Systematic Behaviour Change using the RANAS approach: handwashing campaign in rural and urban Zimbabwe


Prof. Dr. phil. et dipl. zool. Hans-Joachim Mosler

Environmental Social Sciences
Environmental & Health Psychology

Eawag: Swiss Federal Institute of Aquatic Science and Technology
How to introduce behavior change?

Promotion of behavior

Behaviour change starts in the head of the people!

Behavioral factors
How to introduce behavior change?

1. Identify behavioral factors
2. Measure and calculate differences between doers and non-doers
3. Select behavior change techniques accordingly
4. Design & implement software
5. Monitor change in behavioral factors and behavior

Drinking safe water
- Factor A
- Factor B
- Factor C

NOT drinking safe water
- Factor A
- Factor B
- Factor C
The RANAS Systematic Behavior Change Approach

<table>
<thead>
<tr>
<th>Phase</th>
<th>Tools</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify potential behavioural and contextual factors</td>
<td>Qualitative survey RANAS model</td>
<td>Behavioural factors to test</td>
</tr>
<tr>
<td>2. Measure &amp; determine behavioural factors</td>
<td>Quantitative survey Doer/non-doer Analysis</td>
<td>Behavioural factors to change</td>
</tr>
<tr>
<td>3. Select BCTs &amp; design behaviour change strategies</td>
<td>Catalog of BCTs</td>
<td>Behaviour change techniques to apply</td>
</tr>
<tr>
<td>4. Implement and evaluate behaviour change strategies</td>
<td>Before-after-control (BAC) trial</td>
<td>Best behaviour change strategy to apply at scale</td>
</tr>
</tbody>
</table>

Effective behaviour change
Am I at risk? 
Why? 
What does it cost/bring? 
Do I like it? 
What will others say? 
Can I do it? 
How to manage it? 
How to do it?
The RANAS-Model: Risk, Attitudes, Norms, Ability and Self-regulation

- **Information behavior change techniques**: Am I at risk? Why?
- **Persuasion behavior change techniques**: What does it cost/bring?
- **Norm behavior change techniques**: What will others say?
- **Planning & behavior prevention behavior change techniques**: Can I do it?
- **Self-regulation behavior change techniques**: How to manage it?

- **Risk factors**: Health knowledge, Vulnerability, Severity
- **Attitude factors**: Beliefs about costs and benefits, Feelings
- **Norm factors**: Others’ behavior, Others’ (dis)approval, Personal importance
- **Ability factors**: How-to-do knowledge, Confidence in performance, Confidence in continuation, Confidence in recovering
- **Self-regulation factors**: Action planning, Action control, Barrier planning, Remembering, Commitment

- **Behavior A**: a person’s understanding and awareness of the health risk
- **a person’s positive or negative stance towards a behavior**: Habit
- **a person’s perceived social pressure towards a behavior**: Use
- **a person’s confidence in her or his ability to practice a behavior**: Intention
- **a person’s attempts to plan and self-monitor a behavior and to manage conflicting goals and distracting cues**: How to do it?

Social context | Physical context | Personal context

---

The RANAS Model: Risks, Attitudes, Norms, Abilities, and Self-regulation

- **Information behavior change techniques**
- **Persuasive behavior change techniques**
- **Norm behavior change techniques**
- **Infrastructural, skill & ability behavior change techniques**
- **Planning & relapse prevention behavior change techniques**

**Risk factors:**
- Health knowledge
- Vulnerability
- Severity

**Attitude factors:**
- Beliefs about costs and benefits
- Feelings

**Norm factors:**
- Others' behavior
- Others' (dis)approval
- Personal importance

**Ability factors:**
- How-to-do knowledge
- Confidence in performance
- Confidence in continuation
- Confidence in recovering

**Self-regulation factors:**
- Action planning
- Action control
- Barrier planning
- Remembering
- Commitment

**Social context**

**Physical context**

**Personal context**

**Behavior A**
- Intention
- Use
- Habit

**Behavior B**
- Intention
- Use
- Habit

Case Study: Design, Implementation and Evaluation of a Handwashing Campaign in Zimbabwe

Urban: Harare
Rural: Masvingo Province
Qualitative survey: Collect information on psychosocial and contextual factors that might influence the target behavior.

Qualitative Interviews:
- How readily available is water?
- How readily available is soap?
- What are reasons for washing or not washing hands with soap?
- Which promotion activities for handwashing have been implemented?
- By whom, when, and where were they implemented?

Spot checks:
- What are the local handwashing facilities?
- Where are they located?
- Is there water?
- Is there soap?
Allocate psychosocial and contextual factors to the RANAS model

- **Risk factors:**
  - Health knowledge
  - Vulnerability
  - Severity

- **Attitude factors:**
  - Beliefs about costs and benefits
  - Feelings

- **Norm factors:**
  - Others’ behavior
  - Others’ (dis)approval
  - Personal importance

- **Ability factors:**
  - How-to-do knowledge
  - Confidence in performance
  - Confidence in continuation
  - Confidence in recovering

- **Self-regulation factors:**
  - Action planning
  - Action control
  - Barrier planning
  - Remembering
  - Commitment

- **Additional factors:**
  - Hindrance

---

I am washing hands to prevent diarrhea!

I don’t see why I should wash my hands with soap!

I don’t wash hands when I am in a hurry!

Availability of soap.

Availability of handwashing device.

Availability of water.

---

Social context  Physical context  Personal context
The RANAS Systematic Behavior Change Approach

**Phase**

1. Identify potential behavioural and contextual factors
2. Measure & determine behavioural factors
3. Select BCTs & design behaviour change strategies
4. Implement and evaluate behaviour change strategies

**Tools**

- Qualitative survey RANAS model
- Quantitative survey Doer/non-doer Analysis
- Catalog of BCTs
- Before-after-control (BAC) trial

**Output**

- Behavioural factors to test
- Behavioural factors to change
- Behaviour change techniques to apply
- Best behaviour change strategy to apply at scale

Effective behaviour change
<table>
<thead>
<tr>
<th>Block</th>
<th>Factor</th>
<th>Exemplary questionnaire item (with response scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviour</td>
<td>Self-reported handwashing</td>
<td>In the following situations, how often do you wash your hands with soap and water? Please tell us in how many out of 10 times you wash your hands with soap and water … <em>Before eating? Before preparing/cutting food?</em> …</td>
</tr>
<tr>
<td>Risk</td>
<td>Vulnerability</td>
<td>If you always wash your hands with soap and water before handling food, how high do you feel is the risk that you contract diarrhea? <em>(1 = no risk to 5 = high risk)</em></td>
</tr>
<tr>
<td></td>
<td>Severity</td>
<td>Imagine that you contracted diarrhea how severe would be the impact on your life in general? ‘ <em>(1 = not severe to 5 = very severe)</em> ’</td>
</tr>
<tr>
<td></td>
<td>Health Knowledge</td>
<td>Can you tell me what causes diarrhoea? <em>(open ended question)</em></td>
</tr>
<tr>
<td>Attitude</td>
<td>Beliefs about costs and benefits</td>
<td>How effortful do you think is always washing hands with soap and water before handling food? <em>(1 = not at all to 5 = very much)</em></td>
</tr>
<tr>
<td></td>
<td>Feelings</td>
<td>How disgusting do you think is it not to always wash hands with soap and water before handling food? <em>(1 = not at all to 5 = very much)</em></td>
</tr>
<tr>
<td>Norm</td>
<td>Others’ behavior</td>
<td>How many people in your household always wash hands with soap and water after contact with stool? <em>(1=Almost) nobody to 5=(Almost) all of them)</em></td>
</tr>
<tr>
<td></td>
<td>Others’ (dis)approval</td>
<td>People who are important to you, how much do they think you should always wash your hands with soap and water? <em>(1=not at all to 5=very much)</em></td>
</tr>
</tbody>
</table>

Example Exemplary questionnaire item (with response scale):

- In the following situations, how often do you wash your hands with soap and water? Please tell us in how many out of 10 times you wash your hands with soap and water … *Before eating? Before preparing/cutting food?* …
- If you always wash your hands with soap and water before handling food, how high do you feel is the risk that you contract diarrhea? *(1 = no risk to 5 = high risk)*
- Imagine that you contracted diarrhea how severe would be the impact on your life in general? ‘ *(1 = not severe to 5 = very severe)* ’
- Can you tell me what causes diarrhoea? *(open ended question)*
- How effortful do you think is always washing hands with soap and water before handling food? *(1 = not at all to 5 = very much)*
- How disgusting do you think is it not to always wash hands with soap and water before handling food? *(1 = not at all to 5 = very much)*
- How many people in your household always wash hands with soap and water after contact with stool? *(1=Almost) nobody to 5=(Almost) all of them)*
- People who are important to you, how much do they think you should always wash your hands with soap and water? *(1=not at all to 5=very much)*
# Doer/non-doer analysis

## 1. Classification based on behavior

## 2. Comparison of doers and non-doers

### Doers: handwashing ≥ 9 out of 10 times

<table>
<thead>
<tr>
<th>Person</th>
<th>Score in perceived effort</th>
<th>Score in others’ approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>F</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>H</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>J</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>L</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>P</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>R</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>S</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>U</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>V</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>W</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Mean score**

<table>
<thead>
<tr>
<th>Score in perceived effort</th>
<th>Score in others’ approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.46</td>
<td>3.00</td>
</tr>
</tbody>
</table>

### Non-doers: handwashing < 9 out of 10 times

<table>
<thead>
<tr>
<th>Person</th>
<th>Score in perceived effort</th>
<th>Score in others’ approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>E</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>G</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>K</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>M</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>N</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>O</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Q</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>T</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>X</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Y</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Z</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

**Mean score**

<table>
<thead>
<tr>
<th>Score in perceived effort</th>
<th>Score in others’ approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00</td>
<td>1.46</td>
</tr>
</tbody>
</table>
Doer/non-doer analysis

Differences between doers and non-doers

Behavioral factors
The RANAS Systematic Behavior Change Approach

**Phase**

1. Identify potential behavioural and contextual factors
   - Qualitative survey
   - RANAS model
   - Behavioural factors to test

2. Measure & determine behavioural factors
   - Quantitative survey
   - Doer/non-doer Analysis
   - Behavioural factors to change

3. Select BCTs & design behaviour change strategies
   - Catalog of BCTs
   - Behaviour change techniques to apply

4. Implement and evaluate behaviour change strategies
   - Before-after-control (BAC) trial
   - Best behaviour change strategy to apply at scale

Effective behaviour change
RANAS Catalog of 36 behavior change techniques

<table>
<thead>
<tr>
<th>Behavioral factors</th>
<th>Behavior change techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning &amp; relapse prevention BCTs – Self-regulation factors</td>
<td></td>
</tr>
<tr>
<td>Barrier planning</td>
<td>30. <strong>Prompt coping with barriers</strong>: ask participants to identify barriers to behavior change and plan solutions to those barriers.</td>
</tr>
<tr>
<td></td>
<td>31. <strong>Restructure the social and physical environment</strong>: prompt participants to remove social and physical bolsters of the undesired behavior so as to interrupt habitual procedures.</td>
</tr>
<tr>
<td></td>
<td>32. <strong>Prompt to resist social pressure</strong>: ask participants to anticipate and prepare for negative comments from others or for pressures towards the undesired behavior.</td>
</tr>
<tr>
<td></td>
<td>33. <strong>Provide negotiation skills</strong>: prompt participants to reflect on others’ perspectives to find compromises that benefit both sides and arguments bolstering them.</td>
</tr>
<tr>
<td>Remembering</td>
<td>34. <strong>Use memory aids and environmental prompts</strong>: prompt the participant to install memory aids or to exploit environmental cues so as to help to remember the new behavior and to trigger it in the right situation.</td>
</tr>
<tr>
<td>Commitment</td>
<td>35. <strong>Prompt goal setting</strong>: invite participants to formulate a behavioral goal or intention.</td>
</tr>
<tr>
<td></td>
<td>36. <strong>Prompt to agree on a behavioral contract</strong>: invite the participant to agree to a behavioral contract to strengthen her/his commitment to a set goal.</td>
</tr>
</tbody>
</table>
Develop and design behavior change strategies

Strategy 4 (out of 4)

Slogan: Handwashing? Of course! We all do it.

Communication channel: Interpersonal: Community meeting.

BCT 10 Prompt public commitment

Activities: Participants come in front of the community. They shout the slogan as sign of their commitment.

Targeted behavioral factors: Others’ behavior
Implement behavior change strategies

BCT 21 Organize social support
BCT 10 Prompt public commitment
BCT 26: Prompt specific planning: when, where, and how plans

A plan when to wash hands in Zimbabwe
The RANAS Systematic Behavior Change Approach

1. Identify potential behavioural and contextual factors
   - Qualitative survey
   - RANAS model
   - Behavioural factors to test

2. Measure & determine behavioural factors
   - Quantitative survey
   - Doer/non-doer Analysis
   - Behavioural factors to change

3. Select BCTs & design behaviour change strategies
   - Catalog of BCTs
   - Behaviour change techniques to apply

4. Implement and evaluate behaviour change strategies
   - Before-after-control (BAC) trial
   - Best behaviour change strategy to apply at scale

Effective behaviour change
Evaluation: Change in observed handwashing with soap

Observed handwashing behavior in households

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>food-related</td>
<td>25%</td>
<td>0%</td>
<td>25%</td>
<td>0%</td>
</tr>
<tr>
<td>stool related</td>
<td>30%</td>
<td>0%</td>
<td>30%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Evaluation: Change in psychosocial factors

Difference in difference: change in intervention group minus change in control group
Systematic behavior change using the RANAS approach enables:

1. The exact determination of the behavioral factors to be changed
2. The focused selection of the corresponding behavior change strategies
3. Their proven record of success
Systematic Behavior Change in Water Sanitation and Hygiene
A practical guide using the RANAS approach

Version 1.0, August 2016