

# Announcement

Exam 2 is scheduled on **Thursday, Oct. 31, 1:15pm -2:30 pm in class** through Blackboard

Cover materials until Oct. 29

Most of materials from class lecture notes

Open-book and open-notes

Make-up exams are not allowed except excusable absences with appropriate documentation and advanced notice.

# Reminder: Assignment – IRB training

- Every student should pass the IRB training and get a certificate of completion
- Submit the certification to Blackboard
- Deadline extended to **11:59pm EST, Friday, Oct. 4, 2024**



Completion Date  
Expiration Date  
Record ID

This is to certify that:

Has completed the following CITI Program course:

<b>Human Research</b>	(Curriculum Group)
<b>Social &amp; Behavioral Researchers</b>	(Course Learner Group)
<b>1 - Basic Course</b>	(Stage)

Under requirements set by:

**University of South Carolina**



Verify at

An example of Certificate of Completion

# Design Alternatives Presentation

- Group 1-2, Oct. 3 (Thursday)
- Group 3-4, Oct. 8 (Tuesday)

Please submit your slides to Blackboard by  
11:59pm EST, Tuesday, Oct. 8, 2024

# Extra Credit – Group Assignment

- A written report summarizing the outcome from the design alternative presentations
  - What are the major concerns from the audience?
  - What are the feedbacks from the audience? You can use some statistics to summarize the feedbacks.
  - How would you propose solution to address the concerns?
  - How would you incorporate the feedback to improve your design?
- **Up to 2 points towards your final grade**
  - calculated based on this written report and the peer evaluation
- Deadline extended: **11:59pm, Friday, Oct. 11**, in Blackboard

# Today's Agenda

- Evaluation methods
  - Survey

# EVALUATION

# What is Evaluation

Evaluation, in general...

- Gather data about the usability of a design for a particular activity by a specified group of users
- **Goals**
  - Assess extent of system's functionality
  - Assess effect of interface on user
  - Identify specific problems with system

# Forms of evaluation

- **Formative (predictive) evaluation**
  - As project is in progress. All through design lifecycle. Early, continuous, and iterative.
  - “Evaluation of the design”
- **Summative evaluation**
  - After a system has been finished. Make judgments about final product.
  - “Evaluating the implementation”



# Evaluation Methods

## Pre- & Post-prototype

- **Surveys: questionnaires**
- **Surveys: interviews**
- **Surveys: focus groups**
- Task Analysis

## Post-prototype

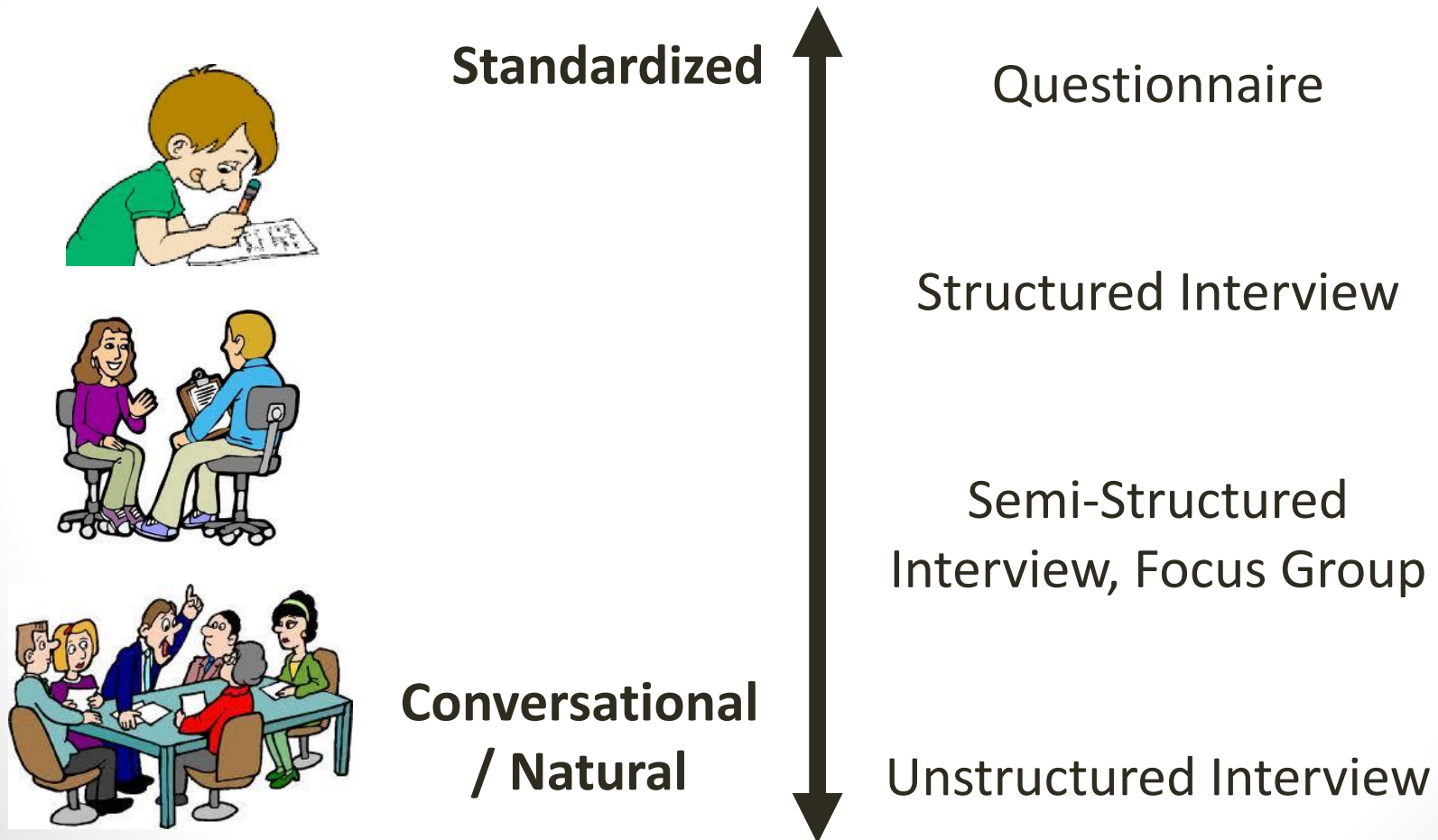
- Heuristic evaluation
- Personas
- Cognitive walkthrough
- Card Sorting
- Field/ ethnographic
- User testing



# SURVEYS & QUESTIONNAIRES

Lecture adapted, in part, from Dr. Philip Kortum

# Comparison of Survey Methods



# Questionnaires

Surveys capture information about the individual

- Demographic data
- Preference and attitude data
- Performance and use data



# Questionnaires

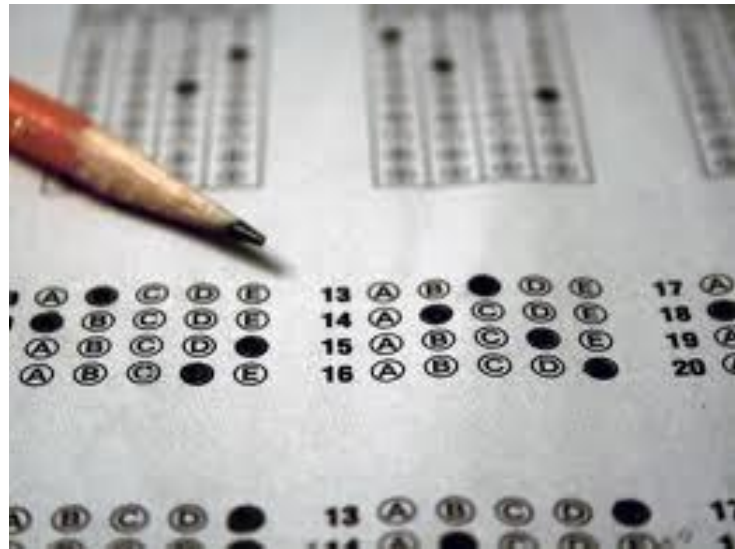
Two fundamental types of questionnaires:

## 1. Standardized (examples?)

- IQ
- ACT/SAT
- LSAT
- NASA-TLX

## 2. Custom

- You create your own



# Standard Questionnaires

- Usually have validity and reliability measures
  - **Validity** – “the quality of being well-grounded, sound, or correct” in Merriam-Webster
  - **Reliability** – “the extent to which an experiment, test, or measuring procedure yields the same results on repeated trials” in Merriam-Webster
- Comparative data is available from other studies
- Cannot collect product specific information

# Custom Questionnaires

- Can collect specific information (e.g., specific problem or product)
- Must establish validity and reliability measures
  - FYI: Some statistical measures to test reliability
  - \*\* Pilot pilot pilot!
- Cannot compare to other studies

# Qualities of a “Good” Questionnaire

1. The responses to the questionnaire help meet the objectives of the research
  - This is important!
2. It has high reliability & validity
3. It is easy for the users to take (ideas?)
  - Easy to understand
  - Maintains the users interest throughout the questionnaire
4. It is easy to administer (ideas?)
5. It is easy to analyze



# Steps in Developing a Questionnaire, Interview, or Focus Group

1. Decide what information is required.
2. Define the target respondents.
3. Choose the method of reaching your target respondents.
4. Decide on question content.
5. Develop the question wording.
6. Put questions into a meaningful order and format.
7. Check the length of the questionnaire/interview/focus group.
8. Pre-test the questions.
9. Develop the final survey form.

# 1: Decide What Information is Required

**\*Notice we don't start by writing questions!\***

- What are the objectives of the study?
- What information is needed to meet these objectives?
  - Don't be tempted to collect "everything but the kitchen sink"
  - What have other researchers asked?
  - What do you already know?



## 2: Define the Target Respondents

- Target audience makes a big difference in how you construct the questionnaire
- Experts and non-experts speak a different language – **think about jargon!**
- Specialized language carries meaning for experts
  - Do you need 2 surveys/interviews?

# 3: Choose Method of Reaching Your Target Respondents

- Personal interviews
- Group interviews (focus groups)
- Telephone interviews
- Mailed questionnaires
- Online questionnaires

# 4: Decide on Question Content

- Questions should be pertinent to the research questions
- Sometimes, you need to start with a 'neutral' question
- May need questions to hide the purpose of the research
  - Image you are testing a prototype of a video conference software with poor video quality
    - Ask about the quality of the conversation, the audio, etc.
    - Kept users from focusing on the video quality only
    - Why?
    - Recall confirmation bias in decision making

# 5: Develop the Question Wording

- **4** types of questions
  - Closed-ended questions
  - Open-ended questions
  - Open response-option questions
  - Likert-scale questions



# 5: Develop the Question Wording:

## Closed-ended Questions

Ask a question and provide a set of possible answers

- What do you like the most about this interface?
  - A) Color scheme
  - B) Layout
  - C) Functionality
  - D) Ease of use

# 5: Develop the Question Wording:

## Closed-ended Questions

- What do you think are pros and cons?
- Pros
  - Does not rely on memory
  - Easy to indicate answer
  - Analysis is very easy
    - Limits the answers to a defined set
- Cons
  - Can't give other responses
  - Answers suggest alternatives that the user may not have considered
  - Researcher must have a good idea of the likely answers



# 5: Develop the Question Wording: Open-ended Questions

Just the question, no suggested answers

- “What do you like the most about this interface?”

# 5: Develop the Question Wording:

## Open-ended Questions

- What do you think are pros and cons?
- Pros
  - Allow the user to construct their own answer
  - Can reveal what issues are most important to the user
  - Captures items that may not have been considered by the researcher
- Cons
  - Difficulty articulating response
    - May forget important points in their answer
  - Answers to the question can vary in dimension
  - Analysis is very difficult

# 5: Develop the Question Wording: Open-ended Questions

- Challenges in open question range of responses.... Answer the following:
- When did you upgrade to Windows 10?
  - When my old computer died
  - When I bought my new computer
  - 6 days ago
  - Pretty recently

# 5: Develop the Question Wording: Open-ended Questions

- Some solutions to the cons
  - Provide hints, examples to guide the responses
    - What are problems with this solution?

# 5: Develop the Question Wording: Open Response-Option Questions

Combines the closed and open ended question types

- What is the best aspect of this interface?
  - It is really fast
  - It is really accurate
  - It is really pretty
  - Other? \_\_\_\_\_

# 5: Develop the Question Wording: Likert-Scale Questions

- Collect information on opinions and attitudes
- Uses scales of agreement, satisfaction, etc.

When approached with a new technology, I tend to be the last of my peers to begin using it.

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>6</sub>	<input type="checkbox"/> <sub>7</sub>
Extremely Unlikely	Quite Unlikely	Slightly Unlikely	Neither	Slightly Likely	Quite Likely	Extremely Likely

## Tips:

- Likert scales always have a true neutral!
- 5 or 7 responses options are most common
- “Likert-like” when no neutral (e.g., four responses / no neutral)

# 5: Develop the Question Wording:

## Question Considerations

- Can the user answer the question?
  - User doesn't know
  - User can't articulate an answer
    - What is the single biggest improvement we could make to Window 10?



# 5: Develop the Question Wording:

## Question Considerations

- Are there external events that bias the answers?
  - After recent news about cyber attacks, responses about security would be elevated
  - Car accident
    - When asked about the most important aspect of a new car, the respondent answers “safety”
    - Before the incident, this may not have been at the top of their list



# 5: Develop the Question Wording: Question Considerations

- Is there ambiguity in the question?

*How bad was your last car accident?*

Really bad

Bad

Not really bad

Not bad at all

2 respondents, who both dented  
the front bumper slightly, no injury...



# 5: Develop the Question Wording:

## Question Considerations

- Is there ambiguity in the question?

*How bad was your last car accident?*

Really bad

Bad

Not really bad

Not bad at all

Respondent 1: 'Really Bad'

- *"I'm only 16, it's my first accident and it was my dad's new sports car, and I wasn't on the insurance for the car."*

Respondent 2: 'Not bad at all'

- *"Well, compared to that 23 car roll-over collision I had with that nuclear-fuel carrying semi last month, this was nothing!"*

How could we fix this?

# 5: Develop the Question Wording:

## Question Considerations

- Is there ambiguity in the question?
  - Do you regularly scan for computer viruses?
    - What is 'regular? Once a day? Once a week? Once a year?
  - How many files are on your computer?
    - Only user created files?
    - Hidden files?
    - Program files?
    - System files?

# 5: Develop the Question Wording:

## Question Considerations

- Are the questions leading?
  - How wonderful is this new interface?
  - What did you dislike about the interface?
    - What if they didn't dislike anything about it?
  - Sometimes best to ask that directly (yes/no), then ask the 'what' question

# 5: Develop the Question Wording:

## Question Considerations

- Are the questions loaded?
  - On a scale of 1 to 5, how ugly are you?
  - Do you believe that big bureaucratic insurance companies spend your health care dollars wisely?

“Loaded” is often subtle and elusive

