	Est.	S.E.	C.R.	*p*	Std.	AVE	CR	Cronbach Alpha
Emotion	Pleasure	happy–unhappy	1				0.888	0.789	0.918	0.917
		satisfied–unsatisfied	1.012	0.020	49.908	***	0.904			
		contended–melancholic	0.985	0.021	46.858	***	0.873			
	Arousal	Stimulated–relaxed	1				0.805	0.676	0.862	0.859
		Excited–calm	1.050	0.031	33.969	***	0.853			
		wide awake–sleepy	1.129	0.035	32.509	***	0.807			
Aesthetic perception	Classical aesthetic perception	elegance	1				0.896	0.779	0.913	0.912
		comfort	0.966	0.020	48.429	***	0.887			
		handicraft	1.009	0.022	46.133	***	0.864			
	Expressive aesthetic perception	sophistication	1				0.836	0.708	0.879	0.879
		creativity	1.041	0.027	37.856	***	0.852			
		innovativeness	1.045	0.028	37.060	***	0.836			

Fit: χ^2 = 444.047, NFI = 0.967 > 0.9, IFI = 0.971 > 0.9, TLI = 0.960 > 0.9, CFI = 0.971 > 0.9, GFI = 0.953 > 0.9, RMSEA = 0.074 < 0.080. ***: $p < 0.001$.

Table 3 shows that the standardized factor loadings of the 12 measures in this study's framework range from 0.806 to 0.906, surpassing 0.50. This indicates a high level of representativeness for each corresponding variable. Additionally, the AVE values for each variable, ranging from 0.676 to 0.789, exceed 0.5. The values of the combined reliabilities (CR) range from 0.862 to 0.918, all surpassing 0.5 as well. These results suggest that the convergent validity of the variables in this research is satisfactory.

4.3. Distinguishing Validity

Suppose the square root of AVE for each latent variable is greater than the correlation coefficient between that variable and other variables. In that case, it signifies discriminant solid validity among the variables. As illustrated in Table 4, the correlation coefficients among the variables in this research are consistently lower than the square root values of the AVE for each latent variable. Hence, there is excellent discriminant validity among the latent variables.

Table 4. Distinguishing validity scale.

		Pleasure	Arousal	Classical Aesthetic Perception	Expressive Aesthetic Perception
Emotion	Pleasure	**0.888**			
	Arousal	0.541	**0.822**		
Aesthetic perception	Classical aesthetic perception	0.663	0.466	**0.882**	
	Expressive aesthetic perception	0.611	0.411	0.646	**0.841**

Note: The bold are the square root of the AVE, and the other data are the correlation coefficients between the variables.

4.4. Correlation Analysis

As shown in Table 5, there was a significant positive correlation between color (hue, value), aesthetic perception (classical aesthetic perception, expressive aesthetic perception), and emotion (pleasure and arousal) ($r > 0$, $p < 0.05$). There was also a significant positive correlation between color and aesthetic perception ($r > 0$, $p < 0.05$), and there was a significant positive correlation between emotion and aesthetic perception and entry decision ($r > 0$, $p < 0.05$).

Table 5. Pearson correlation analysis table.

		M	SD	Gender	Age	Hue	Value	Pleasure	Arousal	Classical	Expressive	Entry Decision
	Gender	1.37	0.48	1								
	Age	1.51	0.61	−0.025	1							
Color	Hue	2.00	0.89	0.000	0.000	1						
	Value	1.50	0.50	−0.001	0.001	0.000	1					
Emotion	Pleasure	2.56	1.12	0.034	−0.073 **	0.207 **	0.285 **	1				
	Arousal	2.74	1.04	0.016	−0.054 *	0.205 **	0.243 **	0.541 **	1			
Aesthetic perception	Classical	2.79	1.10	0.030	−0.039	0.080 **	0.206 **	0.663 **	0.466 **	1		
	Expressive	2.78	0.99	0.016	−0.064 **	0.164 **	0.216 **	0.611 **	0.411 **	0.646 **	1	
Entry decision		0.37	0.48	0.019	−0.035	0.186 **	0.203 **	0.698 **	0.375 **	0.566 **	0.527 **	1

M: mean, SD: standard deviation; * $p < 0.05$, ** $p < 0.01$.

In addition, from Table 5, it was found that there was no significant correlation between gender and color, emotion, aesthetic perception, and entry decision ($p > 0.05$). There was a significant negative correlation between age and color, emotion, and aesthetic perception ($r < 0$, $p < 0.05$) and no significant correlation with entry decision ($p > 0.05$).

4.5. Variance Analysis

An analysis of variance (ANOVA) was used to study the samples of different color groups to determine whether there were significant differences in the scores of pleasure, arousal, classicism, and expressiveness. As shown in Table 6, there are significant differences in the scores of pleasure, arousal, classicism, and expressiveness among different color tones ($p < 0.05$), with the highest arousal scores for "Warm colors", and the highest scores for pleasure, classicism, and expressiveness for "Neutral colors". "Warm colors" had higher scores for pleasure, classicism, and expressiveness than "Cool colors".

Table 6. ANOVA results for color hue.

Variable		Hue			F	*p*
		Cool	Neutral	Warm		
Emotion	Pleasure	2.18 ± 0.98	3.04 ± 1.19	2.70 ± 1.08	73.240	0.000
	Arousal	2.52 ± 1.02	2.65 ± 1.01	3.00 ± 1.02	34.219	0.000
Aesthetic perception	Classical	2.60 ± 1.07	3.18 ± 1.29	2.79 ± 0.96	29.249	0.000
	Expressive	2.56 ± 0.95	2.95 ± 1.11	2.92 ± 0.94	26.494	0.000

The *t*-test was used to study the samples of different value groups to determine whether there were significant differences in the scores of pleasure, arousal, classicism, and expressiveness. As shown in Table 7, the scores of pleasure, arousal, classicism, and expressiveness of the samples in different luminance groups are significantly different ($p < 0.05$). The pleasure, arousal, classicism, and expressiveness scores of the samples with luminance "light" are significantly higher than those with "dark" scores.

Table 7. Results of *t*-test analysis of values.

Variable		Value		t	*p*
		Dark	Light		
Emotion	Pleasure	2.24 ± 0.99	2.88 ± 1.15	−11.489	0.000
	Arousal	2.48 ± 1.00	2.99 ± 1.02	−9.654	0.000
Aesthetic perception	Classical	2.57 ± 1.05	3.02 ± 1.09	−8.123	0.000
	Expressive	2.57 ± 0.96	3.00 ± 0.99	−8.541	0.000

4.6. Logistic Regression Analysis

From the results of Model 1 and Model 2 in Table 8, it can be seen that color hue has a significant positive effect on pleasure ($\beta = 0.127$, $t = 7.048$, $p < 0.001$), indicating that the

more the hue tends to be warmer, the higher the pleasure is. Value has a significant positive effect on pleasure (β = 0.135, t = 7.364, $p < 0.001$), indicating that the brighter the luminance is, the higher the pleasure is. Hue has a significant positive effect on arousal (β = 0.156, t = 6.985, $p < 0.001$), indicating that the more the hue tends to be warmer, the higher the arousal. Value has a significant positive effect on arousal (β = 0.144, t = 6.376, $p < 0.001$), indicating that the brighter the value, the higher the arousal. Hypotheses H1a and H1b were supported.

Table 8. Logistic regression analysis.

Dependent Variable	Independent Variable	β	t	R^2	Modified R^2	F
Model 1: Pleasure	Gender	0.015	0.843	0.530	0.528	278.724 ***
	Age	−0.038	−2.120 *			
	Color Hue	0.127	7.048 ***			
	Color Value	0.135	7.364 ***			
	Classical aesthetic perception	0.450	19.185 ***			
	Expressive aesthetic perception	0.268	11.279 ***			
Model 2: Arousal	Gender	0.003	0.142	0.281	0.278	96.506 ***
	Age	−0.033	−1.475			
	Color Hue	0.156	6.985 ***			
	Color Value	0.144	6.376 ***			
	Classical aesthetic perception	0.335	11.564 ***			
	Expressive aesthetic perception	0.135	4.602 ***			
Model 3: Classical aesthetic perception	Gender	0.029	1.164	0.051	0.049	20.028 ***
	Age	−0.038	−1.504			
	Color Hue	0.080	3.154 **			
	Color Value	0.206	8.154 ***			
Model 4: Expressive aesthetic perception	Gender	0.015	0.595	0.078	0.075	31.395 ***
	Age	−0.064	−2.576 *			
	Color Hue	0.164	6.575 ***			
	Color Value	0.216	8.678 ***			
Model 5: Entry decision	Gender	−0.004	−0.244	0.513	0.511	260.661 ***
	Age	0.016	0.875			
	Pleasure	0.557	20.656 ***			
	Arousal	−0.038	−1.740			
	Classical aesthetic perception	0.144	5.375 ***			
	Expressive aesthetic perception	0.110	4.392 ***			

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

In Table 8, Model 1 and Model 2 also show that classical aesthetic perception has a significant positive effect on pleasure (β = 0.450, t = 19.185, $p < 0.001$). Expressive aesthetic perception also has a significant positive effect on pleasure (β = 0.268, t = 11.279, $p < 0.001$), suggesting that the higher the aesthetic perception, the higher the pleasure. Compared to classical aesthetic perception, the expressive aesthetic perception has less effect on pleasure. Classical aesthetic perception had a significant effect on arousal (β = 0.335, t = −11.564, $p < 0.001$). Expressive aesthetic perception also had a significant positive effect on arousal (β = 0.135, t = 4.602, $p < 0.001$), indicating that the higher the aesthetic perception, the higher the arousal. In contrast, the expressive aesthetic perception had a more minor effect on arousal when compared to classical aesthetic perception. The results support hypotheses H3a, H3b, and H3c.

From the results of Model 3 and Model 4 in Table 8, it can be seen that hue has a significant positive effect on classical aesthetic perception (β = 0.080, t = 3.154, $p < 0.01$), indicating that the more the hue tends to be warmer, the higher the classical aesthetic perception and the results support the hypothesis H2b. Color value has a significant positive effect on classical aesthetic perception (β = 0.206, t = 8.154, $p < 0.001$), indicating

that the brighter the brightness, the higher the classical aesthetic perception, and the results support hypothesis H2c. Hue has a significant positive effect on expressive aesthetic perception (β = 0.164, t = 6.575, $p < 0.001$), indicating that the more the hue tends to favor warmer tones, the higher the expressive aesthetic perception. The results support H2a. Color value has a significant positive effect on expressive aesthetic perception (β = 0.216, t = 8.678, $p < 0.001$), indicating that the brighter the brightness, the higher the expressive aesthetic perception, which does not support hypothesis H2d.

From the results of Model 5 in Table 8, it can be seen that pleasure has a significant positive effect on the entry decision (β = 0.557, t = 20.656, $p < 0.001$). Arousal does not have a significant effect on the entry decision (β = −0.038, t = −1.740, $p > 0.05$). Classical aesthetic perception has a significant positive effect on the entry decision (β = 0.144, t = 5.375, $p < 0.001$). Expressive aesthetic perception has a significant positive effect on the entry decision (β = 0.110, t = 34.392, $p < 0.001$). Classical aesthetic perception is more capable of positively influencing the entry decision than expressive aesthetic perception. Comparing the t-values, we found that pleasure is the most critical factor influencing the entry decision. The results support hypotheses H4 and H5.

5. Discussion

Using the S-O-R framework, this study examined how the color of shopping mall facades impacts the emotional and aesthetic perceptions of first-time/passing shoppers and its connection with the decision to enter. The results of testing the hypothesis are outlined in Table 9.

Table 9. Summary of hypotheses testing.

	Hypothesis Statement	**Result**
H1: Shopping mall facade color → Emotion	H1a: Warmer colors positively influence emotions more than cooler colors.	Accepted
	H1b: Brightness of color more positively influences emotions than darkness.	Accepted
H2: Shopping mall facade color → Aesthetic Perception	H2a: Warm tones more positively affect expressive aesthetic perceptions than cool tones.	Accepted
	H2b: Cool tones more positively influence classical aesthetic perception than warm tones.	Rejected
	H2c: Color brightness is more positively perceived in classical aesthetics than dark.	Accepted
	H2d: Darker, rather than lighter, color brightness is more favorable for expressive aesthetic perception.	Rejected
H3: Aesthetic Perception → Emotion	H3a: Classical aesthetic perception has a positive effect on emotion.	Accepted
	H3b: Expressive aesthetic perception has a significant effect on emotion.	Accepted
	H3c: Expressive aesthetic perception has less effect on emotion than classical aesthetic perception.	Accepted
H4: Emotions positively influence entry decisions, with pleasure being the most critical variable.		Accepted
H5: Aesthetic perception positively influences entry decisions.		Accepted

The study results show how the hue and value of shopping mall façade colors affect shoppers' emotions and aesthetic perceptions. The positive relationship between color and emotion has been well established in the previous related literature in different fields [51–53], which also applies to the emotional response to shopping mall façade color. Regarding the link between shopping mall facade color and aesthetic perception, this study did not find support for hypotheses H2b and H2d. However, D. Kim et al. discovered no significant distinction in the impact of warm and cool colors on classical and expressive aesthetic perceptions in luxury hotels. Furthermore, they noted a positive correlation between luminance and aesthetic perceptions [26].

The connection between customers' aesthetic perceptions and emotions aligns with prior studies [26,39,40,84]. All aesthetic perceptions of customers positively influence

emotions. Nevertheless, expressive aesthetic perceptions exhibit less impact on emotions than classical aesthetic perceptions.

The study's findings emphasize that "pleasure" is the most influential variable in predicting entry decisions. These results align with earlier research [12,40,85]. In contrast, arousal plays a comparatively weaker role in entry decisions, which is consistent with prior studies [12,39,86]. Regarding aesthetic perception, classical aesthetic perception exerts a more significant favorable influence on entry decisions than expressive aesthetic perception, addressing a gap in the existing literature.

To translate these findings into practical design applications, the study employed an analysis of variance (ANOVA) and *t*-tests to compare the mean scores across various hues and values. The results show that neutral colors bring higher pleasure as well as higher aesthetic perception (classical aesthetic perception, expressive aesthetic perception); warmer tones bring more positive emotions (pleasure, arousal) and aesthetic perceptions than cooler tones; and high brightness brings higher emotions as well as higher aesthetic perceptions. These findings suggest that the color design of shopping mall building facades should avoid cold tones and dark brightness colors and prefer neutral, warm tones and bright brightness colors to increase the probability of entry. Previous research, including studies on the pleasantness of restaurant environments' colors, has significantly impacted positive behavioral intentions in restaurants [12,70]. The existing literature recommends high brightness and warm colors in store designs to foster positive customer emotions and satisfaction [5,70,84]. Moreover, in architectural practice, Divers confirmed that neutral colors are used extensively in architectural design to create a friendly atmosphere [87]. Derya Arslan and Yıldırım also confirmed that the appearance of stadiums with neutral colors is more welcoming and evaluated more positively [88].

6. Conclusions and Limitations

Previous studies have applied the S-O-R framework to investigate the effects of environmental stimuli on customers' emotional and behavioral responses. However, there needs to be a more profound understanding of this relationship concerning shopping mall building facades. This study examines the influence of shopping mall building façade color as a stimulus on emotions, aesthetic perceptions, and entry decisions. This research holds significance for both theoretical advancements and practical applications.

6.1. Theoretical Contributions

While prior research has utilized the SOR framework to investigate the impact of environmental stimuli on emotions and retail decisions, these studies often focused on examining specific pairwise relationships, such as S and O [78], S and R [24], or O and R [70]. Moreover, there is a significant void in the literature regarding the impact of building façade context on entry decisions within shopping malls.

This research contributes to theory by simultaneously investigating the interaction between S, O, and R, employing building façade color as the stimulus and entry decisions as the behavioral response. Utilizing logistic regression, a predictive framework for shopping mall entry decisions was established. The findings affirm that colors that induce pleasure can forecast shoppers' entry decisions. Additionally, the study underscores the substantial impact of aesthetic perception, which is the experiential value preceding entry. It extends its significance by proposing that color stimuli from a building's façade can evoke aesthetic perceptions, steering behavioral responses toward the approach. Furthermore, the observation that classical aesthetic perception more strongly influences approach behavior than expressive aesthetic perception tentatively contributes to a literature gap.

Furthermore, this research enhances our comprehension of the link between customers' aesthetic perceptions and emotions. By categorizing perceived aesthetics into classical and expressive aesthetics, this research elucidates the impact of shopping center façade color on shoppers' emotions. This division proves essential for discerning emotional and

behavioral distinctions in shoppers' aesthetic perceptions. It sheds light on the role of aesthetic perception in shopping mall environments.

6.2. Practical Significance

This research confirms that color-induced pleasure affects shopping mall entry behavior. This research can help designers and operators better understand the impact of ambiance caused by building facade color on shopping mall entry decisions.

A crucial implication for designers and operators is the emphasis on enhancing ambiance to drive consumer engagement in shopping malls. A pleasing ambiance, particularly visual merchandising, is pivotal for influencing shopping mall selection. Vibrant colors contribute to positive aesthetic perceptions, shaping the impression and influencing favorable behavioral intentions.

In the practical realm of designing shopping mall facades, the question arises: "What colors should be chosen for building facades?" This study's empirical findings advocate for using neutral colors, warm tones, and high-brightness color facades to evoke positive environmental perceptions and increase the likelihood of shoppers entering the mall. Conversely, cool tones and low-brightness colors were associated with negative perceptions and a reduced probability of mall entry.

6.3. Limitations and Future Research Directions

The research's scenes depicted monochromatic building facade walls. However, real-world facades often feature color combinations, potentially influencing emotional responses and aesthetic perceptions. Future research could explore the impact of diverse color combinations on entry decisions.

Moreover, the study's findings are constrained by the experimental design and specific types of shopping malls. To provide a more comprehensive understanding, subsequent research should consider additional factors, like shopping mall branding, building form, facade material texture, and external landscape.

The study's limitations include using specific sampling methods, which may restrict generalization to other populations. Exploring emotional and behavioral responses across various income levels and ethnic backgrounds within the population could yield valuable insights. Future research might explore the interaction between color and individual customer characteristics to enhance our understanding of customer evaluation and decision-making processes.

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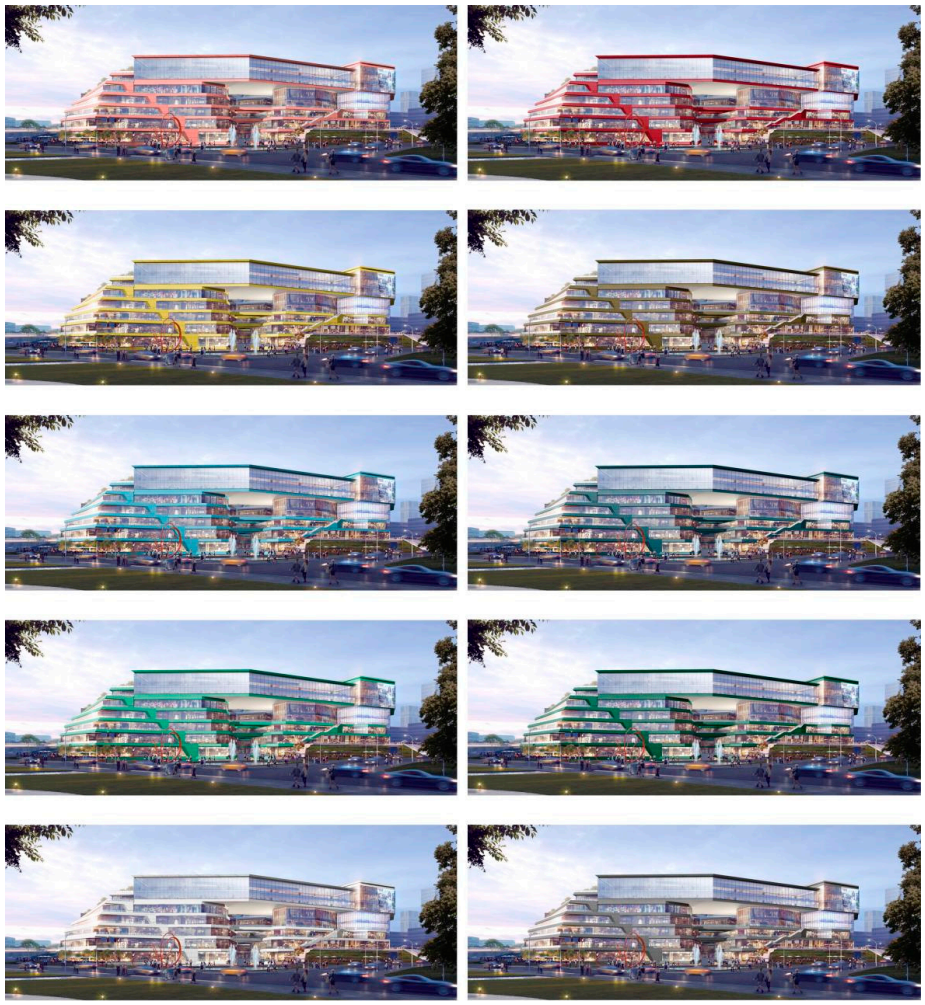
Appendix A

Now, please imagine that you are walking in the busy commercial center of an unfamiliar city, and you are looking for a shopping mall. You see a shopping mall from the street, please evaluate your emotional state and aesthetic perception according to the color of the

façade of this shopping mall, and decide whether to enter or not to enter this shopping mall. Please answer according to the above settings:



(Note: These ten scenes were demonstrated one by one on the TV screen, and each scene was evaluated with the following questions)

1. When you look at the façade of this shopping mall, rate your current emotional state: (six sets of emotions, each set of five boxes representing different levels of emotion, choose one emotion for each set of ratings)

happy	☐	☐	☐	☐	☐	unhappy	stimulated	☐	☐	☐	☐	☐	relaxed
satisfied	☐	☐	☐	☐	☐	unsatisfied	excited	☐	☐	☐	☐	☐	calm
contented	☐	☐	☐	☐	☐	melancholic	awake	☐	☐	☐	☐	☐	sleepy

2. How do you think this colorful shopping mall makes you feel: (six groups of feelings, each group ranging from Strongly agree to Strongly Oppose, please choose the most appropriate option for each group according to your own feelings)

	Strongly agree	Agree	Neutral	Oppose	Strongly Oppose		S.A	A	N	O	S.O
elegance	☐	☐	☐	☐	☐	sophistication	☐	☐	☐	☐	☐
comfort	☐	☐	☐	☐	☐	creativity	☐	☐	☐	☐	☐
handicraft	☐	☐	☐	☐	☐	innovativeness	☐	☐	☐	☐	☐

3. Will you choose to enter this shopping mall?

Yes ☐ No ☐

References

1. Elmashhara, M.G.; Soares, A.M. Entertain Me, I'll Stay Longer! The Influence of Types of Entertainment on Mall Shoppers' Emotions and Behavior. *J. Consum. Mark.* **2019**, *37*, 87–98. [CrossRef]
2. Babin, B.J.; Feng, C.; Borges, A. As the Wheel Turns toward the Future of Retailing. *J. Mark. Theory Pract.* **2021**, *29*, 78–91. [CrossRef]
3. Law, D.; Wong, C.; Yip, J. How Does Visual Merchandising Affect Consumer Affective Response?: An Intimate Apparel Experience. *Eur. J. Mark.* **2012**, *46*, 112–133. [CrossRef]
4. Hussain, R.; Ali, M. Effect of Store Atmosphere on Consumer Purchase Intention. *Int. J. Mark. Stud.* **2015**, *7*, 35. [CrossRef]
5. Brengman, M. The Impact of Colour in the Store Environment: An Environmental Psychology Approach. Ph.D. Thesis, Ghent University, Ghent, Belgium, 2002.
6. Jang, S.; Namkung, Y. Perceived Quality, Emotions, and Behavioral Intentions: Application of an Extended Mehrabian–Russell Model to Restaurants. *J. Bus. Res.* **2009**, *62*, 451–460. [CrossRef]
7. Cho, J.Y.; Lee, E.-J. Impact of Interior Colors in Retail Store Atmosphere on Consumers' Perceived Store Luxury, Emotions, and Preference. *Cloth. Text. Res. J.* **2017**, *35*, 33–48. [CrossRef]
8. Bellizzi, J.A.; Hite, R.E. Environmental Color, Consumer Feelings, and Purchase Likelihood. *Psychol. Mark.* **1992**, *9*, 347–363. [CrossRef]
9. Chebat, J.-C.; Morrin, M. Colors and Cultures: Exploring the Effects of Mall Décor on Consumer Perceptions. *J. Bus. Res.* **2007**, *60*, 189–196. [CrossRef]
10. Yildirim, K.; Capanoglu, A.; Cagatay, K.; Hidayetoglu, M.L. Effect of Wall Colour on the Perception of Hairdressing Salons. *J. Int. Colour Assoc.* **2012**, *7*, 51–63.
11. Han, S.; Choi, D.; Cha, Y. The Effect of Colour on the Anchoring Heuristic in Consumer Decision Making. *J. Eur. Psychol. Stud.* **2014**, *5*, 19–27.
12. Tantanatewin, W.; Inkarojrit, V. The Influence of Emotional Response to Interior Color on Restaurant Entry Decision. *Int. J. Hosp. Manag.* **2018**, *69*, 124–131. [CrossRef]
13. Yi, F.; Kang, J. Impact of Environment Color on Individual Responses in Public Spaces of Shopping Malls. *Color Res. Appl.* **2020**, *45*, 512–526. [CrossRef]
14. Bloch, P.H. Seeking the Ideal Form: Product Design and Consumer Response. *J. Mark.* **1995**, *59*, 16–29. [CrossRef]
15. Meyers-Levy, J.; Zhu, R. Gender Differences in the Meanings Consumers Infer from Music and Other Aesthetic Stimuli. *J. Consum. Psychol.* **2010**, *20*, 495–507. [CrossRef]
16. Cheng, J.-S.; Tang, T.-W.; Shih, H.-Y.; Wang, T.-C. Designing Lifestyle Hotels. *Int. J. Hosp. Manag.* **2016**, *58*, 95–106. [CrossRef]
17. Lin, I.Y. Effects of Visual Servicescape Aesthetics Comprehension and Appreciation on Consumer Experience. *J. Serv. Mark.* **2016**, *30*, 692–712. [CrossRef]
18. Alfakhri, D.; Harness, D.; Nicholson, J.; Harness, T. The Role of Aesthetics and Design in Hotelscape: A Phenomenological Investigation of Cosmopolitan Consumers. *J. Bus. Res.* **2018**, *85*, 523–531. [CrossRef]
19. Jiang, G.-X.; Li, Y.-Q.; Zhang, S.-N.; Ruan, W.-Q. How to Impress Guests: Key Factors and Strategy Configurations for the Accommodation Memories of Homestay Guests. *J. Hosp. Tour. Manag.* **2022**, *50*, 267–276. [CrossRef]
20. Liu, Y.; Jang, S. The Effects of Dining Atmospherics: An Extended Mehrabian–Russell Model. *Int. J. Hosp. Manag.* **2009**, *28*, 494–503. [CrossRef]
21. Baker, J.; Grewal, D.; Parasuraman, A. The Influence of Store Environment on Quality Inferences and Store Image. *J. Acad. Mark. Sci.* **1994**, *22*, 328–339. [CrossRef]
22. Calvo-Porral, C.; Lévy-Mangín, J.-P. Pull Factors of the Shopping Malls: An Empirical Study. *Int. J. Retail Distrib. Manag.* **2018**, *46*, 110–124. [CrossRef]
23. Callum Glennen. The Rise and Fall of the US Mall. World Finance. 2024. Available online: https://www.worldfinance.com/markets/the-rise-and-fall-of-the-us-mall (accessed on 22 June 2024).
24. Oh, H.; Petrie, J. How Do Storefront Window Displays Influence Entering Decisions of Clothing Stores? *J. Retail. Consum. Serv.* **2012**, *19*, 27–35. [CrossRef]
25. Mehrabian, A.; Russell, J.A. *An Approach to Environmental Psychology*; The MIT Press: Cambridge, MA, USA, 1974; ISBN 0-262-13090-4.
26. Kim, D.; Hyun, H.; Park, J. The Effect of Interior Color on Customers' Aesthetic Perception, Emotion, and Behavior in the Luxury Service. *J. Retail. Consum. Serv.* **2020**, *57*, 102252. [CrossRef]
27. Bitner, M.J. Servicescapes: The Impact of Physical Surroundings on Customers and Employees. *J. Mark.* **1992**, *56*, 57–71. [CrossRef]
28. Lin, I.Y. Evaluating a Servicescape: The Effect of Cognition and Emotion. *Int. J. Hosp. Manag.* **2004**, *23*, 163–178. [CrossRef]
29. Caivano, J.L. Research on Color in Architecture and Environmental Design: Brief History, Current Developments, and Possible Future. *Color Res. Appl.* **2006**, *31*, 350–363. [CrossRef]

30. Rea, M.S. Reply to Dr. R. W. G. Hunt Regarding Our Article "An Evaluation of the Hunt94 Color Appearance Model under Different Light Sources at Low Photopic to Low Mesopic Light Levels," by Denget al., Color Res Appl 2005;30: 107–117. *Color Res. Appl.* **2006**, *31*, 72–73. [CrossRef]
31. *GB/T 15608-2006*; Chinese Color System. China-National Standard (CN-GB): Beijing, China, 2006.
32. Sural, S.; Gang, Q.; Pramanik, S. Segmentation and Histogram Generation Using the HSV Color Space for Image Retrieval. In Proceedings of the International Conference on Image Processing, Rochester, NY, USA, 22–25 September 2002; Volume 2, pp. II-589–II-592.
33. Roschk, H.; Loureiro, S.M.C.; Breitsohl, J. Calibrating 30 Years of Experimental Research: A Meta-Analysis of the Atmospheric Effects of Music, Scent, and Color. *J. Retail.* **2017**, *93*, 228–240. [CrossRef]
34. Hynes, N. Colour and Meaning in Corporate Logos: An Empirical Study. *J. Brand Manag.* **2009**, *16*, 545–555. [CrossRef]
35. Yan, L.; Li, Q.; Zhang, Y.; Zhu, C. Computer Vision Quantization Research on the Architectural Color of Avenida de Almeida Ribeiro in Macau Based on the Human Eye Perspective. *Front. Comput. Neurosci.* **2022**, *16*, 951718. [CrossRef]
36. Serra, J.; García, Á.; Torres, A.; Llopis, J. Color Composition Features in Modern Architecture. *Color Res. Appl.* **2012**, *37*, 126–133. [CrossRef]
37. Labrecque, L.I.; Milne, G.R. Exciting Red and Competent Blue: The Importance of Color in Marketing. *J. Acad. Mark. Sci.* **2012**, *40*, 711–727. [CrossRef]
38. Babin, B.J.; Chebat, J.-C.; Michon, R. Perceived Appropriateness and Its Effect on Quality, Affect and Behavior. *J. Retail. Consum. Serv.* **2004**, *11*, 287–298. [CrossRef]
39. Donovan, R.; Rossiter, J. Store Atmosphere: An Environmental Psychology Approach. *J Retail.* **1982**, *58*, 34–57.
40. Sherman, E.; Mathur, A.; Smith, R.B. Store Environment and Consumer Purchase Behavior: Mediating Role of Consumer Emotions. *Psychol. Mark.* **1997**, *14*, 361–378. [CrossRef]
41. Petermans, A.; Van Cleempoel, K.; Nuyts, E.; Vanrie, J. Measuring Emotions in Customer Experiences in Retail Store Environments. *Int. J. Retail Distrib. Manag.* **2009**, *2009*, 2257–2265.
42. Bigné, J.E.; Andreu, L.; Gnoth, J. The Theme Park Experience: An Analysis of Pleasure, Arousal and Satisfaction. *Tour. Manag.* **2005**, *26*, 833–844. [CrossRef]
43. Eroglu, S.A.; Machleit, K.A.; Davis, L.M. Atmospheric Qualities of Online Retailing. *J. Bus. Res.* **2001**, *54*, 177–184. [CrossRef]
44. Elliot, A.J.; Maier, M.A. Color Psychology: Effects of Perceiving Color on Psychological Functioning in Humans. *Annu. Rev. Psychol.* **2014**, *65*, 95–120. [CrossRef]
45. Elliot, A.J. Color and Psychological Functioning: A Review of Theoretical and Empirical Work. *Front. Psychol.* **2015**, *6*, 368. [CrossRef]
46. Valdez, P.; Mehrabian, A. Effects of Color on Emotions. *J. Exp. Psychol. Gen.* **1994**, *123*, 394–409. [CrossRef] [PubMed]
47. Wu, C.-S.; Cheng, F.-F.; Yen, D.C. The Atmospheric Factors of Online Storefront Environment Design: An Empirical Experiment in Taiwan. *Inf. Manag.* **2008**, *45*, 493–498. [CrossRef]
48. Pelet, J.-É. Effets de La Couleur Des Sites Web Marchands Sur La Mémorisation et Sur l'intention d'achat. *Syst. Inf. Manag.* **2010**, *15*, 97–131. [CrossRef]
49. Pelet, J.-É.; Papadopoulou, P. The Effect of Colors of E-Commerce Websites on Consumer Mood, Memorization and Buying Intention. *Eur. J. Inf. Syst.* **2012**, *21*, 438–467. [CrossRef]
50. Anter, K.F.; Billger, M. Colour Research with Architectural Relevance: How Can Different Approaches Gain from Each Other? *Color Res. Appl.* **2010**, *35*, 145–152. [CrossRef]
51. Söker, M.B. The Role of Color on the Assessment of Retail Space: Restaurant Atmospherics. Master's Thesis, Bilkent Universitesi (Turkey), Ankara, Türkiye, 2009.
52. Chen, Z.; Meng, X.; Yao, Z. *The Effect of Object Color Tones on Emotions*; Atlantis Press: Amsterdam, The Netherlands, 2022; pp. 75–78.
53. Wilms, L.; Oberfeld, D. Color and Emotion: Effects of Hue, Saturation, and Brightness. *Psychol. Res.* **2018**, *82*, 896–914. [CrossRef] [PubMed]
54. Olson, J.C.; Jacoby, J. Cue Utilization in the Quality Perception Process. Ph.D. Thesis, Purdue University, West Lafayette, IN, USA, 1972.
55. Richardson, P.S.; Dick, A.S.; Jain, A.K. Extrinsic and Intrinsic Cue Effects on Perceptions of Store Brand Quality. *J. Mark.* **1994**, *58*, 28–36. [CrossRef]
56. Moon, P.; Spencer, D.E. Aesthetic Measure Applied to Color Harmony. *JOSA* **1944**, *34*, 234–242. [CrossRef]
57. Arnheim, R. *Art and Visual Perception: A Psychology of the Creative Eye*; Univ of California Press: Berkeley, CA, USA, 1954.
58. Kawabata, H.; Zeki, S. Neural Correlates of Beauty. *J. Neurophysiol.* **2004**, *91*, 1699–1705. [CrossRef]
59. Schloss, K.B.; Palmer, S.E. Aesthetic Response to Color Combinations: Preference, Harmony, and Similarity. *Atten. Percept. Psychophys.* **2011**, *73*, 551–571. [CrossRef]
60. Hauser, D.; Leopold, A.; Egger, R.; Ganewita, H.; Herrgessell, L. Aesthetic Perception Analysis of Destination Pictures Using #beautifuldestinations on Instagram. *J. Destin. Mark. Manag.* **2022**, *24*, 100702. [CrossRef]
61. Lavie, T.; Tractinsky, N. Assessing Dimensions of Perceived Visual Aesthetics of Web Sites. *Int. J. Hum.-Comput. Stud.* **2004**, *60*, 269–298. [CrossRef]

62. Bhandari, U.; Neben, T.; Chang, K.; Chua, W.Y. Effects of Interface Design Factors on Affective Responses and Quality Evaluations in Mobile Applications. *Comput. Hum. Behav.* **2017**, *72*, 525–534. [CrossRef]
63. Yildirim, K.; Akalin-Baskaya, A.; Hidayetoglu, M.L. Effects of Indoor Color on Mood and Cognitive Performance. *Build. Environ.* **2007**, *42*, 3233–3240. [CrossRef]
64. Gorn, G.J.; Chattopadhyay, A.; Yi, T.; Dahl, D.W. Effects of Color as an Executional Cue in Advertising: They're in the Shade. *Manag. Sci.* **1997**, *43*, 1387–1400. [CrossRef]
65. Gorn, G.J.; Chattopadhyay, A.; Yi, T. Color in Advertising. IIM Bangalore Research Paper. 1993. Available online: https://ssrn.com/abstract=2179429 (accessed on 22 June 2024).
66. Lin, I.Y.; Mattila, A.S. Restaurant Servicescape, Service Encounter, and Perceived Congruency on Customers' Emotions and Satisfaction. *J. Hosp. Mark. Manag.* **2010**, *19*, 819–841. [CrossRef]
67. Lagier, J.; Godey, B. A Scale for Measuring Aesthetic Style in the Field of Luxury and Art Products. *Int. J. Arts Manag.* **2007**, *9*, 39–50.
68. Porat, T.; Tractinsky, N. It's a Pleasure Buying Here: The Effects of Web-Store Design on Consumers' Emotions and Attitudes. *Hum.–Comput. Interact.* **2012**, *27*, 235–276.
69. Seibt, B.; Neumann, R.; Nussinson, R.; Strack, F. Movement Direction or Change in Distance? Self-and Object-Related Approach–Avoidance Motions. *J. Exp. Soc. Psychol.* **2008**, *44*, 713–720. [CrossRef]
70. Othman, M.; Goodarzirad, B. Restaurant Color's as Stimuli to Enhance Pleasure Feeling and Its Effect on Diners' Behavioral Intentions in the Family Chain Restaurants. *J. Tour. Hosp. Culin. Arts* **2013**, *5*, 75–101.
71. Ridgway, N.M.; Dawson, S.A.; Bloch, P.H. Pleasure and Arousal in the Marketplace: Interpersonal Differences in Approach-Avoidance Responses. *Mark. Lett.* **1990**, *1*, 139–147. [CrossRef]
72. Diefenbach, S.; Hassenzahl, M. The Dilemma of the Hedonic–Appreciated, but Hard to Justify. *Interact. Comput.* **2011**, *23*, 461–472. [CrossRef]
73. Li, Y.; Li, J. The Influence of Design Aesthetics on Consumers' Purchase Intention Toward Cultural and Creative Products: Evidence From the Palace Museum in China. *Front. Psychol.* **2022**, *13*, 939403. [CrossRef] [PubMed]
74. Hagtvedt, H.; Patrick, V.M. Consumer Response to Overstyling: Balancing Aesthetics and Functionality in Product Design: Overstyling: Aesthetics and functionality. *Psychol. Mark.* **2014**, *31*, 518–525. [CrossRef]
75. Lin, I.Y. What Makes a Hotelscape Beautiful? Antecedent and Consequent Behaviors of Perceived Aesthetic Value and Aesthetic Judgment in the Customer-Hotelscape Relationship. *Int. J. Hosp. Tour. Adm.* **2022**, *23*, 34–61. [CrossRef]
76. Ishihara, S. *Tests for Colour-Blindness*; Kanehara Shuppan Co., Ltd.: Tokyo, Japan, 1987.
77. Ou, L.-C.; Luo, M.R.; Sun, P.-L.; Hu, N.-C.; Chen, H.-S. Age Effects on Colour Emotion, Preference, and Harmony. *Color Res. Appl.* **2012**, *37*, 92–105. [CrossRef]
78. Wardono, P.; Hibino, H.; Koyama, S. Effects of Interior Colors, Lighting and Decors on Perceived Sociability, Emotion and Behavior Related to Social Dining. *Procedia-Soc. Behav. Sci.* **2012**, *38*, 362–372. [CrossRef]
79. Engelke, U.; Stokkermans, M.G.; Murdoch, M.J. Visualizing Lighting with Images: Converging between the Predictive Value of Renderings and Photographs. In Proceedings of the Human Vision and Electronic Imaging XVIII, Burlingame, CA, USA, 4–8 February 2013; Volume 8651, pp. 119–128.
80. Munsell, A.H. *Munsell Book of Color: Glossy Finish Collection*; X-Rite: Grand Rapids, MI, USA, 2012.
81. Ruiz, J.-P.; Chebat, J.-C.; Hansen, P. Another Trip to the Mall: A Segmentation Study of Customers Based on Their Activities. *J. Retail. Consum. Serv.* **2004**, *11*, 333–350. [CrossRef]
82. Fallah Tehrani, A.; Ahrens, D. Enhanced Predictive Models for Purchasing in the Fashion Field by Using Kernel Machine Regression Equipped with Ordinal Logistic Regression. *J. Retail. Consum. Serv.* **2016**, *32*, 131–138. [CrossRef]
83. Nunnally, J.C.; Bernstein, I.H. The role of university in the development of entrepreneurial vocations: A Spanish study. In *Psychometric Theory*; McGraw-Hill: New York, NY, USA, 1978; pp. 387–405.
84. Brengman, M.; Geuens, M. The Four Dimensional Impact of Color on Shopper's Emotions. *ACR N. Am. Adv.* **2004**, *31*, 122–128.
85. Kim, W.G.; Moon, Y.J. Customers' Cognitive, Emotional, and Actionable Response to the Servicescape: A Test of the Moderating Effect of the Restaurant Type. *Int. J. Hosp. Manag.* **2009**, *28*, 144–156. [CrossRef]
86. Van Rompay, T.J.; Tanja-Dijkstra, K.; Verhoeven, J.W.; van Es, A.F. On Store Design and Consumer Motivation: Spatial Control and Arousal in the Retail Context. *Environ. Behav.* **2012**, *44*, 800–820. [CrossRef]
87. Divers, E. Theory to Practice: Pleasure-Arousal-Dominance (PAD) Theory for Architectural Color Design. *Color Res. Appl.* **2023**, *48*, 445–452. [CrossRef]
88. Derya Arslan, H.; Yıldırım, K. Perceptual Evaluation of Stadium Façades. *Alex. Eng. J.* **2023**, *66*, 391–404. [CrossRef]