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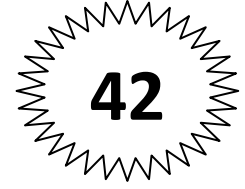
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"Nature's Healing Touch: Exploring the Human Connection with Nature"

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Abstract

Humans have an inherent attraction to nature, a connection that is deeply rooted in our genetic makeup. Despite the modern lifestyle that often separates us from the natural world, our innate bond with nature remains strong, influencing us in profound ways. This paper examines the multifaceted relationship between humans and nature, highlighting the positive impacts it has on our well-being. Specifically, it explores the fractal nature of trees and their influence on human cognition, the role of negative ions emitted by trees in improving health, the effects of nature on cortisol levels and stress reduction, and the healing benefits of exposure to nature for patients in healthcare settings. By understanding and nurturing our connection with nature, we can harness its therapeutic power and enhance our overall quality of life.

Keywords:- Biophilia hypothesis, Cognitive maps, Fractals, Cognitive load, Sensory deprivation, Well-being

Introduction

Humans as a species have evolved over several million years, and according to evolutionary psychologists, certain characteristics and traits have been passed on to their offspring through generations. As Wilson's biophilia hypothesis suggests humans always have an innate tendency to seek connections with nature and other life forms. This inherent attraction to nature is more of a genetic attachment than an emotional attachment. Early humans spent the majority of their time outdoors, in contrast to modern-day humans who spend as much as 90% of their time indoors while their travel involves a car. This resulted in better cognitive maps in early humans, who wandered among forests in search of food and shelter as their survival solely depended on their understanding of the environment in which they inhabited. They had to avoid the locations of predators and other natural barriers while navigating through thick vegetation. Apart from these early connections with nature where time is spent predominantly, humans still have a liking for lawns as they had a better time in the grasslands as hunter-gatherers when they moved from trees to the ground in search of better food and shelter and this inherent liking is due to the information being inherited genetically over time. There are several other reasons why humans feel connected to nature, which sometimes seems to be made unconsciously.

Fractal nature of trees

A fractal is a complex mathematical pattern exhibiting self-similarity, meaning fractals contain copies of themselves even when viewed at different scales. Fractals can be seen in almost everything in nature right from something as large as mountain ranges, coastlines, clouds, and lightning to as small as snowflakes, flowers, and ferns. (Fig.1). Architects have utilized fractal dimension in determining the level of visual complexity as a high level will draw people's attention for a longer time and make them more appealing to humans [2] [3]. In contrast to manmade fractals trees are natural fractals where a simple rule applied recursively to an element could evolve into a complex structure like a tree and is utilized in its natural growth process to limit the energy that a tree could expend towards its growth. (Fig 2) Humans strongly need trees to survive, seemingly supplying most of the oxygen humans breathe.



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Special Issue - Volume -2 Issue -2





Fig.1

Visual Stimuli and Well-being

Even modern-day humans though spending a majority of their time indoors tend to be seated along the windows just to have a glimpse of the nature that is outside. The visual stimuli that are offered by nature don't seem to disturb a human because of the fractal nature that exists in it. This becomes important as our human brain on average receives almost 11 million bits of information at any given time but the brain processes only 40 bits at a given time to avoid cognitive overload [4].

Nature, in a way, due to its fractal character, even when it presents maximum visual and auditory stimuli, doesn't add to the cognitive load of a human.

Experiments involving white torture where an individual is sensorily deprived by placing in a room where everything is painted white including the walls, floor, furniture, electrical fixtures, etc. (Fig.3). exposure around 24 hours produced hallucinations where the individual starts to hear voices and see humans who were not there and when extended in the same state beyond 48 hours makes a person swoon. Sensory deprivation is thus capable of making a human lose his mental stability in just 48 hours. Nature sees to it that humans are not sensorily deprived as it opens up a colourful world (Fig.4) even when most of the time there exists only a limited visual connection from inside to outside. Also, the more a person is in contact with nature it results in positive effects on blood pressure [5,7], heart rate [7], skin conductance, and muscle tension [7].



Fig.3

Negative ions and trees

When water molecules collide with one another in nature, as in the case of fountains, sea waves, and also by trees, a lot of negative ions are created. Through their natural growing process, trees release negative ions that appear to have a good effect by enhancing immunity, providing protection from dangerous bacteria, increasing the flow of oxygen to the brain, etc. The finest example is the eucalyptus tree, which appears to absorb minute amounts of radium through its root system and emit it as radon gas, which contains a large number of negative ions.

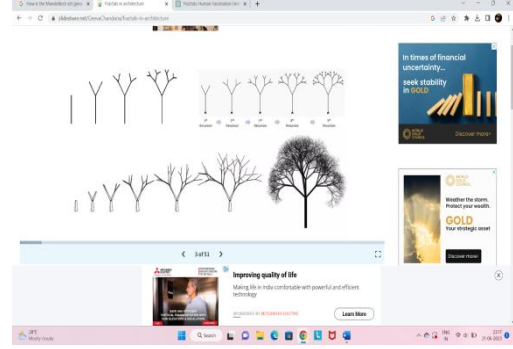


Fig.2



Fig.4



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Cortisol and nature

Modern humans who spend most of their time in an urban environment are more prone to mental disorders like schizophrenia, bipolar disorder, etc. The noise levels when it is consistently loud increase blood pressure and cause heart diseases and many other ailments in humans. Even when a person is asleep the auditory stimuli that are emanating from the environment are processed and only those stimuli with attached importance like the sound of a crying child, alarm sound, etc are allowed to trigger other parts of the brain for further action whereas other unwanted noises are filtered out. This sort of continuous activation of the brain due to aircraft noise and road traffic noise during sleep gives rise to increased cortisol levels in humans. This would further lead to chronic stress which might lead to the gradual deterioration of health. Apart from the noise, several other factors give rise to increased cortisol levels in humans. Contact with nature is associated with mental health especially stress [1]. The levels of the stress hormone cortisol are found to be get reduced by spending ten to fifteen minutes in nature. For example, as Park and colleagues [8] study a stroll through the Japanese forest can reduce cortisol concentrations, compared to a stroll amidst urban environments. Even touching a tree bark for 90 seconds have found to delay the production of cortisol. Results of experiments conducted with students who were made to attend classes in wooden desks and chairs have been found to show marked improvement in performance academically.

Healing Effects in Healthcare Settings

Studies were being conducted in hospitals where patients were found to show an increasing rate of recovery when kept in rooms whose windows opened up to nature. In fact, they required lesser pain medications whereas the recovery time is found to have slowed down when patients were kept in rooms whose windows opened up to blank walls.

Conclusion

By exploring the innate relationship between humans and nature, this paper aims to promote a deeper understanding of the benefits derived from our connection to the natural world. Recognizing the significance of nature in our lives can lead to the development of strategies that enhance well-being and foster sustainable and harmonious relationships between humans and the environment

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