I SPY, I SPY
WITH MY LITTLE EYE

The effect of watching eyes on pre-swim shower behaviour

Joyce Ribbers, University of Twente
Maarten Keuten, Delft University
Thomas van Rompay, University of Twente
Previous behavioural studies

• Amsterdam conference
  – Influence of minimal interventions
  – Information based intervention was best
  – Carrying stuff was a barrier for showering

• Zell am See conference
  – Improved research location
  – Normative intervention was best
  – Carrying stuff was still a barrier
3rd behavioural study

The watching eyes phenomenon

• Feel like being watched
  – Socially approved behaviour
  – Automatically (unconscious)
The watching eyes phenomenon

- Feel like being watched
- Socially approved behaviour
- Automatically (unconscious)

Does the phenomenon work for swimming pool hygiene as well?
Which pair of eyes?

- Pre-test (32 p.o.e)
- Focus (10 p.o.e)
- Questionnaire (1-7)
  - Realistic
  - Serious (authority)
  - Appropriate for Swimming Pool
Influence “Watching Eyes”

- Influence watching eyes
- Influence symbol
- combinations

<table>
<thead>
<tr>
<th></th>
<th>No symbol</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>No “Watching Eyes”</td>
<td>Reference</td>
<td>Symbol-only</td>
</tr>
<tr>
<td>“Watching Eyes”</td>
<td>Eyes-only</td>
<td>Eyes + Symbol</td>
</tr>
</tbody>
</table>
Poster design
Influence “Watching Eyes”

Measured by means of:
1. Observation
2. Questionnaire
3. Water quality sampling
Intervention design

• Each week a new intervention
• 3 observation days (1 weekend day)
• 3 timeslots (10-12, 13-15, 17:30-19:30)
• Water samples 2x / observation day
  – Urea
  – NPOC
  – TN
• Questionnaire on 4th day
## Observation list; data collection

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Time</th>
<th>Temperature:</th>
<th>No. Shower ( + / - )</th>
<th>Age (10+, 20+, 30+, 40+, 50+, 60+, 70+, 80+, 90+)</th>
<th>Gender (m/v)</th>
<th>Company ( + / - )</th>
<th>Children (0-10) ( + / - )</th>
<th>Hair wet ( + / - )</th>
<th>shampoo/soap ( + / - )</th>
<th>Shower time (# x button pushed)</th>
<th>Belongings ( + / - )</th>
<th>Comments (x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Questionnaire

• General information (gender, age)
• Pre-swim shower? Companions?
• Seen poster? Content? Purpose?
• Hygiene perception (1-7)
• Importance of hygiene (1-7)
• Own behaviour? And others? (1-7)
Results

- 596 observations
- 126 questionnaires
- 24 water samples in duplo
## Results

### Observed pre-swim shower %

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Eyes-only</th>
<th>Eyes + Symbol</th>
<th>Symbol-only</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>36.1</td>
<td>48.2</td>
<td>51.1</td>
<td>49.4</td>
</tr>
<tr>
<td>Female</td>
<td>34.5</td>
<td>43.2</td>
<td>39.3</td>
<td>49.4</td>
</tr>
<tr>
<td><strong>Carrying belongings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30.4</td>
<td>37.0</td>
<td>31.4</td>
<td>37.3</td>
</tr>
<tr>
<td>No</td>
<td>40.0</td>
<td>54.7*</td>
<td><strong>64.5</strong>*tt**</td>
<td><strong>62.0</strong>*tt**</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01, *** p < .001; indicating a within-group difference, in bold. † p < .05, ‡ p < .01,

*** p < .001; indicating a between-group difference, in italic.
Questionnaire

• 76.6% states having pre-swim showers

Propositions:
• Scale 1-7 (1 means: totally disagree)
  • Perception of hygiene (1-7); 6.09
  • Importance of hygiene (1-7); 6.74
  • Hygienic behaviour (1-7); 6.63
## Water quality

- Release per bather (mg/L) per hour

<table>
<thead>
<tr>
<th>parameter</th>
<th>reference</th>
<th>Eyes-only</th>
<th>Eyes + symbol</th>
<th>Symbol-only</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN</td>
<td>1.27</td>
<td>0.56</td>
<td>0.30</td>
<td>0.40</td>
</tr>
</tbody>
</table>
Influence # bathers in pool

Results
Resume results

![Chart showing pre-swim shower rate and standardised TN release]

- **Observations**
- **Questionnaires**
- **Release / bather**

**Pre-swim shower rate**

- **reference**
- **eyes-only**
- **eyes + symbol**
- **symbol-only**

**Standardised TN release (mg/b/h)**

- **0**
- **30**
- **60**
- **90**
- **120**
- **150**
- **180**
- **210**
- **240**
- **270**
- **300**
I spy I spy, with my little eye

- Watching eyes do influence hygienic behaviour (2-ways)
- Unclear whether Watching eyes are appropriate
- Combination of different interventions for maximum effect
Maximum effect

• Inform them about why
  – on audio in changing area
  – Video/poster in reception area
• Remind them of what (just before entering shower area)
  – Symbol or short informative message
• Facilitate how
  – Place to store bags without getting wet
Thanks for your attention

Questions ?

m.g.a.keuten@tudelft.nl