Psychological restoration as a pathway between nature and health: Evidence and new research directions

Terry Hartig
Institute for Housing and Urban Research
and
Department of Psychology
Uppsala University

Nature is good for you!

Humbug!

Elephantiasis of leg due to filariasis (Luzon, Philippines)
Image courtesy of CDC via Wikipedia

Ao Nang, Krabi Province, Thailand. 2004 Indian Ocean tsunami
Image courtesy of David Rydevik via Wikipedia
<table>
<thead>
<tr>
<th>What nature?</th>
<th>Gardens, forests, parks, beaches, wilderness areas, ….</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good for whom?</td>
<td>Adults in urban areas, people with stress disorders, children at schools, elderly people in nursing homes, ….</td>
</tr>
<tr>
<td>Under what circumstances?</td>
<td>Driving in the car, during a break from work, looking out the window, in a rehabilitation program, in an experiment, ….</td>
</tr>
<tr>
<td>How?</td>
<td>Pathways including ….</td>
</tr>
</tbody>
</table>

From Hartig, Mitchell, De Vries, & Frumkin (2014)
The Stress Reduction Pathway

Nature can displace or otherwise protect people from stressful exposures (mitigation).

Nature can afford opportunities to acquire new adaptive resources (instoration).

Nature can support renewal of adaptive resources that have become depleted in meeting everyday demands (restoration).

Areas of Accumulating Evidence - #1

Studies of discrete restorative experiences are improving our understanding of the affective, cognitive, and physiological processes involved and the time course for the emergence and dissipation of effects.
Proofreading performance (% of errors detected) as a function of the environment available for restoration after meeting attentional demands.

From Hartig, Mang, & Evans (1991)

Is the red dot in the lower left rear or in the lower left front?

Ability to inhibit Necker cube pattern reversals as a function of the environment walked in after stressor exposure.

From Hartig, Evans, Jamner, Davis & Gärling (2003)
Areas of Accumulating Evidence - #2

Studies are increasing our understanding of the ways in which people make deliberate use of environments for restorative experiences over extended periods of time.

Norwegian adults (N = 1293) endorsement (agree or do not agree) of three statements about use of nature for restoration

I need time in nature to be happy.
Sometimes when I am unhappy I find comfort in nature.
Being out in nature is a great stress reducer for me.

From Hartig, Kaiser, & Strumse (2007)

What would you recommend that a close friend do if he or she felt stressed and worried?

1. Take a walk in the forest.
2. Listen to restful music.
3. Take a good rest in a silent and quiet park.
4. Read a book.
5. See a funny film.
6. Do sports.
   ...
10. Take sedatives.

From Grahn & Stigsdotter (2003)

Areas of Accumulating Evidence - #3

Studies are documenting relationships between access or proximity to green space and health outcomes that are plausibly mediated by the cumulative effects of restorative experiences.

Areas of Accumulating Evidence - #4

Studies in clinical settings and/or with samples from populations of clinical interest are documenting associations that contact with restorative nature and nature-based activities have with practically significant outcomes.

From Astell-Burt, Mitchell, & Hartig (2014)
Scores on Beck Depression Inventory (BDI) and PRS Fascination (FAS) before and during a 12-week therapeutic horticulture intervention.

<table>
<thead>
<tr>
<th></th>
<th>Time 1 Recruit</th>
<th>T2 Start</th>
<th>T3 4 weeks</th>
<th>T4 8 weeks</th>
<th>T5 12 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td>28.4</td>
<td>27.3</td>
<td>20.5</td>
<td>19.3</td>
<td>17.6</td>
</tr>
<tr>
<td>FAS</td>
<td>-----</td>
<td>-----</td>
<td>7.9</td>
<td>8.1</td>
<td>8.1</td>
</tr>
</tbody>
</table>

From González, Hartig, Patil, Martensen, & Kirkevold (2009)

Correlation between change in depression severity (BDI) and the average level of fascination reported during the TH intervention:

\[ r = .57 \]

Pretest-posttest change in performance on an attentionally demanding task as a function of mindfulness training and/or looking at images of natural environments for 15 min.

From Lymeus, Lundgren & Hartig (under review)
Some Challenges Ahead

Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials

“"We think that everyone might benefit if the most radical protagonists of evidence based medicine organised and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute.”"

In BMJ, 2003

A Continuous Challenge

Evidence is accumulating in several areas of research related to restoration as a pathway linking nature and health, but it remains difficult to integrate findings from different studies to reach solid conclusions about effects of interest.

An Unattended Challenge

Too little attention has been paid to the social regulation of time available for restoration as it bears on possibilities for accessing relatively restorative (natural) environments.

The number of vacationing Swedish workers (in 10 000’s) over the 147 months (January, 1993, through March, 2005).

From Hartig, Catalano, Ong, & Syme (2013)
Coefficients (standard errors in parentheses) from models of defined daily doses of selective serotonin re-uptake inhibitors, transformed to natural logarithms and adjusted for autocorrelation, dispensed monthly from January, 1993 through March, 2005, per 1000 Swedish men and women.

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20-64</td>
<td>20-64</td>
<td>&gt;64</td>
<td>&gt;64</td>
</tr>
<tr>
<td>Vacationers</td>
<td>-.0030**</td>
<td>-.0028**</td>
<td>-.0023**</td>
<td>-.0031**</td>
</tr>
<tr>
<td></td>
<td>(.0007)</td>
<td>(.0008)</td>
<td>(.0008)</td>
<td>(.0008)</td>
</tr>
<tr>
<td>July</td>
<td>-.2333*</td>
<td>-.3100**</td>
<td>-.2599*</td>
<td>-.2553*</td>
</tr>
<tr>
<td></td>
<td>(.1249)</td>
<td>(.1497)</td>
<td>(.1538)</td>
<td>(.1466)</td>
</tr>
</tbody>
</table>

Note: Estimates after adjustment for autocorrelation and control variables. *p < .05, one-tailed. **p < .01, one-tailed.

Concluding Comments

Both enthusiasm and restraint are needed as we work to elaborate and apply knowledge of relationships between nature experience and health.

Attention to psychological restoration and restorative person-environment transactions will be needed in that work.

The evidence is accumulating, and new questions arise as it does.

References


Lymeus F, Lundgren T, Hartig T (under review). Attentional effort of beginning mindfulness training is offset with practice directed toward images of natural scenery.