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)
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>
Methods

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>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></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></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></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></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></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></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></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>Sex</th>
<th>Control</th>
<th>Eyes-only</th>
<th>Eyes + Symbol</th>
<th>Symbol-only</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Carrying belongings</th>
<th>Control</th>
<th>Eyes-only</th>
<th>Eyes + Symbol</th>
<th>Symbol-only</th>
</tr>
</thead>
<tbody>
<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>64.5***ff</td>
<td>62.0***ff</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.
Results

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

<table>
<thead>
<tr>
<th>Standardised TN release (mg/b/h)</th>
<th># bathers per hour (mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>reference</td>
<td></td>
</tr>
<tr>
<td>eyes-only</td>
<td></td>
</tr>
<tr>
<td>eyes+symbol</td>
<td></td>
</tr>
<tr>
<td>symbol-only</td>
<td></td>
</tr>
</tbody>
</table>

Graph showing the relationship between the number of bathers in the pool and the standardised TN release.
Resume results

[Bar chart showing comparison of pre-swim shower rates and standardised TN release across different conditions: reference, eyes-only, eyes + symbol, symbol-only.]
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
Conclusions

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 ?