Restorative Effects of Experiencing Nature Pertaining to Health

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Restoration is a casual relationship of man with the environment; the cause is the physical elements and natural forces of the environment and the effect is health recovery.
Biophilic Design is the deliberate attempt to translate an understanding of the inherent human affinity to affiliate with natural systems and process into the design of the built environment. The process is called biophilia (Kellert and Wilson, 1993). Most of our emotional, problem-solving, critical thinking, and constructive abilities continue to reflect skills and aptitudes learned in close association with natural systems and processes that remain critical in human health, maturation, and productivity.

Called Rehabilitation Centre Groot Klimmendaal, the project is located in a forest outside Arnhem, the Netherlands.
Breaking away from the traditional hospital layout, the design for this children’s hospital has a flower-like concept. The holistic approach, fully integrating architecture and engineering, creates a healing environment that not only deals with the body, but also with the mind and soul of young patients. The hospital will be part of a master plan with other healthcare facilities planned for the future. A public plaza will enhance the public function of the hospital and connect the hospital with the future expansion area. Finally, as a healing environment needs a healthy building, the design incorporates sustainable measures, such as natural ventilation, night cooling, solar shading and the use of solar energy.
Restorative Process

• Gardens provide restorative and pleasant views, reduce stress and improve outcomes through established mechanisms such as fostering access to privacy and social support, creating opportunities for restorative escape with respect to stressful clinical environments, and provide settings that enable physically active pursuits in peasant nature surroundings ranging from active play to physical rehabilitation.
Discussion Question 1

- Why people feel comfortable when they are engaged with natural settings?

- sense of control; free to move and to choose; seeing the sun and stars; feeling the winds; hearing the rain and birds, interacting with peers and families
Discussion Question 2

What is a prison cell to an inmate? Is it a place that affords:
- a separation from families and friends
- away from the routines
- long confinement
- little contact with the outdoors
- lots of regimentations
Introduction

- Natural environment can enhance health.
- Contact with the natural world may be directly beneficial to health.
- Access to the natural world is integral to healthcare.
- The innate tendency to affiliate with natural things such as water, plants and animals and natural forces such as wind and sunlight has long been embedded into in the human genes.
- Biophilia: the innately emotional affiliation of human beings to other living organisms (Wilson, 1993).
Properties and Attributes of Nature and Human Feelings toward Nature

- **Positive properties** of nature: greenery, trees, glistening water, chirping birds, budding bushes, colorful flowers, windy weather, sunny day; twinkling stars.

- **Positive attributes** of nature: calm, comfort, pleasant, beauty, green, openness, tranquil, fragrance.

- **Emotional feelings** to natural landscape: place attachment, affiliation, affection, place identity, sense of place, topophilia, favorite place.
Objective

• To discuss how interaction with nature promotes well-being and health.
Meanings of Restorative Environment

- **Medical geography**: A place or milieu that provides plants, fresh air, water and magnificent scenery for physical and emotional recoveries.
- **Horticulture**: A place that stimulates the body and mind of a person through gardening which encourages imagination and exploration.
- **Landscape architecture**: An outdoor place that allows a person to engage with the properties of nature (dynamic, diversity and timelessness) as well as man-made elements.
- **Environmental psychology**: A place that permits a person to recover from mental fatigue allowing him to feel relax, calm and comfort.
Meanings of Restorative Environment

• Restorative environment provides natural and man-made elements for sensual and motoric interactions and social transaction.
  – Sensual: stimulation, fascination and imagination
  – Motoric: exploration, locomotion, responsivity
  – Social: communication, sharing and peer acceptance

• The place, locale or milieu can be:
  – Wilderness or forest
  – Residential park, garden and playground
  – Garden and courtyard in healthcare institution
  – School greenery
Meanings of Restorative Environment

- Restorative environment is a physical setting that renews cognitive, physical and social performances or tasks of individuals.
Psycho-physiological Stress Recovery

- Psychophysiology views that human interaction with natural environment affect his emotional and feeling capabilities and responses, either positively or negatively (Werner and Altman, 2000). Preference, satisfaction, fascination, wonder and awe are some of the positive responses gained when a person intimately experience nature’s diversity and complexity.
Psycho-physiological Stress Recovery

• Essentially, the psycho-physiological stress reduction framework posits that psychological well-being is attained by visual encounter with the environments dominated by plants that reduce arousal and therefore, reduce feelings of stress (Hartig, 2002).
Psycho-physiological Stress Recovery

• Relationship between environments and health (Parsons et al. 1994)

PERCEIVED NATURAL ENVIRONMENT → REDUCED STRESS → IMPROVED HEALTH
Theories of Stress Recovery

• Attention restoration theory and Stress coping restoration theory
• Attention restoration theory (ART), which is grounded in cognitive psychology, suggests that interaction with nature is important for effective mental functioning.
• Directed attention versus involuntary attention
• ART qualities: being away, extent, fascination and compatibility
• *Being away* implies a setting that is physically or conceptually different from one’s everyday environment (Herzog et al., 1997; Herzog et al., 2003).
ART

• *Extent* is the quality of a setting sufficiently rich and coherent that it can engage the mind and promote exploration.
• *Fascination* is an effortless attention in which an individual’s attention is effortlessly engaged without mental fatigue.
ART

- **Compatibility** is a quality of a setting that fits with and supports one’s inclinations or purposes and the kinds of activities supported, encouraged, or demand by the setting (Herzog et al. 2003).
Studies applying ART

- Wells (2000) examined the influence of nature of home environment on 17 children of low income families. The study found that children whose homes with more nature or green tended to have the highest levels of cognitive functioning or attentional capacity.

- Taylor et al. (2001) address the theory by studying exposure of “attention deficit disorder” children with greenery of the residential setting. The results indicate that exposure to greenery increased the attention of the children and that the greener a child’s play area, the less severe his or her attention deficit symptoms.

- Others include in the milieu of prison and hospitals.
Theories of Stress Recovery

• Stress Coping Restorative Theory (SCRT) suggests that stress is mitigated when a person perceives unthreatening natural environments such as forest or garden. As such, the environments afforded him or her five factors: (i) sense of security, (ii) sense of control, (iii) capacity to increase social support, (iv) provision to physical movement and exercise, and (v) access to nature and other positive distractions (Ulrich, 1999, 2004).
• Sense of security: To feel secure is a basic need of human life and it is both a physical and psychological needs.
• A garden in a hospital setting must convey a sense of security to engage the patients to go without fear and experience it.
Sense of control

• Ulrich (1999) posits “people who feel they have control over their situations cope better with stress, experience less stress and have better health status than people who feel they lack control” (pp. 37-38).

• In child psychology, a child views sense of control is the ability to have privacy, to make predictions and to appropriately orient their bodies in spaces (Olds, 1989).
SCRT

Social support
• Garden is a salutary outdoor space for caregivers to provide supports to their patients in various ways, emotional caring and materials and physical aids especially in play and locomotion (Cooper-Marcus, 2002).
Physical movement and exercise

• Gardens that promote play and exercise should improve psychological well-being and foster gains in other health outcomes.
Access to nature and other positive distractions

- Contact with nature can reduce tension or stress and produce calmer states of mind.
- Ulrich et al. (1991) found that wilderness and urban natures mitigate stress and the mitigation is expressed as perceived benefits. Such environments contain features such as tall trees, extensive views, or waterfalls (Irvine and Warber, 2003).
Landscape preference, People-plant relationships, Horticultural therapy, Community gardening, Psychological effects of plants, Physiological effects of plants, Social effects of plants, Horticulture and human health

Evolutionary origins are suggested for the affinity of people with plants. Plants enter the human psyche through observation and/or participation. Given a choice, people prefer settings with vegetation over those lacking vegetation. Research indicates such settings reduce stress, promote peace, tranquility, enhanced self-esteem, and sense of mastery of the environment.
Horticultural Therapy

• Gardening is used in prison. Prisons used inmates as workers on their farms to produce food for use in the institution.

• A green environment encourages people to have physical exercise. Visiting botanical garden lowers blood pressure and reduces heart rate.

• Leisure in green environments provides feelings of relaxation, autonomy and competition, and make people open for reflection.

• Gardening stimulates group processes and this in turn appears to promote social cohesion and development of social and communication skills.
Application of SCRT and ART: Children’s Garden at Batu Pahat Hospital

Patients Play Participation in Garden and Bed Location in Ward

Master Plan of Paediatric Ward's Garden, Batu Pahat Hospital
Scenes in the Ward and Garden
Application of SCRT and ART: Children’s Garden at Batu Pahat Hospital

[Graph showing mean appraisal for various conditions in different settings]
Application of SCRT and ART: Children’s Garden at Batu Pahat Hospital

PROGRESSIVE BEHAVIOURS

- Being relaxed
- Calm and Comfort
- Cheerful
- Forgetting worries
- Active in play
- Independent
- Cooperative
- Playing with peers
- Acquaintanceship
- Decreased social withdrawal
Theories of Restorative Effects of Experiencing Nature Pertaining to Health

Research Agenda

• Is there any association between the amount greenery and health well-being of urban residents?
• Do urban children often playing in parks have better health than those who do not?
• What are the planting layout and composition of green spaces in schools, residential areas or hospitals that effectively foster health for children and adults?
• Do gardens for children be different from those of adults for restorative purpose?