FIELD STUDIES
QUESTIONNAIRES

CPSC 544 FUNDAMENTALS IN DESIGNING INTERACTIVE COMPUTATION TECHNOLOGY FOR PEOPLE (HUMAN COMPUTER INTERACTION)

WEEK 3 – CLASS 5

© Joanna McGrenere
Includes slides from Leila Aflatoony, Karon MacLean and Jessica Dawson
TODAY

• Admin [5 min]
• Questionnaires [30 min]
• In class activity [20 min]
  • Redesign a questionnaire

• Discussion of readings [20 min]
REMINDERS...

• Team contract
  • Due today
• First interim-milestone-observation
  • Due tomorrow
  • We will get Canvas Groups set up today
• You have access to this room (FSC 2330)
LEARNING GOALS

• explain when and why questionnaires may be appropriate evaluation technique choice; discuss their pros/cons

• list different *styles of questions* (open, closed, likert, etc.) and give examples of what they are appropriate for;

• give examples of data different kinds of questions can collect

• discuss important considerations for designing and administering a questionnaire
QUESTIONNAIRES
WHEN & WHY?

• to understand: good for reaching lots of people early on
  • e.g., frustration stories with cross-device application use
• to evaluate prototypes: typically used in combination with other methods (but not always)

• also called ‘surveys’
  • Survey is a complete methodological approach: a process for gathering data that could involve a wide variety of data collection methods, including a questionnaire (list of questions).
QUESTIONNAIRES
WHAT CAN YOU DO WITH THEM?

• closed or open questions
• evidence of wide general opinion

pros/cons:
• can reach a wide subject group (e.g. mail or email)
• does not require presence of evaluator
• many results can be quantified
• can have low response rate and/or low quality response
WHAT KINDS OF DATA CAN YOU COLLECT?

questionnaires can gather both:

- subjective AND objective data
- qualitative AND quantitative data
STYLES OF QUESTIONS: OPEN-ENDED

• asks for opinions
• good for general *subjective information*
  • but difficult to analyze rigorously

for example, “Can you suggest any improvements to the interface?”
STYLES OF QUESTIONS: CLOSED

• restricts responses by supplying the choices for answers
• can be easily analyzed …
• but can still be hard to interpret, if questions / responses not well designed!
  • options should be very specific

Do you use computers at work:
  O often                O sometimes                O rarely

In your typical work day, do you use computers:
  O over 4 hrs a day
  O between 2 and 4 hrs daily
  O between 1 and 2 hrs daily
  O less than 1 hr a day
STYLES OF QUESTIONS: COMBINING OPEN-ENDED & CLOSED QUESTIONS

- gets specific response, but allows room for user’s opinion

It is easy to recover from mistakes:

<table>
<thead>
<tr>
<th>disagree</th>
<th>agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

comment:

...the undo facility is great!...
STYLES OF QUESTIONS (CLOSED): SCALAR --- LIKERT SCALE

- measure opinions, attitudes, and beliefs
- ask user to judge a specific statement on a numeric scale
- scale usually corresponds to *agreement or disagreement* with a statement
- odd or even numbered (what’s the difference?)

Characters on the computer screen are hard to read:

strongly agree

1 2 3 4 5

strongly disagree
STYLES OF QUESTIONS (CLOSED): SCALAR --- SEMANTIC DIFFERENTIAL SCALE

- similar to Likert scales - also measure opinions, attitudes, beliefs
- but explore a range of *bipolar attitudes* about a particular item
- each pair of attitudes is represented as a pair of adjectives
  → generally easier cognitively to answer than Likert

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Connect is:

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Poorly</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Well designed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td>Confusing</td>
</tr>
<tr>
<td>Attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td>Ugly</td>
</tr>
</tbody>
</table>
STYLES OF QUESTIONS (CLOSED): RANKED

• respondent places an ordering on items in a list
• useful to indicate a *user’s preferences*
• forced choice

Rank the usefulness of these methods of issuing a command
(1 most useful, 2 next most useful..., 0 if not used)

__2__ command line
__1__ menu selection
__3__ control key accelerator
STYLES OF QUESTIONS (CLOSED): MULTI-CHOICE

• respondent offered a choice of explicit responses

How do you most often get help with the system? (tick one)

☐ on-line manual
☐ paper manual
☐ ask a colleague

Which types of software have you used? (tick all that apply)

☐ word processor
☐ data base
☐ spreadsheet
☐ compiler
DESIGNING A QUESTIONNAIRE

establish the **purpose** of the questionnaire:

- what information is sought?
- how would you analyze the results?
- what would you do with your analysis?
- higher-level: What are your research questions???

determine the **audience** you want to reach

- typical when using questionnaire for understanding: random sample of between 50 and 1000 users of the (intended) product

test everything before sending it out:

- test the **wording**
- test the **timing**
- test the **validity**
- test the **analysis**
DESIGNING GOOD QUESTIONS

unlike interviews, hard to ask a follow-up questions

✴ extra important to get questions right

a few general guidelines:

• be specific and clear about how users should answer
• keep questions short and easy to follow
• avoid ‘double-’ and ‘triple-barreled’ questions
  • e.g., how often have you used the system and what do you like about it?
• avoid ambiguity and too much room for interpretation
• avoid biasing responses as much as possible
VALIDITY

are your questions getting at what you want?

can increase validity by. . .

• piloting (see how people answer)
• triangulation (target hypotheses with multiple questions)
• use previously validated questionnaires (studied extensively to confirm they gather what they intend to gather)
TRADEOFFS

questionnaires are *limited by length and complexity*
  • can’t always ask about everything you want to try to focus questions on what you really want to learn
    • a few focused questions more useful than many general ones.
    • if the answer is obvious, you probably don’t need to ask it!

but be careful of focusing too much on what you expect to the exclusion of other explanations
## ADMINISTERING QUESTIONNAIRES

<table>
<thead>
<tr>
<th>Method</th>
<th>Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>in-person administration</td>
<td>• requires time to administer, but highest completion rate</td>
</tr>
<tr>
<td>“take home” (conventional)</td>
<td>• often subjects don’t complete / return the questionnaire</td>
</tr>
<tr>
<td>email</td>
<td>• permits subjects to answer on their own time</td>
</tr>
<tr>
<td></td>
<td>• responses may tend to be more free-form</td>
</tr>
<tr>
<td></td>
<td>• attachments may be a problem</td>
</tr>
<tr>
<td></td>
<td>• response rates depend on trust in source</td>
</tr>
<tr>
<td>web-based forms</td>
<td>• standardize formats and responses</td>
</tr>
<tr>
<td></td>
<td>• Java/Javascript to ensure correct / complete</td>
</tr>
<tr>
<td>general issues</td>
<td>• payment or incentives</td>
</tr>
<tr>
<td></td>
<td>• anonymity</td>
</tr>
<tr>
<td></td>
<td>• self-selection</td>
</tr>
</tbody>
</table>
IN-CLASS DISCUSSION: HOW SHOULD THEY DIFFER GIVEN CONTEXT?

to successfully deploy a questionnaire: account for the context and the nature of the questions you’re asking.

what are the important considerations?

E.g., in a hospital setting where…
1. You want to ask patients who just tried a new insulin pump what they thought of it

Versus…

2. You want to widely distributed a survey about general health concerns to people between ages of 20 - 55
BE CONSIDERATE OF YOUR RESPONDENTS AND THE CONTEXT YOU ACCESS THEM IN

• questionnaire length (short is good)
  • think in terms of reasonable completion times
  • do not ask questions whose answers you will not use!
• privacy invasions/anonymity
  • be careful how / what you ask
• motivation
  • why should the respondent bother?
  • usually need to offer something in return
• ability
  • limitations like literacy and disability can come into play
ACTIVITY [20 MIN]

questionnaire critique and redesign

• Work in groups of 2-3
DISCUSSION ON QUESTIONNAIRE READINGS [20 MIN]

Get into group of 3-4 answering the following questions:

• What surprised you? or
• What you disagreed with?
• Others?
ON DECK...

Next class (Tuesday) …

1. Readings (as posted) and researcher journals
2. First Project milestone: Empathy
   ✴️ due on Tuesday two weeks today