TODAY

• Questionnaires [35 min]
• In class activity [20 min]
  • Redesign a questionnaire

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

• Team contract
  • Due today
• First interim-milestone-observation
  • Due tomorrow
• 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?

• evaluating to understand: good for reaching lots of people early on
• evaluation of 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

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you use computers at work?</td>
<td>O often, O sometimes, O rarely</td>
</tr>
<tr>
<td>In your typical work day, do you use computers?</td>
<td>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</td>
</tr>
</tbody>
</table>
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>
</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

### Connect is:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>poorly</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>well designed</td>
</tr>
<tr>
<td>clear</td>
<td></td>
<td></td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>attractive</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</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?

determine the **audience** you want to reach
- typical when using questionnaire for understanding: random sample of between 50 and 1000 users of the 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
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 Oct 2\textsuperscript{nd}
EXTRA SLIDES
SUMMARY: QUESTIONNAIRES

1. establish purpose
2. determine audience
3. variety of administration methods (for different audiences)
4. design questions:
   • many kinds, depend on what you want to learn
   • most important distinction: open/closed (like structured/unstructured interview questions)
5. be considerate of your respondents
6. motivate your respondents (without biasing them).
QUESTIONNAIRE EXAMPLE

**Citation of Research Paper that uses the Example Survey:**


DOI=http://dx.doi.org/10.1145/2399193.2399195