

# How Biophilic Architecture be used to rehabilitate and restore buildings.

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## Abstract:

*Are only medical facilities and therapeutic landscapes considered to be examples of "restoration and rehabilitation in design"? Can the living and working environments support those healing spheres to address the psychological issue at its core? This study's major goal is to look at new advancements in biophilic design with regard to therapy and restoration in order to sustain quality of life in the nearby built environment. The study examines issues related to mental health in the built environment. The idea of "biophilic design" has gained traction and is now regarded as a way to bridge the ecological gap. When it comes to increasing productivity and effectiveness at work inside the interior environment, biophilic design is regarded as a creative force multiplier. Incorporating biophilic design and retrofitting strategies that can improve cognitive function and foster mental serenity into the construction industry is the study's main objective.*

**Keywords:** Biophilia; biophilic design; built environment; restorative environment; sustainability; sustainable architecture; well-being.

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## I. Introduction

Biophilic environments in cities can offer people psychologically revitalizing experiences by easing mental fatigue and reducing stress levels. The rehabilitation procedure ultimately improves people's wellness. Public spaces in cities should be seen as healing spaces where more people can benefit from biophilic elements. Urban environments are always changing. In addition to its intended use, urban space uses are influenced by a city's history, culture, society, and economy. Today's urban academics are focusing on the social and cultural components of cities as well as how individuals interact in urban settings (Gehl, 2010; Madanipour, 2010). However, urban theories are also developing in different directions. Taking into account streets as public spaces and sources of wellbeing where all users can engage in a variety of activities, for instance, pushes local government officials to plan decent cities (Parnell, S. (2016)). There have been several approaches taken to studying wellbeing. Urban planning has always linked the concept of wellbeing to the degree of comfort that individuals can experience in public areas. This doesn't imply that this objective has always been achieved; rather, it shows that this discipline is constantly looking for new approaches to improve wellbeing and our understanding of its urban components. The majority of theories used to explain how people feel in public spaces (Gärling, T., & Gollidge, R. G. (1989)) or how people participate in outdoor activities (Zamanifard, H., Alizadeh, T., Bosman, C., & Coiacetto, E. (2019)) are concerned with how people understand, experience, and perceive a space as a result of its legibility. Depending on how they engage with the environment, people have two different perspectives on it. The physical characteristics of the area give rise to the built environment, but wealth, culture, social issues, and the age of the city also have an impact on people's perceptions of the quality of the urban area (Steg, L. E., Van Den Berg, A. E., & De Groot, 2013). All of these components contribute to a city's identity and have an effect on its inhabitants, who have the capacity to change the environment in both positive and negative ways. Even though each person's environment has a unique impact on them, environmental psychology's key concepts are universal and supported by a wealth of research on both the built and natural environments (Paidas, S. M. 2011). In light of these findings and to enhance people's wellbeing, environmental psychologists advise using natural elements in urban settings that can result in favorable outcomes at various stages and for various purposes, such as playgrounds that resemble forests, green roofs, edible gardens, and boulevards lined with trees. These characteristics are created using methods that are different from urban design theory, such as ecological cities (Gamage, A., & Hyde, R. (2012).), and biophilic design (Downton, P., Jones, D., Zeunert, J., & Roös, P. (2017)). One of nature's main benefits, which will be discussed in this essay, is that it has a healing effect on the mind. This study first defines well-being and restoration as aims to be accomplished by design in order to understand one of the factors that is harming people's well-being. Next, it describes tension. Next, the concept of biophilia and environments with biophilic

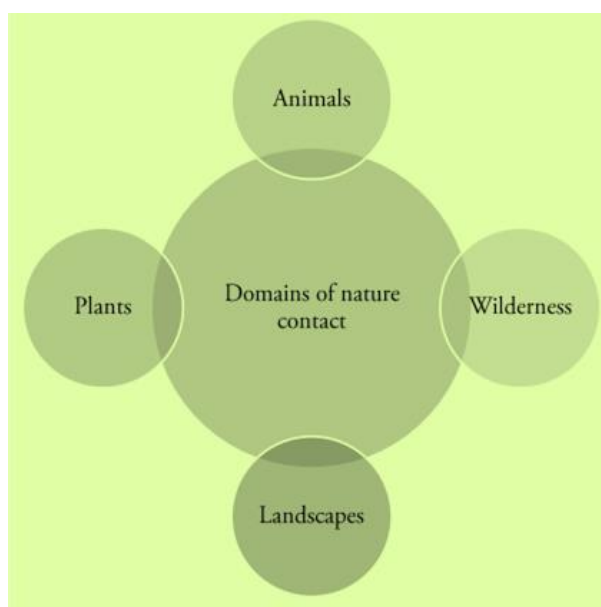
urban design will be discussed. This section explains the current state of the art of this method based on the research of notable specialists in the field. In the concluding section, relevant research is used to investigate the relationship between biophilic design and psychological healing and to highlight the advantages of natural surroundings. The need for an interdisciplinary approach is then discussed, along with some suggestions for further research to help us respond to urban challenges more successfully.

## II. BIOPHILIA and BIOPHILIC DESIGN

The German psychologist Fromm initially used the term "biophilia" in his writings in 1973, defining it as "the passionate love of life and of all that is alive." (Corsini, R. J., & Ozaki, B. D. (1994)). The word has Greek roots (bios is for life and philia is for love), and American biologist Wilson introduced it in 1984. (Krčmářová, J. (2009)). According to the proposed definition, biophilia is "the desire to associate with various types of life." (Kellert, S. R., & Wilson, E. O. (Eds.).(1995)). 99% of living animals had an adaptation to the natural environment and its forces, according to research on the development of humans (Kellert, S., & Calabrese, E. (2015)). These adaptations caused humans to depend on nature and its supplies for a long time. The transdisciplinary application of biophilia to the design of the built world is known as "biophilic design." (Kellert, S. R., Heerwagen, J., & Mador, M. (2011)).

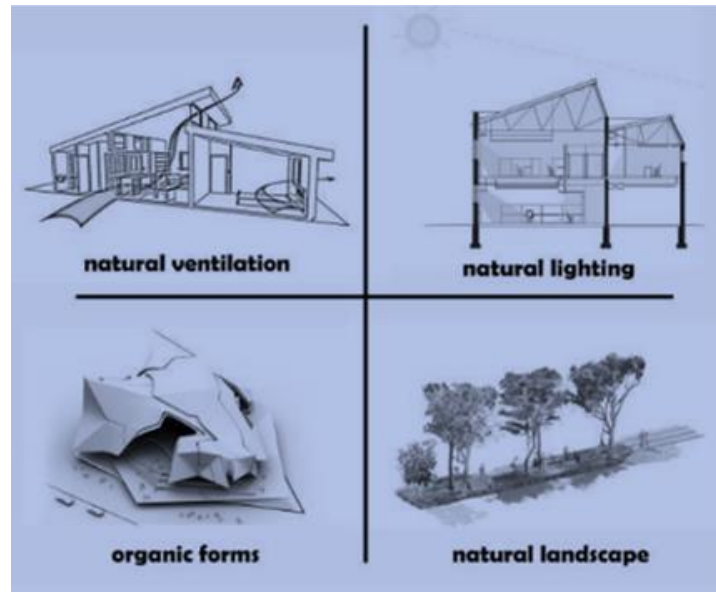
From Homo sapiens' departure beyond Africa through the creation of energy, the evolution of humans as a species has been viewed as a biocentric growth of the body, mind, and senses (Kellert, S., & Calabrese, E. (2015)). Architect and design theorist Christopher Alexander (1977) stated that in his book 'The Pattern Language' that plenty of these natural patterns are fundamental to human beings since they are so fundamentally rooted in our nature today and will continue to do so over the ensuing 500 years. Mankind as a species exhibit an inherent behavioral propensity regarding natural forces, based on research conducted by Swedish psychologists Ohman and Mineka (2001). Their stimulus reactions fluctuate among positive and negative when it comes to feelings. Four facets of nature are taken into account in the research that is currently available in this field (Fig. 1): animals, plants, landscapes, and wilderness (Frumkin, H. (2001)). The idea of "biophilia" supports the idea that both biotic and abiotic elements must be present in constructed settings for mental health and environmental preservation (Boyd, S., Murray, D., & MacPherson, D. (2017)).

Biophilic design relies on the conception of the biophilia hypothesis beneath the guise of sustainability, architecture, urban design, and landscape design. Buildings and living environments with biophilic design, according to (Kellert, S., & Finnegan, B. (2012)). in their bio-centered documentary 'Biophilic Design: Architecture of Life,' "bring people closer to nature."



**Figure. 1.** Domains of Nature Contact adapted (Frumkin, H. (2001)).

The following fundamental components are necessary for biophilic design (Fig. 2): natural lighting, organic forms found in nature, natural ventilation, and natural landscapes. These characteristics deepen the connection between people and their local surroundings (Yilmaz, S., Duzenli, T., & Dincer, D. (2017)).



**Figure 2.** Basic Elements of Biophilic Design adapted (Yilmaz, S., Duzenli, T., & Dincer, D. (2017))

### **III. Health, Stress reduction, and Restoration**

All across the world, people aspire to happiness and health. Being ill hinders not only personal development but also the development of a society where everyone is treated equally. One of the factors that negatively impacts wellness is stress. For the sake of this essay, well-being is understood as the condition of having a healthy body and mind while applying ideas from diverse disciplines (Sharma, S. S., & Sahu, K. (2014)) and making wholesome social connections. In psychology and economics, the phrase "subjective well-being" (SWB) refers to people's moods and feelings as a result of exposure to particular situations or inputs (Diener, E. (2000)). According to M. Durand (2015), subjective well-being is characterized as favorable mental states that comprise both positive and negative self-evaluations of one's life and affective responses to one's experiences.

Cities want to provide citizens with circumstances that improve their quality of life. However, the ability of humans to recover from stress and mental tiredness is threatened by the urban stresses caused by cities—more specifically, by roadways. (Hidalgo, A. K., June 2013). In this sense, stress is a psychological or emotional disorder triggered by unpleasant or challenging circumstances, which affects people's mental and even physical health. When one's awareness of their surroundings is either greater than or less than their capacity for adaption, According to Rahman, A., Sánchez, M., Bursac, Z., Whiting, C. Y., de Dios, M. A., Cano, M.,...& Cano, M.. (2022), this can be stressful for them and endanger their wellbeing. Cognitive healing is the ability to overcome stress and mental fatigue while also renewing the mind.

Stress affects the immune system and results in psychological problems, both of which have an impact on health (Bilotta, E., Vaid, & Evans, G. W. 2013). Having a healthy balance in all areas of life—including the social, physical, spiritual, economic, and mental ones—can reduce stress levels. From a societal perspective, stress is a human response to the imbalance between the demands of the environment and our physical capabilities (Steg, L. E., Van Den Berg, A. E., & De Groot, 2013). Continuous stress may have an effect on both mental and physical health due to biological mechanisms or behavioral inclinations that raise the risk of sickness. According to Ulrich, R. S. (1986), stress is a response to a specific occurrence that is challenging to cope with or endangers a person's wellbeing on an emotional, physiological, and behavioral level.

A person can overcome nervousness by experiencing the surroundings, at least mentally. According to Steg, L. E., Van Den Berg, A. E., and De Groot (2013), healing (from Latin recreation, recreations = restoration, refreshment, and recovery) is the sensation of bodily and psychological recovery brought on by specific situations. Promoting well-being, which is related to people's capacity to recoup their physical well-being following a sickness or stressful events in urban environments, is the main objective of urban design.

Due to the complexity of restoration, psychologists have identified two fundamental concepts about restorative contexts that, despite focusing on different aspects of restoration, are interconnected (Hidalgo, A. K. (2013, June)). Thus, both theories—attention restoration theory (ART) and stress recovery theory (SRT)—are taken into account here in order to contribute to the development of a theoretical framework from an environmental perspective.

The ART stresses the weariness that results from people having to pay attention actively for the majority of a workday. According to Rachel Kaplan and Steven Kaplan (1989), humans must go through four

steps to overcome mental fatigue: interest, focused attention on the fascinating environment, reflection, and deeper restoration experience. Ulrich et al. (1991) suggest the SRT by emphasizing reducing stress as an emotional and visual perception of the environment. People's preferences for natural surroundings are demonstrated by their decisions regarding where they live and how they heal (Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, 1991). This provides the empirical support for the theory. In accordance with SRT, stress is regarded as being repaired when it improves people's health. Y. Joye, S. L. Koole, and A. E. Van den Berg (2016).

Restoration and well-being are connected concepts. The best technique to aid people in recovering from stress and relieving mental tiredness is through the creation of restorative spaces in terms of urban planning. In certain urban settings like parks, museums, spiritual temples, and therapeutic structures, restorative experiences are frequently provided. The majority of these locales' elements are made up of nature and the ability to alter the surroundings.

#### **IV. Biophilic Urban Spaces**

Urban areas are the sites of interactions between people and the urban environment, which give rise to a variety of situations (Gehl, J., Svarre, B. B., & Risom, 2011). More than simply the outward manifestations of the physical environment are included in the concept of an urban place. According to Macdonald (2011), the urban environment is the public realm that must modify its perspective on public values in order to utilize any ecological potential that a particular environment may bring. Urban space encompasses the notion of purpose as a place where thoughts, deeds, and other aspects of life develop and occur. The encounter with the natural environment is made up of views of nature and landscapes, and beliefs and feelings for nature are a component of this meaning. (McCunn, L. J., & Gifford, R. (2013)), The latter turn has anything to do with the ideas of place attachment and feeling of place.

Gifford (2007) asserts that defining the city, the target population, and the study techniques will aid in comprehending a particular location. The qualities of the built and natural environments have a significant impact on the outcomes expected from a specific location. Urban environmental scientists are researching a number of issues, including how people's wellbeing is impacted by the complexity of the natural environment. A tactic that effectively applies these concepts is called "biophilic design" (Downton, Jones, Zeunert, & Roös, 2017). With the help of biophilic architecture, favorable climate and microenvironment conditions in cities can be strengthened and safeguarded. (2013) (Beatley, T., & Newman, P.). A biophilic habitat must take into account the values and sensitivities of a built environment.

In the search for biophilic design values, Benyus (2008) suggests a variety of elements that are inspired by nature, such as organic form and structure, daylighting, natural ventilation, natural sounds, a dynamic color palette, replicating and regenerative landscapes, and bio-inspired gardens. In the design of products and artificial processes, Benyus (2008) recommends utilizing natural physical traits and processes. El-Zeiny, R. M. A. (2012) presents examples of what is regarded to be restorative elements, such as how wild animals and plants interact and adapt (Figure 3).

Kellert (2008) lists six traits and features that cover everything from urban social interactions to environment. These components include environmental traits, organic shapes, forms, patterns, and processes, light and space, place-based connections, and a range of human-nature interactions (Figure 4). His theory also considers a careful examination of the historical, geographic, and cultural elements that have an effect on how people view their surroundings and, as a result, how they react to nature. Because they are a part of the urban environment, even though not all of these biophilic design elements are restorative, they have some impact on mental recovery. (Wilson, E. O., & Kellert, S. R. (2008)).

In Bentley's (2011) work, the author focuses on techniques for integrating nature into the built world by using similar natural resources to build cities. He advises that the elements of biophilic design in the urban environment be applied at the levels of the building, block, street, neighborhood, community, and region to accomplish this. He argues that both political and social decision-makers must be involved in the implementation of biophilic cities. At this local level, natural elements and green urban areas are the main focus of a biophilic environment (Figure 5). Other biophilic aspects, such as variety of color, daylight, natural water features, and organic design, that offer healing situations are not included in the Bentley plan (Bentley, R., Baker, E., Mason, K., Subramanian, S. V., & Kavanagh, A. M., 2011).

|                                     |  |  |
|-------------------------------------|--|--|
| Organic forms and structure         | Biomimic buildings<br>Nature-inspired structures<br>Restorative architecture<br>Animal resilience to natural hazards   |    |
| Daylighting                         | Sunlight<br>Windows and skylights<br>Energy efficiency<br>Darken or lighting flexibility   |    |
| Natural ventilation                 | Temperature control<br>Humidity regulation<br>Fresh air circulation  |    |
| Natural sounds                      | Quiet places<br>Avoidance of noise pollution   |   |
| Palette of colors                   | Relation to sun natural effect on color<br>Natural brilliance<br>Season flexible color palette   |  |
| Mimicking and restorative landscape | Mimicking and restorative function<br>Water storage and release<br>Air and water purification<br>Nutrient cycling<br>Savannah type systems<br>Bringing soil back |  |
| Bio-inspiration gardens             | Ecosystem immersion<br>Learning from organisms<br>Design into nature<br>Nature into built environment  |  |

Figure. 3 .Biophilic design elements inspired in Biomimicry (El-Zeiny, R. M. A. (2012)).

|                                    |   |
|------------------------------------|---|
| Environmental features             | <ul style="list-style-type: none"> <li>Color, water, and air</li> <li>Sunlight</li> <li>Plants and animals</li> <li>Natural materials</li> <li>Views and vistas; façade greening</li> <li>Geology and landscape; habitats and ecosystems</li> <li>Fire</li> </ul>   |
| Natural shapes and forms           | <ul style="list-style-type: none"> <li>Botanical and animal motifs</li> <li>Tree and columnar supports</li> <li>Shells and spirals, egg, oval, and tubular forms</li> <li>Arches, vaults, and domes</li> <li>Shapes resisting straight lines and right angles</li> <li>Simulation of natural features</li> <li>Biomorphy, geomorphology, and biomimicry</li> </ul>  |
| Natural patterns and processes     | <ul style="list-style-type: none"> <li>Sensory variability</li> <li>Information richness</li> <li>Age, change, and the patina of time</li> <li>Growth and efflorescence</li> <li>Central focal point</li> <li>Patterned wholes</li> <li>Bounded spaces and transitional spaces</li> <li>Linked series and chains</li> <li>Integration of parts to wholes</li> <li>Complementary contrasts</li> <li>Dynamic balance and tension</li> <li>Fractals</li> <li>Hierarchically organized ratios and scales</li> </ul> |
| Light and space                    | <ul style="list-style-type: none"> <li>Natural light and shadow</li> <li>Filtered and diffused light; reflected light</li> <li>Light pools, warm light; light as shape and form</li> <li>Spaciousness, space as shape and form</li> <li>Spatial variability and harmony</li> <li>Inside-outside spaces</li> </ul>   |
| Place-based relationships          | <ul style="list-style-type: none"> <li>Historic, geographical, cultural and ecological connection to place</li> <li>Indigenous materials</li> <li>Landscape orientation and ecology</li> <li>Landscape features that define built form</li> <li>Integration of culture and ecology</li> <li>Spirit of place and avoiding placelessness</li> </ul>   |
| Evolved human-nature relationships | <ul style="list-style-type: none"> <li>Prospect and refuge; security and protection</li> <li>Order and complexity; information and cognition</li> <li>Curiosity and enticement; exploration and discovery</li> <li>Change and metamorphosis</li> <li>Mastery and control</li> <li>Affection and attachment; attraction and beauty</li> <li>Fear and awe</li> <li>Reverence and spirituality</li> </ul>  |

**Figure 4.** Biophilic design elements and attributes (Kellert, S. R., & Wilson, E. O. (2008))



**Figure 5.** Biophilic green urban design elements in cities (Beatley, T., & Beatley, T. (2011))

The aim of biophilia is the integration of ecosystems into urban settings. From a psychological standpoint, nature offers individuals healing experiences to combat stress and mental exhaustion that enhance their state of health. From the standpoint of urban architecture, nature offers aesthetics, protection, and an awareness of place (Schmidt, S., & Németh, J. (2010)). Therefore, the integration between nature and urban architecture is the source of the complexity of biophilic design.

### V. Restoration and Well-being as a result of biophilic design

The historical interest in the role that nature plays in enhancing health and wellbeing is real. The relationship between climate, geography, sun and heat, water quality, and a picturesque environment that may be felt by a human being and the way in which these aspects affect one's well-being is established in Doctors' Greek work "Airs, Waters, and Places." Social and environmental psychologists are actively studying weather patterns and how they affect people's behavior in great detail, and they contend that humans still need the connection between natural circumstances and wellbeing. It is vital to note that urban wildness and nature are not just about greenery. Beatley (2011) argues that rather than concealing plants as is customary in cities, trees should be used on roadways, outdoor spaces, rooftops, waterways, other hydrological elements. Microorganisms, marine flora, and animals are also present in nature. (Mayrand, F., Clergeau, P., Vergnes, A., & Madre, F. (2018)).

Even if there is general agreement that nature has a positive impact on human wellness, McCunn, L. J., & Gifford, R. (2013) suggest that having nature indoors may have a negative impact on employees' productivity. Despite having plants around the office may improve workers' psychological well-being, these writers discovered that having lots of plants may reduce workers' output. Although this article has no particular emphasis on indoor surroundings, it is obvious that other studies can offer information regarding potential consequences in other situations that should be considered. The effect nature has on human wellness, sentiments, and happiness relies on the proximity of nature to people as well as the environment's biological deprivation. However, even a fleeting encounter with nature could serve as a therapeutic sensation. (White, R., & Heerwagen, J. (1998)). Utilizing windows with views of a favourite natural environment or even images of the scene might help people feel better.

Using a low-impact technique to prevent harm to the environment and a biophilic design that has an advantageous effect on the environment to improve human wellness is what is known as restorative environmental design. (Kellert, S. R., & Wilson, E. O. (2008)). The concept has two dimensions: an organic or naturalistic component that comprises built-environment forms and shapes that reflect people's natural passion for nature. (Bolten, B., & Barbiero, G. (2020)); and, a location-based or vernacular dimension that takes into account the environment and culture of a specific region, which makes up the social and ecological dimension of design. (Parrish, B. D. (2010)).

Modern living conditions make it harder for people to maintain their attention on daily tasks. Nevertheless, by further strengthening social links that aid in the recovery from mental exhaustion, the built environment can additionally boost psychological health and well-being. Anxiety and despair can be impacted by emotional exhaustion, and these two conditions can lead to violence and aggressive behaviour (Sullivan, W. C., & Chang, C. Y. (2011)). Urban regions with close access to green spaces are known to have lower stress levels. According to what is mentioned below (Table 1), how environmental settings are designed might have either beneficial or negative effects.

Design must take into account social assistance and a sense of belonging. Urban designers can encourage social connection while also preventing crowding, which can lead to stress and despair. They can do this by taking into account factors such as the fact that living near busy roads is undesirable for both workers and neighbours, the possibility that high-rise and multifamily housing may worsen children's anxiety and depression, or the necessity of daylight to prevent seasonal depression and anxiety (Sullivan, W. C., & Chang, C. Y. (2011)). These additional details are among others: Poor urban design can be upsetting; stressed-up drivers may lash out on the road; and there may be other issues related to the lengthening journeys. Cities must lessen the number of people who drive to work, give walking and bicycling more importance, and enhance the legibility of their designs. A readable city gives its citizens a feeling of emotional safety and serves as an invitation to explore it. (Hidalgo, A. K. (2019)).

In order to re-establish a connection between people and nature, the biophilic approach takes into account these natural elements in both the indoor and outdoor constructed environment. This is because using nature, which includes flora and fauna, enhances people's health status and social aspects of life. Natural components like greenery and scenes resembling forests can be used to create a healing atmosphere, as demonstrated by a number of urban case studies and psychological investigations. (Van den Berg, A. E., Maas, J., Verheij, R. A., & Groenewegen, P. P. (2010)), natural water features such as wetlands, storm water ponds, and rivers (Huai, S., & Van de Voorde, T. (2022)), natural light and its relation to colour and shadows (Hidalgo, A. K. (2021)), and built environments that include well designed buildings (McCunn, L. J., & Gifford, R. (2013)), the use of regional resources, neighborhood belonging, and parks and edible gardens (Beatley, T., & Newman, P. (2013)).

| Favourable settings to mental health   |             |   |
|--|-------------|---|
| <ul style="list-style-type: none"> <li>- legible places</li> <li>- attractive, well-maintained, safe place</li> <li>- contact with green space</li> <li>- with privacy</li> <li>- appropriate contact with other people</li> </ul> | Can produce | <ul style="list-style-type: none"> <li>- well-being</li> <li>- life satisfaction</li> <li>- quality of life</li> <li>- social support</li> <li>- ability to concentrate</li> <li>- creative play in children</li> <li>- less mental fatigue</li> </ul>                            |
| Unfavourable settings  |             |   |
| <ul style="list-style-type: none"> <li>- crowded places</li> <li>- noisy places</li> <li>- dangerous places</li> </ul>   | Can produce | <ul style="list-style-type: none"> <li>- social withdrawal</li> <li>- reduced social ties among neighbours</li> <li>- smaller social networks</li> <li>- diminished social and motor skills in children</li> <li>- distress</li> <li>- anxiety</li> <li>- irritability</li> </ul> |

**Table 1.** Favourable and unfavourable settings to mental health.

**Source:** Sullivan, W. C., & Chang, C. Y. (2011).

Psychological restoration can also be a result of the benefits of recreation. Cole, D. N., & Hall, T. E. (2010), Investigate how nature can improve people's wellbeing, which is adversely affected by urban stressors like crowding, human density, and congestion. Their study in natural settings demonstrates that exposing participants to nature produces restorative experiences, a release of mental tiredness, and mental renewal. Additionally, Brenner, N., Marcuse, & Mayer (2009) contend that brief contact with nature can enhance people's capacity for problem-solving. For 10 minutes, the participants in this study were instructed to



stroll in close proximity to nature while considering small problems that needed to be resolved. They make the point that more study is necessary to determine the effects of various lengths of exposure to nature in order to comprehend what individuals need in order to address pressing concerns.

Additional study is required, in the opinion of Ulrich, R. S. (2008), to fully comprehend the relationship between biophilic design and restorative benefits. However, Gifford (2008) contends that the wealth of environmental psychology research, which is based on field and laboratory studies, may continuously guide environmental design to create environments that cater to people's needs. Further study is needed, according to Duffy, S., & Verges (2010), to examine how humans are connected to nature and how seasonal changes in the environment affect human behaviour. Their research indicates that throughout the winter, people identify more strongly with shelter-giving things, while during the spring and fall, they exhibit a favourable link with nature. Moreover, seasonal animal behaviour is linked to common activities during different seasons. These results, according to Duffy, S., & Verges, M. (2010), call into question the "biophilia hypothesis," the idea that people have a natural and implicit bond with nature.

A significant portion of a society's structure depends on how cities and even individual streets run on a daily basis (Alexiou, A. S. 2006). Well-planned metropolitan areas with both natural and man-made features have positive effects on the economy, society, and individuals (Gifford, R. 2007). On a personal level, elements of well-being include financial success, physical health, social connections, free time, security, and environmental quality. Urban dwellers regularly utilize city amenities; therefore, their levels of wellbeing are greatly influenced by what the city has to offer. A few factors that affect well-being are the length of the commute, the ability to walk, and the aesthetic appeal of the streets. Urban design should focus on whether municipal amenities improve or worsen people's degree of well-being.

A significant portion of a society's structure is determined by how cities and even streets operate on a regular basis. Well-planned metropolitan areas with both natural and man-made features have positive effects on the economy, society, and individuals (Gifford, R. 2007). On a personal level, elements of well-being include financial success, physical health, social connections, free time, security, and environmental quality. Urban dwellers regularly utilize city amenities, therefore their levels of wellbeing are greatly influenced by what the city has to offer. A few factors that affect well-being are the length of the commute, the ability to walk, and the aesthetic appeal of the streets. The basic goal of urban design should be to determine whether municipal amenities improve or worsen people's quality of life.

## **VI. Conclusions**

With regard to people to maintain and improve their mental health and well-being, nature preservation and ecosystem health are necessary. Ironically, it was the constructed environment that was originally integrated into nature, losing the well-known advantages of natural settings. Urban designers today attempt to bring nature into built areas. On the other hand, the built environment shields urban dwellers from the elements and natural dangers, making their lives more comfortable. Urban areas, in particular streets, should offer urban dwellers safe havens and be planned with both the benefits and drawbacks of nature in mind.

Environmental psychology and public health have given adequate support for the relationship among nature and wellbeing to help people's mental health. It is a challenge for designers to incorporate these concepts and supporting data into living environments. Since achieving well-being is a shared objective, urban designers must take immediate action to design public areas as healing environments.

Environmental psychology examines the elements of the built and natural environments that promote psychological repair. The restoration theories that are discussed in this study emphasize the importance of nature in helping mental well-being of individuals. The stress recovery theory contends that humans can recover from stress because of an emotive and aesthetic reaction to the environment, in contrast to the attention restoration theory, which claims that attraction is a process that can assist relieve mental weariness. This essay emphasizes the close connection between the advantages of the natural environment, the necessary procedures and reactions of restorative theories, and the biophilic design tenets.

The essential component of biophilic design is the provision of a set of principles as well as methodologies for designing built environments. In order to build better environments for people's health, biophilic researchers have suggested aspects and components, hospitable settings, and spatial qualities, as demonstrated throughout this study. It is necessary to conduct further research on the quality, quantity, and potential combinations of these elements in various public landscapes in order to better understand how they can aid in restoration. Future studies should address the impact of weather, seasonal traits, and environmental factors on people's perceptions and experiences of the environment in connection to recovery and wellbeing.

Biophilic tactics ought to take into account the social aspect of human behavior, which environmental psychology focuses on in particular. Additionally, having a thorough understanding of how people and the environment interact might mean the difference between a simple solution from a single perspective and a complicated one where interdisciplinary methods can lower the risks in the urban design concept and implementation.

The findings of study in several fields relating to urban design are still not connected. This is the case, for instance, with research from environmental psychology and public health on people's psychological health in urban settings, which hasn't always been exploited by urban designers. Incorporating biophilic design, for instance, into the planning process at every level is one way that urban design can benefit from research being done in fields other than urban design. The area of "biophilic design" is one that has a lot of potential for enhancing urban planning and contributing to the wellbeing of city dwellers everywhere.

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### **Conflict of Interests**

The author claims there are no opposing viewpoints.

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