

BIOPHILIA STRESS

Research Brief

PARTNERSHIP INITIATIVE
INTEGRATED DESIGN LAB
at the Center for Integrated Design



Figure 1: “Forest bathing,” or immersing yourself in nature, is being embraced by doctors and others as a way to combat stress and improve health.

Source: <https://www.nytimes.com/2018/07/12/well/take-a-walk-in-the-woods-doctors-orders.html>

Keywords:

Stress; Nature; Discord; Plants; Recovery; Fatigue; Healing environment; Healing gardens

CONTENT OVERVIEW

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BIOPHILIA + STRESS SUMMARY

People are confronted by pressures that significantly impact our lives and contribute to stress, anxiety, and mental fatigue, which can lead people to be aggressive, intolerant, unproductive, dissatisfied and unhealthy. Natural environments can play a central role in reducing these effects. Research shows that whether wandering through a forest or a private garden, stress is decreased and beneficial existential contemplation is increased.

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I. Proximity to Plants

Viewing real or artificial nature in hospital waiting room may be related to perceived attractiveness of the space. Patients exposed to real plants and posters of plants reported lower levels of experienced stress and were more satisfied with their surroundings. (Dijkstra 2008)

II. Healing Gardens and Stress

A study examining anxiety, sadness, anger, worry, fatigue, and pain in adult visitors and staff, as well as child visitors and patients at a pediatric oncology center showed unanimously higher distress scores within the hospital than in any of the center's various garden settings. (Sherman 2005)

The largest percentage of users were families. Adult family members typically relaxed and talked while their children played or more actively explored the garden. Parents not accompanied by children would often sit quietly contemplating in the garden, or walk around looking at plants and artwork. Staff used the garden for coffee or lunch breaks, talking quietly together or perhaps reading a book alone. On rare occasions, staff brought patients to the garden. In addition, special events such as a bimonthly celebration of life for bereaved parents, memorial services for staff, and news conferences, occurred in the garden. (Whitehouse 2003)

III. Recovery, Restoration, Reflection

Different body system's recuperation after stress was faster and more complete when subjects were exposed to natural settings (e.g. parks, gardens, wilderness), rather than various urban environments (e.g. along a pedestrian mall or down a street busy with vehicle traffic). (Grinde 2009)

Recovery

Urban dwelling individuals may come to suffer from progressively limited access to nature, and lower quality of the nature experiences they do access. Ineffective restoration may undermine health through chronic arousal, immune suppression, and other aspects of stress. (Van den Berg 2007)

Restoration

Restorative experiences have the following properties. (Kaplan 1992)

- Being Away. Being in a unique green setting is conducive for mind-wandering and refocus. Many people in the urban context lack sufficient opportunities for getting away to nature spots. Natural environments that are easily accessible thus offer an important resource.
- Extent. Reliant on "scope" and "connectedness". Scope: the environment is large enough to circulate through. Even a relatively small area can provide a feeling of extent with well planned trails and paths. Connectedness: the various parts of the environment must be perceived as belonging to a larger whole.
- Fascination. People are fascinated by solving puzzles, by making predictions, by challenges. Thus fascination is important to the restorative experience because of its intrinsic attraction, but also because fascination allows one to function without using directed attention.
- Compatibility. The compatibility among the environment, the individual, and the actions required by the environment. One's relationship to the environment is effortless, intuitive, and deeply restorative.

In addition to recovery from fatigue, many participants in a wilderness program found themselves in a reflective mode, considering their lives and priorities. After the program concluded, participants considered ways to maintain their contact with this significant environment. (Kaplan 1992)

Reflection

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IV. KEY REFERENCES

Review Articles

- Bratman, Gregory N., J. Paul Hamilton, and Gretchen C. Daily. "The impacts of nature experience on human cognitive function and mental health." *Annals of the New York Academy of Sciences* 1249, no. 1 (2012): 118-136.
- Grinde, Bjørn, and Grete Patil. "Biophilia: does visual contact with nature impact on health and well-being?" *International journal of environmental research and public health* 6, no. 9 (2009): 2332-2343.

Primary Research

- Dijkstra, K., Marcel E. Pieterse, and A. Pruyn. "Stress-reducing effects of indoor plants in the built healthcare environment: The mediating role of perceived attractiveness." *Preventive medicine* 47, no. 3 (2008): 279-283.
- Kaplan, Stephen. "The restorative environment: Nature and human experience." *The role of horticulture in human well-being and social development* (1992): 134-142.
- Sherman, Sandra A., James W. Varni, Roger S. Ulrich, and Vanessa L. Malcarne. "Post-occupancy evaluation of healing gardens in a pediatric cancer center." *Landscape and Urban Planning* 73, no. 2-3 (2005): 167-183.
- Ulrich, Roger S., Robert F. Simons, Barbara D. Losito, Evelyn Fiorito, Mark A. Miles, and Michael Zelson. "Stress recovery during exposure to natural and urban environments." *Journal of environmental psychology* 11, no. 3 (1991): 201-230.
- Van den Berg, Agnes E., Terry Hartig, and Henk Staats. "Preference for nature in urbanized societies: Stress, restoration, and the pursuit of sustainability." *Journal of social issues* 63, no. 1 (2007): 79-96.
- Whitehouse, Sandra, James W. Varni, Michael Seid, Clare Cooper-Marcus, Mary Jane Ensberg, Jenifer R. Jacobs, and Robyn S. Mehlenbeck. "Evaluating a children's hospital garden environment: Utilization and consumer satisfaction." *Journal of environmental psychology* 21, no. 3 (2001): 301-314.

Popular Press

- Abrams, Abigail. "What Green Spaces Can Do to Your Mood." *Time Magazine*. Accessed December 2, 2019. <http://time.com/collection/guide-to-happiness/4881665/green-spaces-nature-happiness/>
- Kalaichandran, M.D., Amitha. "Take a Walk in the Woods. Doctor's Orders." *The New York Times*. July 12, 2018. Accessed December 14, 2018. <https://www.nytimes.com/2018/07/12/well/take-a-walk-in-the-woods-doctors-orders.html>
- Svigals, Barry. "Nature, Art, and Beauty: Antidotes to Everyday Traumas." *Metropolis Magazine*. October 13, 2013. Accessed December 10, 2018. <https://www.metropolismag.com/architecture/healthcare-architecture/nature-art-and-beauty-antidotes-to-everyday-traumas/>