

Impact of the Natural Environment on Individuals' Psychological Well-being

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Abstract. This article explores the intricate relationship between the natural environment and the human psyche. The article examines how exposure to nature can have a positive influence on mental health, increase life satisfaction, and promote the development of positive personality traits. By reviewing research on naturopathy, the outdoors, and personality development, the article emphasizes the profound impact of nature on human mental health and leads to the importance of integrating the natural environment into urban development. As a result, the article proposes the concept of Biophilic and discusses how Biophilic concepts can be integrated into future urban development from the perspective of landscape design to ensure the sustainability and accessibility of natural spaces in cities so that human beings can achieve psychological well-being through daily contact with natural environments. Natural environments are not only beneficial for human mental health but also for future urban sustainability as well as ecological diversity. Therefore, by prioritizing nature in future urban design and development, it is possible to create healthier, more resilient, and liveable cities that ultimately benefit human well-being and the environment.

Keywords: Natural environment, psychology, mental health, landscape architecture, urban design, sustainable development, biophilic design.

1. Introduction

In the bustling modern world, where technological advancements and urban landscapes dominate, the importance of our connection with the natural environment often goes overlooked. Yet, since time immemorial, humanity's relationship with nature has been profound and intertwined. Beyond its physical and material offerings, the natural world possesses a remarkable influence on human psychology, shaping emotions, perceptions, and even personalities. This essay delves into the captivating interplay between natural environments and human psychology, exploring how exposure to nature can foster positive mental health, elevate life satisfaction, and contribute to the development of favorable personality traits.

As urbanization continues to encroach upon the landscapes that once epitomized the surroundings, it becomes increasingly crucial to examine the effects of this disconnect from nature. The understanding that our surroundings extend beyond mere aesthetics to significantly impact our psychological well-being is gaining traction among researchers, psychologists, and environmentalists alike. With a growing body of evidence highlighting the transformative power of natural environments, people find themselves at a crossroads where acknowledging and integrating these insights into people's lives can potentially pave the way for a more harmonious and fulfilling existence.

This essay will unfold in three key segments, each illuminating a distinct facet of the relationship between human psychology and the natural environment. Firstly, this essay will delve into the ways in which exposure to natural settings engenders a positive impact on mental health and emotions. Subsequently, the exploration of how immersion in nature can contribute to increased life satisfaction and happiness, drawing connections between surroundings and people's overall sense of contentment. Finally, the essay will examine the role of natural environments in nurturing positive personality traits, shedding light on how nature's influence can shape individuals into more compassionate, creative, and resilient beings.

In unraveling these aspects, this essay aims to underline the imperative of recognizing and preserving our connection to the natural world. By doing so, people can not only enhance their own well-being, but also lay the groundwork for a sustainable and enlightened future. As people embark on this journey through the intricate interplay of nature and human psychology, let people remain open to the transformative potential that the world around them holds.

2. Main Body

2.1. Positive Influence of Natural Environments on Mental Health and Human Emotion

With the rapid expansion of cities, natural landscapes are gradually covered by buildings and concrete, and ecological diversity is continuously degraded. Humans and the environment are gradually losing touch as a result of city developments, which have led to modernity, and humans and natural environments are becoming more and more isolated from one another. However, as Alan W. Ewert describes in his book, "Everything in the universe is connected to and affects everything else, and that everything known to humans is in effect one living system of which humans are a part" [1]. As human beings live in environments that are further and further disconnected from nature, they face the competition and stress of urban life and work, which builds up over time, leading to today's high probability of depression, anxiety, and other psychological problems. Thankfully, however, with the accumulation of psychological research, more and more people have begun to realize the impact of natural environments on mental health, and have begun to study natural landscapes in the clinical field of medicine.

One of the most noteworthy practical applications of experiments examining the effects of the natural environment on mental health is the clinical treatment of patients suffering from post-traumatic stress disorder (PTSD) by intervening in the natural environment to alleviate their symptoms. According to research conducted by the U.S. Veterans Administration, approximately 10-18% of veterans have been diagnosed with PTSD, and their symptoms include intense fear and anxiety, emotional numbness, hyperarousal, and a sense of social isolation [2]. This range of symptoms, as well as the consequences, will severely impact the daily lives of PTSD sufferers and their families. Due to the general inability of PTSD patients to cope with changes in their surroundings and the development of strong feelings of insecurity, creating a defensible environment for them becomes one of the treatment options, which directly leads to interdisciplinary collaboration between psychotherapy and landscape design. One of the most representative treatments of how landscape design can assist in the treatment of PTSD patients is Nature-based therapy (NBT), which is currently widely used in clinical research. Nature-based therapy (NBT) includes ecotherapy and horticultural therapy, which aims to help PTSD patients improve their self-confidence and daily life ability through exposure to the natural ecological environment and can be adjusted according to the degree of illness of PTSD patients to achieve the best-assisted treatment effect [3].

In 2015, Detweiler et al. conducted a randomized pilot study on how horticultural therapy (HT) can help treat people with PTSD, looking at the effects of horticultural therapy by capturing and assessing changes in participants' cortisol levels. This study demonstrated that natural landscapes can promote neuroendocrine and emotional recovery from stress. The trial randomly assigned 49 veterans to a Horticultural Therapy (HT) group and an Occupational Therapy (OT) group for a three-week controlled trial: The HT group would be engaged in gardening and other tasks that allowed exposure to the natural environment, such as planting seeds, tending to vegetables, and watering and weeding, while the OT group would be engaged in training for regular social interactions, such as book clubs, assembling modeling, ceramic painting, and other activities. At the beginning and end of the experiment, participants will complete the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q-SF), the Alcohol Craving Questionnaire (ACQ-NOW), the Post-Traumatic Stress Disorder Inventory (PCLC), and the Center for Epidemiological Studies Depression Inventory (CES-D), and weekly samples of participant's salivary cortisol will be taken for study. An analysis of variance (ANOVA) found that the salivary cortisol levels of participants in the HT group were

reduced by 12% over a three-week period and that the HT group was more effective than the OT group in reducing salivary cortisol levels at the same time conditions [4].

Through this study, it can be found that contact with the natural environment can indeed help in stress release as well as emotional recovery, thus improving the quality of life. Nature-based therapy (NBT) can be used not only to treat PTSD but also to assist in the treatment of depression, anxiety, bipolar disorder, and other mental illnesses. Many hospitals are now incorporating Nature-based therapy into their landscape design, which is called the healing landscape. The healing landscape goes beyond the traditional concept of a garden or a park, which not only provides a place for outdoor activities but also intentionally creates therapeutic benefits for the individual. Mental illnesses such as depression and anxiety are often accompanied by negative emotions and stress, and the proximity of the natural environment can bring about a positive emotional experience. For example, the scent of flowers, the shade of trees, the sound of running water, and other natural elements can trigger feelings of pleasure, alleviate attentional fatigue, as well as reduce emotional tension [5]. This stimulation of positive emotions can help relieve psychological stress and improve symptoms of depression and anxiety.

However, while the potential and benefits of Nature-based therapy (NBT) are widely recognized, there are still some limitations to be aware of. There may be differences in how different individuals respond to natural environments, and some may not be accustomed to outdoor activities. In addition, NBT as an adjunct to mental health treatment may not be appropriate in all cases, especially in severe mental illnesses that require professional intervention and medication.

In summary, Nature-based therapy provides a unique environment that can promote physical and mental health by creating therapeutic healing landscapes. This approach has a positive role in the treatment of mental illness and the maintenance of mental health, emphasizing the profound connection between nature and health. In the future, more in-depth research could explore the use of NBT in the treatment of different mental illnesses and how to optimize the design of healing landscapes to the greatest extent possible to bring more benefits to the physical and mental health of individuals.

2.2. Positive Impact of Natural Environment on Life Satisfaction and Happiness

Natural environments not only have a positive impact on mental health and human emotions but also increase life satisfaction and happiness. As urbanization and technological advances continue to affect our daily lives, the serenity and beauty of nature, from lush forests and serene lakeshores to vast mountain ranges and vibrant meadows, remain as attractive as ever. The natural world offers more than just picturesque backdrops; it can be just as appealing for outdoor activities such as hiking, biking, jogging, and picnicking. Such outdoor activities not only help to exercise, but also provide a break from a sedentary lifestyle, and physical activity has a positive impact on mood and health." A study in the "American Journal of Lifestyle Medicine" found that participating in outdoor activities in a natural setting significantly reduced symptoms of depression and anxiety [6]. This highlights how time spent in nature directly contributes to improved mental health and well-being, and a large number of empirical tests and scientific studies continue to confirm that there is a positive correlation between nature, physical activity, and well-being.

With the development of modern technology, people's lives are becoming more convenient, being able to fulfill their daily needs through the Internet, achieving the purpose of not leaving home, but at the same time, this is also a double-edged sword. While people are enjoying the convenience of technology, the amount of exercise they need to do on a daily basis is also decreasing. Although medical advances have led to significant improvements in health indicators and the timely treatment of major diseases, the cost of Non-Communicable Diseases (NCDs) has increased dramatically due to long-term unhealthy habits, poor diets, and lack of physical activity, with NCDs now accounting for more than 50 percent of deaths globally each year [7]. Many modern-day poor health conditions are the result of behaviors that have developed gradually over time and are therefore difficult to change. There has been a growing emphasis on how to improve and develop healthy habits in people.

Numerous studies have shown that natural environments can promote healthy living by attracting people to the outdoors and providing them with positive emotions.

In 2020, Jules Pretty, and Jo Barton from the University of Essex are investigating how naturalistic interventions (NBI) and mind-body interventions (MBI) can improve human life satisfaction and happiness. The aim of this experiment is to investigate whether NBI and MBI can help reduce health system costs while increasing participants' happiness. The NBI included woodland therapy, therapeutic gardening, and ecotherapy/green care, while the MBI included tai chi. In this experiment, Pretty and Barton selected four existing NBI and MBI programs to make the data comparable to assess the impact of the interventions and tested them using the SP and IAPT program evaluations as well as measures of life satisfaction and happiness. In the NBI and MBI, the key behavior affecting life satisfaction and happiness was a shift from an anxious or hyperactive mental state to a focused and immersed mental state. When humans are in a focused or immersed mode, the brain produces a relaxation response, which induces transient frontal lobe ptosis and enhances gray matter in the hippocampus, boosting memory and generating a sense of happiness. Moreover, this study has shown that people who participate in both Natural-Based Interventions (NBI) and Mind-Body Interventions (MBI) have relatively higher levels of physical activity, lower levels of psychological stress, and are more likely to be active in sports and physical activities, exhibit healthier lifestyles, and at the same time increase life satisfaction and well-being [7].

However, there are many limitations to this research. Nature-Based Intervention (NBI) and Mind-Body Intervention (MBI) tend to be more targeted at people with lower absolute health and well-being indicators and are not widely available to all. How to integrate these two types of interventions into people's daily lives and make them widely available is a priority for the future. There is already a growing trend in landscape design to intentionally combine these two measures, utilizing the attraction of the natural environment to attract and promote daily exercise, such as running tracks along riverside parks, fitness equipment in gardens, and bicycle paths surrounded by greenery. In addition, the natural environment does not only represent the green space, but also the geographical location, climate, sunshine hours, and other natural factors, which also affect the life satisfaction and happiness of human beings [8].

In conclusion, the natural environment's role in promoting outdoor activities is well-supported by empirical evidence and scientific research. Nature's allure motivates people to engage in outdoor physical activities, which, in turn, enhance physical health, improve mental well-being, and contribute to overall satisfaction and happiness. This inherent connection between nature and well-being underscores how crucial it is to protect and promote access to natural areas for the benefit of both individuals and communities.

2.3. Positive Impact of Natural Environments on Positive Personalities

Having explored how the natural environment affects mental health and life satisfaction and well-being, and having concluded that the natural environment can indeed contribute to the development of a favorable mental state and positive emotions, the question arises as to whether the natural environment can also influence personality development. Natural environments such as parks, forests, and outdoor playgrounds provide unique opportunities for sensory stimulation, physical activity, and novel experiences. Exposure to nature has also been linked to stress release, increased life satisfaction and happiness, and psychological healing. However, there is a lack of discussion about how exposure to nature affects the development of positive personality traits in humans. The formation of personality traits and social-emotional skills during childhood plays an important role in a person's well-being and social interactions throughout life. Although genetic, parenting, and sociocultural factors contribute to the formation of personality traits, recent research has shown that the natural environment also indirectly influences the formation of personality traits and is positively correlated with environmental identity as well as the formation of pro-environmental behaviors [9], which will be described in detail subsequently. Understanding the potential benefits of exposure to the natural

environment on the development of human personality traits is therefore relevant for research, practice, and the future sustainability of nature.

When discussing positive personality traits, a measure often used is the Big Five, which consists of Extroversion, Conscientiousness, Openness, Agreeableness, and Neuroticism. It is the level of Openness, Agreeableness, and Neuroticism that is often considered when determining whether a person has a positive personality trait. When a person has high levels of openness and agreeableness and low levels of Neuroticism, he or she is emotionally approachable, empathetic, and sympathetic, and at the same time demonstrates a sense of responsibility and emotional stability. This set of positive personality traits influences human behavior. Can exposure to nature influence the development of positive personality traits? There is no absolute experimental evidence to support this question. However, there is experimental evidence that suggests that empathy, particularly by empathic thinking and empathic concern, which can be developed through exposure to natural environments, moderates the relationship between personality traits like agreeableness, openness, and connection to nature, and that the more connected to nature a person is, the more he or she can enjoy it and empathize with all living things [10].

In 2018, Annamaria Di Fabio and Maureen E. Kenny addressed this question by hypothesizing and experimenting with two hypotheses: that "the personality traits of agreeableness and openness will be positively correlated with connectedness to nature" and that "empathy will help mediate the relationship between the personality traits of agreeableness, openness, and connectedness to nature". The two hypotheses were hypothesized and tested. A total of 230 participants, half of them Italian nurses and generally Italian educators, were invited to participate in the experiment. The Big Five Questionnaire (BFQ), the Interpersonal Reactivity Index (IRI), and the Connection to Nature Scale (CNS) were used in the experiment, and the results were used to analyze the data, build a mediation model, and make conclusions. This study discovered that the effect of agreeableness and openness on connection with nature was mitigated by the overall structure of empathy. This experiment revealed that agreeableness and openness showed significant and strong positive relationships with empathy and connection with nature [10]. Through this experiment, it was shown that people who have been in contact with natural environments for a long period of time tend to have high levels of empathy, and people with high levels of empathy also usually have high levels of openness and pleasantness. This indirectly proves that natural environments can indeed help humans develop positive personality traits.

Furthermore, It has also been demonstrated that people's relationships with nature affect their propensity to participate in nature in the future [11], also known as pro-nature behavior. Pro-nature behaviors are often developed as a result of having high levels of empathy due to extensive early contact with nature, which leads to the development of cognitively driven behaviors. This group will be more likely to perceive the world, believe that nature and humans are interconnected, and show a higher tendency to protect the environment [12]. In the long run, the development of such cognitive behaviors can better contribute to social and ecological sustainability. People who tend to maintain strong competitive tendencies and selfish interests are less likely to act in an environmentally friendly manner, whereas people who have a broader concern for others and society, and who are empathetic, translate this into a positive concern for the environment and a willingness to participate in environmental protection efforts. If children are exposed to the natural environment at an early age, and if nature education helps them develop cognitive behaviors that will help them more readily develop positive personality traits and empathy for the environment, then perhaps more people in the future will begin to care about and participate in environmental conservation. This is a good development for the environment, for society, and for the individual.

In summary, the natural environment has a positive impact on the development of human personality traits, and at the same time, positive personality traits can have a positive impact on the natural environment as well. By providing opportunities to learn, explore, and be close to nature, the natural environment helps to develop positive personality traits such as curiosity, independence, empathy, and social responsibility. Therefore, actively encouraging children to interact with and

explore nature in their educational and family environments can provide a strong foundation for their future well-being and social interactions.

3. Discussion about Future Envision and Suggestions for Combining Nature with Real Urban Design

The previous section delved into the profound impact of the natural environment on the human psyche in three key areas: mental health, life satisfaction, and positive personality development. Part I demonstrated how nature-based therapies (NBT), such as PTSD therapy, emphasize the potential for improving human well-being. Part II emphasized the positive impact of outdoor activities in natural environments, highlighting the link between physical activity and well-being. The third section emphasized how nature enhances personal well-being and promotes environmental awareness and sustainability. All three parts emphasized the importance of recognizing and protecting the connection between humans and the natural world. As societies grow and cities expand in size, the reduction of green space has increasingly disconnected people from nature. Addressing this disconnect caused by urban development is therefore critical to maintaining a healthy city-nature balance.

In terms of landscape design, how can people effectively bridge the gap between urban development and nature? How can people consciously integrate nature into cities to maximize its positive impact on human mental health? How should people shape the future of landscape and urban design? To this end, an important concept has emerged: biophilic design. Prioritizing nature in cities ensures access to nature, promotes sustainable urban development, and creates a healthier, more resilient, and more livable city of the future. The sustainability and accessibility of the natural environment need to be taken into account when incorporating biophilic design concepts into actual landscape planning.

Protecting the natural environment is critical to human mental health and well-being, as well as the health of the planet, so future landscape design should prioritize sustainability. Key aspects of contemporary sustainable design include multi-functional green spaces, green transportation, and climate adaptation. These spaces should be both recreational and ecological, not only promoting biodiversity and ecosystem services but also encouraging access to nature and thus mental health. Besides, nature can be integrated into the transportation infrastructure, and pedestrian-friendly streets and bike lanes can be encouraged to reduce car dependency and pollution. In addition, while future designs must consider the control of greenhouse gas emissions, they must also consider nature-based solutions to climate change and resilience, such as green roofs, urban forests, and sponge cities.

In addition to natural sustainability, natural urban accessibility is crucial to ensure that everyone can enjoy green spaces. Urban planning should focus on creating green spaces close to residential neighborhoods while balancing mobility and economic constraints. This includes creating accessible paths, sensory gardens, and outdoor fitness options tailored to different urban residents, allowing people to easily access the natural environment in individuals' daily lives. In addition, community involvement plays a crucial role. Landscape architects must conduct in-depth studies of sites and neighborhoods to meet people's needs and preferences and promote access to nature. In addition, accessible natural spaces can provide educational opportunities that foster awareness and responsibility for urban nature conservation and sustainable development.

New York's Central Park exemplifies pro-environmental design concepts that seamlessly integrate human activity with nature, providing a place for surrounding residents to release stress and contributing to the city's sustainable ecology. It offers a wide variety of recreational opportunities, including a playground, skating rink, and boating, all of which allow people to be active, and to relax and release stress in a natural environment. The park's woodlands and gardens provide tranquil resting places and habitats for wildlife, enhancing the diversity of the city's ecology. In addition, the park's tree-lined paths minimize environmental impact and pollution while creating a green transportation network. Central Park also mitigates climate change by absorbing carbon dioxide, reducing the urban

heat island effect, and managing stormwater runoff to prevent flooding. While Central Park has favorable impacts on human mental health as well as ecological sustainability, its reach is limited to the surrounding community. Therefore, it is worth considering how nature-based pro-environmental design can be applied city-wide so that all humans can benefit from nature.

In conclusion, integrating biophilic design concepts into urban planning and development is a complex but crucial task. It requires the cooperation of many parties, including governments, urban planners, community organizations, and citizens. By emphasizing sustainability, accessibility, education, and policy, it is possible to ensure a stronger connection between urban development and the natural environment, thereby creating healthier, more resilient, and liveable cities and providing a better quality of life and environment for future generations. Such efforts not only help to improve human mental health and life satisfaction but also contribute to better protecting the planet's ecosystems and promoting a sustainable future.

4. Conclusion

The impact of the natural environment on the human psyche is indisputable, with evidence of positive effects on mental health, life satisfaction, and personality development. Nature-based therapies, outdoor activities, and early exposure to nature can contribute to increased well-being and the development of positive personality traits such as empathy and environmental awareness. To ensure that nature continues to have a positive impact on individuals' lives, biophilic design principles must be integrated into urban planning. Sustainable, accessible, nature-rich cities enhance human mental health, foster a sense of connection to the environment, and contribute to a more sustainable future. By prioritizing nature in urban landscapes, people will pave the way for healthier, happier, and more environmentally conscious societies.

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