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# Mindfulness and Biophilic Design: Enhancing Guest Well-Being, Emotional Relaxation, Stress Reduction and Physical Health in the Hotel Sector

## Abstract

The study examines the interplay between mindfulness and biophilic design, as well as their combined impact on the well-being, emotional relaxation, stress reduction, and physical health of hotel guests. Employing convenience sampling through Amazon MTurk, data were collected from 477 adults in the United States over the course of one week in March 2024. The findings reveal significant relationships: mindfulness considerably enhances perceptions of biophilic design, biophilic design positively influences both well-being and emotional relaxation, and these factors, in turn, increase the perceived value of the hotel experience. Furthermore, biophilic design contributes to stress reduction and physical health, thereby enriching the overall guest experience. The research underscores the potential for integrating mindfulness and biophilic design to cultivate a more holistic and valuable hotel environment. This study contributes to the expanding body of literature by empirically demonstrating the interconnected roles of mindfulness and biophilic design in enhancing guests' well-being, facilitating emotional relaxation, reducing stress, and improving physical health, ultimately enriching the perceived value of the hotel experience.

*Keywords:* mindfulness, biophilic design hotel, well-being, emotional relaxation, stress reduction, physical health

## 1. Introduction

The hospitality industry consistently implements innovative strategies to optimize guest experiences and satisfaction (Kwan et al., 2024). Two key factors in achieving this are mindfulness practices and biophilic design (Gana, 2023). Mindfulness entails cultivating non-judgmental awareness of the present moment, which is beneficial for mental well-being and stress reduction (Ates et al., 2025). Biophilic design incorporates natural elements into constructed environments, fostering a deep connection with nature (Kellert et al., 2011).

In conjunction with the principles of biophilic design, the practice of mindfulness allows hotel guests to establish a deeper connection with their natural surroundings (Suess et al., 2024). Specifically allocated natural spaces, such as areas for meditation or yoga, offer guests the opportunity to engage in mindfulness activities while immersed in nature. Biophilic environments have been shown to contribute to mental and emotional relaxation (Lee, 2019). Elements such as natural light, green plants, water features, and decor crafted from natural materials help guests connect with the natural world and experience a heightened sense of serenity

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(Akinyemi et al., 2024). The incorporation of biophilic design elements in hotel rooms and common areas reduces guests' stress levels and facilitates a state of relaxation (Khozaei et al., 2022).

Biophilic design has been shown to offer numerous benefits for stress reduction and improved physical health (Zhong et al., 2022). By incorporating natural elements, it is possible to lower stress hormones, promote tranquillity, reduce blood pressure, and improve heart health. The integration of biophilic design in hotel rooms and common areas has a positive impact on guests' well-being (Lee, 2019; Song et al., 2022). The increasing adoption of biophilic design in the hospitality industry enhances perceived value and creates a memorable experience that guests are inclined to repeat (Abdullah et al., 2023). When combined with mindfulness practices, biophilic design helps rejuvenate guests both physically and mentally, thereby enhancing a hotel's reputation, guest loyalty, and profitability (Suess et al., 2024).

While previous research has explored various strategies, the integration of mindfulness practices and biophilic design emerges as a potentially transformative approach that exceeds traditional service improvements (Gana, 2023). The primary motivation of this study is to bridge a significant gap in the literature and practice by investigating how these two strategies, when combined, contribute to guest well-being (Susaeta Erburu et al., 2024), emotional relaxation, and overall satisfaction within a hotel environment. This research aims to address a critical void in the current understanding of how mindfulness practices and biophilic design interact to promote a holistic guest experience. Unlike prior studies (Nanu & Rahman, 2023; Song et al., 2022), which focus on one strategy at a time, this study examines how designated natural spaces for mindfulness activities, along with the incorporation of natural elements in hotel environments, can facilitate both mental and physical rejuvenation. This approach addresses key gaps in hospitality research, particularly the need for more comprehensive data on the combined impact of these two strategies on guest well-being and overall experience (Suess et al., 2024). Ultimately, this study makes a significant theoretical and practical contribution by enhancing our understanding of how hotels can leverage biophilic environments and mindfulness practices to optimise guest experiences, thereby fostering both emotional and physical well-being. It provides a foundation for future research and offers hospitality leaders a new framework for creating memorable and health-enhancing stays for their guests.

## 2. Background and hypothesis development

### 2.1. Mindfulness and perceived biophilic design

Mindfulness, defined as sustained attention and awareness of present-moment experiences (Purser, 2015), has been demonstrated to enhance sensory perception and emotional regulation. Through the practice of mindfulness, individuals can improve their capacity to focus on subtle details in their surroundings, increase their sensory awareness, and become more receptive to the aesthetic and emotional qualities of their environment (Shapiro et al., 2006). This heightened perceptual sensitivity facilitates the recognition and appreciation of natural elements within spaces, as mindfulness fosters a more vivid and meaningful interaction with one's physical surroundings (Lutz et al., 2015). Biophilic design, which is grounded in the innate human inclination to connect with nature, is known to elicit positive emotional responses, reduce stress, and enhance overall well-being (Söderlund, 2019). The incorporation of natural elements such as greenery, natural lighting, and water features can evoke restorative experiences for individuals. Research in environmental psychology suggests that individuals who are more attuned to their environment, particularly those with heightened sensory awareness, are likely to experience greater psychological and physiological benefits from biophilic design (Franco et al., 2017).

Mindfulness cultivates a heightened sense of present-moment awareness that encompasses emotional, mental, and physical experiences (Abdalla et al., 2024; Eck, 2023). The concept of biophilic design, on the other hand, aims to strengthen the bond between humans and nature (Fuchs & Konar, 2025) by incorporating

natural elements into indoor spaces, thereby fostering health, well-being, and tranquillity (Hahn et al., 2021; Zhong et al., 2022). Recent studies (e.g., Nanu & Rahman, 2023; Song et al., 2022; Suess et al., 2024) have explored the impact of mindfulness on the experiences of hotel guests in relation to biophilic design elements. Hotels incorporate features such as natural light, plants, and sustainable materials to enhance both the emotional and physical well-being of their guests (Browning et al., 2018). These biophilic elements have been found to alleviate stress (Lee, 2019) and enrich the overall accommodation experience (Suess et al., 2024). Mindful guests tend to wholeheartedly engage with these elements, appreciating the textures of plants, the illumination of natural light, and the use of natural materials, thus enhancing their aesthetic and emotional encounters (Hosey, 2012). This immersive engagement fosters positive perceptions and heightens guest satisfaction within hotel environments.

Research suggests (e.g. Holas & Jankowski, 2013; Grossman, 2010) that mindfulness practice promotes individuals' ability to pay closer attention to both their internal and external surroundings. Mindfulness is defined as the capacity to concentrate on present moment experiences, which in turn improves one's ability to perceive and evaluate environmental factors more thoroughly. This enhanced ability may have a positive impact on how individuals perceive biophilic design. Biophilic design involves incorporating natural elements, such as plants, natural light, and water, into artificial settings, and has been shown to have beneficial effects on human health and well-being (Beatley, 2011; Grossman et al., 2004). By cultivating greater mindfulness awareness, individuals can develop a deeper perception and evaluation of these natural elements, thus strengthening the potential effects of biophilic design. Within this context, the research hypothesis is as follows:

*H1: Mindfulness affects the perceived biophilic design of hotel guests.*

## 2.2. Relationship of biophilic design with well-being and emotional relaxation

Biophilic design enhances psychological and physiological well-being by meeting people's innate need to connect with nature (Gillis & Gatersleben, 2015). Numerous studies (e.g. Kellert & Calabrese, 2015) have demonstrated that spending time in nature-infused spaces reduces stress levels and improves overall quality of life. Biophilic design elements in hotels encompass features related to nature, including plants, natural light, water elements, and natural materials (Quan et al., 2024). The inclusion of these natural elements in spatial arrangements has a positive impact on people's emotional state. Ulrich (1984) revealed that views of nature and green spaces create a sense of relaxation in individuals. The utilisation of natural elements enhances emotional well-being, leading to reduced stress, increased relaxation, and an overall improvement in mood (Berto, 2014). Ulrich (1984) focused on the effects of nature views and green spaces on human psychology and found that nature views from hospital rooms contributed to faster patient recovery. Biophilic design incorporates natural elements into architectural and interior designs, grounded in the philosophy that people are healthier and happier in environments that are connected to nature. Browning et al. (2014) examined the effects of biophilic design on hotel guests and revealed that guests experienced lower levels of stress and greater tranquillity in hotel environments featuring biophilic elements. Research (e.g. Grinde et al., 2009) consistently demonstrates the positive effects of incorporating natural elements into spatial arrangements on people's emotional and psychological well-being. With this in mind, the research hypothesis is as follows:

*H2: Perceived biophilic design of hotels enhances the well-being of hotel guests.*

The utilization of biophilic design in hotel environments can significantly enhance the guest experience (Song et al., 2022). Integrating nature into architecture and interiors allows guests to connect more deeply with the natural environment. Many hotels incorporate biophilic elements, such as plants, natural lighting, and water features, into their lobbies, rooms, and relaxation areas, creating a more relaxed and tranquil ambience (Browning & Ryan, 2020; Suess et al., 2024). Features like large plants, natural stone, wooden materials, and water elements create an immersive natural environment. In contrast, natural light and views from hotel

rooms help alleviate stress and promote better sleep (Abdulaali et al., 2020). Green walls, indoor gardens, and zen gardens in relaxation areas further refresh and rejuvenate guests. Grinde and Patil (2009) highlight the positive effects of natural elements on psychological and physiological well-being. In such environments, guests may experience reduced stress, increased tranquillity, and higher overall satisfaction. With this in mind, the research hypothesis is as follows:

*H3: Perceived biophilic design of hotels enhances the emotional relaxation of hotel guests.*

The overall well-being of guests has a direct impact on the perceived value of their hotel experience. When guests experience higher levels of well-being, they are more likely to evaluate hotel services and the environment more favourably, resulting in increased satisfaction and loyalty (Han et al., 2019). This positive evaluation extends beyond service interactions to encompass the physical design and ambience of the hotel environment. Incorporating biophilic design elements, such as natural light, greenery, and water features, plays a significant role in enhancing guests' well-being by fostering a sense of calm, reducing stress, and promoting a restorative experience (Kellert & Calabrese, 2015). As guests feel more relaxed and rejuvenated in such settings, their emotional state contributes to a more positive assessment of the overall hotel experience.

Furthermore, guests with a heightened sense of well-being tend to perceive environments that incorporate biophilic design as aesthetically pleasing and more valuable, as these elements align with their psychological and physiological needs for connection with nature. This perception of value is crucial in shaping their overall impression of the hotel, as it increases the likelihood that they will attribute greater worth to their stay. In essence, the inclusion of biophilic design enhances the hotel's capacity to cater to guests' emotional and psychological well-being, which, in turn, influences how valuable they consider their experience to be (Suess et al., 2024). Within this context, the research hypothesis is as follows:

*H4: The well-being of hotel guests affects the perceived value of the biophilic hotel experience.*

Emotional relaxation is another crucial factor that directly affects guests' accommodation experiences (Brunner-Sperdin et al., 2012). Spaces that include natural elements and biophilic design create a sense of peace and relaxation for guests (Ulrich, 1984). Emotional relaxation contributes to the perceived value of the biophilic hotel experience, as these environments decrease guests' stress levels and make their stay more enjoyable (Browning et al., 2014). The use of biophilic design in hotel environments can significantly enhance the guest experience and the perceived value of the hotel. The inclusion of natural elements in spatial arrangements leads to greater guest satisfaction with hotel services, which they perceive as having higher value (Grinde & Patil, 2009). Biophilic elements have a positive effect on guests' physical and emotional well-being, thereby enhancing their overall accommodation experience. Within this context, the research hypothesis is as follows:

*H5: Emotional relaxation of hotel guests affects the perceived value of biophilic hotel experience.*

### 2.3. Relationship of biophilic design with stress reduction and physical health

Biophilic design, an approach that seeks to incorporate natural elements into indoor spaces, aims to foster individuals' connection with nature (Richardson & Butler, 2022). The biophilic design approach plays a significant role in reducing stress levels. Research (e.g. Huang et al., 2020) has shown that individuals who spend time in environments with natural elements and green spaces experience significantly lower stress levels compared to those in environments lacking such elements. Particularly in hotel settings, the application of biophilic design has been found to help guests escape from their daily stress and promote relaxation (Iheabunike, 2021). Biophilic design elements, such as natural light, plants, water features, and natural materials, contribute to guests feeling more physically and mentally at ease (Browning et al., 2014). Therefore, it can

be argued that incorporating perceived biophilic design elements in hotels effectively reduces guests' stress levels. The positive effects of biophilic design on physical health are also widely recognised in the literature (Zhong et al., 2022). In this context, the research hypothesis is as follows:

*H6: Perceived biophilic design of hotels enhances the stress reduction of hotel guests.*

Biophilic elements, such as natural light and proper air circulation, are recognized for their ability to enhance indoor air quality, thereby positively influencing respiratory health (Lei et al., 2021). Clean, well-ventilated environments diminish the presence of harmful pollutants and allergens, creating a healthier atmosphere for guests and contributing to overall respiratory well-being. Beyond respiratory health, biophilic design also promotes physical activity. The inclusion of natural elements, such as gardens, green spaces, and walking paths, provides guests with opportunities to engage in outdoor activities, which can lead to increased physical activity levels. For instance, guests may be encouraged to take walks in these natural surroundings, participate in light exercise, or spend more time outdoors, all of which enhance their physical fitness and energy levels (Pretty et al., 2005).

Furthermore, environments that incorporate natural elements have been shown to yield physiological benefits, including lower blood pressure and reduced stress hormones, which are associated with improved cardiovascular health. The calming influence of natural elements aids in mental relaxation and fosters physical well-being by promoting a state of physiological relaxation. Additionally, exposure to natural settings can stimulate immune system activity, resulting in improved resistance to illness and a stronger overall physical health profile (Li et al., 2010). Consequently, biophilic design offers multifaceted benefits for the physical health of hotel guests, encompassing respiratory health, physical activity, and overall physiological well-being. Therefore, it can be concluded that incorporating perceived biophilic design elements in hotels not only enhances aesthetic and psychological experiences but also contributes to tangible improvements in guests' physical health. In this context, the research hypothesis is as follows:

*H7: Perceived biophilic design of hotels enhances the physical health of hotel guests.*

Stress is an inevitable aspect of modern life and has detrimental effects on individuals' physical and mental well-being (Halbreich, 2021). For guests staying at hotels, reducing stress is a key objective, particularly during holidays and accommodation experiences (Chen & Petrick, 2013). Biophilic design is an approach that aims to alleviate stress by connecting people with nature (Barbiero & Berto, 2021). Biophilic hotel environments, which incorporate natural elements and green spaces, contribute to guests' relaxation and stress reduction (Browning et al., 2014). As a result, guests perceive their hotel experience as more valuable and satisfying (Ulrich, 1984). Therefore, stress reduction for hotel guests can positively impact the perceived value of the biophilic hotel experience. In this context, the research hypothesis is as follows:

*H8: The stress reduction of hotel guests affects the perceived value of the biophilic hotel experience.*

Physical health has a significant impact on individuals' overall quality of life and their satisfaction with daily activities. Efforts to maintain and enhance guests' physical health during their hotel stay contribute to their overall experience and satisfaction levels (Pizam & Milman, 1993). Biophilic design incorporates elements that promote physical activity and natural surroundings (Peter & D'Penna, 2020). This enables guests to lead a more active and healthy lifestyle. For example, hotels with outdoor sports areas, walking trails, and locations surrounded by natural beauty support the physical health of guests (Iheabunike, 2021). Consequently, guests may perceive the biophilic hotel experience as more valuable and meaningful. Therefore, the physical health of hotel guests can positively influence the perceived value of the biophilic hotel experience. In this context, the research hypothesis is as follows:

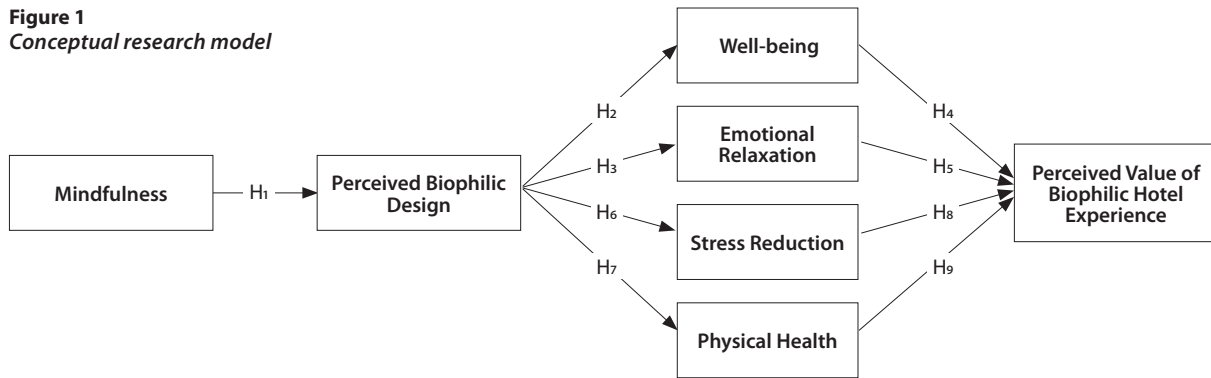
*H9: Physical health of hotel guests affects the perceived value of the biophilic hotel experience.*

### 3. Materials and methods

#### 3.1. Conceptual research model

The conceptual model of the study is presented in Figure 1. The objective of this study is to examine the impact of mindfulness and biophilic design on the well-being, emotional relaxation, stress reduction, and physical health of hotel guests. The interrelationships among these variables are illustrated in the conceptual model.

**Figure 1**  
*Conceptual research model*



#### 3.2. Instrument development and data collection

The research model employed a comprehensive set of seven scales. The mindfulness scale, comprising 14 statements, was derived from a study by Loureiro et al. (2020). The well-being scale, consisting of 12 statements, was based on a study by Liddle and Carter (2015). To evaluate perceived biophilic design, a 13-statement scale was developed based on various studies in the literature. The Emotional Relaxation Scale (five statements) and Stress Reduction Scale (four statements) followed the methodology outlined by Cohen et al. (1983). The physical health scale, comprising six statements, was adapted from the Short Form Health Survey by McHorney et al. (1993). Finally, the scale used to measure the perceived value of the biophilic hotel experience was taken from Loureiro et al.'s (2020) study. In this study, all constructs (except well-being) were assessed using a 5-point Likert scale, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The well-being scale was evaluated using a 5-point Likert scale, with responses ranging from 1 (never) to 5 (all of the time).

The study employed convenience sampling, a non-probability technique where participants are selected based on accessibility and availability (Obilor, 2023). Unlike random selection methods, researchers opted for individuals who were easily accessible (Pandey & Pandey, 2021). Data collection was conducted among adult participants aged 18 and above in the United States, utilising Amazon Mechanical Turk as the platform. A sample size of 384 participants was intentionally chosen to ensure sufficient data, as recommended by Hair et al. (2009). Rigorous measures were taken to ensure accuracy and consistency throughout the one-week data collection period in March 2024, resulting in a refined dataset of 477 participants. No specific filter questions were used, such as queries about participants' experience with biophilic design hotels. In terms of demographics, 38.6% of participants were female (184 participants) and 61.4% were male (293 participants). The age distribution indicated that 16.8% were aged 29 years and below, 38.2% were in the 30-34 age group, 11.3% were in the 35-39 age group, and 33.8% were aged 40 years and above. The majority (90.8%) of participants were married. In terms of education, the breakdown was as follows: 0.4% had a primary school education, 1.7% were high school graduates, 1.5% had some college education without a degree, 9.6% held an associate's degree, 44.0% held a bachelor's degree, and 42.8% held a graduate degree. 31.4% of the respondents reported travelling several times a year, while 27.0% indicated that they travel once a year. Additionally, 23.5% of the participants expressed a preference for

travelling once a month, while 12.4% stated a preference for travelling several times a month. The remaining 5.7% of participants were categorised as rare travellers. Regarding accommodation preferences, 51.8% of the participants reported a preference for mid-range options, while 27.7% indicated a preference for luxury and ultra-luxury accommodations. Conversely, 20.5% of the respondents expressed a preference for budget-friendly or economical accommodation choices.

## 4. Results

To evaluate the suitability of the scales for factor analysis, the skewness and kurtosis values of all statements were analysed. Skewness values were utilised to assess the normality of the data distribution (Table 1). In accordance with Tabachnick and Fidell (2007), it is recommended that the skewness of each variable should be below 3. The obtained values validate that the data follows a normal distribution.

**Table 1**  
*Distribution of normality*

	Skewness	Kurtosis
Mindfulness (Mind)	-0.936	2.092
Perceived Biophilic Design (PBD)	-1.241	2.410
Well-being (WELL)	-1.304	1.658
Emotional Relaxation (ER)	-1.248	2.896
Stress Reduction (SR)	-1.119	1.843
Physical Health (PH)	-1.028	1.627
Perceived Value (PVB)	-1.278	2.825

To assess the validity and reliability of the scales, an exploratory factor analysis (EFA) was conducted. Additionally, internal consistency and reliability of the identified dimensions were evaluated by calculating Cronbach's Alpha ( $\alpha$ ), Average Variance Extracted (AVE), and Composite Reliability (CR). The findings, presented in Table 2, were assessed based on four criteria: (1) the statistical significance of all scale items with loadings above 0.50 on their respective scales, (2) AVE exceeding 0.50, (3)  $\alpha$  value exceeding 0.60, and (4) CR greater than 0.70, as outlined by Fornell and Larcker (1981) and Hair et al. (2009).

**Table 2**  
*Exploratory factor analysis of scales*

	Factor Loading	
<b>Factor 1: Mindfulness (Mind)</b>		
I could pay attention to what I was doing. (Excluded because factor loading is low).	0.212	$\alpha$ : 0.60 CR: 0.892 AVE: 0.524
It was easy for me to concentrate on what I was doing.	0.569	
I was able to pay close attention to the environment.	0.507	
I was open to the experience of the moment.	0.645	
I was able to focus on the moment.	0.617	
Part of my mind was occupied with other topics, such as what I will be doing later, or things I would rather be doing.	0.617	
I noticed my surroundings while touring.	0.578	
I was aware of smells, sounds, and feelings, such as the wind blowing in my face.	0.637	
I was attentive to my movements.	0.632	
I was aware of other people.	0.699	
I could describe how I felt and thought at the moment.	0.626	
I tended to make judgments about whether my thoughts were good or bad.	0.675	
I made judgments about how worthwhile or worthless my experience was.	0.628	
I tended to evaluate whether my perceptions about it were right or wrong.	0.671	

**Table 2 (continued)**

<b>Factor 2: Perceived Biophilic Design (PBD)</b>		
I notice how much natural light is used in my hotel room. (Excluded because factor loading is low).	0.423	$\alpha$ : 0.89 CR: 0.908 AVE: 0.553
I think natural lighting creates a comfortable atmosphere in my hotel room.	0.647	
I think the vegetation adds a natural touch to the hotel's atmosphere.	0.613	
I think the vegetation in the hotel has a relaxing effect.	0.719	
I've noticed that the furniture and decorative elements used in the hotel are made from natural materials.	0.660	
I think natural materials create a sense of warmth and naturalness in the hotel's design.	0.721	
I think natural materials make the hotel room/environment feel calmer and more peaceful.	0.661	
I think water elements add tranquillity and peace to the hotel's atmosphere.	0.709	
I think water elements make my hotel experience more enjoyable.	0.655	
I think natural landscapes positively affect my hotel experience.	0.698	
I think the natural landscapes in the hotel positively affect my mood.	0.633	
I think natural stimuli (e.g., the wind blowing, birds chirping) have a relaxing and invigorating effect in the hotel environment.	0.677	
I think natural movements and stimuli make my hotel experience more interesting.	0.673	
<b>Factor 3: Well-being (WELL)</b>		
I felt calm during my stay at the hotel.	0.538	$\alpha$ : 0.92 CR: 0.929 AVE: 0.623
I felt hopeful and cheerful about the future during my stay at the hotel.	0.699	
The environment in the hotel relaxed me.	0.698	
I was in a good mood during my stay at the hotel.	0.735	
I got along well with people at the hotel.	0.687	
I felt there were many things I could be proud of.	0.757	
I noticed my surroundings while touring.	0.735	
I enjoyed what each new day brought me.	0.806	
I felt successful in some things.	0.728	
I thought good things would happen in my life.	0.773	
I found many fun things to do.	0.721	
I felt that many people cared about me.	0.773	
<b>Factor 4: Emotional Relaxation (ER)</b>		
I felt mentally relaxed during my stay at the hotel.	0.547	$\alpha$ : 0.67 CR: 0.790 AVE: 0.511
The time I spent at the hotel helped me get away from my worries.	0.703	
The environment in the hotel emotionally calmed me.	0.668	
I felt at peace during my stay at the hotel.	0.661	
I made an effort to relax during my stay at the hotel.	0.693	
<b>Factor 5: Stress Reduction (SR)</b>		
The time I spent at the hotel reduced my stress level.	0.790	$\alpha$ : 0.69 CR: 0.812 AVE: 0.520
I did not feel tense during my stay at the hotel.	0.652	
The environment in the hotel reduced my stress level.	0.746	
I did not have difficulty dealing with my worries during my stay at the hotel.	0.688	
<b>Factor 6: Physical Health (PH)</b>		
I felt that my overall health improved during my stay at the hotel.	0.718	$\alpha$ : 0.76 CR: 0.834 AVE: 0.558
I felt physically active during my time at the hotel.	0.676	
The environment in the hotel contributed to my physical relaxation.	0.659	
I felt physically fit during my stay at the hotel.	0.562	
The time I spent at the hotel had a positive impact on my physical health.	0.708	
The hotel's environment provided a suitable setting to support my physical health.	0.725	

**Table 2 (continued)**

Factor 7: Perceived Value (PVB)		
Staying in a biophilic hotel was reasonably priced. (Excluded because factor loading is low).	0.423	$\alpha$ : 0.84 CR: 0.876 AVE: 0.571
Given the cost of staying in a biophilic hotel, I was happy with the quality of the hotel.	0.718	
Compared to other hotels, staying in a biophilic hotel is good value for money.	0.617	
Biophilic hotels are a high-quality tourist product.	0.721	
Staying in a biophilic hotel gave me pleasure.	0.642	
Staying in a biophilic hotel made me feel more at ease.	0.768	
After staying in a biophilic hotel, my image of it was improved.	0.594	
The decision to stay in a biophilic hotel was the right choice.	0.723	
I obtained good results from staying in biophilic hotels.	0.690	

The results suggest that the dimensions demonstrate reliability and internal consistency in accordance with established criteria (Field, 2009). All items in the scales were included in the analysis, as their loadings exceeded the threshold of 0.50. The constructs exhibited acceptable internal consistency reliability, with both  $\alpha$  and CR values surpassing 0.70. Furthermore, all latent variables had AVE values greater than 0.50 (Hair et al., 2009).

Descriptive statistics for all study variables are presented in Table 3. The table shows that perceived biophilic design and physical health have high mean scores of 4.20, with a midpoint of 3. As expected, a significant correlation exists between mindfulness and perceived biophilic design ( $r = 0.79$ ,  $p < 0.01$ ). Perceived biophilic design also shows significant correlations with the anticipated outcomes: well-being ( $r = 0.64$ ,  $p < 0.01$ ), emotional relaxation ( $r = 0.78$ ,  $p < 0.01$ ), stress reduction ( $r = 0.80$ ,  $p < 0.01$ ), and physical health ( $r = 0.77$ ,  $p < 0.01$ ). Moreover, well-being is significantly correlated with the perceived value of the biophilic hotel experience ( $r = 0.65$ ,  $p < 0.01$ ), as are emotional relaxation ( $r = 0.78$ ,  $p < 0.01$ ), stress reduction ( $r = 0.81$ ,  $p < 0.01$ ), and physical health ( $r = 0.80$ ,  $p < 0.01$ ).

**Table 3**  
*Correlations and means of variables*

	Mean	SD	Mind	PBD	WELL	ER	SR	PH
Mindfulness (Mind)	3.69	0.281						
Perceived Biophilic Design (PBD)	4.20	0.494	0.79*					
Well-being (WELL)	4.04	0.654	0.63*	0.64*				
Emotional Relaxation (ER)	4.16	0.493	0.64*	0.78*	0.60*			
Stress Reduction (SR)	4.18	0.557	0.71*	0.80*	0.63*	0.76*		
Physical Health (PH)	4.20	0.506	0.69*	0.77*	0.64*	0.75*	0.80*	
Perceived Value (PVB)	4.16	0.499	0.74*	0.84*	0.65*	0.78*	0.81*	0.80*

\* $p < 0.01$ 

We conducted a hierarchical multiple regression analysis (Cohen & Cohen, 1983) to investigate the proposed hypotheses. The regression analysis findings for each hypothesis are presented in Table 4. As demonstrated in Table 4, Hypothesis 1 was supported, revealing a significant relationship between mindfulness and perceived biophilic design ( $\beta = 0.79$ ,  $p < 0.05$ ). Hypotheses 2 and 3 were also supported, with perceived biophilic design significantly associated with well-being ( $\beta = 0.64$ ,  $p < .05$ ) and emotional relaxation ( $\beta = 0.78$ ,  $p < .001$ ). Additionally, hypotheses 4 and 5 were supported, indicating a significant relationship between well-being and the perceived value of the biophilic hotel experience ( $\beta = 0.65$ ,  $p < .05$ ) and between emotional relaxation and the perceived value of the biophilic hotel experience ( $\beta = 0.78$ ,  $p < .05$ ).

**Table 4**  
**Findings of direct effects evaluation**

		Beta ( $\beta$ )	t-value	R Square	P value	Hypothesis
H <sub>1</sub>	Mind → PBD	0.793	28.369	0.629	0.000	Supported
H <sub>2</sub>	PBD → WELL	0.646	18.464	0.418	0.000	Supported
H <sub>3</sub>	PBD → ER	0.782	27.324	0.611	0.000	Supported
H <sub>4</sub>	WELL → PVBHE	0.651	18.676	0.423	0.000	Supported
H <sub>5</sub>	ER → PVBHE	0.789	28.033	0.623	0.000	Supported
H <sub>6</sub>	PBD → SR	0.802	29.216	0.642	0.000	Supported
H <sub>7</sub>	PBD → PH	0.772	26.442	0.595	0.000	Supported
H <sub>8</sub>	SR → PVBHE	0.819	31.161	0.671	0.000	Supported
H <sub>9</sub>	PH → PVBHE	0.806	28.646	0.648	0.000	Supported

Note. Mind: Mindfulness, PBD: Perceived biophilic design, WELL: Well-being, ER: Emotional relaxation, SR: Stress reduction, PH: Physical health, PVBHE: Perceived value of biophilic hotel experience.

Hypotheses 6 and 7 were supported, with perceived biophilic design being significantly related to stress reduction ( $\beta = 0.80$ ,  $p < .05$ ) and physical health ( $\beta = 0.77$ ,  $p < .001$ ). Hypotheses 8 and 9 were supported, with stress reduction being significantly related to the perceived value of the biophilic hotel experience ( $\beta = 0.81$ ,  $p < .05$ ), and physical health being significantly associated with the perceived value of the biophilic hotel experience ( $\beta = 0.80$ ,  $p < .05$ ).

## 5. Discussion

This study examines the relationship between mindfulness, biophilic design, and guest well-being within hotel environments. The findings offer valuable insights into how mindfulness and biophilic design contribute to enhancing the overall guest experience, facilitating emotional relaxation, reducing stress, and promoting physical well-being.

Mindfulness has a positive impact on the perception of biophilic design. Individuals with a high level of mindful awareness are more likely to have a favourable view of biophilic designs. Mindfulness enables individuals to live in the present moment and remain attentive to their surroundings. The correlation between these concepts suggests that designs that integrate nature are better appreciated when individuals practice mindfulness. This indicates that mindful engagement with nature enhances the positive effects of biophilic design. Biophilic design in hotels has a strong correlation with enhanced well-being and emotional relaxation (Song et al., 2022). The integration of biophilic elements contributes to the overall well-being of guests (Zhong et al., 2022) and promotes emotional relaxation. The connection between well-being and biophilic design underscores the positive impact of hotel environments that incorporate nature on the physical and mental health of guests. The significant correlation with emotional relaxation suggests that these designs help guests manage daily stress by improving their emotional state.

There is a strong correlation between well-being and the perceived value of biophilic hotel experiences, as well as between emotional relaxation and the perceived value of these experiences. This underscores the positive impact of biophilic designs on guests' emotional relaxation, thereby enhancing their overall hotel experience. Biophilic design has been shown to significantly reduce stress (Hahn et al., 2021) and improve physical well-being. By incorporating biophilic designs into hotels, stress levels among guests can be reduced and their physical health can be enhanced (Khozaei et al., 2022). These designs promote a stronger connection with nature, which in turn contributes to stress reduction (Peters & D'Penna, 2020). The significant association between stress reduction and biophilic design highlights the positive effects on guests' mental health. The perceived value of biophilic hotel experiences is closely tied to a decrease in

stress and an improvement in physical health. These research findings suggest that biophilic designs have a positive impact on guests' perception of their hotel experiences by reducing stress levels and enhancing physical well-being. The strong connection between stress reduction and perceived value highlights the ability of nature-compatible hotel environments to promote mental relaxation and improve the overall value of the experience. Likewise, the high correlation between physical health and perceived value indicates that biophilic designs contribute to guests' physical well-being, thereby improving the overall quality of their hotel experiences.

## 5.1. Research implications

The results of this study contribute to the expanding body of literature on biophilic design and its impact on human well-being, particularly within the hotel industry. The positive correlation between mindfulness and the perception of biophilic design establishes a new theoretical framework that connects psychological states, such as mindfulness, to the physical environment. This indicates that individuals with higher levels of mindfulness are more inclined to appreciate environments that incorporate natural elements. The findings support the theory that mindfulness promotes present-moment awareness and sensitivity to one's surroundings, thereby enhancing the benefits of biophilic designs (Chen, 2023).

This study supports theories suggesting that biophilic design enhances both visual appeal and emotional and physical well-being (Aristizabal et al., 2021; Zhong et al., 2022). The findings align with the notion that biophilic environments in hotels facilitate stress reduction, emotional relaxation, and physical health, ultimately enhancing the quality of life for guests. Furthermore, these results lay a foundation for future research on integrating biophilic design principles into various commercial and residential spaces, thereby enriching the theoretical discourse surrounding human-centred design and sustainable architecture.

From a managerial perspective, the findings provide practical recommendations for hotel managers and designers. The strong correlation between biophilic design and guest well-being suggests that incorporating natural elements into hotel environments can significantly enhance the guest experience. Furthermore, mindfulness, as a psychological trait, can be utilised by hotel operators to foster a more immersive and meaningful guest experience through nature-oriented design. Hotels can enhance their offerings by incorporating biophilic elements, including vertical gardens, natural lighting, indoor gardens, and water features. These design elements foster tranquil environments that promote emotional relaxation and physical well-being, aligning with the modern guest's desire for wellness and relaxation. Additionally, such designs can be marketed as part of wellness tourism initiatives, appealing to a growing demographic of health-conscious travellers. By investing in biophilic design, hotel operators can distinguish their properties and enhance the perceived value of the guest experience, potentially leading to increased customer satisfaction and loyalty.

## 5.2. Limitations and future research directions

This study has certain methodological limitations that should be acknowledged. Firstly, the sample size was limited to the United States, which may restrict the generalizability of the findings. To enhance the external validity of future research, it is recommended that studies be conducted in various geographical locations to account for potential cultural variations. Moreover, there is a need for comprehensive quantitative studies to delve into the relationship between conscious awareness and the perception of biophilic design, focusing on specific design features. Additionally, conducting comparative studies that investigate the effects of biophilic design across diverse cultural and geographical contexts would be highly beneficial. Adopting this approach will contribute to a more comprehensive understanding of the universality of biophilic design and its potential application in various hotel settings.

## 6. Conclusion

In conclusion, the study underscores the significance of mindfulness and biophilic design in enhancing the overall guest experience within hotel environments. The findings indicate that individuals who engage in mindfulness practices are more likely to appreciate and benefit from biophilic designs, as these environments foster emotional relaxation, stress reduction, and physical well-being. By integrating nature into indoor spaces, hotel operators can create environments that meet aesthetic expectations and promote the mental and physical well-being of their guests. The study contributes to the theoretical understanding of the interplay between mindfulness and biophilic design in shaping guest perceptions. It provides practical recommendations for hotel managers seeking to improve guest well-being. Future research can build on these findings to further investigate the impact of biophilic design across diverse industries and demographic groups, thereby offering significant contributions to both theory and practice in design, architecture, and hospitality management.

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