Psychological effects of urban nature and biodiversity

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Structure of the talk

• Environmental psychology

• Health and restoration: some theories and results

• Effect of different natural environments
  • Forest
  • Agricultural land
  • Gardens
  • Natural experience areas

• Opportunities to promote health in an urban context
Environmental psychology addresses the interaction between people and the environment.

**Perception** of environmental problems by individuals and population.

**Psychological Effects** of environmental conditions.

Conditions enabling people to **behave** environmentally friendly.
• Health and restoration: some theories and results
Health

- Health is considered to be a status of complete
  - physical
  - psychological
  - and social
  well-being
... and not merely the absence of infirmity and disease (WHO, 1948)

- Resource-orientation enables the promotion of health
- Nature becomes a possible resource for health
Evolutionary Theory of Stress Reduction (Ulrich, 1984)

- Nature provides
  - recovery from stress
  - positive affect
- Moderate to high complexity
- Absence of threat and tension
- Deflected vistas
- Appearance of water
Crossing the street: a complex everyday processes

- Perception
- Evaluation
- Behavioural possibilities
- Evaluation of behavioural possibilities

- Decision
- Act
Attention Restoration Theory (Kaplan & Kaplan, 1989)

- Directed and involuntary attention

- Nature enables attention to recover
  - Being Away
  - Compatibility
  - Extent
  - Fascination
Effects of nature

• **Physical well-being**
  - Intake of analgetica after the visit of therapeutic gardens (Beck & Schneiter 2009)

• **Social well-being**
  - Reduction of isolation (Milligan, Gatrell & Bingley, 2004)
  - Social inclusion (Sempik, Aldridge & Becker, 2005)

• **Psychological well-being**
  - Comparison of natural vs. urban environments: Restoration, stress reduction and mood (see Lee & Maheswaran, 2010)
  - Cognitive performance increase stronger after perceiving natural environments compared to urban environments (Hartig et al., 2003)
Effects of environment on health – empirical approaches

• Effect of different natural environments
  • Forest
Forest conditions

- Protection area for flora
- Vegetation density
- Infrastructure
- Cultivation strategy

Examples “tended” forest
Examples “wild” forest
Experimental pre-post design

- Stronger effect of “tended” forest on positive and negative affect
  - Possibly due to signals of care and visual access (see Herzog et al., 2003)
  - Possible trigger for sadness: dead wood (see Hunziker, 1997)
  - Less attention needed in “tended” forest
Effects of environment on health – empirical approaches

• Effect of different natural environments

  • Agricultural land
Experimental Procedure

- No significant differences between extensively and intensively used agricultural land
- However, stronger positive effect than control group with activity only
• Effect of different natural environments

• Gardens
Community gardens

• 1st intercultural garden in Zurich, Switzerland
  • People from the neighbourhood (place of origin: Switzerland, Kosovo, Columbia, Germany, Cambodia)
  • Development of perceived restorativeness along three measurements: decreasing?

• Berlin: perceived restoration increased with responsibility for garden
Urban community gardens in Berlin, Germany

- Perceived restoration increased with responsibility for garden → sense making process?
- Moving beyond physical environmental impacts
- Gardens provide affordances to stay outside and be physical active
- Possible health effects
  - Directly: exposure to nature
  - Indirectly: Affordance to be physical active
    Participate in urban design
Gardening addressing social inclusion and equity?

- Green space provision and social status
  - Strong correlation between environmental quality and social status of the resident population (Bolte & Mielck, 2004; Hornberg et al., 2011)

- Education processes in gardens
  - Low threshold to participate: inclusion
  - Climate-relevant agenda (e.g. biodiversity, ecological plant growing, recycling, sustainable consumption)
Empowering people with low access to nature
• Effect of different natural environments

• Natural experience areas
Trends in childrens‘ development

- **Increasing time spent indoors and institutionalisation**
  (Blinkert & Hank, 1996; Schemel, 1998)
- **Importance of media**

- **Influence of nature on child development**
  - **Attention** (Tennesen & Cimprich, 1995)
  - **Concentration and performance** (Wells, 2000)
  - **Motoric development** (Fjortoft, 2004)
  - **Development of social skills** (Laaksoharju et al., 2012; Said, 2012)
  - **Anxiety and stress** (Wells & Evans, 2003)
**Definition**

<table>
<thead>
<tr>
<th>Use</th>
<th>Primarily recovery</th>
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<tbody>
<tr>
<td>Character</td>
<td>Large partial areas, preferable &gt; 50 % unkept, nature-oriented, rest extensively cultivated, natural attractivity (possibly initial design with mound, puddle), no play tools</td>
</tr>
<tr>
<td>Size</td>
<td>Aim: 2 hectares, minimum 0.5 hectares</td>
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<tr>
<td>Care</td>
<td>Extensive care in order to preserve open views in some parts, define a care plan with organizers and users, control of areas</td>
</tr>
<tr>
<td>Location</td>
<td>Close to living environment (<em>Access radius 500m</em>)</td>
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</tbody>
</table>
| Target group      | - Age 6 to 12 years  
- Possibly younger (child care institutions) |
| Assistance        | - *Play actions to get to know location and lose fear of “wild” nature*  
- Offers outside of school, child care institutions, public relations  
- Enable *unobserved, free play* |
| Reglementation    | - Considering safety issues, all activities allowed apart from motor sport |
| Planning protection | - Initiation in given space category, no additional protection.  
- Initiation of separate greenspace category possible |

Table: Proposal for characteristics of natural environment areas in big cities (see Stopka & Rank, 2013)
Pilot areas
Summary of natural potentials for health

• Exposure to nature
  • Physical, psychological and social effects

• Affordance character of nature → healthy lifestyle
  • Physical activity
  • Social interaction

• Education processes
  • Enabling incidental learning
  • Enabling behaviour changes → promote sustainable lifestyle?

• Effect on children’s play behaviour
  • Creativity and cognitive performance → promote appreciation of nature?

• Accessibility and availability of urban green space for all population groups
  • Distribution and interconnection of urban green space
  • Multifunctional use: biodiversity, climate effects, psychological effects
Thank you!

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