

Bringing nature into workspaces

Employees' perceptions of their offices

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Introduction



- *How and in what ways does reconnecting with nature affect our health and well-being?*
- Faster recovery from illnesses; lower stress; greater motivation; improved cognitive functioning; ...
- Two main mechanisms/theories are represented in literature:
 - **Attention Restoration Theory** (ART, Kaplan & Kaplan, 1995)
 - **Stress Reduction Theory** (SRT, Ulrich, 1984)



From a sustainable to a restorative environmental and ergonomic design

- Contact with nature can be achieved through the **design of built environments**.
- Kellert (2008): low environmental impact of **sustainable construction** **can be complemented** with the use of natural resources in a way that fosters human well-being.
- **Restorative environmental (and ergonomic)/biophilic design**
 - Naturalistic dimension: direct, indirect, and vicarious representations of nature
 - **Vernacular dimension: place-based, culture-based elements**

Elements of nature in evidence-based design (van den Berg, 2005) and in the Indoor Nature Exposure model (McSweeney *et al.*, 2015)

- **Views of nature**
 - Also decorative elements with representations of nature
- **Plants**
- **Daylight**
- **Fresh air**
- **Absence of noise**
- **Natural materials** (wood and wood-based products; effects of visual and haptic contact)
- IEQ – Sick Building Syndrome

Aims and goals

Perform a survey to:

- assess how employees in Slovenia perceive their offices with regard to the presence of bio-based materials and elements, and
- determine how the perceived naturalness of office spaces is linked to the employees' well-being and preferences.

Research hypotheses

1. The presence of bio-based materials and elements (wood-based products and materials) in the workplace positively correlates with employees' subjective well-being.
2. Workplaces with a higher presence of bio-based materials and elements reflective of nature are perceived as more “natural”.
3. Perceived restorativeness of the workplace correlates positively with the perceived naturalness of the space.
4. Perceived restorativeness of the workplace correlates positively with the rated presence of bio-based materials and elements in the office.

Methods (I)

Participants

- 401 administrative/professional office workers employed in various medium and large businesses in Slovenia
- Mean age 43.08 years (SD=9.64)
- 71.3% female
- Mean tenure 13.52 years (SD=10.55)

Methods (II)

Instruments

Findings in literature itemised to form a questionnaire

- Demographics
- Naturalness (elements of nature, overall perceived naturalness)
- Perceived restorativeness (PRS-11)
- Sick building syndrome (fatigue, headaches, respiratory/eye irritation, noise complaints)
- and WHO-5 (Well-being Index)

Methods (III)

Procedure

- Questionnaire was formed and distributed as an online survey
- 457 businesses were contacted and invited to participate
- Responses collected and analysed in a way that ensures anonymity

Analysis

Structural equation modelling:

- Initial model defined according to our understanding of theoretical concepts and relationships between them
- Items (variables) were grouped into latent variables

Elements of nature; Perceived naturalness; Perceived restorativeness;
Fulfilment of needs; Well-being; Mood

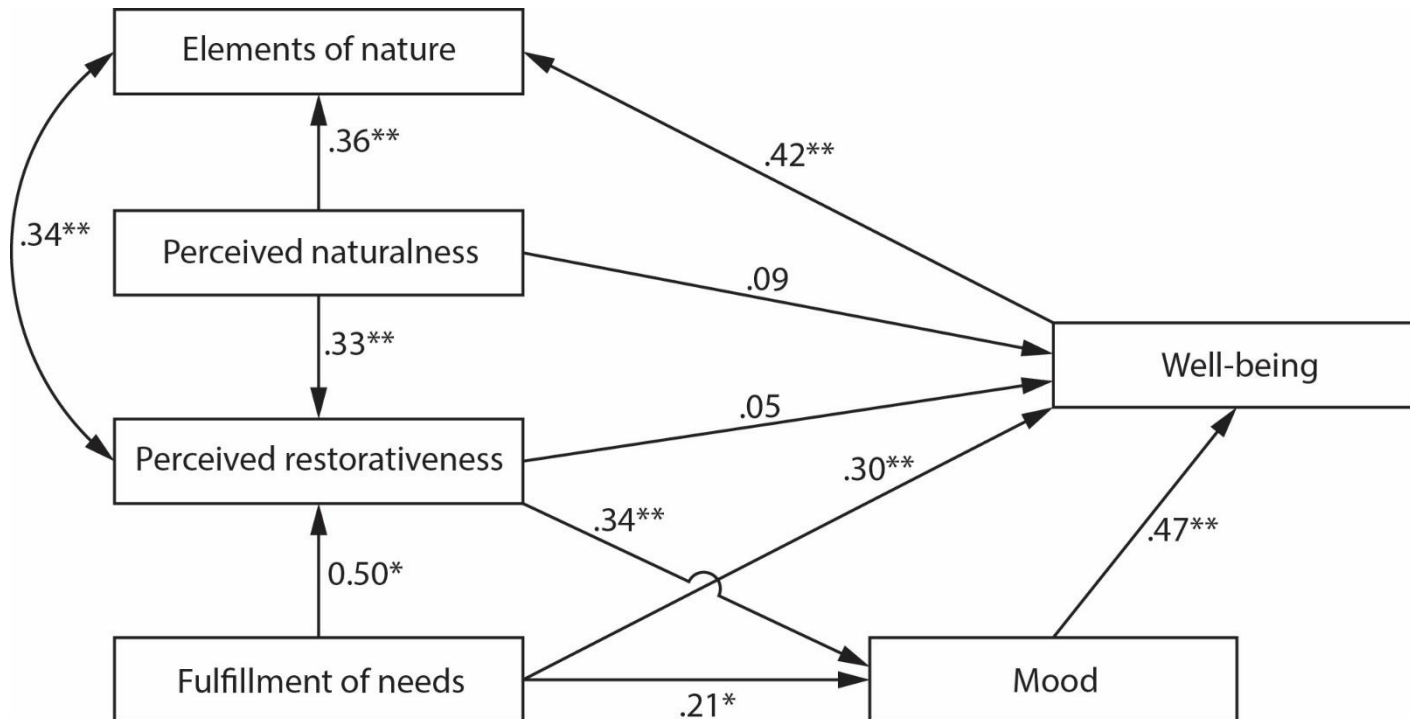
Results and discussion

State of offices in Slovenia with respect to the principles of REED

Variable label	Item	M	SD
Plants ^a	There are plants in my office.	3.54	1.44
SurfacePleasing-Haptic ^a	Working surfaces in my office are pleasant to the touch.	3.45	1.05
WindowsView3 ^a	Windows in my office allow a direct view of a natural setting.	2.85	1.44
Decor1 ^b	Please rate the presence of decorative elements in your office.	2.33	.96
VisWoodSurfaces ^a	Please rate the presence of visible wooden surfaces in your office.	3.39	1.04
Sunlight1 ^a	Light sources in my office are mostly artificial.	2.39	1.17
Sunlight2 ^a	Sunlight illuminates my office during the day.	3.81	1.15
FreshAir ^a	My office allows easy access to fresh air.	3.88	1.08
Noise1 ^a	My workspace allows me to work in peace and quiet.	2.96	1.24
Noise2 ^a	Ambient sounds in my office are bothersome.	2.96	1.22
		Yes (%)	No (%)
WindowsView1 ^c	My office has one or more window(s).	97.8	2.2

Hypotheses addressed in the model:

- The presence of bio-based materials and elements in the workplace positively correlates with employees' subjective wellbeing;
- Workplaces with a higher presence of bio-based materials and elements reflective of nature are perceived as more “natural”;
- Perceived restorativeness of the workplace correlates positively with the rated presence of bio-based materials and elements in the office;
- Perceived restorativeness of the workplace correlates positively with the perceived naturalness of the space



Conclusions

- *The present work can serve as an implication to encourage designers, builders, developers and product manufacturers to pursue progress in building design by considering the design choices that impact occupant health.*
- *Managers should also strive towards providing their employees healthful workspaces, which can often be achieved through relatively simple design interventions.*

Implications for future research

Effort should be directed at building an evidence base of design practices that involve the inclusion of nature into the built (indoor) environment.

- Robust methodology
- Good understanding of processes that play a role in the beneficence of the human-nature contact in the built environment.

THANK YOU FOR YOUR ATTENTION.

Questions?

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