Using mobile technology to capture behavioural patterns and affective responses in activity-based work environments

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The psychology of activity-based working

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Activity-based work environments

Choice behaviour and switching behaviour → P-E fit

Workplace icons: ©Center for People and Buildings
Why develop a new tool for data collection?

Limitations of existing methods:

• *Surveys*: low reliability and precision due to unconscious behaviour
• *Observations*: labour-intensive and problematic to distinguish different types of activities; difficult to relate data to individual workers
• *Diaries*: burdening for participants → low compliance, limited reliability
• *Repeated measures with pagers, PDA’s or text messages*: limited practicality and quality of data

In this project we need:

• More detailed data: workplace type + activity type + satisfaction
• More reliable data: repeated measures, on-the-spot reporting
• Combination of behaviour, satisfaction and personal characteristics
Experience Sampling Method (ESM)

- ESM is familiar with *Work Sampling* and *Ecological Momentary Assessment*

- Self-reported, repeated measures at randomized moments during a certain time span
  - Enables analysis of time spent at different activities and places
  - Enables analysis of developments over time
  - Enables analysis of behavioural patterns

- Data are recorded on-the-spot, while participants are performing their daily activities in their regular (work) environment
The tool at a glance

1. Online questionnaire & registration

2. Smartphone app

3. Individual feedback

I can perform this activity at this workplace to my full content
(activity type × workplace type)

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Open Workplace</th>
<th>Semi-enclosed Workplace</th>
<th>Shared Office</th>
<th>Private Office</th>
<th>Meeting Room</th>
<th>Company Restaurant of Coffee Corner</th>
<th>Lounge Workplace</th>
<th>Touchdown Workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual work that requires high concentration</td>
<td>-2.0</td>
<td>1.0</td>
<td>2.0</td>
<td>-1.5</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual work that requires low concentration</td>
<td>0.5</td>
<td>2.0</td>
<td>-</td>
<td>-</td>
<td>1.2</td>
<td></td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Planned face-to-face communication</td>
<td>-</td>
<td>-</td>
<td>1.2</td>
<td>0.8</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-planned face-to-face communication</td>
<td>-0.6</td>
<td>-1.0</td>
<td>1.8</td>
<td>1.8</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication through phone or videoconference</td>
<td>-1.5</td>
<td>-</td>
<td>1.0</td>
<td>-</td>
<td>2.0</td>
<td></td>
<td>-1.0</td>
<td></td>
</tr>
<tr>
<td>Break</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.5</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Planned face-to-face communication
Non-planned face-to-face communication
Communication through phone or videoconference
Break
Preliminary results

1. Major discrepancies between expected and actual activity patterns

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Expected</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication through phone/video</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Non-planned collaboration/communication</td>
<td>15%</td>
<td>30%</td>
</tr>
<tr>
<td>Planned collaboration/communication</td>
<td>25%</td>
<td>20%</td>
</tr>
<tr>
<td>Non-concentrated individual work</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Concentrated individual work</td>
<td>10%</td>
<td>30%</td>
</tr>
</tbody>
</table>
Preliminary results

2. Misfits caused by specific combinations of workplace and activity

Workplaces used for concentrated work

- Open office
- Shared office
- Private office
- Lounge workplace

Workplace satisfaction
Preliminary results

3. Satisfaction levels correlate with psychological needs

Need for Privacy

Need for Relatedness

Satisfaction with open office for concentrated work
## Preliminary results

4. Workplace choices deviate strongly from workplace preferences

<table>
<thead>
<tr>
<th>Choice matches preference?</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied</td>
<td>38%</td>
<td>39%</td>
<td>77%</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>6%</td>
<td>18%</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>44%</td>
<td>57%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Conclusions and future perspectives

• Promising new method for data collection in ABW environments
  – More reliable assessment of needs
  – More precise prediction of behaviour
  – More precise diagnosis of P-E misfits
  – More insight in individual differences

• Research perspectives
  – Analyse relationships between variables
  – Expand database → improve reliability, cross-case analysis
  – Other fields of study?

• Application in practice
  – Optimize ABW design and implementation
  – Stimulate behavioural change
Curious?

www.myplace2work.com


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