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Article

Maintain a Positive Attitude and Visit Urban Forest Parks More Often! Using Positive Emotions as a Mediating Variable Between Nature and Happiness

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Abstract: With the acceleration of urbanization around the world, city dwellers face increasing levels of work stress and mental health issues, which negatively impact their happiness. The purpose of this study was to explore the impact of natural environment on residents' mental health and well-being in urban forest parks, and to analyze the relationship between natural environment perception, psychological recovery, restorative environment perception and subjective well-being. Through a questionnaire survey conducted in a botanical garden in Hunan Province, 504 valid samples were collected. Through structural equation model (SEM) analysis, the results show that: (1) natural environment perception has significant positive effects on psychological recovery and restorative environment perception. (2) Psychological recovery as an intermediary variable significantly improved residents' subjective well-being. In addition, the characteristics of an individual's social background, such as gender, education level, occupation, and frequency of visits, are closely related to the perception and well-being of the natural environment. Among them, the increase of the frequency of visit has a significant positive effect on the improvement of individual's natural environment perception, restorative environment perception, subjective well-being and psychological recovery. The results show that: (1) Urban planners should improve the accessibility of urban forest parks and integrate restorative elements into the design. (2) Encourage residents to visit frequently to improve mental health and well-being. The results of this study provide empirical support for the value of urban forest parks in promoting public mental health and well-being, and provide scientific basis for urban planning and green space management.

Keywords: urban forest park; natural environment perception; psychological recovery; structural equation model; subjective well-being

1. Introduction

1.1. Psychological Health Issues and Happiness

Over the past few decades, the global process of urbanization has been accelerating rapidly. While this swift urbanization has spurred economic development and improved living standards, it has also intensified work-related stress and exacerbated mental health issues. This phenomenon has led to an increase in "mental entropy," reflecting a growing disorder in individuals' mental states. Such confusion further results in behavioral disarray, which is a significant contributor to the prevailing decline in well-being. Notably, the World Health Organization's "2023 World Health Statistics: Monitoring Health for Sustainable Development Goals" emphasizes the gravity of mental health challenges[1]: (1) Over 1.3% of deaths in 2019 were attributed to suicide, underscoring the severity of mental health issues. (2) Mental health disorders, including depression and anxiety, are major causes of morbidity and disability among adolescents, and preventing and treating these disorders during youth can yield long-term benefits in health and economic outcomes. (3) Approximately 70% of individuals with neurological disorders reside in low- and middle-income

countries, where health systems are often inadequately equipped to address these challenges, resulting in significant treatment gaps. However, the lack of happiness, an effective means of energizing individuals and alleviating mental strain, is becoming increasingly prevalent worldwide. The "2024 World Happiness Report" released by the United Nations, reveals that[2] (1) since 2016, happiness among young people (ages 15-24) in North America has sharply declined, to the extent that they report lower happiness levels than older adults. (2) Happiness inequality has worsened in other regions since 2016, indicating that the deficit in well-being is spreading globally, further intensifying the mental health crisis. (3) In South Asia, the Middle East, and North Africa, happiness levels have dropped across all age groups, inevitably leading to a range of mental crises. These data and insights underscore the seriousness of mental health issues and their profound impact on individuals, communities, and society as a whole; concurrently, the deficit in happiness exacerbates the mental crisis. Therefore, there is an urgent need to enhance research on well-being to provide more economical and higher-quality mental health services, thereby alleviating mental health problems.

Research on well-being has emerged as a prominent topic, particularly as an effective means of alleviating psychological stress and addressing mental health issues[3–5]. Specifically, Buckland and Schepp employed mixed methods to explore solutions for patients with schizophrenia (SCZ). Their three-hour interviews revealed that enhancing well-being significantly reduces reliance on medication and alleviates feelings of fear and isolation[6]. Mahakud conducted a comprehensive analysis of the literature on mental health and happiness, highlighting that an individual's psychological well-being fosters self-sufficiency; thus, happiness plays a crucial role in empowering individuals to cope with various mental disorders. In a psychological study in Saudi Arabia[7], Almadani and Alwesmi focused on women, utilizing the Oxford Happiness Questionnaire and the General Health Questionnaire to investigate the relationship between happiness and mental health. Their findings indicated a significant negative correlation between happiness scores and overall mental health issues, including somatic complaints, anxiety, and depression, while happiness scores positively correlated with mental health[8]. Bray and Gunnell investigated the connection between life satisfaction, happiness, and suicide rates across 32 countries, revealing a negative correlation between suicide rates and both life satisfaction ($r = -0.44$; 95% CI: -0.68, -0.11) and happiness ($r = -0.42$; 95% CI: -0.67, -0.08). In summary, there exists an inseparable link between happiness and mental health; in other words, the healthier the mind, the greater the sense of happiness.

1.2. Natural Environment and Mental Health

A wealth of research has undeniably demonstrated the positive psychological effects of natural environments as excellent venues for psychophysiological restoration[9–11]. Specifically, Bai and Zhang investigated the impact of natural sounds on psychophysiological well-being at Zhangjiajie National Forest Park, finding that paired sample t-tests revealed a significant increase in positive emotions and a notable decrease in negative emotions following exposure to natural sounds[12]. Similarly, Jackson and Stevenson surveyed 624 American adolescents, uncovering a strong correlation ($R^2 = 0.42$) between changes in subjective well-being and participation in outdoor ($B = 0.44$, $p < 0.001$) and nature-based activities ($B = 0.21$, $p = 0.016$). Their findings suggest that engaging in outdoor activities enhances adolescents' resilience to stress[13]. Furthermore, Zhang and Tan employed virtual reality technology to analyze the psychological effects of virtual tourism, demonstrating that 3D virtual travel significantly enhances positive emotions[14]. Collectively, these studies illustrate that natural environments play a crucial role in regulating emotions and restoring mental health, affirming their significant psychological restorative benefits.

1.3. Urban Forest Parks and Psychological Happiness

In natural environments, urban forest parks serve as excellent venues for residents' daily leisure and relaxation, and their relationship with well-being is frequently explored by scholars[15,16]. Specifically, Reyes-Riveros conducted a systematic bibliometric review of 153 articles, highlighting the significant impact of public urban green spaces on people's happiness and health benefits[17].

Meanwhile, Lee and Son utilized qualitative research to investigate the therapeutic effects of urban forests on middle-aged women participating in forest therapy programs, employing grounded theory for analysis. Their findings revealed that urban forest parks have a beneficial restorative effect on individuals' mental states[18]. In summary, urban forest parks, as vital components of urban green environments, significantly enhance psychophysiological recovery and, consequently, elevate residents' well-being, making them a valuable focus for research.

1.4. Natural Environment and Happiness

There are at least three compelling reasons to believe that natural environments significantly enhance subjective well-being[19]. First, biological evidence shows that experiences in natural settings can influence the nervous system, alleviating stress and restoring attention. This relationship—biophilia—has a logical evolutionary explanation: humans are inherently part of nature, with a deep-seated emotional connection to the natural world shaped by our 10,000-year history of reliance on it[20]. As noted by Gaekwad[21] in a meta-analysis of the biophilia hypothesis, exposure to natural environments has moderate to large effects on increasing positive emotions and reducing negative ones, lending credibility to the theory of nature-based design. Second, natural environments may promote and encourage beneficial behaviors, such as exercise, recreation, and social activities, which release dopamine and enhance happiness. Specifically, Barton and Pretty's meta-analysis of ten UK studies found that green exercise in natural settings significantly improved self-esteem and mood in both men and women[22]. Third, natural environments typically have fewer harmful elements, such as noise and air pollution, which negatively impact well-being. Long-term exposure to urban traffic noise can lead to serious sleep disturbances and cardiovascular issues[23,24], while air pollution is linked to widespread respiratory and cardiovascular diseases[25]. As Welsch pointed out, the negative impacts of these factors on health can diminish happiness levels, regardless of individuals' awareness of the causal relationship[26]. In summary, natural environments have been shown to significantly enhance well-being from multiple perspectives.

Overall, substantial research confirms that mental health influences happiness and that natural environments play a crucial restorative role in both mental health and happiness. However, the comprehensive impact pathway of "natural environment—psychological restoration/perceived environmental restoration—happiness" lacks systematic exploration. This paper aims to empirically analyze the influence of natural environments on happiness through evaluations of the subjective restorative qualities of urban forest parks, focusing on how these environments affect residents' well-being and the moderating role of subjective evaluations.

This paper aims to discuss the direct and indirect impacts of natural environments on subjective well-being through Structural Equation Modeling (SEM). Specifically, it addresses two primary questions: (1) How do natural environments influence residents' subjective happiness? (2) Which social background characteristics of individuals affect their sense of well-being? The study will provide several implications: **(1) For urban forest park planners:** emphasizing the importance of integrating natural environments into urban planning and optimizing the configuration of natural elements to enhance public mental health and residents' happiness. **(2) For mental health professionals and public health authorities:** offering new insights into the role of natural environments as interventions for mental health. **(3) For the public:** raising awareness about the impact of natural environments on mental health and happiness while providing practical information on utilizing these environments to improve well-being. **(4) For international health:** offering an economical approach to enhancing happiness in underdeveloped or resource-limited countries.

2. Development and Justification of Hypotheses

2.1. Natural Environment Perception and Psychological Recovery

The perception of natural environments is increasingly recognized in the study of mental health and well-being. Existing literature demonstrates a significant impact of cognitive assessments of

natural environments on individual happiness[27]. Research in environmental psychology shows that as individuals' perceptions of natural environments enhance, their subjective well-being correspondingly increases—a phenomenon closely related to the restorative effects of these environments. Numerous studies have confirmed that connecting with nature not only alleviates psychological stress but also improves emotional states, particularly when facing the challenges of daily life[28]. For instance, Payne and Loi narrated a three-week intervention aimed at improving college students' mental health, illustrating how engaging with natural environments can reduce stress and burnout while enhancing life satisfaction. Participants in the experimental group exhibited significantly lower stress levels compared to those on the waitlist[29]. Restorative environment theory posits that the restorative experiences provided by natural settings help individuals regain energy and bolster psychological resilience. Specifically, aesthetically pleasing elements within natural environments can evoke pleasurable emotional experiences, thereby promoting increased happiness[30,31]. Additionally, place attachment—an emotional connection between individuals and their environments—is considered to play a critical role in enhancing subjective well-being. The emotional bonds established in specific natural settings not only foster a sense of belonging but also elevate life satisfaction[32]. Based on the discussions above, the following hypothesis can be proposed:

H1: The perception of natural environments has a significant positive effect on psychological restoration.

2.2. Natural Environment Perception and Restorative Environment Perception

Environmental psychology indicates that individuals' perceptions of natural environments can significantly influence their restorative experiences, which are closely tied not only to the physical characteristics of the environment but also to individuals' emotions and attitudes[33,34]. The theory proposed by Kaplan and Kaplan emphasizes that the beauty and tranquility of natural environments enhance individuals' restorative capacities, with positive environmental perceptions stimulating intrinsic motivation and facilitating psychological recovery[35,36]. Research has shown that experiences in natural settings, such as immersion and comfort, can strengthen individuals' perceptions of restoration. These experiences are intricately linked to interactions with natural elements; when individuals feel an emotional connection to their environment, their psychological stress is alleviated, thereby promoting recovery[37,38]. Furthermore, existing studies have identified that the formation of restorative perceptions is influenced by various factors, particularly individuals' positive assessments of the environment[28,39]. Therefore, understanding the significance of individuals' subjective experiences in natural settings for restorative perceptions has become a key focus of research. While many studies have examined factors such as place attachment and place identity in relation to restorative environment perceptions, there remains a gap in research specifically addressing the perception of natural environments themselves[40]. Based on the literature review above, the following hypothesis can be proposed:

H2: The perception of natural environments has a significant positive impact on restorative environment perceptions.

2.3. Restorative Environmental Perception and Psychological Recovery

Restorative environment perception is increasingly recognized as a crucial factor in the study of psychological recovery and subjective well-being. Environmental psychology indicates that restorative environment perception encompasses individuals' subjective experiences within specific settings, including immersion, comfort, and emotional connection—each of which is vital for psychological recovery. Research shows that the aesthetic and comforting qualities perceived in restorative environments can significantly enhance individuals' mental states. For instance, Hao and Zhang noted that exposure to natural environments positively impacts both physiological and psychological health, with restorative effects increasing in conjunction with the extraordinary

qualities of natural landscapes[41]. Moreover, restorative perception can further enhance mental health by boosting individuals' self-efficacy and positive emotions[42,43]. There is also a close relationship between restorative environment perception and subjective well-being. Numerous studies indicate that when individuals experience positive perceptions in restorative environments, their sense of happiness tends to significantly increase. Sun and Liu highlighted that positive interactions within restorative environments can enhance individuals' sense of belonging, thereby improving overall life satisfaction[41]. This suggests that restorative environments not only provide emotional support but also promote happiness at cognitive and social levels. In summary, the following hypothesis can be proposed:

H3: Restorative environment perception has a significant positive impact on psychological recovery.

2.4. Mental Recovery and Subjective Well-Being

In the field of psychology, the concept of mental recovery has been extensively studied, with increasing attention on its relationship with subjective well-being. Mental recovery refers to the process by which individuals return to a balanced state after experiencing stress or fatigue. This process includes not only emotional restoration but also the recovery of cognitive functions and improvements in physiological conditions. Research shows that mental recovery effectively alleviates anxiety and depressive emotions, thereby enhancing individuals' subjective well-being[44,45]. For example, Fredrickson's "Broaden-and-Build Theory" suggests that positive emotions can expand individuals' cognitive capacities, fostering creativity and adaptability, which in turn enhances their experience of happiness[46]. Additionally, according to Ryan and Deci's Self-Determination Theory, positive experiences of mental recovery facilitate individuals' capacity to experience happiness[47]. While current research has begun to elucidate the relationship between mental recovery and subjective well-being, further exploration of the specific mechanisms involved is necessary. In summary, mental recovery plays a crucial role in emotional regulation and directly influences the enhancement of subjective well-being. Therefore, the following hypothesis can be proposed:

H4: Mental recovery has a significant positive effect on subjective well-being.

2.5. Restorative Environment Perception and Mental Recovery as Mediators in the Relationship Between Natural Environment Perception and Subjective Well-Being

In the study of the relationship between natural environment perception and subjective well-being, restorative environment perception is widely recognized as a key mediating variable. Kaplan[48] indicates that the restorative qualities of an environment can enhance individuals' mental recovery, thereby influencing their well-being. The Cognitive Levels Theory emphasizes that when environmental conditions are favorable, individuals' intrinsic motivations are stimulated, directly affecting their emotional and behavioral choices. Moreover, research by Yao and Zhang conducted a comprehensive meta-analysis on the effects of direct exposure to natural environments in alleviating stress. The findings indicate that contact with natural environments can effectively reduce stress and enhance individuals' mental recovery capabilities, highlighting the importance of restorative environment perception[49]. Similarly, Chen and Gao proposed that the relaxation and pleasure experienced during interactions with natural environments are crucial for facilitating mental recovery[50]. These studies suggest that restorative environment perception not only improves individuals' psychological states but may also play a significant role in the relationship between natural environment perception and subjective well-being. Therefore, it is particularly important to explore the mediating role of restorative environment perception in this relationship and its chain effects. Based on the above discussion, the following hypotheses can be proposed:

H5: Mental recovery mediates the relationship between natural environment perception and subjective well-being.

H6: Restorative environment perception and mental recovery serve as chain mediators between natural environment perception and subjective well-being.

2.6. *The Moderating Role of Positive Emotion*

Many scholars argue that positive emotion plays a crucial role in the restorative effects of environments[51–53]. Natural settings provide rich sensory experiences that can evoke positive emotions, subsequently influencing individuals' mental recovery processes. This aligns with the "Emotion-Environment Interaction" theory[54,55], which posits that positive emotions enhance individuals' perceptual abilities regarding their environments, leading them to focus more on and appreciate the beauty within their surroundings, thereby enhancing their subjective well-being[56]. Research indicates that when individuals experience positive emotions in natural environments, their perception of the environment's restorative qualities significantly increases. This may be due to positive emotions facilitating attention restoration, making it easier for individuals to receive positive feedback from their environments[57]. Furthermore, empirical support exists for the bridging role of positive emotion between natural environment perception and mental recovery. Fredrickson's "Broaden-and-Build" theory suggests that positive emotions broaden individuals' thought processes, fostering more positive environmental cognitions and psychological experiences[46]. This positive mental state not only helps individuals maintain psychological resilience in the face of stress but also effectively promotes their mental recovery. Additionally, the relationship between enhanced mental recovery and subjective well-being is noteworthy. Numerous studies show that mental recovery significantly boosts individuals' subjective well-being, allowing them to experience greater satisfaction and joy in life[58,59]. Positive emotion plays a key moderating role in this process; it not only influences individuals' perception of their environments but also enhances their intrinsic motivation and life satisfaction. Moreover, the relationship between positive emotion and restorative environment perception warrants attention. When individuals perceive restorative qualities in their environments, they often experience an accompanying surge of positive emotion, which aids in mental recovery and promotes a re-evaluation of the environment[37]. In summary, the mechanisms by which positive emotion interacts with natural environment perception, restorative environment perception, mental recovery, and subjective well-being are increasingly recognized. Exploring these interrelationships can deepen our understanding of individuals' psychological experiences in various environments. Therefore, the hypotheses presented will provide an important theoretical foundation for subsequent empirical research.

H7: Positive emotion moderates the relationship between natural environment perception and restorative environment perception.

H8: Positive emotion moderates the relationship between natural environment perception and mental recovery.

H9: Positive emotion moderates the relationship between mental recovery and subjective well-being.

H10: Positive emotion moderates the relationship between restorative environment perception and mental recovery.

Based on all the hypotheses. We propose a structural equation model hypothesis diagram (Figure 1).

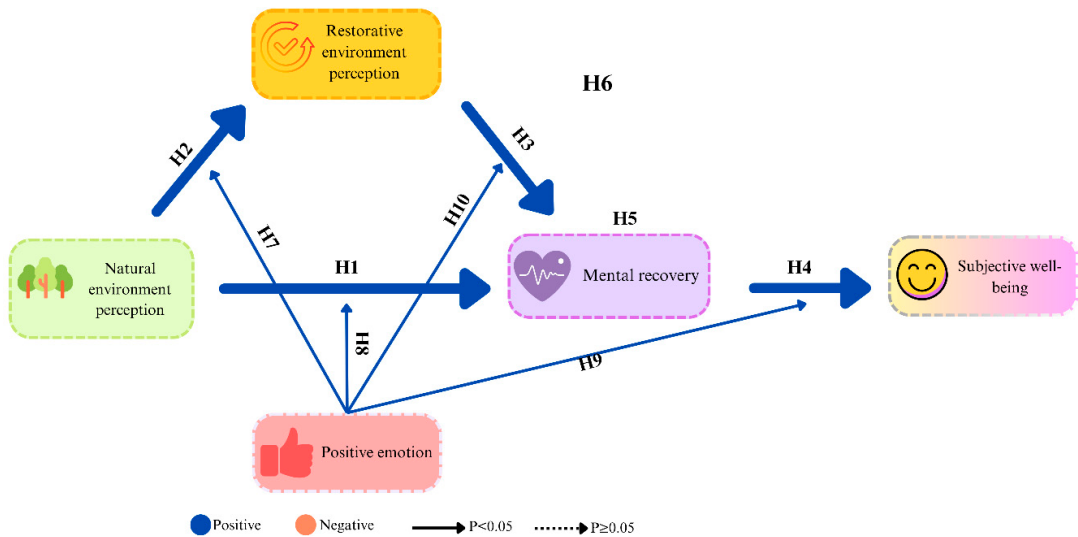


Figure 1. Pathway Diagram of the Structural Equation Model for Nature-Mental Recovery-Subject wellbeing.

3. Research Area and Methods

3.1. Research Area

The experimental site is located in the Tianjiling National Forest Park (Figure 2), part of the Hunan Provincial Botanical Garden. This park is a renowned AAAA-level national tourist attraction in China and represents a typical urban forest park in the subtropical region of China. Comprising lakes, bamboo groves, and gardens, it boasts a forest coverage rate of 90% (Figure 3), spanning nearly 120 hectares and attracting over one million visitors annually (data sourced from the Hunan Provincial Forestry Bureau, (hunan.gov.cn)). The park features diverse landscapes and rich biodiversity, housing over 4,000 plant species and 112 species of wildlife. Additionally, the area's flat and open pathways, coupled with dense vegetation, make it a crucial component of Hunan's green space system. Its proximity to densely populated centers in Hunan Province allows citizens convenient access for recreational activities. As a natural tourism destination in Hunan, the Botanical Garden serves as a significant source of health and leisure for residents, contributing to high levels of subjective well-being. For these reasons, the Hunan Provincial Botanical Garden serves as an ideal research site for this study.

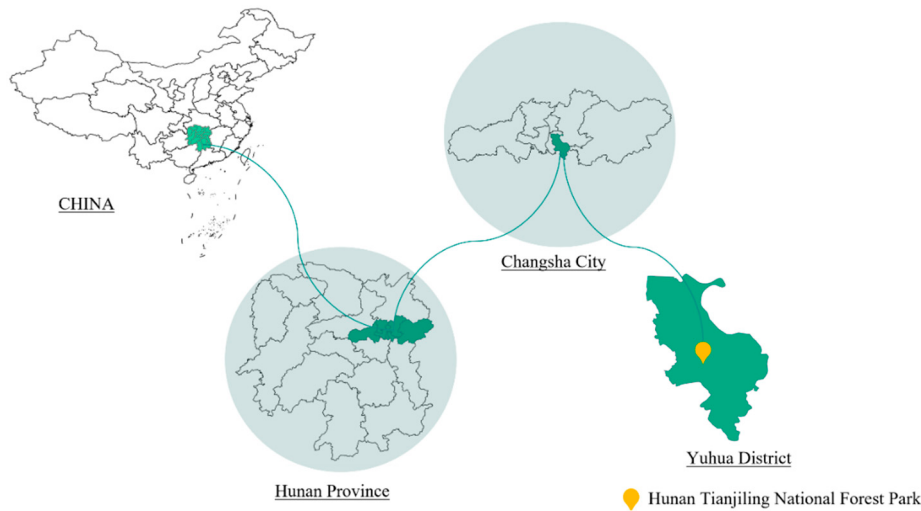


Figure 2. Schematic diagram of Tianjiling.



Figure 3. Tianjiling urban Forest Park some landscape.

3.2. Questionnaire Design

The questionnaire used in this study comprises five main sections: demographic variables, natural environment perception, restorative environment perception, mental recovery, and subjective well-being. The Natural environment perception scale is adapted from Kaltenborn's work [60], which investigated landscape preferences and place attachment in the Netherlands. This scale includes dimensions of natural environment perception, natural attribute perception, and natural form perception, and it has been empirically validated for reliability and validity, making it a robust tool for assessing perceptions of the natural environment. The restorative environment perception scale draws on the work of Huang [61] and Yang [62], who revised the perceptual restoration scale. It encompasses four dimensions: charm, compatibility, distance, and expansiveness. Originally developed by Harting [63], this scale was translated and adjusted by Huang et al. to align with the semantic and cultural context of China, ensuring comprehensibility for the majority of Chinese respondents. For the mental recovery scale, we reference Mayer's [37] nature-connectedness scale (CNS), which serves as a new metric for measuring emotional connections with the natural world. The subjective well-being scale is constructed based on the expertise of several scholars, as this aspect is central to our study. Initially, we refer to the subjective well-being scale developed by Diener [64], who first proposed a specific framework and detailed issues for measuring subjective well-being. Following this, Diener published the life satisfaction scale in 2010 [65], which is suitable for various age groups and educational backgrounds. We invited translation experts to perform semantic translations based on Diener's scales to ensure they meet the needs of our study. Lastly, the positive emotion scale is critical to this research as it plays an important moderating role. This section is primarily based on the Positive and Negative Affect Schedule (PANAS) developed by Watson [66]. Zhang further improved this scale for his investigation of the restorative effects of virtual natural environments [14], adapting it to fit the Chinese semantic context. The collaborative efforts of these scholars have culminated in our positive emotion scale. All measurement scales are structured as 5-point Likert scales, where "1" indicates strong disagreement, "2" indicates disagreement, "3"

indicates neutrality, “4” indicates agreement, and “5” indicates strong agreement. A complete list of the measurement scales is presented in the accompanying Table 1.

Table 1. All questions of the questionnaire were compared with the control dimension.

Variables	Variable quantity	Potential items
Natural environment perception	NAP1	The air here is relatively fresh.
	NAP2	This place has a rich fragrance from the plants.
	NAP3	The climate here is more comfortable than in the city.
	NAP4	The lighting here is suitable.
	NAP5	The wind here is gentle and comfortable.
	NAP6	The air's temperature and humidity here are appropriate.
	NAP7	There are many natural sounds here (such as birdsong, frog croaks, rain sounds, etc.).
	NAP8	There is a rich variety of biological scenery here (animals, plants, etc.).
	NAP9	The environment here is peaceful.
	NAP10	The space here is open, with long visual distances.
	NAP11	This place offers a nature-oriented experience.
	NAP12	The forest vegetation here is varied and layered.
	NAP13	The natural sounds here are rich in variation and wonderful.
	NAP14	Water bodies are common and abundant here.
	NAP15	The forest vegetation here is diverse and rich in variation (species, colors, etc.).
	NAP16	The terrain and landforms here are diverse and varied.
	NAP17	The roads are winding and the natural environment through which they pass is also rich in variation.
Restorative environment perception	REP1	Here, I feel completely free.
	REP2	Everything here is very friendly.
	REP3	I feel like I'm blending in with nature.
	REP4	Everything here is in harmony with the overall environment.
	REP5	I can do what I crave and enjoy here.
	REP6	Here, I can temporarily forget my responsibilities and stress.
	REP7	Here, I can escape the monotony of daily life and get some rest.
	REP8	Here, I feel like the environment is different from my usual daily surroundings.
	REP9	The activities I do here are different from what I do at home.
	REP10	The environment here is vastly different from my usual surroundings.
	REP11	This place is enchanting and unforgettable.
	REP12	There are many interesting things and discoveries here.
	REP13	This place is full of charm.
	REP14	I feel very nostalgic about this place.

Mental recovery	MR1	This trip enhanced my sense of achievement.
	MR2	This trip increased my motivation in life.
	MR3	This trip boosted my confidence.
	MR4	This trip strengthened my sense of responsibility
	MR5	This trip relieved my stress.
	MR6	This trip stabilized my emotions.
	MR7	This trip helped me relax
	MR8	This trip made me feel joyful.
	MR9	This trip made life feel more enjoyable
	MR10	This trip strengthened my relationships with friends and family.
	MR11	This trip improved my ability to handle interpersonal relationships
	MR12	This trip helped me balance work and life better.
	MR13	This trip alleviated my fatigue.
	MR14	This trip restored my vitality.
	MR15	This trip helped me focus on a single task.
	MR16	This trip reduced the impact of external distractions.
	MR17	This trip improved my work (or study) efficiency.
Positive emotion	PE1	On this trip, I was active.
	PE2	On this trip, I was enthusiastic.
	PE3	On this trip, I was happy.
	PE4	On this trip, I was elated.
	PE5	On this trip, I was excited.
	PE6	On this trip, I was proud.
	PE7	On this trip, I was delighted.
	PE8	On this trip, I was energetic.
	PE9	On this trip, I was grateful.
Subjective well-being	SW1	This trip improved my quality of life.
	SW2	This trip made me feel very pleased.
	SW3	This trip made me feel satisfied.
	SW4	Most of the time, my life is close to my ideal.
	SW5	My current life situation is quite good.
	SW6	This trip increased my satisfaction with life.
	SW7	I have achieved the most important things in life.
	SW8	If life could start over, there is not much I would want to change.
	SW9	I am grateful for this trip.

3.3. Data Collection

The data was collected during the survey period from July 3 to July 10, 2024, at the Tianjin Urban Forest Park in Hunan Province, China. We distribute questionnaires to visitors through random sampling. Considering the activity patterns and preferences of tourists in Tianjin Urban Forest Park,

most of the data collection takes place between 10am and 6pm, especially in areas with high scenic value and entertainment potential. A total of 530 questionnaires were distributed. After filtering out invalid and duplicate responses, we collected 504 valid questionnaires with a valid sample collection rate of 95.09%. Specifically, among the 504 respondents, there were 249 females and 255 males. In addition, there were 24 respondents under the age of 18 and 98 respondents over the age of 64, with the highest number of respondents over the age of 64, totaling 300 people. Other demographic characteristics are detailed in Table 2.

Table 2. Sociodemographic statistics and percentages.

Indicator	Item	Frequency	%
Sex	Female	249	49.4
	Male	255	50.6
Age	Under 18	24	4.8
	18-24	92	18.3
	25-34	84	16.6
	35-44	70	13.9
	45-54	71	14.1
	55-64	65	12.9
	64 above	98	19.4
Personal annual income	Under 24,000	167	33.2
	24,000-60,000	120	23.8
	60,001-12,000	112	22.2
	120,000 above	105	20.8
Education	Junior Secondary and below	71	14.1
	High School and Secondary School	165	32.1
	College and Undergraduate	196	38.9
	Postgraduate and above	72	14.9
Job	Civil servant	77	15.3
	Managerial personnel	27	5.4
	Private owner	32	6.3
	Wait for employment	32	6.3
	Professional technical personnel	28	5.6
	Peasant	47	9.4
	Student	113	22.4
	Other	58	11.5
Number of visits	Unit staff	90	17.8
	1 time	173	34.3
	2 times	116	23.0
	3 times	88	17.5
	4 times	39	7.7
	5 times and above	88	17.5

3.4. Data Analysis

This study employed SPSS 21.0 and Amos 23.0 for empirical testing of the theoretical model. First, the cleaned questionnaire data was imported into IBM SPSS Statistics for Windows version 21.0 (IBM Corp., Armonk, NY, USA) to verify the internal consistency of the dimensions, assess the stability of the questionnaire scales, and conduct exploratory factor analysis. Next, confirmatory factor analysis (CFA) was performed using IBM SPSS AMOS Graphics version 24.0 (IBM Corp., Armonk, NY, USA) to evaluate the stability of the measurement model variables. The CFA examined the construct validity of the measurement model, including convergent validity and discriminant validity, along with other validity analyses. Finally, mediation analysis and structural equation modeling (SEM) were conducted with the help of AMOS to empirically test the path relationships among the variables in the theoretical model and explore the mechanisms by which the natural environment influences subjective well-being.

4. Results

4.1. Common Method Bias Test

Given that data was collected through a questionnaire survey method, and all responses were provided by the same subjects (albeit anonymously), it is crucial to address potential common method bias (CMB) before conducting quantitative analyses. Typically, a CMB threshold of less than 50% is considered acceptable [67]. To assess this, the study employed Harman's single-factor test, which involved conducting an unrotated factor analysis on all measurement items. If no single factor accounts for the majority of the variance, it indicates the absence of common method bias. Following this approach, the results revealed the contribution rates of the first factor for each scale as follows: Natural Environment Perception (30.70%), Restorative Environment Perception (32.46%), Mental Recovery (30.40%), Positive Emotion (40.25%), and Subjective Well-Being (40.71%). All these values were below the 50% threshold, indicating that common method bias is not significant in this study.

4.2. Reliability and Validity Testing of the Scales

Firstly, using SPSS 21.0, the Cronbach's alpha coefficients for each dimension involved in the conceptual model were calculated. The results indicated that all latent variables had Cronbach's alpha values exceeding 0.8. Additionally, the KMO measure of sampling adequacy for each dimension was greater than 0.8, demonstrating the questionnaire's good reliability. Subsequently, confirmatory factor analysis (CFA) was conducted using AMOS 23.0. The reliability test results showed that the composite reliability (CR) for all variables was above 0.8, and the average variance extracted (AVE) values were greater than 0.7. Furthermore, Bartlett's Test of Sphericity achieved significance, confirming the credibility and validity of the factor data (Table 3). Construct validity refers to the extent to which the questionnaire can measure theoretical abstract concepts. A principal component analysis was performed for each scale, revealing that the first principal component contribution rates for Natural Environment Perception, Restorative Environment Perception, Mental Recovery, Positive Emotion, and Subjective Well-Being were 63.227%, 70.323%, 72.206%, 77.334%, and 69.551%, respectively. Generally, a contribution rate above 40% is considered acceptable. This indicates that the measurement items in the questionnaire significantly contribute to their respective latent variables, thus supporting the good construct validity of the scales.

Table 3. The reliability and validity test table of the questionnaire.

Variables	Variable quantity	Standardized factor loading	CR	AVE	Cronbach's Alpha	KMO
	NAP1	0.775	0.868	0.774	0.845	0.844
	NAP2	0.762				

Natural environment perception	NAP3	0.599	0.938	0.703	0.834	0.816
	NAP4	0.66				
	NAP5	0.388				
	NAP6	0.835				
	NAP7	0.711				
	NAP8	0.872				
	NAP9	0.788				
	NAP10	0.595				
	NAP11	0.537				
	NAP12	0.644				
	NAP13	0.565				
	NAP14	0.71				
	NAP15	0.801				
	NAP16	0.89				
	NAP17	0.773				
Restorative environment perception	REP1	0.634	0.911	0.789	0.854	0.814
	REP2	0.724				
	REP3	0.528				
	REP4	0.75				
	REP5	0.436				
	REP6	0.286				
	REP7	0.718				
	REP8	0.585				
	REP9	0.425				
	REP10	0.779				
	REP11	0.81				
	REP12	0.671				
	REP13	0.676				
	REP14	0.627				
Mental recovery	MR1	0.691	0.911	0.789	0.854	0.814
	MR2	0.748				
	MR3	0.743				
	MR4	0.675				
	MR5	0.452				
	MR6	0.681				
	MR7	0.709				
	MR8	0.705				
	MR9	0.696				
	MR10	0.754				

	MR11	0.878				
	MR12	0.713				
	MR13	0.865				
	MR14	0.84				
	MR15	0.744				
	MR16	0.607				
	MR17	0.639				
	PE1	0.715				
	PE2	0.138				
	PE3	0.672				
	PE4	0.762				
Positive emotion	PE5	0.577	0.818	0.772	0.912	0.882
	PE6	0.773				
	PE7	0.689				
	PE8	0.699				
	PE9	0.717				
	SW1	0.656				
	SW2	0.546				
	SW3	0.537				
	SW4	0.663				
Subjective well-being	SW5	0.599	0.927	0.721	0.812	0.831
	SW6	0.637				
	SW7	0.658				
	SW8	0.897				
	SW9	0.654				

In this study, we utilized AMOS 23.0 software for data analysis and assessed discriminant validity by comparing the square roots of the average variance extracted (AVE) with the correlation coefficients between variables. The analysis results, as shown in Table 4, indicated that the square roots of the AVE for all latent variables were greater than the corresponding correlation coefficients, suggesting significant differences among the variables. This confirms that the scales possess good discriminant validity (Table 4). Therefore, we can conclude that the scales designed for this study demonstrate overall strong discriminant validity.

Table 4. Differential validity test of the scale.

Variables	NEP	REP	MR	PE	SW
NEP	0.774				
REP	0.731	0.703			
MR	0.667	0.637	0.789		
PR	0.585	0.561	0.821	0.772	
SW	0.478	0.526	0.831	0.774	0.721

Square root of AVE	0.880	0.838	0.888	0.879	0.849
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4.3. Structural Equation Model Testing

In the model fitting process, the goodness of fit for the structural equation model was assessed using both absolute fit indices and commonly used fit indices. Mulaik et al. [68] suggest that for sample sizes greater than 500, a χ^2/df value of less than 5 is acceptable, which is a looser criterion than the usual threshold of 3. Similarly, Blunch supports a looser specification for χ^2/df at 5 [69]. In this study, the model yielded a χ^2/df value of 3.384, falling within the acceptable range. The RMSEA value of 0.063 also meets the requirement of being less than 0.08, indicating an acceptable fit for the structural equation model. The NFI value was 0.917, exceeding the required threshold of 0.9. Although the TLI value was 0.883, which is below the 0.9 criterion, it still falls within an acceptable range. The CFI value was 0.924, greater than 0.9, further supporting model fit. Additionally, the PNFI and PGFI values were 0.834 and 0.611, respectively, both exceeding the minimum requirement of 0.5 (Table 5). Overall, based on the comparison of various fit indices, the structural equation model in this study demonstrates good fit.

Table 5. Structural equation model fitting index table.

Indicators	Absolute Indicator	Fit Indicator	Value-Added Indicator		Fitness Indicator	Simplicity Indicator	Fitness Indicator
Specific indicators	x²/df	RMSEA	NFI	TLI	CFI	PNFI	PGFI
Judgment Criteria	(1-5)	< 0.08	> 0.9	> 0.9	> 0.9	> 0.5	> 0.5
Measurement results	3.384	0.063	0.917	0.883	0.924	0.834	0.611
Fitness Evaluation	Ideal	Ideal	Ideal	Acceptable	Ideal	Ideal	Ideal

Additionally, the structural equation model was employed to further explore the relationships among the four direct paths: Natural environment perception, Mental recovery, Restorative environment perception, and Subjective well-being. The detailed model fitting results, including factor loadings and significance relationships, are presented in Table 6. From the table, it is evident that the significance coefficients for all four paths are less than 0.05, indicating that all hypotheses are supported. Specifically, the standardized factor loading for the path from Natural environment perception to Mental recovery is 0.715. The loading for the path from Natural environment perception to Restorative environment perception is 0.538. Furthermore, the standardized factor loading from Restorative environment perception to Mental recovery is 0.672, and the loading from Mental recovery to Subjective well-being is 0.762. Thus, hypotheses H1, H2, H3, and H4 are all validated.

Table 6. Direct path verification table.

Hypothesis	Pathway relationship	Standardize d factor loading	SE	P
H1	Natural environment perception → Mental recovery	0.715	0.105	***
H2	Natural environment perception → Restorative environment perception	0.538	0.103	***
H3	Restorative environment perception → Mental recovery	0.672	0.107	***
H4	Mental recovery → Subjective well-being	0.762	0.057	***

4.4. Mediation Effect Analysis

The study hypotheses propose two pathways from natural environment perception to subjective well-being. The first mediation pathway (H5) is: Natural environment perception → Mental recovery → Subjective well-being. The second mediation pathway (H6) is: Natural environment perception → (Mental recovery + Restorative environment perception) → Subjective well-being. To investigate the mediation effects of restorative environment perception and mental recovery between natural environment perception and subjective well-being, we followed Hayes's [70] recommendations and set the Bootstrap sampling number to 5000 for H5 mediation effect analysis and H6 chain mediation effect analysis, with a 95% confidence interval. As shown in Table 7, the Bootstrap 95% confidence intervals for the pathway sizes of H5 and H6 are [0.143, 0.234] and [0.107, 0.212], respectively, both of which do not include zero. This indicates that the mediation pathways and hypotheses are significant and valid. Notably, the mediation effect value for H5 is the largest, indicating that the mediation role of mental recovery is the most pronounced. Therefore, hypotheses H5 and H6 are supported.

Table 7. Intermediate effect path test.

Hypothesis	Total indirect effect	Boot SE	Boot LLCI	Boot ULCI	Z	P
H5	0.233	0.023	0.143	0.234	9.949	0.000
H6	0.194	0.027	0.107	0.212	7.148	0.000

4.5. Moderation Effect Analysis

Hypotheses H7 to H10 examine the moderating effects of positive emotion (PE) on the direct effect pathways. In this moderation effect analysis, we employed hierarchical regression using SPSS. First, we centered the independent variables and the moderator variable, and examined the significance of the interaction terms (X*Z) for each hypothesis to assess whether the moderating effect of positive emotion is significant. The slope of the interaction term indicates whether the moderation is positive or negative (as shown in the Figure 4). Specifically, in H7 (Natural environment perception → Restorative environment perception), the interaction between Natural environment perception (NAP) and Positive emotion (PE) was significant ($t = -4.717, p = 0.000 < 0.05$), indicating that the impact of NAP on Restorative environment perception (REP) varies significantly with different levels of the moderator (PE), and it is a positive moderation. In H8 (Natural environment perception → Mental recovery), the interaction between NAP and PE was not significant ($t = -1.752, p = 0.080 > 0.05$), suggesting that the effect of NAP on Mental recovery (MR) remains consistent across different levels of PE. In H9 (Mental recovery → Subjective well-being), the interaction between MR and PE also showed no significance ($t = 0.597, p = 0.551 > 0.05$), indicating that the effect of MR on Subjective well-being (SW) is uniform across varying levels of PE. Lastly, in H10 (Restorative environment perception → Mental recovery), the interaction between REP and PE was not significant ($t = 1.601, p = 0.110 > 0.05$), meaning that the influence of REP on MR does not significantly differ with varying levels of PE. Therefore, H7 is supported, while H8, H9, and H10 are not supported, indicating that positive emotion does not play a significant moderating role in these relationships.

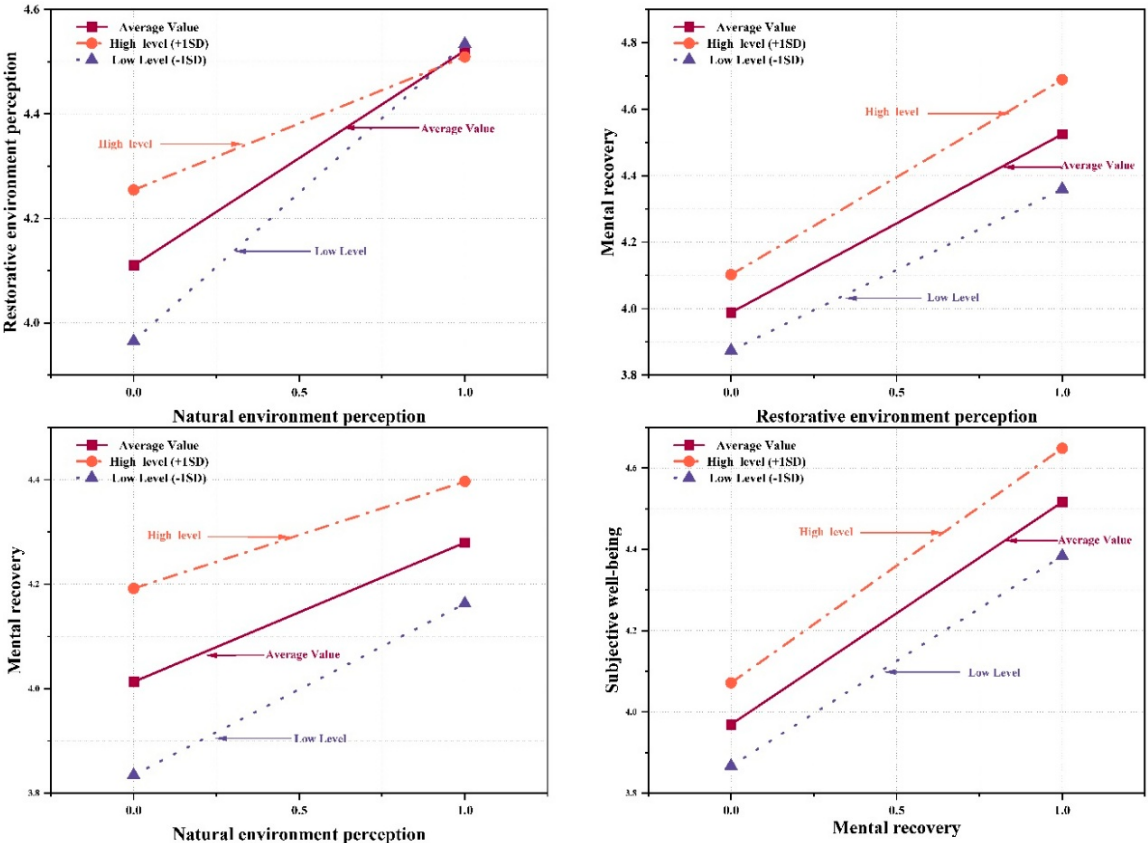


Figure 4. The modulating effects of positive emotions.

Finally, all hypotheses in the overall model were updated with the previously obtained data. Positive effects are represented by blue lines, while negative effects are depicted in orange. Significant effects are indicated by solid arrows, whereas non-significant effects are represented by dashed arrows. The resulting model, along with its coefficients, is illustrated in the Figure 5 below.

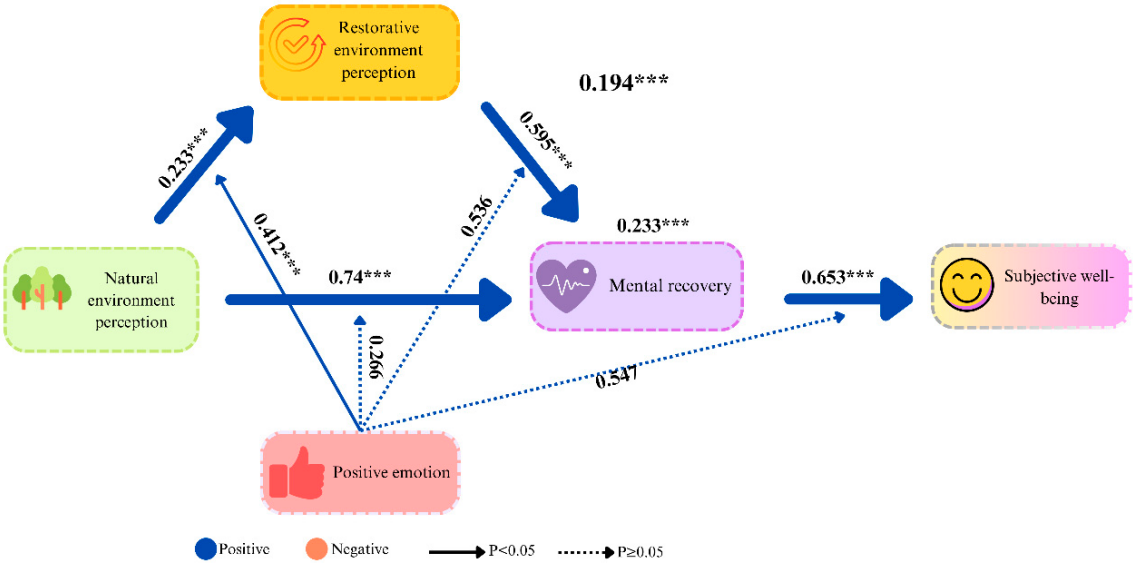


Figure 5. The result of path analysis of structural equation model.

4.6. Linear Relationships Between Demographic Characteristics and Environmental Perception and Well-Being

To further explore the correlations between visitors from different social backgrounds and the four survey dimensions, we conducted a correlation analysis of six demographic characteristics (Sex, Age, Personal Annual Income, Education, Job, Number of Visits) with Natural Environment Perception, Restorative Environment Perception, Mental Recovery, and Subjective Well-Being. This analysis aimed to understand the reasons behind varying scores. The results confirmed that these factors met the assumptions of linear regression (with no significant multicollinearity), as illustrated in the Figure 6. Specifically, gender was found to have significant correlations with Natural Environment Perception, Restorative Environment Perception, Subjective Well-Being, and Mental Recovery ($P \leq 0.05$). Age showed a significant correlation only with Mental Recovery ($P \leq 0.05$), while its relationships with Natural Environment Perception, Restorative Environment Perception, and Subjective Well-Being were not significant ($P > 0.05$). Education demonstrated significant correlations with all dimensions: Natural Environment Perception, Restorative Environment Perception, Subjective Well-Being, and Mental Recovery ($P \leq 0.05$). Similarly, occupation was significantly related to Natural Environment Perception, Restorative Environment Perception, Subjective Well-Being, and Mental Recovery ($P \leq 0.05$). Personal annual income showed a significant negative correlation with Natural Environment Perception ($P \leq 0.05$), while its relationships with the other dimensions were not significant ($P > 0.05$). In contrast, the number of visits was positively correlated with all four dimensions—Natural Environment Perception, Restorative Environment Perception, Subjective Well-Being, and Mental Recovery ($P \leq 0.05$). Notably, the number of visits emerged as the only demographic characteristic that significantly and positively correlated with all four survey dimensions, indicating that increasing visit frequency may enhance individuals' Natural Environment Perception, Restorative Environment Perception, Subjective Well-Being, and Mental Recovery. Gender, education, and occupation were also significantly associated with multiple dimensions, whereas the significance of age and personal annual income was relatively lower

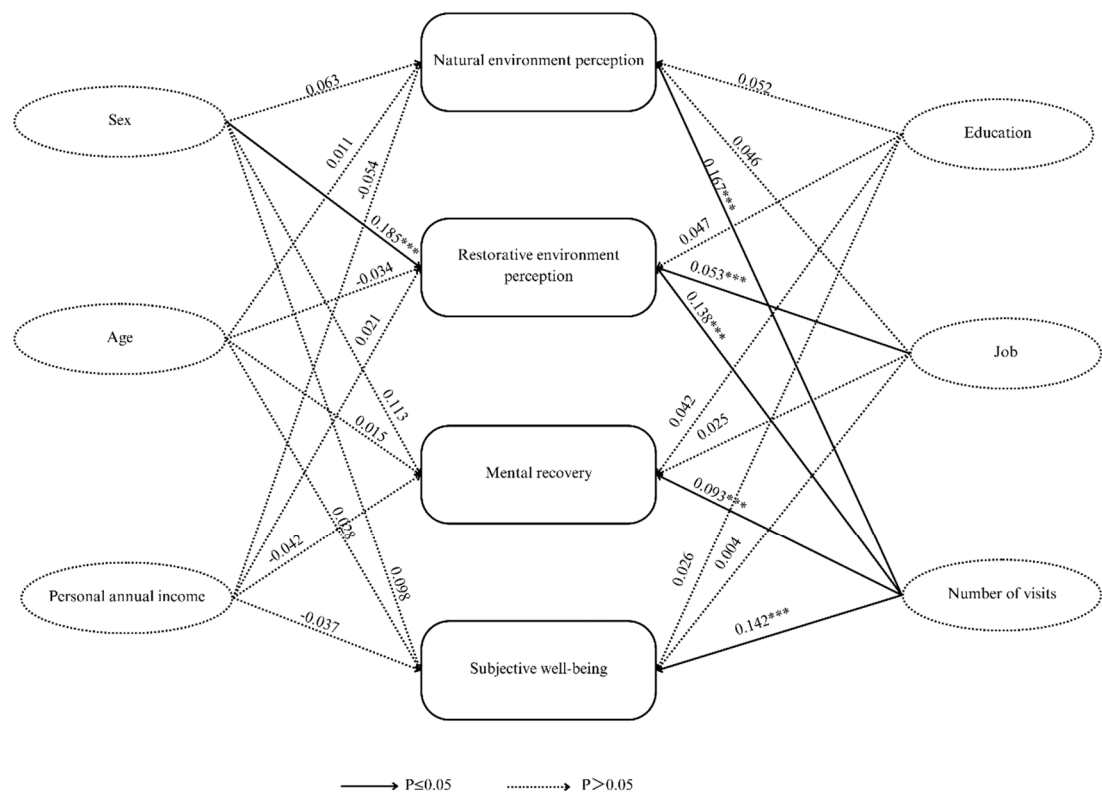


Figure 6. Linear regression diagram of population sample characteristics and questionnaire.

5. Discussion

5.1. Exposure to Natural Environments Enhances Well-Being

In our hypothesized model, we did not directly assert the positive effect of natural environments on well-being for several reasons. First, extensive literature has already established that natural environments significantly enhance subjective well-being. Second, during the survey process, many visitors expressed that they experienced an uplift in their sense of happiness while enjoying their time in the park, and they reported a greater willingness to engage positively with life afterward. Additionally, the experimental results indicated indirect effects of the two mediating pathways at 0.233 and 0.194, respectively, suggesting that the overall impact of natural environments on well-being is approximately 0.573. These three points collectively highlight that visitors experience a significant increase in happiness while engaging with nature in urban forest parks.

This finding aligns with the research of scholars such as Wicks[71], Barragan-Jason[72], and Barton[73], who have concluded that exposure to natural environments aids in stress reduction and enhances subjective well-being. Previous studies linking natural environments to well-being primarily relied on field research or simulated natural environments (such as recordings and virtual tourism) while often neglecting subjective evaluations. However, subjective assessments can sometimes provide insights that objective physiological monitoring systems fail to capture comprehensively. For instance, Schebella employed immersive virtual environments and measured participants' recovery using heart rate and five self-reported happiness metrics after immersion in one of five immersive virtual environments[74]. Similarly, Kjellgren compared the restorative effects of natural and virtual environments, employing both psychological and physiological measurement tools, concluding that both settings contribute to stress alleviation[75].

Moreover, there is a scarcity of research focusing on urban forest parks within the context of Chinese culture, and the perception of happiness derived from such environments can vary significantly across different cultural backgrounds. The results of this study help to address this research gap to some extent.

5.2. Natural Environment Perception Significantly Influences Mental Recovery and Restorative Environment Perception

The experimental results demonstrate that natural environment perception has a significant ($p = 0.000$) and positive impact on both mental recovery and restorative environment perception. Specifically, the path coefficient for the relationship between Natural Environment Perception (NAP) and Restorative Environment Perception (REP) is 0.233, while the path coefficient for NAP and Mental Recovery (MR) is 0.74. This indicates that when visitors engage with the natural environment in urban forest parks, their mental fatigue and psychological stress can be alleviated, leading to a significant enhancement in their evaluation of restorative environment perception.

These findings align with the research of scholars such as Guo[76] and Yeon[77], who assert that the natural environment of urban forest parks can exert a positive restorative effect on residents' psychological well-being. For example, Tsunetsugu conducted a comparative study between four urban forest areas and urban regions in central and western Japan, revealing that participants in forest areas exhibited significant reductions in diastolic blood pressure, increased parasympathetic nervous activity, and decreased heart rates[78]. Such evidence underscores the indispensable role of urban forest environments in promoting human well-being.

Our research not only corroborates the validity of these previous studies but also employs structural equation modeling to demonstrate that these conclusions are applicable within the context of China.

5.3. Mental Recovery and Subjective Well-Being

In the structural equation model, the impact coefficient of mental recovery on subjective well-being ranks second (0.653), following the influence of natural environment perception on mental

recovery. This indicates that mental recovery plays a crucial role in enhancing subjective well-being. In other words, improving psychological health can significantly boost happiness, a concept often referred to as "happiness therapy," which has its origins in psychological interventions within medical contexts[79,80].

Our initial objective was to provide an economical therapeutic option for individuals with mental health disorders, aligning closely with this overarching aim. Furthermore, the complete path of $NAP \rightarrow MR \rightarrow$ Subjective Well-Being (SW) further substantiates the notion that exposure to natural environments is a vital strategy for psychological recovery, subsequently enhancing happiness. This finding supports the assertions made by researchers such as Bai[12], Nukarinen[81], and Frost[82] regarding the relationship between natural environments, mental recovery, and the promotion of subjective well-being.

5.4. The Mediating Role of Mental Recovery and Restorative Environment Perception Between Natural Environment and Subjective Well-Being

The mediation analysis from the structural equation model reveals that the indirect effect of mental recovery (MR) in the pathway $NAP \rightarrow MR \rightarrow$ Subjective Well-Being (SW) is 0.233. Additionally, the chain mediation effect, which incorporates both mental recovery and restorative environment perception (REP), is measured at 0.194. This indicates a significant mediating role of both factors in the pathway from natural environment perception to subjective well-being.

This relationship may manifest as visitors to the urban forest park first experiencing solace and psychological rejuvenation upon encountering the green spaces of the natural environment, which subsequently leads to an enhancement in their happiness. Such a mediating effect has often been overlooked in prior research, yet it aligns with cognitive psychology's stimulus-mental-behavior impact pathway. Furthermore, our findings suggest that the chain mediation effect is smaller than the singular mediation effect ($0.233 < 0.194$). This discrepancy indicates the necessity to explore a parallel mediation analysis involving $NAP \rightarrow REP \rightarrow SW$, rather than solely relying on the chain mediation model.

5.5. The Moderating Effect of Positive Emotion Is Not Pronounced

In terms of the moderating effect of positive emotion, the structural equation model reveals a significant moderation in the pathway from Natural Environment Perception (NAP) to Restorative Environment Perception (REP) ($p = 0.000$). However, no significant moderating effect was found in the other three pathways, which marks a notable deviation from our initial hypotheses, particularly in the pathway from mental recovery to subjective well-being. This outcome contrasts with findings by Fredrickson[83], Dreer[84], and Hendriks[85] regarding the moderating role of positive emotions within positive psychology.

Several factors may contribute to this unexpected result. First, the relationships in the paths $REP \rightarrow MR$ and $NAP \rightarrow MR$ may be less influenced by positive emotions, suggesting that their impact may be largely independent of this variable. Second, the order in which questions were presented in the questionnaire might have affected responses; if positive emotions were not positioned at the end, participants may not have consistently provided rational ratings. Furthermore, with an overall average score exceeding 4, it raises the possibility that the high scores could obscure any potential moderating effects.

5.6. The Positive Influence of Frequency of Visits on Subjective Well-Being

In the final analysis of the data, we conducted a correlation analysis between demographic characteristics and questionnaire scores to explore factors that may influence subjective well-being ratings. The results of the linear regression revealed that frequency of visits is the only demographic characteristic significantly positively correlated with all four dimensions of the questionnaire. This finding indicates that an increase in visit frequency has a substantial positive impact on individuals' perceptions of the natural environment, restorative environment perception, subjective well-being,

and mental recovery. This portion of the results corroborates findings by Carneiro[86] and Hong[87], among others. Specifically, Hong examined how visit frequency and time spent in urban green spaces (UGS) affect the subjective well-being of urban residents, noting a significant interaction between visit frequency and time spent in UGS. This aligns with our results, suggesting that increasing the frequency of visits may enhance both subjective well-being and mental recovery.

6. Conclusions, Recommendations, and Study Limitations

6.1. Conclusions

The article delves into the significant impact of urban forest parks' natural environments on residents' mental health and happiness in the context of rapid urbanization worldwide. The study reveals that while urbanization has led to economic growth and improved living standards, it has also exacerbated work-related stress and mental health issues, resulting in a general decline in people's sense of well-being. By conducting a questionnaire survey in a botanical garden in Hunan Province, the research gathered 504 valid responses and employed Structural Equation Modeling (SEM) to analyze the effects of natural environment perception on mental recovery and restorative environment perception, as well as how these factors further influence subjective well-being. The findings demonstrate that natural environment perception has a significant positive impact on both mental recovery and restorative environment perception, and that this perception notably enhances individuals' happiness through the mediating variable of mental recovery.

Furthermore, the study identifies that individual social background characteristics—such as gender, education level, and occupation—as well as the frequency of visits to natural environments, are closely linked to their sense of well-being. Notably, an increased frequency of visits to natural environments significantly boosts individuals' perceptions of the natural environment, restorative environment perception, subjective well-being, and mental recovery.

6.2. Recommendations

Based on the findings of our research, we propose the following recommendations to enhance the well-being effects of urban forest parks: **(1) Improve Accessibility:** The article highlights the positive impact of urban forest parks on residents' mental health. Therefore, we recommend that urban planners enhance transportation networks by increasing the frequency and routes of public transport, making it easier for citizens to access these parks. **(2) Incorporate Restorative Elements:** The study indicates that restorative environment perception significantly contributes to mental recovery. We suggest that the design and maintenance of urban green spaces prioritize the inclusion of restorative elements, such as tranquil pathways, diverse vegetation, and water features. **(3) Encourage Frequent Visits:** Experimental results demonstrate that higher visit frequency correlates with greater mental recovery and well-being ratings. We encourage residents to frequently visit nearby urban forest parks to reap these benefits.

6.3. Study Limitations and Future

Despite being grounded in extensive scholarship and rigorous controls, our study has certain areas that require improvement: **(1) Geographical Limitations:** The research was conducted solely in the Hunan Provincial Botanical Garden, which may restrict the generalizability of the findings. Cultural, climatic, and environmental differences across various regions of China may influence residents' mental health and well-being in diverse ways. **(2) Selection of Mediating and Moderating Variables:** Our study primarily focused on mental recovery and restorative environment perception as mediating variables, with positive emotion as the moderating variable. There may be other mediating or moderating variables that were not considered. **(3) Temporal Limitations:** The study was conducted during a specific time frame (summer), a season characterized by lush vegetation. Other seasons may present different conditions, which could obscure the effects of seasonal changes on natural environment perception and its influence on residents' mental health and happiness. Future research should expand the temporal scope. Additionally, collaboration with sports scientists

to examine the positive effects of physical activities in urban green spaces could provide valuable insights.

In conclusion, we sincerely urge everyone to protect the natural environment and our planet, which sustains us. Natural environments provide not only fresh air, clean water, and rich biodiversity, but also invaluable support for our mental health and emotional stability. The spiritual and psychological benefits they offer far exceed their economic value. Nature is not merely a repository of resources; it embodies a healing power that can soothe our souls and restore our energy, enabling us to find tranquility and relaxation in the fast-paced modern world. Protecting the natural environment is an investment in the future well-being of all humanity.

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Ethics approval and consent to participate: The authors promise that: (1) The research protocol has been reviewed and approved by the Academic Ethics Committee of the Central South University of Forestry and Technology and conforms to the ethical standards for medical research involving human subjects as set out in the 1964 Declaration of Helsinki and its later amendments. (2) All participants signed a written informed consent prior to participating in the study.

Consent for publication: All the authors agreed to publish the article and declared that there was no conflict of interest.

Patients consent to publication: Not applicable.

References

1. 2024 World Happiness Report Available online: <https://www.who.int/publications-detail-redirect/9789240074323> (accessed on 20 May 2024).
2. Helliwell, J.F.; Layard, R.; Sachs, J.D.; Neve, J.-E.D.; Aknin, L.B.; Wang, S. World Happiness Report 2024 Available online: <https://worldhappiness.report/ed/2024/> (accessed on 14 September 2024).
3. Buckley, R. Nature Tourism and Mental Health: Parks, Happiness, and Causation. *J. Sustain. Tour.* **2020**, *28*, 1409–1424, doi:10.1080/09669582.2020.1742725.
4. Sun, Y. Happiness and Mental Health of Older Adults: Multiple Mediation Analysis. *Front. Psychol.* **2023**, *14*, doi:10.3389/fpsyg.2023.1108678.
5. Touburg, G.; Veenhoven, R. Mental Health Care and Average Happiness: Strong Effect in Developed Nations. *Adm. Policy Ment. Health Ment. Health Serv. Res.* **2015**, *42*, 394–404, doi:10.1007/s10488-014-0579-8.
6. Buckland, H.T.; Schepp, K.G.; Crusoe, K. Defining Happiness for Young Adults With Schizophrenia: A Building Block for Recovery. *Arch. Psychiatr. Nurs.* **2013**, *27*, 235–240, doi:10.1016/j.apnu.2013.07.002.
7. Dr. Gopal Chandra Mahakud; Ritika Yadav Effects of Happiness on Mental Health. *Int. J. Indian Psychol.* **2015**, *2*, doi:10.25215/0203.085.
8. Almadani, N.A.; Alwesmi, M.B. The Relationship between Happiness and Mental Health among Saudi Women. *Brain Sci.* **2023**, *13*, 526, doi:10.3390/brainsci13040526.
9. Alvarsson, J.J.; Wiens, S.; Nilsson, M.E. Stress Recovery during Exposure to Nature Sound and Environmental Noise. *Int. J. Environ. Res. Public Health* **2010**, *7*, 1036–1046, doi:10.3390/ijerph7031036.
10. Hartig, T.; Bök, A.; Garvill, J.; Olsson, T.; Gärling, T. Environmental Influences on Psychological Restoration. *Scand. J. Psychol.* **1996**, *37*, 378–393, doi:10.1111/j.1467-9450.1996.tb00670.x.

11. Ulrich, R.S.; Simons, R.F.; Losito, B.D.; Fiorito, E.; Miles, M.A.; Zelson, M. Stress Recovery during Exposure to Natural and Urban Environments. *J. Environ. Psychol.* **1991**, *11*, 201–230, doi:10.1016/S0272-4944(05)80184-7.
12. Bai, Z.; Zhang, S. Effects of Different Natural Soundscapes on Human Psychophysiology in National Forest Park. *Sci. Rep.* **2024**, *14*, 17462, doi:10.1038/s41598-024-67812-1.
13. Jackson, S.B.; Stevenson, K.T.; Larson, L.R.; Peterson, M.N.; Seekamp, E. Outdoor Activity Participation Improves Adolescents' Mental Health and Well-Being during the COVID-19 Pandemic. *Int. J. Environ. Res. Public Health* **2021**, *18*, 2506, doi:10.3390/ijerph18052506.
14. Zhang, S.; Tan, Y.; Zhong, Y.; Yuan, J.; Ding, Y. Psychological Recovery Effects of 3D Virtual Tourism with Real Scenes -- a Comparative Study. *Inf. Technol. Tour.* **2023**, *25*, 71–103, doi:10.1007/s40558-023-00246-z.
15. Ayala-Azcárraga, C.; Diaz, D.; Zambrano, L. Characteristics of Urban Parks and Their Relation to User Well-Being. *Landsc. Urban Plan.* **2019**, *189*, 27–35, doi:10.1016/j.landurbplan.2019.04.005.
16. Geng, W.; Wan, Q.; Wang, H.; Dai, Y.; Weng, L.; Zhao, M.; Lei, Y.; Duan, Y. Leisure Involvement, Leisure Benefits, and Subjective Well-Being of Bicycle Riders in an Urban Forest Park: The Moderation of Age. *Forests* **2023**, *14*, 1676, doi:10.3390/f14081676.
17. Reyes-Riveros, R.; Altamirano, A.; De La Barrera, F.; Rozas-Vásquez, D.; Vieli, L.; Meli, P. Linking Public Urban Green Spaces and Human Well-Being: A Systematic Review. *Urban For. Urban Green.* **2021**, *61*, 127105, doi:10.1016/j.ufug.2021.127105.
18. Lee, H.J.; Son, Y.-H.; Kim, S.; Lee, D.K. Healing Experiences of Middle-Aged Women through an Urban Forest Therapy Program. *Urban For. Urban Green.* **2019**, *38*, 383–391, doi:10.1016/j.ufug.2019.01.017.
19. MacKerron, G.; Mourato, S. Happiness Is Greater in Natural Environments. *Glob. Environ. Change* **2013**, *23*, 992–1000, doi:10.1016/j.gloenvcha.2013.03.010.
20. Chang, C.; Cheng, G.J.Y.; Nghiem, T.P.L.; Song, X.P.; Oh, R.R.Y.; Richards, D.R.; Carrasco, L.R. Social Media, Nature, and Life Satisfaction: Global Evidence of the Biophilia Hypothesis. *Sci. Rep.* **2020**, *10*, 4125, doi:10.1038/s41598-020-60902-w.
21. Gaekwad, J.S.; Sal Moslehian, A.; Roös, P.B.; Walker, A. A Meta-Analysis of Emotional Evidence for the Biophilia Hypothesis and Implications for Biophilic Design. *Front. Psychol.* **2022**, *13*, doi:10.3389/fpsyg.2022.750245.
22. Barton, J.; Pretty, J. What Is the Best Dose of Nature and Green Exercise for Improving Mental Health? A Multi-Study Analysis. *Environ. Sci. Technol.* **2010**, *44*, 3947–3955, doi:10.1021/es903183r.
23. Basner, M.; Babisch, W.; Davis, A.; Brink, M.; Clark, C.; Janssen, S.; Stansfeld, S. Auditory and Non-Auditory Effects of Noise on Health. *The Lancet* **2014**, *383*, 1325–1332, doi:10.1016/S0140-6736(13)61613-X.
24. Passchier-Vermeer, W.; Passchier, W.F. Noise Exposure and Public Health. *Environ. Health Perspect.* **2000**, *108*, 123–131, doi:10.1289/ehp.00108s1123.
25. Franchini, M.; Mannucci, P.M. Air Pollution and Cardiovascular Disease. *Thromb. Res.* **2012**, *129*, 230–234, doi:10.1016/j.thromres.2011.10.030.
26. Welsch, H. Environment and Happiness: Valuation of Air Pollution Using Life Satisfaction Data. *Ecol. Econ.* **2006**, *58*, 801–813, doi:10.1016/j.ecolecon.2005.09.006.
27. Stieger, S.; Aichinger, I.; Swami, V. The Impact of Nature Exposure on Body Image and Happiness: An Experience Sampling Study. *Int. J. Environ. Health Res.* **2022**, *32*, 870–884, doi:10.1080/09603123.2020.1803805.
28. Macaulay, R.; Lee, K.; Johnson, K.; Williams, K. Mindful Engagement, Psychological Restoration, and Connection with Nature in Constrained Nature Experiences. *Landsc. Urban Plan.* **2022**, *217*, 104263, doi:10.1016/j.landurbplan.2021.104263.
29. Payne, E.A.; Loi, N.M.; Thorsteinsson, E.B. The Restorative Effect of the Natural Environment on University Students' Psychological Health. *J. Environ. Public Health* **2020**, *2020*, 1–9, doi:10.1155/2020/4210285.
30. Kaplan, S. The Restorative Benefits of Nature: Toward an Integrative Framework. *J. Environ. Psychol.* **1995**, *15*, 169–182, doi:10.1016/0272-4944(95)90001-2.
31. Pan, H. Effect of the Ecological Environment on the Residents' Happiness: The Mechanism and an Evidence from Zhejiang Province of China. *Environ. Dev. Sustain.* **2023**, *25*, 2716–2734, doi:10.1007/s10668-022-02163-3.
32. *The Routledge Companion to Landscape Studies*; Howard, P., Thompson, I.H., Waterton, E., Atha, M., Eds.; Second edition.; Routledge Taylor and Francis Group: London ; New York, 2019; ISBN 978-1-315-19506-3.
33. Kaplan, R.; Kaplan, S. A Psychological Perspective.

34. Ulrich, R.S. Aesthetic and Affective Response to Natural Environment. In *Behavior and the Natural Environment*; Altman, I., Wohlwill, J.F., Eds.; Springer US: Boston, MA, 1983; pp. 85–125 ISBN 978-1-4613-3541-2.
35. Hartig, T.; Mang, M.; Evans, G.W. Restorative Effects of Natural Environment Experiences. *Environ. Behav.* **1991**, *23*, 3–26, doi:10.1177/0013916591231001.
36. Polajnar Horvat, K.; Ribeiro, D. Urban Public Spaces as Restorative Environments: The Case of Ljubljana. *Int. J. Environ. Res. Public. Health* **2023**, *20*, 2159, doi:10.3390/ijerph20032159.
37. Mayer, F.S.; Frantz, C.M. The Connectedness to Nature Scale: A Measure of Individuals' Feeling in Community with Nature. *J. Environ. Psychol.* **2004**, *24*, 503–515, doi:10.1016/j.jenvp.2004.10.001.
38. Sandifer, P.A.; Sutton-Grier, A.E.; Ward, B.P. Exploring Connections among Nature, Biodiversity, Ecosystem Services, and Human Health and Well-Being: Opportunities to Enhance Health and Biodiversity Conservation. *Ecosyst. Serv.* **2015**, *12*, 1–15, doi:10.1016/j.ecoser.2014.12.007.
39. Giusti, M.; Samuelsson, K. The Regenerative Compatibility: A Synergy between Healthy Ecosystems, Environmental Attitudes, and Restorative Experiences. *PLOS ONE* **2020**, *15*, e0227311, doi:10.1371/journal.pone.0227311.
40. Williams, D.R.; Vaske, J.J. The Measurement of Place Attachment: Validity and Generalizability of a Psychometric Approach. *For. Sci.* **2003**, *49*, 830–840, doi:10.1093/forestscience/49.6.830.
41. Hao, S.; Zhang, L.; Hou, R.; Lau, S.S.Y.; Lau, S.S.Y. Research on the Physiological and Psychological Impacts of Extraordinary Nature on Emotions and Restorative Effects for Young Adults. *J. Environ. Psychol.* **2024**, *97*, 102345, doi:10.1016/j.jenvp.2024.102345.
42. Akpınar, A. How Perceived Sensory Dimensions of Urban Green Spaces Are Associated with Teenagers' Perceived Restoration, Stress, and Mental Health? *Landsc. Urban Plan.* **2021**, *214*, 104185, doi:10.1016/j.landurbplan.2021.104185.
43. Dzhambov, A.M.; Lercher, P.; Vincens, N.; Persson Waye, K.; Klatte, M.; Leist, L.; Lachmann, T.; Schreckenber, D.; Belke, C.; Ristovska, G.; et al. Protective Effect of Restorative Possibilities on Cognitive Function and Mental Health in Children and Adolescents: A Scoping Review Including the Role of Physical Activity. *Environ. Res.* **2023**, *233*, 116452, doi:10.1016/j.envres.2023.116452.
44. Echezarraga, A.; Las Hayas, C.; López De Arroyabe, E.; Jones, S.H. Resilience and Recovery in the Context of Psychological Disorders. *J. Humanist. Psychol.* **2024**, *64*, 465–488, doi:10.1177/0022167819851623.
45. Yıldırım, M.; Arslan, G. Exploring the Associations between Resilience, Dispositional Hope, Preventive Behaviours, Subjective Well-Being, and Psychological Health among Adults during Early Stage of COVID-19. *Curr. Psychol.* **2022**, *41*, 5712–5722, doi:10.1007/s12144-020-01177-2.
46. Fredrickson, B.L. The Role of Positive Emotions in Positive Psychology: The Broaden-and-Build Theory of Positive Emotions. *Am. Psychol.* **2001**, *56*, 218–226, doi:10.1037/0003-066X.56.3.218.
47. Ryan, R.M.; Deci, E.L. Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *Am. Psychol.* **2000**, *55*, 68–78, doi:10.1037/0003-066X.55.1.68.
48. Kaplan, S. Meditation, Restoration, and the Management of Mental Fatigue. *Environ. Behav.* **2001**, *33*, 480–506, doi:10.1177/00139160121973106.
49. Yao, W.; Zhang, X.; Gong, Q. The Effect of Exposure to the Natural Environment on Stress Reduction: A Meta-Analysis. *Urban For. Urban Green.* **2021**, *57*, 126932, doi:10.1016/j.ufug.2020.126932.
50. Chen, R.; Gao, Y.; Zhang, R.; Zhang, Z.; Zhang, W.; Meng, H.; Zhang, T. How Does the Experience of Forest Recreation Spaces in Different Seasons Affect the Physical and Mental Recovery of Users? *Int. J. Environ. Res. Public. Health* **2023**, *20*, 2357, doi:10.3390/ijerph20032357.
51. Folkman, S. The Case for Positive Emotions in the Stress Process. *Anxiety Stress Coping* **2008**, *21*, 3–14, doi:10.1080/10615800701740457.
52. Cavanagh, C.E.; Larkin, K.T. A Critical Review of the “Undoing Hypothesis”: Do Positive Emotions Undo the Effects of Stress? *Appl. Psychophysiol. Biofeedback* **2018**, *43*, 259–273, doi:10.1007/s10484-018-9412-6.
53. Richardson, M.; McEwan, K.; Maratos, F.; Sheffield, D. Joy and Calm: How an Evolutionary Functional Model of Affect Regulation Informs Positive Emotions in Nature. *Evol. Psychol. Sci.* **2016**, *2*, 308–320, doi:10.1007/s40806-016-0065-5.
54. Russell J A. A Circumplex Model of Affect. *J. Pers. Soc. Psychol.* **1980**, *37*, 178.
55. Norman, G.J.; Necka, E.; Berntson, G.G. 4 - The Psychophysiology of Emotions. In *Emotion Measurement*; Meiselman, H.L., Ed.; Woodhead Publishing, 2016; pp. 83–98 ISBN 978-0-08-100508-8.

56. Jones, N.A.; Mize, K.D. Introduction to the Special Issue: Psychophysiology and Psychobiology in Emotion Development. *J. Exp. Child Psychol.* **2016**, *142*, 239–244, doi:10.1016/j.jecp.2015.10.013.
57. Bratman, G.N.; Anderson, C.B.; Berman, M.G.; Cochran, B.; De Vries, S.; Flanders, J.; Folke, C.; Frumkin, H.; Gross, J.J.; Hartig, T.; et al. Nature and Mental Health: An Ecosystem Service Perspective. *Sci. Adv.* **2019**, *5*, eaax0903, doi:10.1126/sciadv.aax0903.
58. Kuykendall, L.; Tay, L.; Ng, V. Leisure Engagement and Subjective Well-Being: A Meta-Analysis. *Psychol. Bull.* **2015**, *141*, 364–403, doi:10.1037/a0038508.
59. Wiese, C.W.; Kuykendall, L.; Tay, L. Get Active? A Meta-Analysis of Leisure-Time Physical Activity and Subjective Well-Being. *J. Posit. Psychol.* **2018**, *13*, 57–66, doi:10.1080/17439760.2017.1374436.
60. Kaltenborn, B.P.; Bjerke, T. Associations between Landscape Preferences and Place Attachment: A Study in Røros, Southern Norway. *Landsc. Res.* **2002**, *27*, 381–396, doi:10.1080/0142639022000023943.
61. Huang C.C.; Hunag F.M.; Chou X.J. Research on the Relationship between Environmental Preference and Environmental Resilience Evaluation: A Case Study of Mountain View. *J. Outdoor Recreat. Tour.* **2008**, 1–25.
62. Yang, H.; Zhang, S. Impact of Rural Soundscape on Environmental Restoration: An Empirical Study Based on the Taohuayuan Scenic Area in Changde, China. *PLOS ONE* **2024**, *19*, e0300328, doi:10.1371/journal.pone.0300328.
63. Hartig T. Further Development of a Measure of Perceived Environmental Restorativeness. *Int. J. Environ. Res. Public Health* **1997**, 1–23.
64. Diener, E. Subjective Well-Being. *Psychol. Bull.* **1984**, *95*, 542–575, doi:10.1037/0033-2909.95.3.542.
65. Diener, E.; Emmons, R.A.; Larsen, R.J.; Griffin, S. The Satisfaction With Life Scale. *J. Pers. Assess.* **1985**, *49*, 71–75, doi:10.1207/s15327752jpa4901_13.
66. Watson, D.; Anna, L.; Tellegen, A. Development and Validation of Brief Measures of Positive and Negative Affect: The PANAS Scales.
67. Wen Z L Comparison and Application of Moderating Effect and Mediating Effect. *Acta Psychol. Sin.* **2005**, *37*, 268–274.
68. Mulaik, S.A.; James, L.R.; Van Alstine, J.; Bennett, N.; Lind, S.; Stilwell, C.D. Evaluation of Goodness-of-Fit Indices for Structural Equation Models. *Psychol. Bull.* **1989**, *105*, 430–445, doi:10.1037/0033-2909.105.3.430.
69. Blunch, N.J. Introduction to Structural Equation Modeling Using IBM SPSS Statistics and Amos. **2012**, 1–312.
70. Hayes, A.F. Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium. *Commun. Monogr.* **2009**, *76*, 408–420, doi:10.1080/03637750903310360.
71. Wicks, C.; Barton, J.; Orbell, S.; Andrews, L. Psychological Benefits of Outdoor Physical Activity in Natural versus Urban Environments: A Systematic Review and Meta-Analysis of Experimental Studies. *Appl. Psychol. Health Well-Being* **2022**, *14*, 1037–1061, doi:10.1111/aphw.12353.
72. Psychological and Physical Connections with Nature Improve Both Human Well-Being and Nature Conservation: A Systematic Review of Meta-Analyses. *Biol. Conserv.* **2023**, *277*, 109842, doi:10.1016/j.biocon.2022.109842.
73. Barton, J.; Pretty, J. What Is the Best Dose of Nature and Green Exercise for Improving Mental Health? A Multi-Study Analysis. *Environ. Sci. Technol.* **2010**, *44*, 3947–3955, doi:10.1021/es903183r.
74. Schebella, M.F.; Weber, D.; Schultz, L.; Weinstein, P. The Nature of Reality: Human Stress Recovery during Exposure to Biodiverse, Multisensory Virtual Environments. *Int. J. Environ. Res. Public Health* **2019**, *17*, 56, doi:10.3390/ijerph17010056.
75. Kjellgren, A.; Buhrkall, H. A Comparison of the Restorative Effect of a Natural Environment with That of a Simulated Natural Environment. *J. Environ. Psychol.* **2010**, *30*, 464–472, doi:10.1016/j.jenvp.2010.01.011.
76. Guo, Y.; Jiang, X.; Zhang, L.; Zhang, H.; Jiang, Z. Effects of Sound Source Landscape in Urban Forest Park on Alleviating Mental Stress of Visitors: Evidence from Huolu Mountain Forest Park, Guangzhou. *Sustainability* **2022**, *14*, 15125, doi:10.3390/su142215125.
77. Yeon, P.-S.; Kim, I.-O.; Kang, S.-N.; Lee, N.-E.; Kim, G.-Y.; Min, G.-M.; Chung, C.-Y.; Lee, J.-S.; Kim, J.-G.; Shin, W.-S. Effects of Urban Forest Therapy Program on Depression Patients. *Int. J. Environ. Res. Public Health* **2022**, *20*, 507, doi:10.3390/ijerph20010507.
78. Tsunetsugu, Y.; Lee, J.; Park, B.-J.; Tyrväinen, L.; Kagawa, T.; Miyazaki, Y. Physiological and Psychological Effects of Viewing Urban Forest Landscapes Assessed by Multiple Measurements. *Landsc. Urban Plan.* **2013**, *113*, 90–93, doi:10.1016/j.landurbplan.2013.01.014.

79. Fava, G.A.; Tomba, E. Increasing Psychological Well-Being and Resilience by Psychotherapeutic Methods. *J. Pers.* **2009**, *77*, 1903–1934, doi:10.1111/j.1467-6494.2009.00604.x.
80. Fava, G.A.; Offidani, E. The Mechanisms of Tolerance in Antidepressant Action. *Prog. Neuropsychopharmacol. Biol. Psychiatry* **2011**, *35*, 1593–1602, doi:10.1016/j.pnpbp.2010.07.026.
81. Nukarinen, T.; Rantala, J.; Korpela, K.; Browning, M.H.E.M.; Istance, H.O.; Surakka, V.; Raisamo, R. Measures and Modalities in Restorative Virtual Natural Environments: An Integrative Narrative Review. *Comput. Hum. Behav.* **2022**, *126*, 107008, doi:10.1016/j.chb.2021.107008.
82. Frost, S.; Kannis-Dymand, L.; Schaffer, V.; Millea, P.; Allen, A.; Stallman, H.; Mason, J.; Wood, A.; Atkinson-Nolte, J. Virtual Immersion in Nature and Psychological Well-Being: A Systematic Literature Review. *J. Environ. Psychol.* **2022**, *80*, 101765, doi:10.1016/j.jenvp.2022.101765.
83. Fredrickson, B.L.; Joiner, T. Positive Emotions Trigger Upward Spirals Toward Emotional Well-Being. *Psychol. Sci.* **2002**, *13*, 172–175, doi:10.1111/1467-9280.00431.
84. Dreer, B. Teachers' Well-Being and Job Satisfaction: The Important Role of Positive Emotions in the Workplace. *Educ. Stud.* **2024**, *50*, 61–77, doi:10.1080/03055698.2021.1940872.
85. Hendriks, T.; Schotanus-Dijkstra, M.; Graafsma, T.; Bohlmeijer, E.; de Jong, J. Positive Emotions as a Potential Mediator of a Multi-Component Positive Psychology Intervention Aimed at Increasing Mental Well-Being and Resilience. *Int. J. Appl. Posit. Psychol.* **2021**, *6*, 1–21, doi:10.1007/s41042-020-00037-5.
86. Carneiro, M.J.; Eusébio, C. Factors Influencing the Impact of Tourism on Happiness. *Anatolia* **2019**, *30*, 475–496, doi:10.1080/13032917.2019.1632909.
87. Hong, S.-K.; Lee, S.-W.; Jo, H.-K.; Yoo, M. *Sustainability* **2019**, *11*, 4189, doi:10.3390/su11154189.
88. Self-Reports in Organizational Research: Problems and Prospects - Philip M. Podsakoff, Dennis W. Organ, 1986 Available online: <https://journals.sagepub.com/doi/abs/10.1177/014920638601200408> (accessed on 27 September 2024).

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