# Analysis of Visitors' Multisensory Experiences Towards Mental Health Benefits in Outdoor Destinations

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***ABSTRACT***

*This study explores the increasing trend of traveling outdoors after the COVID-19 pandemic. There is still limited research in Indonesia exploring the role of multisensory experiences on tourists' mental health benefits. Two main theories are used, "the Attention Restorative Theory (ATR) and the Theory of Grounded Cognition, as the basis for developing the research model. This study aims to analyze the impact of the multisensory experience of outdoor tourism on place attachment, the perception of environmental restoration, and the perception of mental health benefits. This study examined 278 respondents who visited city parks and outdoor tourist sites in Yogyakarta and its surroundings. Using quantitative approaches and PLS statistical tools, it was found that the influence of multisensory experiences affects place attachment, perception of environmental restoration, and mental health benefits. The perception of environmental restoration also affects the mental health benefits. Only place attachment does not affect the mental health benefits of visiting outdoor destinations. The implication for marketing strategies is that the tourism industry should design destinations that facilitate mental health in balance with physical health.*

Keywords: Multisensory experience, restorative environment, place attachment, tourism, health benefits

## A. INTRODUCTION

In 2020-2022, the COVID-19 pandemic has caused the world's economy to decline, including the tourism sector, which is the sector with the worst impact. However, this sector stands out for its ability to recover, even finding new forms in serving and offering tourism services. The increasing trend of health tourism is not only due to the pandemic, but work pressure also makes people work harder. The demands of work and competition in both business and education are increasing the number of people with mental health problems. A balanced state of physical and mental health is increasingly sought after. People, especially in urban areas, show a stronger desire to enjoy the natural atmosphere, which is an environment that can restore their health. The desired natural environment is commonly something green,

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clean, and fresh (Lopez-Mosquera & Sanchez, 2013). Increasing social pressures have been identified as triggering widespread public mental health problems (Buckley, 2020).

The concept of mental restoration and multisensory tourism experience emerged because certain places are considered capable of providing a restorative impact for their visitors. In natural spaces, usually an atmosphere of a green concept, the human senses can capture sensations (visual, auditory, olfactory, tactile, and gustatory). The external environment can stimulate the human senses to produce sensations that can affect emotions, cognition, and behavior (Zhou, et al., 2024). By visiting the restorative environment, it is expected to reduce physical and mental stress and fatigue. Mental recovery is often the main reason for motivation to travel in outdoor environments in the hope of getting a more soothing atmosphere for emotions and mental state (Zhou, et al., 2024). Studies identify that the interaction between people and green destinations can reduce stress and mental fatigue (Zhou, et al., 2023; Zhou, et al., 2024).

A place cannot be separated from the living beings who occupy it. To explain the relationship, the *Attention Restorative theory* (ATR) is used as a basis for connecting places and health impacts. With the rapid growth of health tourism around the world, the application of ATR theory has begun to be applied again; however, the implementation is still limited in the health sector (Jang, et al., 2020). Other than ATR, the *Theory of Grounded Cognition* is also useful as a guideline to explain the relationship between human sensory perceptions of the outdoor destinations they visit. The Sensory Marketing Theory explains that the external environment can trigger a variety of human sensory responses, which ultimately lead to sensations that can affect a person's emotional state, build cognitive processes, and influence behavior after exposure to nature (Krishna & Schwarz, 2014). Empirical studies on multisensory elements in the tourism sector show significant psychological effects on increasing visitor loyalty (Agapito, et al., 2017). Krishna, et al.'s (2010) research examining multisensory marketing has identified that visitors' multi-sensory experiences can build perceptions, judgments, and behaviors when engaging in an outdoor environment that provides a relaxing natural atmosphere.

After the COVID-19 outbreak and the increase in health tourism, the ATR has been reapplied to explain the relationship between place and health. While the connection between place and mental health is gaining universal acceptance, the majority of foundational research, including the *Attention Restorative Theory* (ART) and the *Theory of Grounded Cognition*, originates from Western culture and its geographical contexts. There is a significant research

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gap in understanding how these principles apply to a tropical, archipelagic nation like Indonesia. Indonesia has distinct cultural, ecological, and social characteristics. Indonesia, among countries with the world's most biodiverse, offers a unique and intense "sensory scape". Indonesia's cultural and spiritual values also differ from Western perspectives. The concept of visiting nature in Indonesia is more communal and family-oriented. The experience and perceptions of Indonesians towards nature can be different from other countries for mental health effects. Another important reason for research in Indonesia is triggered by the high population density in the cities; thus, it is crucial to design more accessible outdoor destinations.

This study fills the gap of previous research that majority done in western countries with different geographical and cultural conditions (Chiang 2023; Qu & Ma, 2024). Especially in Indonesia, the combination of the health, marketing, and tourism fields in a study will enrich better strategic decisions in tourism management and marketing. In this case, visitors' multisensory experiences are rarely studied to influence health benefits in Indonesia (Roostika, et al., 2025). The novelty of this study is the use of multisensory experiences to identify their restorative environment perception and health benefits. In particular, the sense of place attachment is also important to be tested in the model as the emotional aspect closely relates to mental health. The issue of how human multisensory experience captures the benefits of nature is also lacking in the tourism and marketing field. Among the literature found related to this topic include Huang, et al., (2018), Jang, et al., (2020), and Zhou, et al., (2023).

## B. LITERATURE REVIEW

### *Multisensory Experiences*

Research by Hartig and Staats, (2006) found that urban environments with minimal green space cannot be comfortable places for providing a restorative environment. Natural green spaces that provide a fresh and relaxing atmosphere are needed for a balance between mental tension and physical burnout. Post-COVID-19 pandemic research also corroborates that people who visit nature find freedom from isolation and experience a decrease in anxiety (negative mentality) due to COVID-19 (Fiorillo & Gorwood, 2020). Experiences in nature provide opportunities to free oneself from stress, reduce anxiety and tension (Sumarni, et al., 2020; Adevi & Martensson, 2013), reduce mental fatigue (Sonntag-Ostrom, et al., 2014), and research by Wolf, et al., (2017) found increased creativity by working in nature. Beautiful tourist destinations with good environmental quality are sources of restoration that generate

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positive energy and deep restorative experiences for visitors. Multisensory stimulation from sight, hearing, smell, taste, and touch has been shown to play an important role for visitors to have experiences that impact positive mental gains (Goldstein & Cacciamani, 2021).

Cognitive theory explains that human senses are an important part of understanding and seeing the world (Krishna & Schwarz, 2014). Therefore, to gain mental health benefits from tourism experiences in nature with the life that occupies it, the role of human senses in capturing the benefits of nature is vital (Franco, et al., 2017). Sounds from the natural environment, such as wind blowing and water splashing, can provide soothing restorative sounds (Payne, 2013). The chirping of birds can elicit a happy emotional response, even though it may only be the sound without seeing the bird (Little, 2013). Natural environments are identified by Annerstedt et al., (2013) as providing better stress relief than soundless nature. Although assessments of visitors' sensory experiences vary (Pan & Ryan, 2009), in the tourism sector, the majority of research is still limited to aspects of visual beauty and relaxing sound in capturing the benefits of the outdoors.

***Place Attachments***

Place attachment is defined as the emotional connection that arises when individuals visit a place. The experience of tourists in a particular tourist destination is very likely to form a positive emotional relationship (Williams, et al., 1992). Place attachment is built into two elements: place dependence and place identity. Place dependence is more reflective of an attachment to functional places, in this case referring to places that can fulfill needs and provide activities that a person is looking for. Place identity refers to emotional attachment, where individuals evaluate places to find appropriate symbolic aspects or emotional affinities (Woosnam, et al., 2018). Even though limited in number, among the studies that have begun to touch on multisensory aspects of mental health benefits and place attachment are Zhou, et al. (2024) and Yang, et al. (2021). The research shows that the multisensory tourism experience (through eyes, nose, ears, tongue, and skin) can create a sense of place attachment to a destination. The same findings were also obtained in Lv & Wu's research (2021) where the sensory experience was also identified as playing an important role in shaping place attachment.

Multisensory experiences can create a lasting connection between a visitor and a location. Using their senses sight, sound, smell, and touch, will help tourists form mental and

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emotional bonds with a place. A strong memory will elicit a sense of attachment to the place, which can be evoked by human senses, such as the distinctive scent of a pine forest, local food, and waterfalls. This sense creates a lasting impression that is not just aesthetically pleasing.

Previous studies often linked single sensory dimensions to place attachment. This hypothesis improves previous studies that the effect of multiple senses provides a more comprehensive model of how place and visitor create a bond. The multi-dimensional variable is more representative in real-world experiences. Based on previous research, this study develops the first hypothesis as follows:

H1: Multisensory tourism experiences have a significant positive effect on place/destination attachment.

***Sensory Marketing, Restorative Experiences, and Health Benefits***

The decision to visit pleasant places is a reason for tourists to benefit from interactions with nature through the five senses (Agapito, et al., 2017). The process of multisensory interaction and the beauty of nature can bring about emotional and cognitive states from the multisensory experience, which ultimately affects mental recovery as expected. The multisensory experience of traveling has been proven to have a positive mental impact so that visitors are interested in coming back to the same destination (Yang, et al., 2021). Furthermore, research by Ratcliffe & Korpela (2016) and Roostika & Mumpuni (2023) also found a direct relationship that visitors who have an attachment to a place tend to perceive better mental health outcomes.

Attention Restorative Theory (ATR) in this study is the theoretical basis related to restorative environments that have a restorative impact (Kaplan & Kaplan, 1989). This theory explains that a person will experience a decrease in concentration ability when spending too long on a job that requires a lot of physical and mental effort. After working hard, the person's cognitive resources are depleted, leading to mental fatigue and increased stress (Berman, et al., 2008). This psychological mental fatigue is identified to be recovered by visiting a place with a different atmosphere from the place of work or study, namely in a refreshing, open green environment. According to ATR theory, environments that have restorative qualities are known as restorative environments, which can facilitate a sense of calmness, relaxation, safety, and freshness so that mental health benefits are obtained (Backman, et al., 2023; Zhou, et al., 2024).

An early line of research that has identified the role of sensory variables and linked them

to perceptions of restorative environments is that of Alindo & Hidalgo, (2005) which was noted to include only visual sensors. Sensory research specifically on the calming effects of natural sounds that were found to elicit a high positive response to perceptions of environments that provide restorative qualities was conducted by Payne & Guastavino (2018). A combination of visual and audio-sensory experiences was found to have a direct impact on the restorative environment for tourists visiting outdoor locations (Qiu, et al., 2021). Considering that the role of other senses also has the potential to build an emotional sense in capturing the benefits of nature, then referring to the research of Zhou et al. (2024) and Zhou, et al. (2023), this study sees the importance of people increasingly gaining health benefits through visiting outdoor destinations, particularly the human multisensory capabilities to optimize the recovery benefits. The ATR theory, as described, provides a logical basis that individuals' perceptions of environments that provide restorative experiences can significantly influence their mental health. Using the logic of ATR theory and previous research supporting the positive impact of perceived restorative environments on individuals' mental health recovery when traveling in beautiful and meaningful open spaces (Pals, et al., 2014; Sato & Conner, 2013; Zhou, et al., 2024), this study builds hypotheses in the Indonesian tourism context. In addition, it was also identified in the research of Knez & Eliasson, (2017) that visiting a favorite destination can bring about the impact of feeling healthy and happy. This can be understood because a person's emotional connection to a place will be more likely to bring up a sense of security and comfort, so that people can more easily forget their previous mental fatigue and therefore reduce stress (Scannell & Gifford, 2017; Roostika, 2019).

Considering hypothesis 2 and 3, the majority of previous research on restorative environments has focused on broad concepts like "green space." This hypothesis specifically **identifying multisensory experiences** through which restoration occurs. It explores more details on sensory roles to interact with nature. Considering hypothesis 4, when people have more experience and a strong connection to a place, this builds a sense of identity and security. This feeling of connection can contribute to psychological well-being and allow comfort and happiness. With regards to hypothesis 5, this study focuses on the **visitor's *perception*** of restorativeness as the key variable. This study shifts the objective features to the subjective, psychological process. This moves the focus from the environment to the individual's cognitive and emotional response. From the above reviews, the next hypotheses are:

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H2: Multisensory tourism experiences have a significant positive effect on the perception of restorative environments.

H3: Multisensory tourism experiences have a significant positive effect on mental health.

H4: Place attachment has a significant positive effect on the mental health of tourists.

H5: The perception of the restorative environment has a significant positive effect on the mental health of tourists.

This study tests the multisensory experience of visitors on the perception of the restorative environment, place attachment, and mental health (Recovery). The research model was developed as follows, referring to the study of Zhou, et al., (2024).

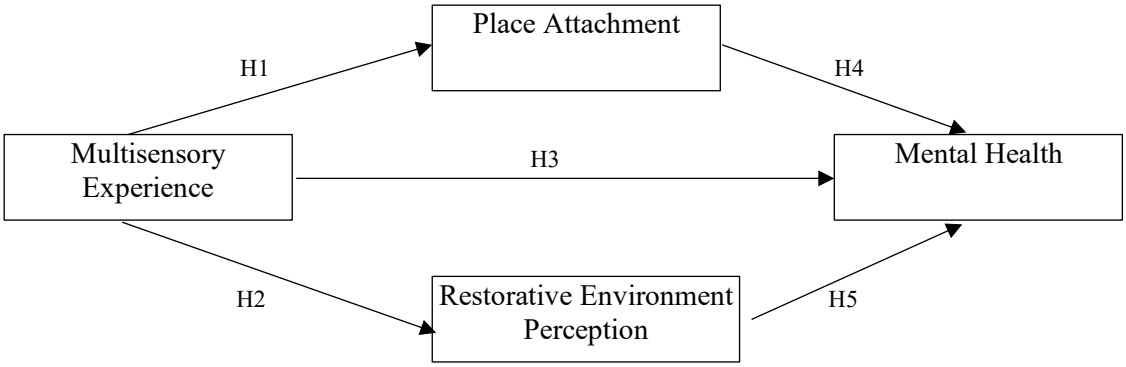


Figure 1. Research Model

## C. RESEARCH METHOD

### *Research Design*

This study uses a quantitative approach. The research location is outdoor destination areas in Yogyakarta and its surroundings, such as city parks, gardens, forests, temples, mountains, and beaches. The development of the questionnaire was carried out by referring to previous research, namely the research of Zhou, et al., (2024) and Zhou, et al., (2023). The variables of health benefits (recovery), place attachment, and perceived restorative environment were adopted and developed from the research of Zhou, et al., (2024). The multisensory experience of visitors is adopted and developed from the research of Zhou, et al., (2023). The Likert measurement scale was applied using a range from 1 (strongly disagree) to 7 (strongly agree). Using SPSS and Smart PLS statistical tools (Ringle et al., 2005), this study tested the proposed model using a sample of 278 valid respondents, which was then used to test the hypotheses proposed.

## D. RESULTS AND DISCUSSIONS

*Descriptive Statistics*

Demographic data of respondents are outlined in Table 1 below. The majority of respondents are women, under 29 years old. The majority of the sample is students, with the education of high school students and college students.

Table 1 Demographic Data of Respondents

| Classification | | Sum | Percent |
|---|---|---|---|
| Gender | Man | 134 | 48% |
| | Woman | 144 | 52% |
| Age | Less than 20 years old | 162 | 58% |
| | 20 - 29 Years | 75 | 27% |
| | 30 – 39 Years | 26 | 10% |
| | Above 40 Years | 15 | 5% |
| Education | Secondary school | 121 | 44% |
| | Diploma – Sarjana S1 | 151 | 54% |
| | Master | 6 | 2% |
| | Other | 0 | 0% |
| Expense | Less than IDR 2,000,000 | 80 | 29% |
| Monthly | IDR 2,000,000,- IDR 5,000,000,- | 120 | 43% |
| | IDR 5,000,000,- IDR 10,000,000,- | 62 | 22% |
| | Above IDR 10,000,000 | 16 | 6% |
| Work | Student | 173 | 63% |
| | Private Sector | 48 | 17% |
| | Government Employees | 29 | 10% |
| | Entrepreneurial | 29 | 10% |
| | Other | 0 | 0 |

Sources: Data Processing Results SPSS 2024

*Measurement model*

This study applies a two-step approach in statistical analysis using PLS, the first is the measurement model approach, and the second is the structural model. In the measurement model, reliability and validity (convergence and discriminant validity) will be tested first. If the conditions have been met, the next stage is a structural model approach by conducting hypothesis testing. Hair, et al., (2019) stated that reliability can be measured by Cronbach's alpha or composite reliability (CR). This study tests the convergence validity using factor loading and AVE (*average variance extracted*) values. The discriminant validity was also assessed by using the heterotrait-monotrait ratio (HTMT). Table 2 shows the results of factor loading, where all items measure variables with values above 0.5. Thus, from the analysis of factor loadings, it was found that the convergence validity meets the requirement.

Table 2. Factor Loading

| | Original Sample (O) | Sample Mean (M) | T Statistics (\|O/STDEV\|) | P Values |
|---|---|---|---|---|
| Com1 <- Perceived Restorative Environment | 0,772 | 0,771 | 24,552 | 0,000 |
| Com2 <- Perceived Restorative Environment | 0,770 | 0,770 | 27,673 | 0,000 |
| Com3 <- Perceived Restorative Environment | 0,842 | 0,841 | 39,357 | 0,000 |
| Com4 <- Perceived Restorative Environment | 0,817 | 0,816 | 32,622 | 0,000 |
| Com5 <- Perceived Restorative Environment | 0,834 | 0,833 | 33,227 | 0,000 |
| E1 <- Perceived Restorative Environment | 0,734 | 0,733 | 22,833 | 0,000 |
| E2 <- Perceived Restorative Environment | 0,800 | 0,800 | 27,458 | 0,000 |
| E3 <- Perceived Restorative Environment | 0,862 | 0,861 | 51,581 | 0,000 |
| Fasc1 <- Perceived Restorative Environment | 0,821 | 0,820 | 32,107 | 0,000 |
| Fasc2 <- Perceived Restorative Environment | 0,772 | 0,772 | 18,804 | 0,000 |
| Fasc3 <- Perceived Restorative Environment | 0,850 | 0,850 | 45,048 | 0,000 |
| Fasc4 <- Perceived Restorative Environment | 0,867 | 0,867 | 49,852 | 0,000 |
| MR1 <- Recovery | 0,925 | 0,925 | 79,871 | 0,000 |
| MR2 <- Recovery | 0,915 | 0,914 | 62,468 | 0,000 |
| MR3 <- Recovery | 0,919 | 0,919 | 70,524 | 0,000 |
| MR5 <- Recovery | 0,873 | 0,873 | 46,609 | 0,000 |
| PA1 <- Perceived Restorative Environment | 0,781 | 0,780 | 24,785 | 0,000 |
| PA2 <- Perceived Restorative Environment | 0,791 | 0,790 | 21,484 | 0,000 |
| PA3 <- Perceived Restorative Environment | 0,783 | 0,782 | 25,754 | 0,000 |
| PD1 <- Place Attachment | 0,811 | 0,811 | 32,600 | 0,000 |
| PD2 <- Place Attachment | 0,884 | 0,884 | 63,728 | 0,000 |
| PD3 <- Place Attachment | 0,799 | 0,796 | 24,856 | 0,000 |
| PI1 <- Place Attachment | 0,818 | 0,819 | 31,494 | 0,000 |
| PI2 <- Place Attachment | 0,787 | 0,789 | 28,247 | 0,000 |
| SensExp1 <- Multisensory Experience | 0,816 | 0,817 | 33,435 | 0,000 |
| SensExp2 <- Multisensory Experience | 0,827 | 0,826 | 36,832 | 0,000 |
| SensExp3 <- Multisensory Experience | 0,715 | 0,712 | 15,360 | 0,000 |
| SensExp4 <- Multisensory Experience | 0,734 | 0,731 | 16,374 | 0,000 |
| SensExp5 <- Multisensory Experience | 0,834 | 0,833 | 33,406 | 0,000 |

Second, the convergence validity test is also proven by the AVE value, which must be higher than the threshold value of 0.5. The AVE value in this study is shown with a value

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between 0.619 and 0.673, which is greater than 0.6, which indicates the support of convergence validity (Hair, et al., 2017). An AVE value greater than the test standard of 0.5 indicates good internal consistency (Fornell & Larcker, 1981; Hair, et al., 2017). Internal consistency is reflected in the composite reliability value (CR) indicated with CR being between 0.890 and 0.966, all exceeding 0.700. The Cronbach alpha value also ranges from 0.850 to 0.962, which is greater than the threshold of 0.6, which indicates good internal consistency or reliability

Table 3. Construction Validity and Reliability

| | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|
| Multisensory Experience | 0,850 | 0,870 | 0,890 | 0,619 |
| Perceived Restorative Environment | 0,962 | 0,963 | 0,966 | 0,652 |
| Place Attachment | 0,878 | 0,879 | 0,911 | 0,673 |
| Recovery | 0,929 | 0,930 | 0,950 | 0,825 |

The cross-loading test and the HTMT value test were used for the discriminant validity. The discriminant validity is shown by cross-loading values that measure items whose correlation values with the measured variables must be greater than those of other items that do not measure related variables. The results of the cross-loading can be seen in Table 4.

Table 4. Validity of Discrimination – Cross-Loading

| | Multisensory Experience | Perceived Restorative Environment | Place Attachment | Recovery |
|---|---|---|---|---|
| With 1 | 0,584 | 0,772 | 0,687 | 0,636 |
| Com2 | 0,591 | 0,770 | 0,663 | 0,602 |
| Com3 | 0,633 | 0,842 | 0,688 | 0,676 |
| Com4 | 0,549 | 0,817 | 0,643 | 0,665 |
| Com5 | 0,613 | 0,834 | 0,737 | 0,697 |
| E1 | 0,514 | 0,734 | 0,616 | 0,542 |
| E2 | 0,605 | 0,800 | 0,569 | 0,608 |
| E3 | 0,643 | 0,862 | 0,635 | 0,666 |
| Fasc1 | 0,618 | 0,821 | 0,643 | 0,710 |
| Fasc2 | 0,612 | 0,772 | 0,515 | 0,658 |
| Fasc3 | 0,646 | 0,850 | 0,615 | 0,754 |
| Fasc4 | 0,654 | 0,867 | 0,636 | 0,768 |
| MR1 | 0,631 | 0,771 | 0,609 | 0,925 |

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| | | | | |
|---|---|---|---|---|
| MR2 | 0,649 | 0,746 | 0,591 | 0,915 |
| MR3 | 0,643 | 0,727 | 0,613 | 0,919 |
| MR5 | 0,627 | 0,710 | 0,590 | 0,873 |
| PA1 | 0,525 | 0,781 | 0,548 | 0,635 |
| PA2 | 0,545 | 0,791 | 0,548 | 0,561 |
| PA3 | 0,562 | 0,783 | 0,572 | 0,621 |
| PD1 | 0,491 | 0,627 | 0,811 | 0,535 |
| PD2 | 0,523 | 0,681 | 0,884 | 0,570 |
| PD3 | 0,520 | 0,623 | 0,799 | 0,493 |
| PI1 | 0,472 | 0,611 | 0,818 | 0,566 |
| PI2 | 0,498 | 0,613 | 0,787 | 0,546 |
| SensExp1 | 0,816 | 0,716 | 0,496 | 0,683 |
| SensExp2 | 0,827 | 0,710 | 0,564 | 0,642 |
| SensExp3 | 0,715 | 0,375 | 0,364 | 0,366 |
| SensExp4 | 0,734 | 0,425 | 0,460 | 0,454 |
| SensExp5 | 0,834 | 0,554 | 0,481 | 0,523 |

Hair, et al., (2017) suggest that the discriminant validity can be tested using the heterotrait-monotraite ratio (HTMT) in PLS. All the values between the two variables should be less than 0.9, and Table 5 shows no values above 0.9; thus internal correlation of all variables has met the requirements and has good discriminant validity.

Table 5. Heterotrait-Monotrait Ratio (HTMT)

| | Multisensory Experience | Perceived Restorative Environment | Place Attachment | Recovery |
|---|---|---|---|---|
| Multisensory Experience | | | | |
| Perceived Restorative Environment | 0,777 | | | |
| Place Attachment | 0,693 | 0,838 | | |
| Recovery | 0,760 | 0,857 | 0,732 | |

*Structural Model*

This study uses a bootstrapping method with a resampling of 3000 to test the statistical significance of the hypothesis (H1-H5). The results of the structural model are described in the following Figure 2, where all hypotheses except H4 show a statistical T value above 1.96. The

results of the PLS-SEM test identified that H4: Place attachment had a significant positive effect on the mental health of visitors was not supported (β = 0.064, p <0.321). In other words, place attachment does not affect the mental health benefits of visitors. The other four hypotheses, as seen from Figure 2 (H1, H2, H3, and H5) show a statistical T value above 1.96.

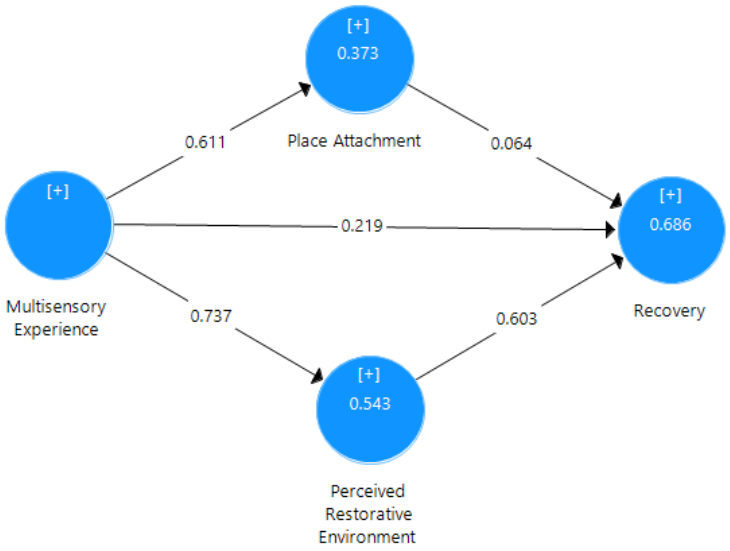


Figure 2. Structural Model - Bootstrapping

Furthermore, the discussion of the structural model will discuss the hypothesis tests as can be seen in Figure 3 and Table 6. The results of the study show that all four hypotheses are supported, where:

H1: Multisensory tourism experiences have a significant positive effect on a place's attachment, is supported (β = 0.611, p <0.000).

H2: Multisensory tourism experiences have a significant positive effect on the perceived restorative environment, is supported (β = 0.737, p <0.003).

H3: Multisensory tourism experiences have a significant positive effect on visitors' mental health, is supported (β = 0.219, p <0.000).

H5: The perceived restorative environment had a significant positive effect on the mental health of visitors, are supported (β = 0.603, p <0.000).

This finding is very interesting because, in the context of respondents who come from urban locations, the sensory experiences are important to build the perception of a healthy restorative environment, as well as the mental health benefits of visiting green, beautiful, and natural open places.

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Table 6. Results of Hypothesis Analysis

| | Original Sample (O) | T Statistics (\|O/STDEV\|) | P Values | Decision |
|---|---|---|---|---|
| Multisensory Experience -> Perceived Restorative Environment | 0,737 | 19,647 | 0,000 | Supported |
| Multisensory Experience -> Place Attachment | 0,611 | 13,045 | 0,000 | Supported |
| Multisensory Experience -> Recovery | 0,219 | 2,964 | 0,003 | Supported |
| Perceived Restorative Environment -> Recovery | 0,603 | 7,863 | 0,000 | Supported |
| Place Attachment -> Recovery | 0,064 | 0,994 | 0,321 | Not Supported |

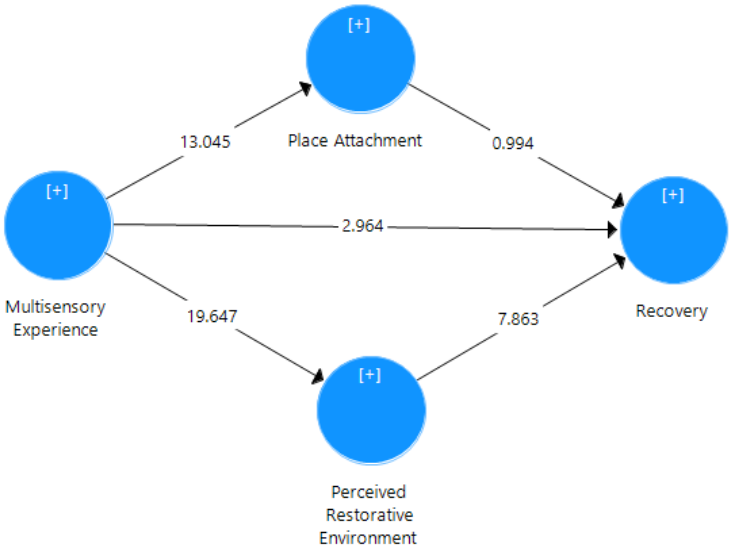


Figure 3. Results of Hypothesis Analysis

*Discussions*

Hartig and Staats (2006) have long observed the role of the natural environment in offering restoration effects. Visitors get a positive experience from a visit to an outdoor environment (Fiorillo & Gorwood, 2020). Nature (outdoor) can be a medium to reduce stress, anxiety, tension, and mental fatigue (Adevi & Mårtensson, 2013; Sonntag-Ostrom, et al., 2014). Even Wolf, et. al., (2017) found the impact of creativity development by visiting the outdoors. Studies by Zhou, et al., (2023) and Yang, et al., (2021) show the support of visitors' multisensory experiences (through sight, hearing, smell, touch, and taste) on the ability to build a sense of place/destination attachment. Sensory experience, as identified by Lv and Wu, (2021) is an important factor in forming place/destination attachment. The activities and lives of creatures in the open are captured by human sensors that provide emotional experiences. The green natural scenery and sky, as well as the beautiful blue water, fresh breeze, sounds of birds, and activities of the locals create unique visiting experiences. The results of this study

support the finding that multisensory experiences positively affect the sense of place attachment (**H1**). It needs to be understood that promoting the uniqueness of the destination that provides sensory experiences will have a positive impact on destination attachment. For example, it can be done by providing the waterfall sound effect or the fragrance from the woods and their surroundings.

Outdoor destinations can build stimuli or experiences for visitors through their five senses (visual, auditory, olfactory, tactile, and gustatory) (Agapito, et al., 2017). Visitors also experience emotional and cognitive processes captured from multisensory abilities, which are capable of influencing mental recovery. The Attention Restorative Theory is the theoretical basis in this study for the impact of the restorative benefits of a place with the ability to recover (Kaplan & Kaplan, 1989). Certain environments can reduce this psychological fatigue. The visitors' visual experience has been found to positively relate to the perception of the restorative environment (Galindo & Hidalgo, 2005). The calmness of natural sounds affects the restorative environment (Payne & Guastavino, 2018). Visual beauty also has a direct impact on the perception of the restorative environment (Qiu, et al., 2021). Zhou, et al., (2024) study found that multisensory experience positively influences the perception of the restorative environment in the tourism sector. This study supports **H2**: Multisensory tourism experiences have a significant positive effect on the perception of the restorative environment. This can be interpreted that, in addition to being able to build attachment to the place, through sensory experiences, visitors enjoy a sense of beauty and enjoyment that cannot be restored. Visitors at least feel recovered or reduced from the mental burden that they previously suffered. Managers today need to understand visitors' motivation to travel, where they seek balance in life, namely physical and mental health balance.

Research by Zhou, et al., (2024) found the impact of visitors' multisensory experiences on mental health benefits. Visits to the city's parks, suburban forests, or historical sites that have a lot of green open spaces provide a different emotional experience as compared to working spaces in people’s daily lives. This study supports the findings of previous research that "multisensory travel experiences have a significant positive effect on mental health" (**H3**). Visitors who visit their favorite outdoor locations feel healthier and happier (Knez & Eliasson, 2017). This is associated with the emotional state of a place that can provide a sense of security, calm, and comfort so that the burden of daily fatigue is reduced (Scannell & Gifford, 2017). Currently, more and more people are exercising using public open spaces to get health benefits. Outdoor tourism locations are also increasingly becoming a priority choice because the

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motivation to visit is to get a balance of physical and mental health. The more people have experience with health benefits, the more they will be loyal to a destination.

This study does not support the fourth hypothesis (**H4**) which states that "Place attachment has a significant positive effect on the mental health of visitors". Although previous studies such as Zhou, et al., (2023), Yang, et al., (2021), and Lv and Wu, (2021) have shown a positive relationship between place attachment and health benefits, the different results of this study can be explained because a person may not be attached to a place, but for health reason, a person may have to come to a certain place regularly to get the health benefits. The increasing number of green open locations that offer alternative health benefits can also be a reason why a person needs to try different alternatives, and not to tied to specific places for health benefits.

The Attention Restorative (ATR) theory provides the basis for thinking about the relationship between a person's destination and restorative experience. Previously, ATR was limited to being used in health studies. However, it is now increasingly used as a theoretical foundation in the field of marketing and tourism to explain the relationship between the potential of a destination and the benefits of mental health. The fifth hypothesis (**H5**) states that the perception of a restorative environment has a significant positive effect on the mental health of visitors. This study supports the findings of previous studies (Zhou, et al., 2023; Yang, et al., 2021; Backman, et al., 2023; and Lv & Wu, 2021) which show a positive association between the restorative experience and the health benefits of visitors. The increased workload and demands create psychological fatigue that can be recovered by certain environments. An environment that has a restorative quality is an alternative for visitors to reduce fatigue and regain the balance of physical and mental health. The shift in people's motivation to do tourism needs to be the concern of managers and marketers. The potential of natural destinations should be organized to better offer the benefits of providing a balance of physical and mental health. For marketers, it is for better managing marketing and communication strategies that emphasize the role of health in the tourism industry.

## E. CONCLUSION

This study analyzed the relationship between four key variables, namely multisensory experience, place attachment, restorative environment, and health benefits. With a quantitative approach, this study tested 278 visitors to outdoor destinations, where the survey was conducted using questionnaire distribution via Google Forms. The two main theories the *Attention Restorative Theory* (ATR) and the *Theory of Grounded Cognition* are used as the

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basis for research model development. The ATR theory explains the basis of the relationship between destinations and potential restorative impacts. Meanwhile, the theory of grounded cognition provides the basis for the relationship between the basic principles of sensory marketing theory and the external environment (the surrounding nature). The findings provide evidence for the significant positive influence between visitors' multisensoric experiences on place attachment, perceive restorative environment, and health benefits (H1, H2, and H3). Perceive restorative environment also have a positive effect on health benefits (H5) while place attachment does not affect health benefits (H4). The theoretical contribution is that the study on multisensory experiences used in the model enriches the marketing and tourism literatures for considering the multisensory effect on visitors positive bahaviors when managed correctly. The multisensory experiences can be developed as part of the tourism plan for contributing to a more healthy tourism activities. Managerial contribution can be placed by understanding visitors motivation for balancing their physical and mental health which can be appreciated by visitors when visiting the destinations.

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**Apendix** – Measurement Scale
Place Attachment- Zhou et al., 2024

**Place Dependence**

1. This destination has special meaning to me
2. This destination is very special to me
3. I feel like I′m a part of it when I travel here

**Place Identity**

1. Compared with other tourist destinations, I am more satisfied with this place
2. Compared to other tourist destinations, I prefer this place
3. There is nowhere else like this tourist destination
4. This tourist destination gives me the feeling that other places can't give

**Perceived Destination Restorative Qualities (PDRQ)**

**Compatibility**

1. The destination I visited was consistent with who I am
2. Everything I saw at the destination goes well together
3. Everything I saw at the destination belongs here
4. The destination was in harmony with its natural surroundings
5. The destination was my kind of place

**Physically away**

1. Being at the destination, I felt as if I was in different surroundings than my normal living environment
2. When I was at the destination, I did different things from when I was home
3. The destination was very different from my daily environmen

**Extent**

1. There was a variety of things to do at the destination
2. I did different things in different areas at the destination
3. The destination allowed me to explore extensively

**Mentally away**

1. At the destination, I could forget about my obligations
2. When I was at the destination, I felt free from my daily routine
3. At the destination, I felt free from all the things that I normally have to do

**Fascination**

1. My attention is drawn to many interesting things about this destination
2. There was much to discover at the destination
3. I found the destination fascinating
4. For me, visiting this place was a captivating experience

**Tourist Involement**

1. Travelling here is very important to me
2. I am full of interest in this tourist destination
3. Travelling here is a very meaningful activity for me

**Mental restoration**

1. After travelling here, my body and mind are restored and relaxed
2. After travelling here, I gain enthusiasm and vitality for life
3. After travelling here, my heart becomes more peaceful
4. I can forget my daily troubles here
5. Travelling here is a way for me to cleanse and purify my soul

**Destination experience -** Zong 2023

1. Providing aesthetic and colorful landscapes.
2. Having a cool and refreshing temperature and climate.
3. Providing elegant local style music.
4. Providing savory traditional food.

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