Questionnaire design for smartphones (and tablets): an on-going journey from mobile unfriendly to mobile friendly to mobile optimization

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Mobile unfriendly surveys
What can we do?

1. Do nothing

2. Explicitly discourage the use of a mobile device

3. Make the survey mobile friendly

4. Optimize surveys for mobile devices

5. *Build a specific app for mobile devices*
1. Doing nothing: Can we get away with it?

1. Is the amount of mobile respondents neglectable?
2. Are mobile respondents similar to non-mobile respondents (background & answers)?
Is the amount of mobile respondents neglectable?

Table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Tablet</th>
<th>Smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2013</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>2014</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>2015</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>2016</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>2017</td>
<td>10%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Graph:

- Tablet
- Smartphone
Are mobile respondents similar to non-mobile respondents?

<table>
<thead>
<tr>
<th></th>
<th>Tablet (vs. Desktop)</th>
<th>Smartphone (vs. Desktop)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>No difference</td>
<td>younger</td>
</tr>
<tr>
<td>Gender</td>
<td>No/small difference</td>
<td>More female</td>
</tr>
<tr>
<td>Income</td>
<td>No difference</td>
<td>Lower</td>
</tr>
<tr>
<td>Education</td>
<td>No/small difference</td>
<td>lower</td>
</tr>
<tr>
<td>Ethnicity /nationality</td>
<td>No difference</td>
<td>More ethnic background</td>
</tr>
</tbody>
</table>

**Differences in answer distribution (device effects)**

- Longer question text
- Grid/matrix questions
What can we do?

1. Do nothing

2. Explicitly discourage the use of a mobile device

3. Make the survey mobile friendly

4. Optimize surveys for mobile devices

5. Build a specific app for mobile devices
2. Explicitly discourage the use of a mobile device

- In the survey invitation
  → doesn’t work*
- On the introduction page
  → doesn’t work*
- Blocking mobile device access
  → This really doesn’t work. You will lose about half of your mobile respondents.

* Based on only a few studies
What can we do?

1. Do nothing

2. Explicitly discourage the use of a mobile device

3. Make the survey mobile friendly

4. Optimize surveys for mobile devices

5. Build a specific app for mobile devices
3. Make the survey mobile friendly

What is mobile friendly?
– Content is displayed properly
– Text is readable without the need to zoom in
– Selecting items is easy
– No horizontal scrolling
– Grid questions are transformed to multiple single choice questions

Radio Buttons: do’s

ERVARING MET COOLBLUE.
In hoeverre bent u tevreden met:

- het oriëntatieproces

- zeer tevreden
- n.v.t.
- zeer ontevreden
- ontvreden
- niet ontevreden / niet tevreden
- tevreden
- zeer tevreden
- n.v.t.

ENTHOUSIASME.
Zou u ons aanbevelen bij een vriend of collega?
0 = zeer onwaarschijnlijk, 10 = zeer waarschijnlijk
Check boxes: do’s

1. Which of the following devices do you use to connect to the internet? (Check all that apply)
   - Enter prise digital assistant (EDA)
   - Personal digital assistant (PDA)
   - Laptop computer
   - Desktop computer
   - Computer tablet
   - Smart phone
   - Other (please specify)

2. Which of the following devices do you most prefer to use to connect to the internet?
Text Fields: do’s

- Content comparable, although
  - Shorter
  - More abbreviations
  - More typos
  - More auto-correct errors
- Use multiple fields for multi-section answers (birth date)
During the current school year, about how often have you done the following?

- Prepared two or more drafts of a paper or assignment before turning it in
  - Very often
  - Often
  - Sometimes
  - Never

- Come to class without completing readings or assignments
  - Very often
  - Often
  - Sometimes
  - Never

- Attended an art exhibit, play, or other arts performance (dance, music, etc.)
  - Very often
  - Often
  - Sometimes
  - Never

- Asked another student to help you

Bent u het eens of oneens met de volgende uitspraken?

Mijn eigen geluk hangt sterk af van het geluk van mensen om mij heen.

- 1 helemaal oneens
- 2
- 3
- 4
- 5
- 6
- 7 helemaal eens

Ik weet het niet

Wilt u van de volgende langdurige ziekten en aandoeningen aangeven of u die heeft of in de afgelopen 12 maanden heeft gehad?

- Migraine of regelmatig ernstige hoofdpijn
  - Ja
  - Nee

- Astma
  - Ja
  - Nee

- COPD, chronische bronchitis, longenfibrose
  - Ja
  - Nee

- Psoriasis
  - Ja
Sliders

- Avoid using sliders to collect precise values
- Sliders may produce
  - longer completion times
  - Lower quality responses
  - Different item means
Avoid using drop-down boxes
– produces stronger primacy effects
– Higher item missing's
– More errors/mistakes
– Layout dropdown boxes vary between browsers

If you do use a drop-down box, make sure the respondent knows the name of what they want and sort the list in a logical way.
What can we do?

1. Do nothing

2. Explicitly discourage the use of a mobile device

3. Make the survey mobile friendly → bare minimum

4. Optimize surveys for mobile devices

5. Build a specific app for mobile devices
4. Optimizing surveys for mobile

Limited or no research available

– Number of questions on a screen (Paging vs. scrolling)
– Automated scrolling/auto forward
– Question wording (length)
– Radio buttons vs. big buttons
– Questionnaire length
– Icons instead of text
– ...

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Number of questions on a screen

- Paging (1 question per screen)
  - No scrolling needed
  - Longer loading time
  - More clicking
  - Limited content effects

- Scrolling (1 screen for all questions)
  - Faster
  - Need to scroll
  - Risk of item-missings
  - More difficult with routing
Automated scrolling/auto forward

- Could be faster than desktop
- Need for animated movement
- Potential risks for straightlining
- It could harm data quality
Question wording (length)

– Complicated text is about twice as hard to read on a small device (Nielsen & Budiu, 2013)
– Device effect for questions with a lot of text

– Can we shorten questions & question text without changing the question?
Radio buttons vs. big buttons
**Questionnaire length**

### Survey on Living conditions 2015

<table>
<thead>
<tr>
<th>Device</th>
<th>Breakoff per minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone</td>
<td>0.70%</td>
</tr>
<tr>
<td>Tablet</td>
<td>0.36%</td>
</tr>
<tr>
<td>Computer</td>
<td>0.25%</td>
</tr>
</tbody>
</table>
Icons

- Humans are better at picture recognition than reading
- Finding the perfect icon is hard
- Less errors when showing both icon and text
- A lot of continuous experimenting is needed to finetune icons!
What can we do?

1. Do nothing

2. Explicitly discourage the use of a mobile device

3. *Make the survey mobile friendly* \(\rightarrow\) bare minimum

4. Optimize surveys for mobile devices \(\rightarrow\) in progress

5. *Build a specific app for mobile devices*
5. Build a specific app for mobile devices

- Use 24-7 availability
  - diary studies
  - Flash questionnaires
- Gamification
- Sensors
  - GPS
  - Health
  - Environment
  - Directly linked to you brain?
- Link to wearables
- Augmented/Virtual reality?
Hands free survey using VR

- Use cardboard box
- Speech recognition
- Eye-tracking
- [www.mdb3d.nl/cbs](http://www.mdb3d.nl/cbs)
Conclusions

– Make a special smartphone layout
– Tablet layout can stay similar to the desktop
– The best practices are not set in stone
– Most research relies on sub-optimal samples
– If you want to be safe (minimize potential device effects), only use question types that are known to work across devices (radio buttons, check boxes and text entry boxes)