

Affective atmospheres in theme parks: Exploring the relationships among ritual, aesthetic, sensory factors and brand love

Abstract

Affective atmospheres have recently garnered tourism scholarly attention but remain underexplored within theme park context. This pioneering study utilizes a mixed-methods approach to delineate the orchestration of affective atmospheres and their impact on visitor-park relationships. Study one develops a three-dimensional scale to assess affective atmospheres and pinpoints the potential key contributors. Study two, rooted in affective events theory, reveals that affective atmospheres are bolstered through ritual interaction, aesthetic design, and sensory attractiveness, while positively affecting brand love and playing a mediating role between relationships. Theoretically, this study advances our understanding by creating a robust measurement tool for affective atmospheres, elucidating the mechanisms through which they are shaped, and clarifying how such atmospheres forge emotional bond between visitors and theme parks. Practically, it informs strategic management within theme parks on optimizing ritual, aesthetic, and sensory factors to cultivate desired affective atmospheres and foster visitors' brand love.

Keywords: Affective atmosphere, Theme parks, Ritual interaction, Aesthetic design, Sensory attractiveness, Brand love

1. Introduction

When visiting tourism attractions or destinations, tourists usually experience distinctive atmospheres of the environment (Thorel et al., 2024). These atmospheres generate emotions through tourists' bodily feelings within specific locales, termed as "affective atmospheres" (Anderson, 2009; d'Hautesserre, 2015; Goulding, 2023). This concept has gained growing interests in tourism research in recent years (Goulding, 2023). From the traditional perspective, atmospheres are regarded as ambient stimuli that reflect consumer perceptions of physical and human factors, such as layout, decorations and employee attributes (Choi & Kandampully, 2019; Kement et al., 2021; Liu & Jang, 2009). However, the concept of affective atmosphere serves as a unique approach based on the generation of affects through experience of place, particularly focusing on individuals' subjective mental states and emotional responses stimulated by surroundings (Anderson, 2009; Edensor, 2012; Heide et al., 2009).

Affective atmospheres are both produced and consumed, accordingly acknowledged as crucial experiences in consumer research (Steadman & Coffin, 2023). As dynamic entities, tourists actively interact with destinations and establish meaningful connection with local elements, thereby co-creating unique experiential atmospheres and engendering diverse emotional states (Bissell, 2010). Although intangible and fleeting, affective atmospheres function as essential mediators that enable emotional exchanges between tourists and destinations, thereby strengthening travelers' emotional engagement and connection (Zhu & Xu, 2023). Affective atmospheres are described as "collective effervescences," which significantly shape the relationships among tourists, service providers, and environments in diverse tourism settings (Rokka et al., 2023). Recent theoretical developments of atmosphere have prioritized the significance of affective aspect, emphasizing its compelling influence in tourism experience (Cabanas, 2020; Goulding, 2023; Rokka et al., 2023; Thorel et al., 2024; Zhu & Xu, 2023). Accordingly, affective atmospheres can be treated as effective tools in designing tourism environment to promote tourists' emotional responses.

Affective atmospheres exist in diverse tourism attractions and destinations, among which theme parks particularly exemplify representative sites, as both thematic and environmental qualities are meticulously crafted to submerge visitors in dramatic illusions and appealing atmospheres (Bille et al., 2015; Fu et al., 2023). Theme parks integrate diverse consumption modalities (e.g. retail, gastronomy, performances) within unified thematic spaces, enabling visitors to encounter layered affective experience in this collective consumption space (Liu et al., 2025; Wu et al., 2024). Recognized as a typical attraction that generates emotional atmospheric experiences (Cabanias, 2020), theme park is as an ideal representative for affective atmosphere studies. The findings can also offer transferable insights for comparable tourism attractions, destinations, and business.

Recognizing the significance of tourism affective atmospheres, there remain gaps in the literature to understand this concept. First, the prevailing research on affective atmospheres remains primarily exploratory and qualitative (Rokka et al., 2023; Zhu & Xu, 2023). This methodological limitation, particularly the absence of validated measurement scales significantly constrains the field's capacity to quantitatively assess atmospheric dynamics. The development of affective atmosphere scale is therefore crucial to enable rigorous empirical examinations and assists industry to better understand what key affective atmosphere attributes across dimensions should be carefully produced and managed. Second, knowledge of affective atmosphere needs new insights from different scenarios beyond the existing context (Goulding, 2023), such as resort and tourism shopping space (Rokka et al., 2023; Zhu & Xu, 2023). Theme park represents a novel context for investigating affective atmosphere due to their uniquely themed environments and activities that generate distinctive and various atmospheric conditions (Cabanias, 2020). Their operational comprehensiveness creates amplified emotional resonances that surpass the atmospheric intensity of most destination types (Fu et al., 2023), rendering theme park a prototypical example for understanding how affective atmospheres operate in experience-driven economies. Third, what specific factors cultivate tourism affective atmospheres and the role of

affective atmospheres in shaping visitors' emotional responses remain insufficiently explored (Goulding, 2023). Examining their relationships is beneficial for attractions and destinations to better understand how to effectively design and control affective atmospheres, further achieve a deeper and stronger emotional bond with tourists.

The above stated reasons for this research echo to the scholarly call from Goulding (2023), who proposed a series of key issues in tourism atmosphere research. Specially, new methodology, different tourism settings, and emotional effects needs to be addressed for deepening the field of atmosphere study (Goulding, 2023). Considering the paucity of the research, this study aims to 1) develop a measurement scale for affective atmosphere; 2) identify the contributory elements for crafting affective atmosphere in theme parks; 3) examine the relationships among affective atmosphere and its antecedental and outcome factors. Grounded in affective events theory, which posits that specific experiences shape individuals' affective states and responses, the study empirically explores how affective atmospheres are influenced by various factors and their subsequent effect on visitors' emotional response, brand love towards theme parks, including the mediating role.

This study pioneers the exploration of affective atmosphere in theme park research with both theoretical and managerial implications. It contributes by establishing a novel measurement scale and identifying contributory factors of affective atmosphere and its impact on visitors' brand love, thereby advancing the scholarly discourse in both atmosphere and theme park tourism studies. Findings derived from this context hold significant transfer value for enhancing atmospheric design in other composite consumption spaces, such as festivals, events, and entertainment attractions, where coordinated emotional experiences are essential for visitor engagement. Furthermore, the findings offer practical insights for how theme park management cultivates desirable affective atmospheres and fosters brand love.

2. Theoretical Background

2.1 Affective events theory

Affective events theory, originating from the field of organizational behavior, elucidates the processes through which individuals' emotional outcomes are influenced by exogenous affective experiences that induced by diverse stimuli (Weiss & Cropanzano, 1996). Weiss and Cropanzano (1996) introduced affective events theory to explore how external factors shape people's subjective experiences and reactions within certain environment. According to this theory, affective events, such as significant occurrences, specific location, or memorable moments influence individuals' subjective states, further prompting notable shifts in emotional responses (Lazarus, 1991). Expanding into hospitality and tourism research, affective events theory has been applied across various topics. For instance, the impact of affective events on hotel employees' emotions and behaviors (Lam & Chen, 2012), tourist and tour guide interactions (Li et al., 2022; Tu et al., 2020), service failure and complaint behavior (Lee et al., 2021), and tourists' emotional responses to tourism scams (Ma et al., 2022). More recently, Chen et al. (2024) explained how host-tourist interaction enhances tourist delight and inspiration based on affective events theory, while Stylos et al. (2024) explored the effect of bus tour sightseeing experience as an affective event on tourists' affection and behavioral intention.

The application of affective event theory in theme park tourism remains underexplored. While existing literature demonstrates its efficacy in explaining the impact of specific events, interactions, and experiences on tourists' emotional responses, this study employs affective event theory as the theoretical foundation to inquire how theme park affective atmosphere is formulated and how it influences visitors' affection for the park. According to Weiss and Cropanzano (1996), affective events encompass experiences, happenings, locales, or periods that alter individuals' affect. Recognized as a unique event, tourism activity elicits psychological responses such as satisfaction, where tourists achieve desired goals or values through cognitive evaluations during their participation (Dolnicar et al., 2012). Stylos et al. (2024) verified tourism activity as an

affective event in the scenario of bus tour sightseeing, evaluated through several aspects such as facilities and interactions. Consequently, theme park visits can be viewed as affective events, involving affective atmospheres in theme parks as essential emotional experiences. As affective event theory suggests, affective events trigger emotional responses and attitudinal changes (Weiss & Cropanzano, 1996), implying that the affective atmosphere generated by various stimuli could profoundly foster visitors' emotional connection with the park.

2.2 Affective atmosphere

Affective atmospheres emerge from the broader notion of “atmosphere,” which is perceived as either an impersonal or transpersonal intensity, encompassing the transmission of feelings, mimetic waves of sentiment, and a profound feeling of place (Böhme, 1993; Brennan, 2004; McCormack, 2008; Rodaway, 2011; Thrift, 2007). Anderson (2009) first introduced the term “affective atmosphere” to interpret the affective nature of atmospheres, linking collective affects to the ambient emotional quality of spaces. Consequently, an affective atmosphere produces emotions through people's feelings elicited by physical encounters, which acts as catalysts in the formation of emotional landscapes across various settings and enhances our grasp of socio-spatial dynamics (Anderson, 2009). Characterized by distinctive emotional tones such as serenity, enthusiasm, and optimism, affective atmospheres encapsulate multiple and distinct emotional realms coexisting within a certain space (Borch, 2010). Furthermore, Zhu and Xu (2023) explored the affective atmosphere through the lens of assemblage and affection, portraying it as an emergent affective property of the confluence of diverse human and non-human factors within a defined temporal-spatial framework.

Affective atmosphere is claimed to be an emotional experience, which is in essence the subjective experience featured by mental state and psychological expression (Lee, 2016; Turner, 2009). Anderson (2009) claimed affective atmospheres are a class of affective experiences that occur along the subjectivity formation, from which people's emotions

emerge. Similarly, Hill et al. (2022) discussed atmospheres as special experiences where people's affects flow. Tourism scholars also pinpointed the emotional effect of atmospheres, emphasizing them as essential tourist emotional experiences (Cabanas, 2020; Cheng & Chen, 2021). Affective atmospheres are conceptualized by distinct affective attributes, such as comforting, calming, and exciting (Anderson, 2009), relaxation and hospitality (Heide et al., 2009), arousal and pleasure (Uhrich & Benkenstein, 2010), conviviality and festivity (Edensor, 2012).

The allure of “atmosphere” has captivated tourism research scholars for decades. Considerable academic focus has centered on the integration of “atmospheric stimuli” in service management (Bitner, 1992; Turley & Milliman, 2000), particularly within studies pertaining to hotel and restaurant atmospheres (Choi & Kandampully, 2019; Liu & Jang, 2009). Predominantly, research has emphasized physical attributes such as decorations, music, and lighting as key stimuli in crafting distinctive atmospheres (Donovan et al., 1994; Edensor, 2012; Lovell & Griffin, 2022). Concurrently, the significance of social and human elements, including interactions and employee influences, has been increasingly recognized (Choi & Kandampully, 2019; Kement et al., 2021). Yet, the literature has largely focused on atmospheric attributes without sufficiently exploring the mechanisms of emotional transmission within tourist experiences. Until recently, the discourse has evolved with the introduction of the affective atmosphere into tourism studies, examining the interplay between physical and social dynamics (Rokka et al., 2023). This exploration highlighted that affective atmosphere as tourists' emotional experiences are ephemeral and emerging spontaneously from social interactions, material and temporal conditions within the certain area (Rokka et al., 2023).

Theme parks exemplify environments engineered to create distinctive atmospheres as their thematic design imbues the entire park with unique, immersive, and precisely defined emotional ambiances (Cabanas, 2020). This orchestrated atmospheric manipulation intentionally shapes visitors' affective experiences, thereby influencing

their emotional reactions (Bille et al., 2015). Scholarly investigations into theme park atmospheres have addressed various aspects, such as atmospheric quality (Slåtten et al., 2009), the role of atmosphere in analyzing visitor experiences (Geissler & Rucks, 2011), and the interplay between atmospheric experience and tourist satisfaction (Razaka et al., 2019). While prior studies have largely concentrated on the physical atmospheric attributes, this study initiates an exploration into the distinctive emotional peculiarity of theme park atmospheres by assessing affective atmospheres within this context.

Staging theme park atmospheres is primarily achieved through establishing thematic zones with defined physical perimeters, complemented by the curation of vivid “scenes” that deepen tourists’ narrative immersion (Chytry, 2012; Lefebvre, 2012). Lukas (2012) posited that the theme park atmospheres are shaped by an array of factors, including landscapes, architecture, stores, performances, attire, and sensory experiences. In terms of the emergence of affective atmospheres, Rokka et al. (2023) identified three pivotal components, including collective rituals, materiality, and temporality that coalesce to enact resonant “affective bubbles.” However, the specific manifestation of these components within theme parks remains underexplored. Consequently, it is essential to classify the antecedents of affective atmospheres within the theme park context and systematically examine this concept from a comprehensive perspective.

3. Mixed methods design overview

This research comprises two studies, utilizing a mixed-methods approach to achieve the research objectives. As depicted in Fig 1, Study 1 integrates qualitative and quantitative methods to develop a scale for assessing affective atmosphere (Study 1a) and identify its potential contributory factors through qualitative approach (Study 1b). The scale development adheres to Churchill (1979)’s three-step procedure: item generation, scale purification, and scale validation. Building on the insights from Study 1, Study 2 proposes several hypotheses and constructs a research model to indicate potential relationships between variables. Quantitative analysis was adopted to evaluate the measurement model and test hypotheses. Collectively, Studies 1 and 2 enhance the

comprehensive understanding of affective atmosphere in theme park settings.

While data collection of each study in this research was conducted in July and August 2024, participants had theme park visiting experiences within six months were recruited. Their reported visit timing encompassed both summer and non-summer periods, thereby mitigating potential seasonal biases from summer vacation effects. All of the surveys involved participants with diverse theme park visitation backgrounds, as self-reported, demonstrating the scale’s applicability beyond single-park contexts and ensuring the items’ relevance to multiple theme park types rather than isolated scenario.

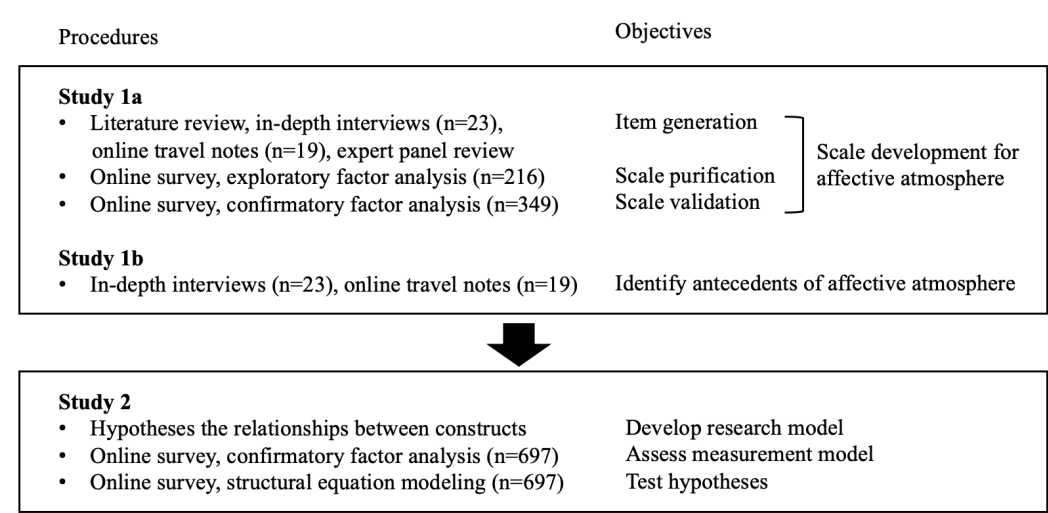


Figure 1. Research process

4. Study 1

Study 1 was designed to develop a measurement scale for affective atmosphere and identify its antecedents. This involved conducting in-depth interviews and reviewing online travel notes for both sub-studies, Study 1a and Study 1b. Additionally, two rounds of online surveys were administered in Study 1a to facilitate item purification, assess dimensionality, and validate the scale.

4.1 Study 1a: scale development for affective atmosphere

4.1.1 Item generation

Despite limited research on affective atmosphere in theme parks, identifiable attributes

emerged from literature review, identifying eight preliminary items (Cabanias, 2020; Slåtten et al., 2009; Tasci & Milman, 2019). To further investigate, in-depth interviews were conducted. Participants were recruited through the Chinese social media platform, Red, and expanded via snowball sampling based on initial participant referrals. To enhance content richness, participants varied in sociodemographic characteristics and types of visited theme parks (Table 1). Only those who had visited a theme park within the past six months were selected to ensure recency of experiences. Data saturation was achieved after interviewing 23 participants, as no new insights were obtained (Guest et al., 2006). Interviews were carried out via WeChat calls from May 6 to June 27, lasting between 30 to 60 minutes, with incentives provided. Following interview manuals from Cheng and Chen (2021) and Fu et al. (2023), participants initially shared their most memorable theme park experiences, then detailed the specific affective atmospheres they experienced and discussed the emotional arousal elicited by these atmospheres.

Table 1. Profile of the in-depth interview participants.

No.	Age	Gender	Occupation	Visited theme parks
1	20	F	Undergraduate student	Disneyland (Shanghai)
2	21	M	Undergraduate student	Universal Studio (Singapore)
3	27	F	PhD student	Song Dynasty Town (Hangzhou)
4	32	F	Senior strategy consultant	Ocean Park (Hong Kong)
5	30	M	E-commerce sales manger	Fantawild (Ningbo)
6	28	M	Financial analyst	Disneyland (Paris)
7	36	F	Marketing director	Qingming Riverside Landscape Garden (Kaifeng)
8	19	M	Undergraduate student	Universal Studio (Beijing)
9	23	F	Postgraduate student	Chimelong (Guangzhou)
10	33	F	Accountant	Fantawild (Jinan)
11	51	M	Professor	Disneyland (Hong Kong)
12	24	M	Bank clerk	Universal Studio (Japan)
13	26	M	PhD student	Happy Valley (Shenzhen)
14	42	F	Homemaker	Chimelong Ocean Kingdom (Zhuhai)
15	31	M	Photographer	Disneyland (Shanghai)
16	25	F	Postgraduate student	Chimelong Spaceship (Zhuhai)

17	37	M	Freelancer	Discoveryland (Dalian)
18	44	F	Civil servant	Disneyland (Shanghai)
19	41	F	Media director	Universal Studio (Beijing)
20	28	F	Event planner	Sunac Land (Hefei)
21	33	F	Middle school teacher	Song Dynasty Town (Hangzhou)
22	25	M	Tour guide	Fantawild (Changsha)
23	34	F	Assistant professor	Universal Studio (Beijing)

Additionally, researchers extracted potential indicators from travel notes. Post-travel online narratives are pivotal as they richly detail travelers' emotions and experiences, providing a textual richness essential for research (Volo, 2010). For this study, travel notes from popular Chinese online platforms including Mafengwo, Tuniu, Ctrip, and Meipian were scrutinized. To ensure the collection of most current and relevant data, the scanning of travel notes commenced with the most recent records of theme park visits available on these platforms. The selected notes, which showcased diverse theme park experiences, were chosen based on their content relevance, length, textual quality and theme diversity. Specifically, selected notes should authentically capture visitors' park experiences, explicitly documenting both tourists' perceptions of unique affective atmospheres and the catalysts inducing such atmospheres. Language fluency, expression coherence, and content depth also served as key criteria during selection. Documentation from multiple theme park types was deliberately chosen to guarantee thematic variety. In adherence to the principles of data saturation (Guest et al., 2006), a total of 19 travel notes were ultimately included in the analysis (Table 2), spanning the period from the year of 2022 to 2024. These travel notes provided descriptions of the affective atmospheres encountered, which were systematically documented by researchers. Notably, the theme parks discussed in both the interviews and the travel notes covered a range of brands, from international ones like Disneyland to local Chinese parks such as Song Dynasty Town, enhancing the diversity of affective atmospheres explored and ensuring the measurement scale's applicability across different theme park contexts.

Table 2. Profile of online travel notes.

No.	Gender	Visited theme parks	Source
1	F	Ocean Park (Hong Kong)	Mafengwo
2	F	Disney (Shanghai)	Mafengwo
3	M	Chimelong Ocean Kingdom (Zhuhai)	Mafengwo
4	M	Disney (Shanghai)	Mafengwo
5	F	Dragon Dream Paradise Taihu Lake (Huzhou)	Mafengwo
6	F	Song Dynasty Town (Hangzhou)	Mafengwo
7	F	Hello Kitty Park (Huzhou)	Mafengwo
8	M	Universal Studio (Beijing)	Tuniu
9	F	Fantawild (Wuhu)	Tuniu
10	F	Shimo Max Wonderpark (Shishi)	Tuniu
11	M	Fantawild (Mianyang)	Tuniu
12	M	Sunac Land (Wuxi)	Tuniu
13	F	Disneyland (Shanghai)	Ctrip
14	M	Song Dynasty Town (Hangzhou)	Ctrip
15	F	Chimelong (Guangzhou)	Ctrip
16	F	Fantawild (Jingzhou)	Meipian
17	M	Disneyland (Shanghai)	Meipian
18	F	Universal Studio (Japan)	Meipian
19	M	Merryland (Guilin)	Meipian

Through elaborative thematic analysis via NVivo 12, 267 units were primarily yielded and classified into 29 potential items (Appendix A). Five tourism experts critically evaluated the item pool, consolidating items with overlapping connotations and eliminating those not universally applicable. Following several rounds of meticulous revision, 18 items were ultimately retained. These items were consistently identified by informants with diverse theme park visitation backgrounds, ensuring items' relevance extends beyond singular park types to varied contexts, thereby reinforcing credibility. Table 3 shows the items retained after panel review and the examples of coding process. Three potential dimensions were initially identified at this stage based on the content of items. Referring to the naming of tourism atmospheres by Cheng and Chen (2021), the potential dimensions were defined as conviviality, therapeutic, and playfulness.

Table 3. Coding process

Selective coding	Axial coding	Open coding
Potential dimensions	Potential items	Sample quotes
Conviviality	I felt the joyful atmosphere	“Once I stepped into the park, the <u>joyful atmosphere made me impossible not to smile.</u> ”
	I felt the exciting atmosphere	“Just waiting in line for the ‘TRON light cycle power run,’ <u>I could feel an exciting atmosphere.</u> ”
	I felt the relaxing atmosphere	“I sat on the bench in the garden area and listened to the soft music, <u>the surrounding atmosphere was so relaxing.</u> ”
	I felt the escaping atmosphere	“When I entered the themed zones, <u>the atmosphere was like I had escaped into a space that free from everyday stress.</u> ”
	I felt the surprising atmosphere	“The trash can suddenly talk to me! I would describe <u>the atmosphere at that moment was so surprising.</u> ”
	I felt the vivid atmosphere	“The bright colors, lively music, and active performances created <u>an atmosphere, which made me feel being in a vivid painting.</u> ”
	I felt the juvenescent atmosphere	“ <u>The atmosphere that made me feel as a kid again</u> was very impressive, reminding my childhood time.”
Therapeutic	I felt the eudemonic atmosphere	“The overall experience <u>filled me with a eudemonic atmosphere.</u> It was like everyone could find <u>happiness.</u> ”
	I felt the warm atmosphere	“When I hugged with Princess Belle, she definitely <u>brought me an atmosphere full of warmth,</u> I was so cured at that moment.”
	I felt the amical atmosphere	“I chatted and laughed with staff and strangers together, <u>there was an atmosphere of friendly everywhere,</u> which healed me so much.”
	I felt the touching atmosphere	“The heartfelt performance made <u>the atmosphere really touching</u> and even made me cried.”
	I felt the romantic atmosphere	“I saw some couples hugging and kissing under fireworks. That <u>kind of romantic atmosphere healed me and made me believe in love.</u> ”
Playfulness	I felt the immersive atmosphere	“Every detail was so well-designed in the park <u>to absorb me into an immersive atmosphere,</u> I

	felt I was part of the story.”
I felt the adventurous atmosphere	“The amazing Caribbean rides <u>gave me a rush of adventurous atmosphere</u> , I felt I can be a pirate too.”
I felt the amusing atmosphere	“All the shows were so <u>humorous and interesting, making me kept laughing all the time in this kind of atmosphere</u> .
I felt the fantastical atmosphere	“I can remember the <u>overwhelming fantastical atmosphere</u> in Wizarding World of Harry Potter, where reality and fantasy blended.”
I felt the novel atmosphere	“The spaceship experience was <u>so fresh and novel. I never felt this kind of atmosphere before.</u> ”
I felt the authentic atmosphere	“I felt like I had time-traveled to Song destiny, <u>the surrounding atmosphere was so authentic like in ancient time.</u> ”

4.1.2 Item purification

To purify the items and obtain scale dimensionality, exploratory factor analysis (EFA) was conducted. Adopting a seven-point Likert scale, all items were compiled into a questionnaire from 1 (strongly disagree) to 7 (strongly agree). The questionnaire was originally developed in Chinese to cater participants. To ensure the adequacy and appropriateness of measurement items, two English-Chinese bilingual experts were invited to evaluate the items through back-to-back translation method. **Adopting convenience sampling method, the e-questionnaire was created on Credamo, a professional data collection platform. The QR code was distributed on three popular Chinese social media platforms, including Rednote, Weibo, and Douban. These platforms were selected due to their large user bases, active online communities, and the ease of targeting theme park enthusiasts through relevant hashtags (Jendryke et al., 2017; Rui & Shuren, 2025; Yang & Yecies, 2018). Their popularity and engagement ensured sufficient and fast responses from experienced and interested participants.**

To prevent duplicate responses, the survey allowed only one submission per ID and per IP, while included a filter question confirming first-time participation. Additionally, response locations (longitude and latitude) were cross-checked to ensure uniqueness.

Filter questions confirmed participants' theme park visits within the last six months to ensure relevance, while detection questions were designed to maintain data integrity. Conducted from July 12 and concluding two weeks later, the survey achieved 216 qualified replies, adhering to the sample size standards (Gorsuch, 2014). Table 4 presents detailed demographic data.

Table 4. Profile of survey respondents.

Variable	Category	Study 1a EFA (n=216)		Study 1a CFA (n=349)		Study 2 (n=697)	
		Frequ ency	Rate (%)	Frequ ency	Rate (%)	Frequ ency	Rate (%)
Gender	Male	94	43.52	158	45.27	299	42.9
	Female	122	56.48	191	54.73	398	57.1
Age	18-29	95	43.98	146	41.83	323	46.34
	30-39	75	34.72	122	34.96	223	31.99
	40-49	41	18.98	69	19.77	118	16.93
	50 and above	5	2.31	12	3.44	33	4.73
Education	Senior middle and below	27	12.5	42	12.03	79	11.33
	Junior college	35	16.2	62	17.77	131	18.79
	Bachelor	105	48.61	176	50.43	321	46.05
	Master and above	49	22.69	69	19.77	166	23.82
Monthly income (¥)	5000 and below	41	18.98	49	14.04	133	19.08
	5001-10,000	92	42.59	166	47.56	306	43.9
	10,001- 20,000	56	25.93	81	23.21	188	26.97
	20,001 and above	27	12.5	53	15.19	70	10.04

Exploratory factor analysis was conducted using SPSS 27, employing the principal components analysis technique with the varimax rotation method. This method is

widely acknowledged for purifying the measures and identifying dimensionality (Churchill, 1979; Taherdoost et al., 2014), adopted by many researchers in scale development studies (Kim et al., 2022; Liu et al., 2022; Shi et al., 2025; Teng & Tsaur, 2022). The primary Kaiser-Meyer-Olkin (KMO) index, registering at 0.966, indicated the sample's adequacy by surpassing the acceptable threshold of 0.5 (Kaiser, 1974). The criteria of communalities above 0.5, factor loadings higher than 0.4 or cross-loadings under 0.4, and dimensions with at least three items to retain was followed (Hair et al., 2022). This criterion has been applied in a wide range of research (Huang & Wen, 2021; Kim et al., 2022; Shi et al., 2025). One double-loaded item, "I felt the juvenescent atmosphere," was removed. Ultimately, by applying eigenvalues of factors above one, three dimensions with 17 items were obtained with a KMO of 0.963 and Bartlett's test of sphericity at a 0.000 significance level (Hair et al., 2022), explaining 83.249% of the total variance. Cronbach's α for each factor exceeded 0.7, while item-to-total correlations showed 0.823 to 0.895 (>0.5), and factor loadings were 0.726 to 0.831 (>0.4) (Table 5) (Hair et al., 2022).

The three dimensions obtained after EFA is in line with the result of thematic analysis in previous step, further verified the reliability of dimension classification. The first dimension, "conviviality," captures the happiness and cheerfulness that atmospheres evoke in tourists. For instance, some informants recounted their most memorable experiences, noting overwhelming joy and excitement upon entering the park and a sense of vivid jubilation as everyone danced with mascots during the parade. The second dimension, "therapeutic," describes how visitors were comforted and healed by affective atmospheres. For instance, some informants shared the touching atmospheres they sensed when their favorite movie scenes relived. Meanwhile, they also mentioned amicable atmosphere when interacted with hospitable staff and friendly strangers, acquiring a sense of comforting and healing. Others described romantic atmosphere when witnessing couples kissing under fireworks or hearing sentimental music, which generated therapeutic effects through emotional resonance and feeling love. In contrast to the unbridled joy characteristic of "conviviality," this dimension captures the

psychological restoration and emotional resonance facilitated by therapeutic atmospheres (García Otero, 2023). Empirical research substantiates key therapeutic components, including warmth and amicability as affective conditions (Castonguay et al., 2018), eudemonic and touching experiences that foster psychological healing (Paterson, 2016; Ruini & Cesetti, 2019), and romantic elements demonstrating therapeutic potential (Poletti et al., 2025). Furthermore, the indicators of warm, amical, touching, romantic, and eudemonic elements also correlate with love (Han et al., 2010; Hosany & Gilbert, 2010; Laros & Steenkamp, 2005; Lee & Kyle, 2013). Given the therapeutic properties of love, including its capacity for psychological healing and emotional comfort (Jia & Xu, 2025; Si et al., 2024; Tamam & Ahmad, 2019), therapeutic appropriately characterizes this dimension. The third dimension, “playfulness,” explains how visitors enjoy playful atmospheres through diverse themed and engaging activities. For instance, one informant noted the authentic and immersive atmospheres she sensed by time-traveling to the ancient dynasty of Song, while others narrated the novel atmosphere that they encountered in a spaceship theme park and the fantastical atmosphere when exposing themselves in the Wizarding World of Harry Potter.

Table 5. EFA result of affective atmosphere scale.

Factors/Items	Factor loading	Variance (%)	Cronbach's α
Conviviality		28.257	0.96
C1: I felt the joyful atmosphere.	0.776		
C2: I felt the exciting atmosphere.	0.777		
C3: I felt the relaxing atmosphere.	0.755		
C4: I felt the escaping atmosphere.	0.756		
C5: I felt the surprising atmosphere.	0.800		
C6: I felt the vivid atmosphere.	0.777		
Therapeutic		25.741	0.955

T1: I felt the eudemonic atmosphere.	0.796		
T2: I felt the warm atmosphere.	0.770		
T3: I felt the amicable atmosphere.	0.781		
T4: I felt the touching atmosphere.	0.816		
T5: I feel romantic atmosphere.	0.807		
Playfulness		29.251	0.955
P1: I felt the immersive atmosphere.	0.764		
P2: I felt the adventurous atmosphere.	0.796		
P3: I felt the amusing atmosphere.	0.801		
P4: I felt the fantastical atmosphere.	0.726		
P5: I felt the novel atmosphere.	0.831		
P6: I felt the authentic atmosphere.	0.819		

4.1.3 Item validation

To further validate the measurement scale, a refined questionnaire derived from the items and dimensions identified through exploratory factor analysis was established. Following the foregoing data collection protocols, convenience sampling was adopted by distributing the e-questionnaire with QR code on social media platforms including Rednote, Weibo, and Douban with theme park related hashtags. Data were collected from August 1 to August 19, garnering 349 valid responses. Respondents' profiles are shown in Table 4.

The confirmatory factor analysis (CFA), conducted by AMOS 26, indicated acceptable skewness (-0.566 to -0.24) and kurtosis (-0.711 to 0.241) (Kim, 2013). Good model fit was evidenced by robust indices: $p = 0.000$; $\chi^2/df = 1.473$, RMSEA = 0.037; GFI = 0.946; IFI = 0.99; TLI = 0.989; NFI = 0.971; RFI = 0.965; CFI = 0.99 (Hair et al., 2022). The factor loading values ranged from 0.839 to 0.906, and AVE values exceeded 0.5, confirming convergent validity. Construct reliability was proved with CR values of each factor surpassing 0.7 (Table 6) (Fornell & Larcker, 1981). Meanwhile, Table 7

shows good discriminant validity of the scale, further verified the dimensionality of the scale.

Table 6. CFA result of affective atmosphere scale.

Factors/Items	Factor loading	AVE	CR	Mean	SD
Conviviality		0.744	0.947		
C1: I felt the joyful atmosphere.	0.869			5.76	0.968
C2: I felt the exciting atmosphere.	0.855			5.70	1.007
C3: I felt the relaxing atmosphere.	0.839			5.70	0.959
C4: I felt the escaping atmosphere.	0.857			5.63	1.008
C5: I felt the surprising atmosphere.	0.852			5.62	1.009
C6: I felt the vivid atmosphere.	0.902			5.69	1.013
Therapeutic		0.802	0.953		
T1: I felt the eudemonic atmosphere.	0.904			5.55	1.109
T2: I felt the warm atmosphere.	0.906			5.60	1.106
T3: I felt the amicable atmosphere.	0.876			5.56	1.072
T4: I felt the touching atmosphere.	0.896			5.59	1.097
T5: I felt the romantic atmosphere.	0.895			5.62	1.073
Playfulness		0.747	0.947		
P1: I felt the immersive atmosphere.	0.876			5.44	1.096
P2: I felt the adventurous atmosphere.	0.871			5.40	1.075
P3: I felt the amusing atmosphere.	0.852			5.44	1.012
P4: I felt the fantastical atmosphere.	0.855			5.47	1.018
P5: I felt the novel atmosphere.	0.867			5.46	1.021
P6: I felt the authentic atmosphere.	0.865			5.46	1.081

Table 7. Discriminant validity of affective atmosphere scale.

Factors	Conviviality	Therapeutic	Playfulness
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Conviviality	0.863		
Therapeutic	0.459	0.896	
Playfulness	0.491	0.435	0.864

Notes: the diagonal values are square root of AVE.

To ensure the stability of affective atmosphere scale, multigroup confirmatory factor analysis (MGCFA) was conducted by examining measurement invariance based on the demographics across gender, age, education level, and income. The grouping of each category followed the method suggested by Chandran et al. (2021). Configural invariance, factorial (metric) invariance, and scalar (intercept) invariance were used. The factorial invariance was built upon configural invariance, while scalar invariance was built upon configural and factorial invariances. Following the absolute value of $\Delta CFI \leq 0.01$ and $\Delta RMSEA \leq 0.015$ (Cheung & Rensvold, 2002), the results of each category surpassed the bottom line (Table 8). Besides, the chi-square differences between each baseline model and constrained model were test. As shown in Table 8, all the $\Delta\chi^2$ were not significant ($p > 0.05$), indicating the factor loadings and intercepts of both groups in each category were invariant (Dimitrov, 2010). Therefore, the scale invariance is confirmed.

Table 8. MGCFA results across groups

Model	χ^2	df	χ^2/df	RMSEA	CFI	TLI	ΔCFI	$\Delta RMSEA$	$\Delta\chi^2$
Gender (M & F)									
Configural invariance	292.848	232	1.262	0.027	0.989	0.988			
Factorial invariance	308.803	246	1.255	0.027	0.989	0.988	0.000	0.000	$\chi^2(14)=15.955$ $p=0.316$
Scalar invariance	327.455	263	1.245	0.027	0.989	0.988	0.000	0.000	$\chi^2(31)=34.606$ $p=0.300$
Age (<30 & ≥30)									

Configural invariance	288.494	232	1.244	0.026	0.990	0.989			
Factorial invariance	301.837	246	1.227	0.026	0.990	0.989	0.000	0.000	$\chi^2(14)=13.343$ p=0.500
Scalar invariance	320.855	263	1.220	0.025	0.990	0.990	0.000	-0.001	$\chi^2(31)=32.361$ p=0.399
Education (below bachelor & bachelor and above)									
Configural invariance	320.865	232	1.383	0.033	0.985	0.982			
Factorial invariance	327.995	246	1.333	0.031	0.986	0.984	0.001	-0.002	$\chi^2(14)=7.131$ p=0.930
Scalar invariance	355.613	263	1.352	0.032	0.984	0.983	-0.002	0.001	$\chi^2(31)=34.748$ p=0.294
Income ($\leq 10,000$ & $>10,000$)									
Configural invariance	280.567	232	1.209	0.025	0.992	0.990			
Factorial invariance	295.754	246	1.202	0.024	0.991	0.990	-0.001	-0.001	$\chi^2(14)=15.188$ p=0.365
Scalar invariance	313.205	263	1.191	0.023	0.991	0.991	0.000	-0.001	$\chi^2(31)=32.638$ p=0.386

4.2 Study 1b: Exploration of affective atmosphere antecedents

4.2.1 Procedure

While Rokka et al. (2023) pinpointed three critical dimensions in crafting affective atmospheres, including rituals, materiality, and temporality, their theoretical framework manifests two critical gaps: (1) the lack of operational specificity with quantifiable metrics, and (2) the lack of precise applicability within theme park context. To comprehensively embody the antecedents of affective atmospheres in theme parks, study 1b employed qualitative research methods, combining in-depth interviews and

analysis of online travel notes. This approach aimed to triangulate data sources and enhance the depth of insights into how affective atmospheres are co-created in such settings. To ensure methodological rigor and consistency across the research phases, the same cohort of participants from study 1a was retained for study 1b. Specifically, the individuals who participated in the initial interviews were also engaged in study 1b, while the online travel notes collected in study 1a were reanalyzed with a focused lens on identifying atmospheric antecedents. This continuity in data sources minimized contextual variability and strengthened the validity of cross-study comparisons.

Semi-structured interview protocol was firstly designed to probe participants' personal experiences of theme park visits. Open-ended questions were formulated to elicit detailed reflections on how specific elements within the dimensions of ritual, materiality, and temporality influenced their perception of affective atmospheres. Specifically, participants were asked what kind of ritual factors, material factors, and temporal factors made them feel the existence of affective atmospheres. During the interviews, participants were encouraged to recount vivid examples. The prompts ensured rich, context-specific narratives that aligned with the theoretical framework of affective atmosphere creation while allowing the emergence of specific factors in theme park settings. Concurrently, online travel notes were carefully examined to corroborate and expand upon interview findings. The descriptions of how affective atmospheres manifested and the elements contributing to their emergence were extracted.

4.2.2 Result

Through rigorous thematic analysis, three primary factors, including ritual interaction, aesthetic design, and sensory attractiveness were surfaced as potential antecedents of affective atmosphere.

The first factor, "ritual interaction," reflects visitors' ritualized interactive experiences within theme parks, such as engaging in performances and parades, which profoundly influence the perceived atmosphere. Many informants described sensing affective

atmospheres, particularly during these activities. For example, one interviewee remarked, “The daily performances by Disney’s costumed characters not only infuse the environment with joy but also foster a friendly atmosphere through their engaging gestures and interactions with the audience.”

The second factor, “aesthetic design,” encompasses the visitors’ appreciation for beauty and entertainment value. This involves the aesthetic physical attributes such as architectures, landscapes, facilities, buildings, and decorations, complemented by entertainment activities like thrilling rides. For example, one writer described in an online travel note, “the fantastical dreamlike atmosphere was generated by the exquisite landscapes and the enchanting merry-go-round, enhanced by aesthetic lighting and color schemes.”

The third factor, “sensory attractiveness,” implies the transient, yet impactful experiences elicited by a blend of visual, auditory, gustatory, olfactory, and tactile stimuli. Numerous informants recounted ephemeral but vivid encounters that evoked atmospheric sensations, highlighting elements like “the interplay of light and shadow,” “the sounds of music and laughter,” “the taste of ice cream and drinks,” “the smell of popcorn,” and “the feel of plush dolls in souvenir shops.” Although subtle, these sensory elements play a crucial role in shaping visitors’ perceptions of diverse atmospheres.

5. Study 2

Building on Studies 1, Study 2 delves deeper into affective atmosphere by examining its antecedental and outcome factors, which also serves as a nomological validation of the newly developed scale. A research model was constructed to analyze the impacts of ritual interaction, aesthetic design, and sensory attractiveness on affective atmosphere. Furthermore, the study explored how affective atmosphere affects visitors’ brand love for theme parks and investigated its mediating role in these relationships.

5.1 Hypotheses development

As demonstrated by affective events theory, individuals' emotional experiences are shaped by affective events, further evoke subsequent emotional responses (Weiss & Cropanzano, 1996). In tourism contexts, these affective events comprise both tangible elements (e.g., environment) and intangible elements (e.g., interactions) of tourism activities (Chen et al., 2024; Stylos et al., 2024). Building on this theory, the current study argues that theme park stimuli, including ritual interaction, aesthetic design, and sensory attractiveness influence visitors' affective atmosphere experiences. Furthermore, affective atmosphere serves as both a trigger for the emotional response of brand love and a mediator between stimuli and brand love. Based on this framework, the relationships between these constructs are further discussed in the following parts.

5.1.1 Ritual interaction

Durkheim (1912) initially identified “ritual” as pivotal in forging connections and engendering collective emotions, a notion further expanded by Goffman (1967), who explored how situational interactions consolidate on a micro sociological level. Building on these foundations, Collins (2004) articulated interaction ritual theory, positing that such rituals craft, sustain, and evolve social structures, transforming shared focus into collective dynamics, thereby fostering emotional solidarity and symbols of interpersonal ties. Extending this framework, ritual interaction interprets the sequences of ritualized interactive tourist engagement within specific settings that transmute distinctive destination traits into compelling experiences and indelible ritual memories (Lu et al., 2024).

Theme parks represent a modern ritual space providing visitors various ritual activities, from which entertaining options including shows, parades, fireworks, and street performances are provided on a ritualized modality and designed into interactive forms (Koehler, 2017; Moore, 1980; Yang et al., 2022). Recent popular ritualized on-site engagement with mascots is also a form of ritual interaction, which includes interactions such as greeting, photo-taking, performances, and dining (Su et al., 2024).

Theme parks employ ceremonial meta-spectacle events to amplify interactive rituals, boosting collective affections, shaping visitors' emotional experiences, and facilitating active emotional reaction (Brittingham, 2019; Cabanas, 2020). These ritual interactions in theme parks facilitate a deep engagement not only with performers but also with fellow visitors and companions, enhancing the positive emotional experiences of all participants (Tasci & Milman, 2019). **Affective events theory posits that interpersonal interactions function as affective events, significantly shaping tourists' emotional experiences (Chen et al., 2024; Tu et al., 2020; Weiss & Cropanzano, 1996). Applying this theoretical lens, ritual interactions in theme parks can be conceptualized as structured affective events, with their orchestrated nature expected to strongly influence tourists' emotional engagement, specifically, their experiences of affective atmosphere.** Furthermore, interaction ritual theory posits that ritual interactions generate emotional energy through shared focus and collective mood (Collins, 2004). Empirical studies corroborate that ritual interactions foster various emotional experiences, emotional congruence (Wood & Kenyon, 2018), and emotional energy (Wong et al., 2023). Given that the affective atmosphere is essentially an emotional experience and emotional resonance among participants, it is postulated as the outcome of these ritual interactions. Consequently, the first hypothesis is proposed as follows:

H1. Ritual interaction positively influences affective atmosphere.

5.1.2 Aesthetic design

Aesthetic design is recognized as the harmony, beauty, and organization of any object or experience, such as a product, event, or landscape (Hekkert, 2006; Toufani et al., 2017). Mathwick et al. (2001) categorized aesthetics into visual appeal (e.g., layout, color, photographic quality) and entertainment value, which implies the enjoyment and worthy savoring of experiences. Notably, aesthetic design influences numerous areas in tourism research, such as destination design (Kirillova & Lehto, 2015), food tourism branding (Tsai & Wang, 2017), tourist engagement in cultural tourism (Hung et al., 2019), and the aesthetics of tourism videos (Fang et al., 2023).

Theme parks, emblematic of tourism landscapes, skillfully integrate aesthetic design into their construction, encompassing both visual elements and entertainment activities (Berleant, 1994). These elements not only offer a cohesive experiential context but also enable aesthetic interactions with both tangible and intangible aspects, enhancing visitor engagement (Mathwick et al., 2001). **Affective events theory suggested that environmental and experiential stimuli serve as critical affective events that influence individuals' emotional experiences (Stylos et al., 2024; Weiss & Cropanzano, 1996). Based on this theoretical stance, aesthetic design as a composite of physical and entertaining stimuli can be regarded as affective events. Consequently, its impact on visitors' affective experience within theme park atmospheres emerges as a theoretical grounded proposition.** Research has demonstrated that aesthetic design significantly influences visitors' emotional experiences and emotional engagement (Alfakhri et al., 2018). Meanwhile, aesthetic design also produces the affective feelings of pleasant and comforting (Charters & Pettigrew, 2005; Hung et al., 2019; Vilnai-Yavetz & Rafaeli, 2006). An aesthetically pleasing environment in theme parks has been shown to effectively create emotional atmospheric experiences (Feng & Huang, 2024). Since affective atmosphere is the emotional experiences tourists acquired, the impact of aesthetic design on the affective atmosphere can be assumed. Atmosphere is also argued to be shaped by physically attractive elements such as beautiful architecture (Edensor, 2012). Accordingly, the second hypothesis is proposed as follows:

H2. Aesthetic design positively influences affective atmosphere.

5.1.3 Sensory attractiveness

Sensory attractiveness, representing the artistic appeal perceived by individuals (Hauser et al., 2022), acts as a potent mechanism within experiential settings to influence consumers' physiological experiences and behaviors (Krishna, 2012). In a tourism context, sensory attractiveness not only embodies a destination's identity and image (Tan & Kuo, 2014) but also stimulates tourist interest and travel intention, fostering anticipatory visions of future experiences (Köchling, 2021). Abd Rahman et al. (2016) identified five sensory aspects to present destination attractiveness, namely visual,

auditory, gustatory, olfactory, and tactile.

Theme parks, epitomizing lavish sensory environments, richly integrate five sensory dimensions into various experiences (Milman, 2009; Tasci & Milman, 2019). These sensory experiences, significant for their aesthetic value, enhance visitor enjoyment and evoke rich emotional and imaginative experiences (Cachero-Martínez & Vázquez-Casielles, 2021). *From the lens of affective events theory, intangible elements act as essential affective events triggering one's affective states (Bigné et al., 2008; Stylos et al., 2024; Weiss & Cropanzano, 1996). Within this framework, sensory attractiveness represents a key intangible affective event influencing theme park visitors' affective atmospheric experiences.* Empirical evidence confirms the pivotal role of sensory attractiveness in fostering memorable affective experiences (Agapito et al., 2017; Lv et al., 2024), thus implying its relationship with affective atmosphere. Besides, Li and Zhang (2023) discovered the impact of sensory attractiveness on emotional experience and Brakus et al. (2009) proved the correlations between sensory attractiveness and emotional engagement. As affective atmosphere indicates consumers' affective experiences, it can be assumed that sensory attractiveness influences affective atmosphere. Furthermore, Edensor (2012) discussed atmosphere is shaped by sensational factors such as sounds and smells. Therefore, the third hypothesis is proposed as follows:

H3. Sensory attractiveness positively influences affective atmosphere.

5.1.4 Brand love

Brand love is an emotional outcome representing the pinnacle of consumer satisfaction, featured by a profound and enduring emotional bond between consumer and brand (Carroll & Ahuvia, 2006; Fournier, 1998; Roberts, 2005). This concept integrates cognitive components such as long-term commitment and emotional elements such as attachment, passion, and pleasure (Bagozzi et al., 2017; Zarantonello et al., 2016). Tourism research links brand love with tourist satisfaction (Carroll & Ahuvia, 2006), emotions (Bigne et al., 2020), and behavioral loyalty (Lee & Hyun, 2016). In the

context of theme parks, brand love manifests as visitors' passion, self-integration, attachment, and affection towards the park (Bigne et al., 2020). *Affect events theory* claims that individuals' emotional response is generated through affective experience (Weiss & Cropanzano, 1996). Building on this theoretical foundation, the current study conceptualizes affective atmosphere as a significant emotional experience that shapes visitors' affective response, which is their brand love toward the theme park. Lehmann et al. (2008) posited that affective factors significantly enhance consumer engagement, notably through positive emotions that strengthen brand bonds and increase love and devotion. Bazi et al. (2023) confirmed this, establishing a positive correlation between affective experience and brand love. Given that affective atmosphere is visitors' emotional experience, its relationship with brand love can be forecasted. Lee (2014) emphasized the emotional outcome derived from tourism atmosphere, while the emotion of love is proved to be influenced by various emotional experience (Gedecho et al., 2024; Hosany & Gilbert, 2010; Lee & Kyle, 2013). As a result, the fourth hypothesis is proposed as follows:

H4. Affective atmosphere positively influences brand love.

5.1.5 Mediating role of affective atmosphere

The mediating role of affective factors is highlighted in shaping consumer-brand relationships, notably through emotional responses to external stimuli (Hamby & Jones, 2022; Park et al., 2010). The affective factors, enhanced by engaging stimuli, lead to positive and enduring brand attitudes (Bhatt et al., 2020; Cao et al., 2021), thus underscoring their mediating impact. *Affective events theory* conceptualizes affective experience as a critical mediator between affective events and subsequent emotional responses (Stylos et al., 2024; Weiss & Cropanzano, 1996). In accordance with this theory, affective atmosphere is proposed to act as a pivotal bridge linking three key categories of theme park affective events, including ritual, aesthetic, and sensory stimuli with visitors' affection for the brand. Customer affection is proved to be affected by entertaining stimuli while further contributing to brand love (Bazi et al., 2023). Li and Zhang (2023) corroborated the emotional experience as a mediator between brand

connection and sensory, content, and interactive elements. The mediating role of affective experience between attractive stimuli and emotional reaction is also confirmed by Zhang et al. (2024) and Bhatt et al. (2020). This study posits that affective atmosphere, reflecting visitors' affective experience, is driven by emotional energy observed from ritual interactions, aesthetic design, and sensory attractiveness, which can significantly foster brand love. As such, the following hypotheses are proposed:

H5a. Affective atmosphere plays a mediating role between ritual interaction and brand love.

H5b. Affective atmosphere plays a mediating role between aesthetic design and brand love.

H5c. Affective atmosphere plays a mediating role between sensory attractiveness and brand love.

Based on the foregoing hypotheses, a research model is presented in Figure 2 to illustrate the relationships between constructs.

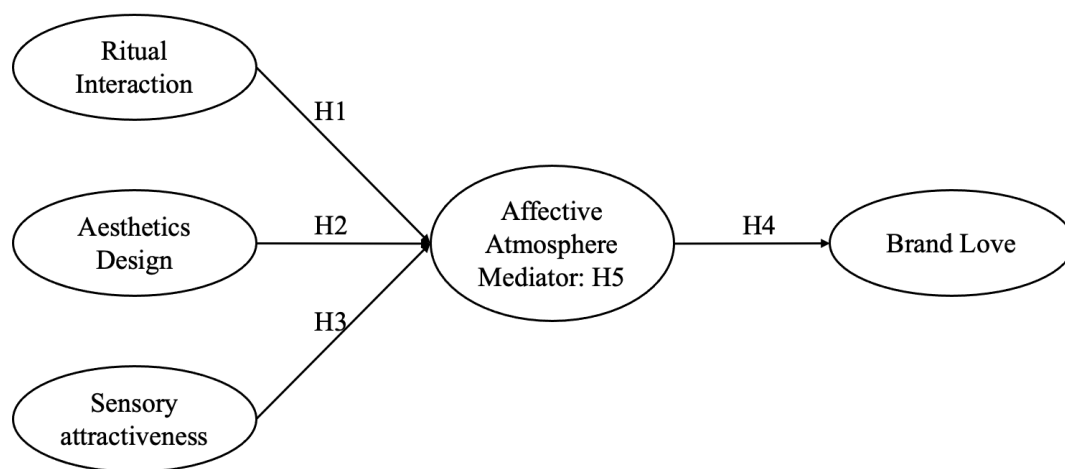


Figure 2. Research model

5.2 Measures, data collection and analysis

The measurement scale for affective atmosphere was derived from Study 1a, while the rest of the constructs were examined by established scales. Measures for ritual interaction adopted the four-dimensional scale developed by Lu et al. (2024). Aesthetic design was evaluated by the two-dimensional scale developed by Mathwick et al. (2001). To assess sensory attractiveness, the scale from Brakus et al. (2009) and An et

al. (2021) was adapted. The scale for brand love was borrowed from Bazi et al. (2023).

Consistent with Study 1a's data collection procedures and criteria, a final online survey was conducted. Consistent with previous data collection procedure, convenience sampling was adopted by distributing the e-questionnaire with QR code on Rednote, Weibo, and Douban platforms. Hashtags with theme park related topics were used for recruitment posts. The data were collected from August 26 to September 29, yielding 697 valid responses. The demographics of respondents are shown in Table 4. Utilizing AMOS 26, confirmatory factor analysis was initially performed to assess the measurement model, followed by structural equation modeling to examine the hypotheses.

5.3 Measurement model

The results of confirmatory factor analysis revealed satisfied skewness (-1.087 to -0.278), kurtosis (-0.517 to 1.241) (Kim, 2013), and model fit index ($p = 0.000$; $\chi^2/df = 1.255$, GFI = 0.924; IFI = 0.993; TLI = 0.992; RFI = 0.963; CFI = 0.993; NFI = 0.966; RMSEA = 0.019) (Hair et al., 2022). The factor loading values ranged from 0.83 to 0.982. All AVE values exceeded the cut-off value of 0.5, and CR values exceeded the cut-off value of 0.7 (Fornell & Larcker, 1981), confirming good internal consistency and convergent validity (Table 9). Discriminant validity is demonstrated in Table 10 with each AVE square root higher than the correlations with other constructs.

Table 9. CFA result of research model.

Constructs	Factor loading	AVE	CR	Mean	SD
Ritual Interaction - Contextual elements		0.871	0.971		
CE1: The buildings and decorations in theme parks contribute to the ritual	0.933			5.45	1.276

theme.

CE2: The color and lighting in theme parks create a ritual atmosphere. 0.944 5.48 1.308

CE3: The sound and music in theme parks are consistent with the ritual. 0.939 5.47 1.323

CE4: The ritual atmosphere in theme parks is appropriate (matching ritual theme, type, etc.). 0.932 5.45 1.276

CE5: The supporting facilities (space, seats, restrooms, etc.) in theme parks for the ritual are adequate. 0.917 5.44 1.270

Ritual Interaction – Ritual symbols 0.95 0.983

RS1: The rituals in theme parks are sacred for me. 0.975 5.25 1.224

RS2: The rituals in theme parks are symbolic for me. 0.982 5.26 1.232

RS3: The rituals in theme parks fulfill my need for authenticity. 0.967 5.25 1.229

Ritual Interaction – Scripted process 0.823 0.949

SP1: The ritual arrangement (presentation form, length, time, etc.) in theme parks is reasonable. 0.901 5.35 1.161

SP2: The ritual performers in theme parks are professional. 0.919 5.39 1.186

SP3: The ritual performers in theme parks are dedicated. 0.909 5.41 1.161

SP4: The ritual process in theme parks is attractive. 0.900 5.41 1.159

Ritual Interaction – Shared emotions 0.795 0.951

SE1: The peer interaction during the ritual is pleasurable.	0.875	5.37	1.151
SE2: People get along well with each other during the ritual.	0.892	5.33	1.158
SE3: People behave properly (civilized, orderly way, etc.) during the ritual.	0.887	5.30	1.192
SE4: The people at the ritual evoke my emotions.	0.903	5.33	1.180
SE5: The reaction of the people at the ritual emotionally infects me.	0.901	5.31	1.172
Aesthetic Design – Visual appeal	0.894	0.962	
VA1: The environment of theme parks is aesthetically appealing.	0.942	5.64	1.123
VA2: Decorations of the theme parks are attractive.	0.968	5.62	1.127
VA3: The style of theme parks is impressive.	0.925	5.59	1.112
Aesthetic Design – Entertainment value	0.854	0.946	
EV1: Theme parks are very entertaining.	0.918	5.36	1.047
EV2: The enthusiasm of theme parks is catching, which picks me up.	0.952	5.34	1.048
EV3: Theme parks does not just sell products, it entertains me.	0.902	5.33	1.094
Sensory Attractiveness	0.879	0.956	
SA1: Theme parks make a strong impression on my senses visually, auditorily, gustatorily, olfactorily, and	0.933	5.52	1.123

tactilely.				
SA2: I find theme parks interesting in sensory ways of visual, auditory, gustatory, olfactory, and tactile.	0.948		5.50	1.112
SA3: Theme parks appeal to my senses visually, auditorily, gustatorily, olfactorily, and tactilely.	0.932		5.52	1.121
Affective Atmosphere - Conviviality		0.728	0.941	
C1: I felt the joyful atmosphere.	0.851		5.76	0.935
C2: I felt the exciting atmosphere.	0.839		5.71	0.956
C3: I felt the relaxing atmosphere.	0.830		5.70	0.936
C4: I felt the escaping atmosphere.	0.853		5.66	0.969
C5: I felt the surprising atmosphere.	0.850		5.65	0.993
C6: I felt the vivid atmosphere.	0.895		5.74	0.985
Affective Atmosphere - Therapeutic		0.804	0.954	
T1: I felt the eudemonic atmosphere.	0.907		5.53	1.092
T2: I felt the warm atmosphere.	0.903		5.55	1.092
T3: I felt the amicable atmosphere.	0.884		5.53	1.094
T4: I felt the touching atmosphere.	0.894		5.54	1.094
T5: I felt the romantic atmosphere.	0.895		5.55	1.071
Affective Atmosphere - Playfulness		0.761	0.95	
P1: I felt the immersive atmosphere.	0.877		5.39	1.097
P2: I felt the adventurous atmosphere.	0.872		5.35	1.075
P3: I felt the amusing atmosphere.	0.849		5.39	1.044
P4: I felt the fantastical atmosphere.	0.871		5.39	1.056
P5: I felt the novel atmosphere.	0.885		5.40	1.089
P6: I felt the authentic atmosphere.	0.878		5.39	1.101
Brand Love		0.783	0.967	
BL1: Theme parks are wonderful	0.864		5.83	0.901

places.			
BL2: Theme parks make me feel good.	0.883	5.79	0.891
BL3: Theme parks are totally awesome.	0.883	5.76	0.932
BL4: Theme parks make me very happy.	0.882	5.78	0.900
BL5: I love theme parks.	0.887	5.80	0.907
BL6: Theme parks are pure delight.	0.879	5.78	0.904
BL7: I am passionate about theme parks.	0.904	5.80	0.880
BL8: I am very attached to theme parks.	0.895	5.78	0.918

Table 10. Discriminant validity of the research model.

	CE	RS	SP	SE	VA	EV	SA	C	T	P	BL
CE	0.93										
RS	0.535	0.97									
SP	0.635	0.422	0.91								
SE	0.64	0.525	0.516	0.892							
VA	0.504	0.398	0.513	0.422	0.946						
EV	0.498	0.445	0.43	0.501	0.502	0.924					
SA	0.51	0.49	0.493	0.502	0.423	0.347	0.938				
C	0.567	0.439	0.528	0.51	0.498	0.47	0.545	0.853			
T	0.528	0.482	0.479	0.537	0.483	0.519	0.485	0.456	0.897		
P	0.552	0.457	0.499	0.512	0.478	0.454	0.514	0.477	0.438	0.87	
BL	0.613	0.519	0.595	0.59	0.519	0.522	0.583	0.691	0.687	0.724	0.885

Notes: CE=contextual elements, RS=ritual symbols, SP=scripted process, SE=shared emotions, VA=visual appeal, EV=entertainment value, SA=sensory attractiveness, C=conviviality, T=therapeutic, P=playfulness, BL=brand love. The diagonal values are square root of AVE.

5.4 Structural equation model and hypothesis testing

The model fit index ($\chi^2/df = 1.412$, $p = 0.000$; CFI = 0.988; GFI = 0.914; TLI = 0.988; RFI = 0.959; IFI = 0.988; NFI = 0.961; RMSEA = 0.024) suggested an applicable structural model (Hair et al., 2022). H1 to H5 were all supported (Table 11 and Table 12). Specifically, ritual interaction, aesthetic design, and sensory attractiveness have significantly positive effects on affective atmosphere, supporting H1, H2, and H3. Sensory attractive shows the highest influence. Besides, affective atmosphere has a significantly positive effect on brand love, supporting H4. In terms of the mediating effect of affective atmosphere, the bootstrap method with 5000 resamples and a 95% confidence interval bias-corrected percentile was applied. Since 0 is excluded in the confidence intervals, affective atmosphere mediates the relationship between ritual interaction and brand love, aesthetic design and brand love, and sensory attractiveness and brand love, supporting H5a, H5b, and H5c. Fig 3 shows the results of paths.

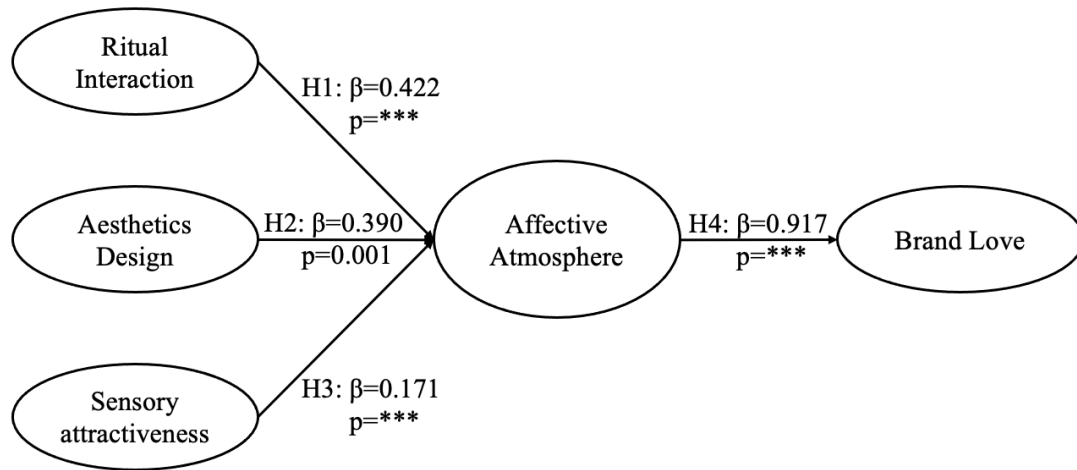
Table 11. Research results.

Hypotheses	Path	Estimates	S.E.	T-value	P-value	Result
H1	RI->AA	0.422	0.076	3.362	***	Support
H2	AD->AA	0.390	0.098	3.213	0.001	Support
H3	SA->AA	0.171	0.022	4.284	***	Support
H4	AA->BL	0.917	0.066	18.46	***	Support

Note: *** $p < 0.001$

Table 12. Mediation effect.

Hypotheses	Path	Estimate	Bias-corrected 95% CI		Percentile 95% CI		Result
			Lower	Upper	Lower	Upper	
H5a	RI->AA->BL	0.387	0.014	0.665	0.003	0.66	Support
H5b	AD->AA->BL	0.358	0.104	0.715	0.108	0.718	Support
H5c	SA->AA->BL	0.157	0.064	0.257	0.064	0.257	Support



Notes: *** $p < 0.001$;
0 is excluded in confidence intervals, supporting H5a, H5b, and H5c

Figure 3. Results of paths in research model

6. Discussion and conclusion

6.1 Discussion

This research empirically investigated affective atmosphere in a theme park context and reinforced its vital role in tourist experiences as indicated in previous studies (Cabanass, 2020; Zhu & Xu, 2023). It firstly explored affective atmosphere by developing and validating a measurement scale. Following Churchill (1979)’s scale development procedure, a three-dimensional, 17-item scale was established. The “conviviality” dimension, characterized by joyful, exciting, relaxing, escaping, surprising, and vivid atmospheres, captures the collective happiness and vibrancy sensed by tourists. The “therapeutic” dimension, comprising eudemonic, warm, amicable, touching, and romantic atmospheres, reflects the emotional relief and resonance tourists experience. The “playfulness” dimension encompasses immersive, adventurous, amusing, fantastical, novel, and authentic atmospheres, highlighting how unique themes and experiences inspire and immerse tourists in a whimsical and playful Neverland. The scale confirmed previous descriptions of theme park affective atmosphere features such as joyful and exciting (Cabanass, 2020; Slåtten et al., 2009; Tasci & Milman, 2019), while extended them through validating its multi-layered attributes. It also enriched the

discussion of convivial affective atmosphere in hedonic tourism settings (Rokka et al., 2023) through defining its specific attributes.

Through qualitative methods, the potential antecedents of affective atmosphere were identified as ritual interaction, aesthetic design, and sensory attractiveness, enriching Rokka et al. (2023)'s framework of ritual, materiality, and temporality on creating affective atmosphere. Drawing on the principles of affective event theory (Weiss & Cropanzano, 1996), this research revealed that ritual interaction, aesthetic design, and sensory attractiveness significantly influence affective atmosphere in theme parks, affirming earlier findings (Feng & Huang, 2024; Li & Zhang, 2023; Wong et al., 2023). The results provide evidence that affective atmosphere, fostered through active participation in interactive rituals, appreciation of aesthetic configuration, and sensory experiences, engages visitors in a rich mosaic of affective experiences. Among the three factors, sensory attractiveness exerts the greatest influence, suggesting that sensory elements are the most significant contributors to crafting attractive atmosphere. Moreover, the affective atmosphere significantly enhances brand love, enriching visitors' emotional connections with the park and triggering deep affection and positive attitudes, confirming the relations between affective factors and brand love (Bazi et al., 2023). Notably, affective atmosphere mediates the impact of ritual interaction, aesthetic design, and sensory attractiveness on brand love, consistent with existing literature (Cao et al., 2021; Hamby & Jones, 2022). These elements intensify visitors' emotional attachment through the bond of affective atmosphere, thereby amplifying brand love in theme park settings.

6.2 Theoretical contributions

The current study has several noteworthy theoretical contributions. First, affective atmosphere, while increasingly recognized in tourism research, lacks valid measurement tools. Addressing this underexplored area, this study significantly contributes by developing an empirical measurement of affective atmosphere, which can be assimilated across diverse hedonic tourism environments. It shed new light to

the field of atmosphere study through methodological advance, which previously explored mainly through conceptualization and qualitative analysis without empirical substantiation in specific tourism settings (Cabanias, 2020; Goulding, 2023; Rokka et al., 2023; Thorel et al., 2024; Zhu & Xu, 2023). Meanwhile, this research moved beyond the traditional focus of atmosphere on physical and social elements (Donovan et al., 1994; Edensor, 2012; Lovell & Griffin, 2022; Razaka et al., 2019; Slåtten et al., 2009), emphasizing the affective value of atmospheres and elucidating how affective atmosphere manifests in theme parks through dimensions of conviviality, therapeutic, and playfulness, delineating the complex emotional dynamics involved. This study also extends the research scope of affective atmosphere beyond previous insights (e.g. resorts, shopping malls) (Rokka et al., 2023; Zhu & Xu, 2023), responding to the scholarly call from Goulding (2023) for deeper insights into how affective atmosphere are manifested in different tourism settings.

Second, this study explored and validated the contributory factors of affective atmosphere, incorporating embodied elements of ritual interaction, aesthetic design, and sensory attractiveness, enriching Rokka et al. (2023)'s framework on affective atmosphere creation. It pioneers the incorporation of ritual interaction into theme park tourism, exploring its impact on visitors' emotional connections through affective atmosphere and responding to Lu et al. (2024)'s call for its broader applications in varied tourism settings. Additionally, although aesthetics and sensory experiences have been explored in tourism studies, this research further enriches the field by substantiating their foundational roles in shaping the affective atmosphere. Meanwhile, while prior research predominantly addressed the visual aspects of aesthetics (Fang et al., 2023; Tsai & Wang, 2017), this study broadens the scope by affirming its entertainment value. It also enhances the understanding of sensory experiences in theme parks by expanding from traditional focus on sensory categories of visual, auditory, and gustatory (Tasci & Milman, 2019) to include olfactory and tactile factors in measurement, thus offering a comprehensive view of sensory engagement.

Third, this research investigated the impact of affective atmosphere on visitors' emotional outcome, transcending the traditional focus of what is affective atmosphere and how it is produced (Goulding, 2023; Rokka et al., 2023; Thorel et al., 2024). This study is among the first to explore brand love within theme park tourism, offering a novel perspective on brand management through the notion of brand love, indicative of consumers' attachment and commitment (Bigne et al., 2020), while predicting visitor loyalty and intentions to revisit (Han et al., 2019; Liu et al., 2018). It also enriches the brand love literature by demonstrating its emergence from the direct influence of the affective atmosphere, a departure from traditional antecedents such as satisfaction and brand image (Carroll & Ahuvia, 2006; Unal & Aydın, 2013). This research introduces new insights into how a complex blend of emotional experiences within affective atmospheres enhances visitors' emotional connection to theme parks.

Fourth, this study extends the application and **adds theoretical values to both** affective events theory (AET) and interaction ritual (IR) theory within tourism. Building on previous research (Chen et al., 2024; Li et al., 2022; Tu et al., 2020), it validates AET as a significant framework for understanding how tourism events shape individuals' affective states and alter their attitudes and **supports Stylos et al. (2024)'s proposition that tourism experiences function as affective events**. Innovatively, this research validates ritual, aesthetic, and sensory dimensions as affective event categories, enriching AET's typology into previously underexplored experiential domains. The findings also empirically demonstrate the mediating role of affective atmosphere, thereby addressing AET's prior neglect of spatial-affective mediation. These theoretical extensions transform AET from explanatory framework to design-orientated paradigm, offering a systematic foundation for creating emotional experiences in service **environments**. Additionally, the study enriches IR theory (Collins, 2004) **beyond its conventional micro-social domain by illustrating that designed ritual spaces (e.g., theme park parades) effectively generate emotional energy through choreographed collective engagement**. Furthermore, affective atmosphere is proved as a novel spatialized manifestation of emotional experience within IR framework, thereby

introducing a unique affective dimension to the theory.

6.3 Managerial implications

The approach to utilize affective atmosphere as a novel managerial tool could inspire theme park and attraction managers to improve the attractiveness of environment and activities, while leverage these special atmospheric experiences as powerful mediums to enhance visitor brand love. The findings of this study assist theme park managers to comprehend how visitors perceive affective features of atmosphere by delineating it into three dimensions: conviviality, therapeutic, and playfulness. In designing theme park activities that offer visitors diverse experiences, operators should strategically integrate these components to varying extents, tailored to the specific themes and sections of the park. These factors are also beneficial for theme park operators to understand the type of atmospheres visitors desire and facilitating as indicators to evaluate visitors' emotional experience, further assist the improvement of designing atmospheric experiences. To enhance convivial atmosphere, collective activities are especially emphasized to arouse visitors' emotional energy through shared focus and collective mood. In terms of therapeutic atmosphere, intentionally creating romantic, amicable, and warm feelings through various stimuli can effectively bring visitors a sense of healing and love. As for playfulness, authenticity and immersion are critically emphasized in revivifying the stories to engage visitors.

To strategically craft affective atmospheres, ritual interaction is an insightful aspect. Theme park operators should attach more importance to improve existing interactive rituals (e.g., ritual performances, parades), while design more innovative and intensive ritual practices to engage visitors. Interactive plots among performers and fellow visitors should be especially promoted to intensify the collective effervescence of the atmospheres. Rather than watching ritual performances or shows as most theme parks provide at present, visitors should be part of the story for enhancing the sense of community and shared emotional states that strengthens the affective atmospheres. To achieve this, theme parks could design immersive storylines where visitors become as

active participants in ritual interactions. For example, visitors can be given a role such as “an ancient merchant” in Song Dynasty Town or “an oceanologist” in Ocean Kingdom once they entered and assigned with special task during their visit. To complete the task, participants need to interact with staff and other visitors, through which enhancing their collective emotional experience. Besides, providing ritual props such as costumes or accessories is suggested for better immersing visitors into the plots and enriching their sense of ritual.

Besides, it is crucial to prioritize aesthetics in theme park design. Beyond aligning with the thematic essence, special attention should be given to the harmony, beauty, and organizational aspects of park settings. Employing professional aesthetic design teams is highly recommended for theme parks under construction to achieve these levels of sophistication and ensure that every detail can aesthetically contribute the overall atmosphere. Additionally, the entertainment value of aesthetics plays a significant role, particularly in theme parks where performance is a central feature, providing visitors experiential attractiveness (Mathwick et al., 2001). Aesthetics should be seamlessly integrated into performance design, with careful consideration of stage settings, props, lighting, spatial arrangements, performers’ costumes, and scripts. These supporting facilities should not only reflect the theme but also enhance the storytelling, with intricate details that add depth and authenticity to the characters they portray, contributing to a playful atmosphere. To further enhance the aesthetic experience, theme parks could explore innovative design concepts that push the boundaries of traditional theming. Interactive art installation is an innovative way to achieve this. Through incorporating it into the park’s landscape, visitors are allowed to engage with the environment in creative ways. For instance, theme parks can utilize smart-material walls to project digital mural that changes based on audience’s manipulation. Dynamic aesthetics can also be expressed through detecting visitors’ face expressions and generate a lovely protrusion sculpture of AI face to respond them. These practices can not only add aesthetical interest for creating special affective atmospheres but also increase visitors’ emotional engagement.

Lastly, while multi-sensory experiences are often considered transient on-site reactions, they play a pivotal role in shaping continuous and engaging affective atmospheres within theme parks. Beyond the mostly applied visual (e.g., lights, colors, decorations) and auditory (e.g., audio, music) effects, incorporating the neglected elements of olfactory, gustatory, and tactile is vital for creating a fully immersive environment. For instance, olfactory attractiveness is mainly reported by informants as randomly sensed smell of food or flowers in the parks. However, olfactory stimuli can be strategically integrated into entertainment activities and aligned with thematic narratives to evoke specific emotional experience. Imagine walking through a Snow White-themed area where the air is subtly infused with the scent of fresh apples and blooming flowers, or a pirate-themed zone that featured by salty tang of sea air or the earthy aroma of wooden barrels, enhancing the storytelling and deepening the emotional connection to the narrative. Technology equipment such as OVR technology that provides VR aroma simulation is suggested to adopt. Similarly, to innovate gustatory experiences, creative food and beverage services in line with the parks' themes can transform dining into an integral part of the experience. For instance, theme parks can provide dynamic moving food like "chocolate frogs" in Happy Potter-theme restaurant and personalized 3D-printed food to enrich visitors' dining experiences. Theme parks can also provide visitors snacks during specific activities to echo the plots, such as biscuits that eaten by crew in a sailing-themed ride. Moreover, theme parks can introduce tactile engagement through tailored equipment and interactive installations to deepen the haptic immersion. Advanced technologies like VR, AR, and holographic projections further heighten tactile sensory engagement, seamlessly blending realistic sensations with narrative elements to intensify the affective atmosphere. For instance, textured pathways or kinetic sculptures that respond to touch can add a layer of physical engagement that enhances the overall atmosphere. Theme parks could explore multisensory storytelling by combining these elements into cohesive, narrative-driven experiences. Imagine a themed walkthrough attraction where visitors follow a storyline that engages all five senses: they see stunning visuals, hear immersive soundscapes, smell scents that match

the setting, taste themed snacks at key moments, and touch interactive props that advance the plot. This holistic approach would create a deeply engaging and memorable experience that resonates on multiple levels.

6.4 Limitations and future research

Despite its valuable insights, this study acknowledges several limitations that highlight avenues for future research. First, while this research was inspired by Rokka et al. (2023)'s framework to integrate ritual, materiality, and temporality as precursors to affective atmospheres, future investigations could explore additional physical, social, and psychological factors to deepen the understanding of affective atmosphere dynamics. Second, the affective atmosphere scale, developed specifically for theme park tourism, requires further validation and adaptation across various tourism contexts to assess its broader applicability and to discern any similarities and differences. Third, since the three components of affective atmosphere are regarded as independent dimensions in this research, future studies may consider the potential interrelations between them. Lastly, while this study focused on brand love as the primary outcome, the impact of affective atmosphere on other attitudinal and behavioral outcomes, such as loyalty and revisit intentions, can be further tested. As affective atmosphere is an emerging topic within tourism research, expanding studies in this field is essential to uncover innovative ways to leverage this concept effectively, addressing the interconnectedness and mutual dependencies among tourism stakeholders.

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Appendix A Initial item pool

Items	Sources
I felt the joyful atmosphere	Slåtten et al. (2009), In-depth Interviews, Travel Notes
I felt the exciting atmosphere	Tasci and Milman (2019), In-depth Interviews, Travel Notes
I felt the juvenescent atmosphere ^b	
I felt the escaping atmosphere	
I felt the thrilling atmosphere ^a	
I felt the immersive atmosphere	Cabanas (2020), In-depth Interviews, Travel Notes
I felt the relaxing atmosphere	
I felt the fantastical atmosphere	
I felt the eudemonic atmosphere	In-depth Interviews, Travel Notes
I felt the surprising atmosphere	
I felt the passionate atmosphere ^a	
I felt the satisfying atmosphere ^a	
I felt the pleasurable atmosphere ^a	
I felt the warm atmosphere	
I felt the amical atmosphere	
I felt the homelike atmosphere ^a	
I felt the touching atmosphere	
I felt the romantic atmosphere	
I felt the naive atmosphere ^a	
I felt the vivid atmosphere	
I felt the young atmosphere ^a	
I felt the free atmosphere ^a	
I felt the vibrant atmosphere ^a	
I felt the adventurous atmosphere	
I felt the explorative atmosphere ^a	
I felt the amusing atmosphere	
I felt the interesting atmosphere ^a	
I felt the novel atmosphere	
I felt the authentic atmosphere	

^a Item deleted after panel review

^b Item deleted after EFA