

08- Interviews, focus groups, and diary studies + analyzing qualitative data

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Usable Privacy and Security

Carnegie
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Engineering &
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Today's class

- Interviews
- Focus groups
- Diary studies
- Analyzing qualitative data
- Interview demo

Interviews

Why do an interview?

- Obtain rich data from a few participants when you aren't sure what you'll find
 - Explore an area
 - If done properly, lets you identify themes
 - Come up with entirely new perspectives
- Allows you to probe mental models, what people think and why
- Semi-structured interviews allow you to explore issues as they are raised
- Allows you to clarify if people don't understand a question

Limitations

- Time consuming to conduct; large number of interviews may not be feasible
- May not be able to quantitatively generalize frequencies of opinions
- Time consuming to analyze
 - May require transcription and coding
- Hard to completely avoid bias

Developing an interview script

- Keep your questions fairly open-ended
- Follow-up with specific probes:
 - “What files do you have on your computer that you consider valuable?”
 - Follow up with “Do you have valuable photos? Videos? School work?”
- Start with general questions and get more specific so you get unbiased impressions before you direct them to particular details
- A *semi-structured* approach allows real time adjustment
- Write-out all your questions and follow-up probes

Role play and hypothetical scenarios

- Appropriate for some interview studies
- Give participant a role to play or put them in a hypothetical scenario
 - Imagine you just saw this message on your computer screen....
 - Imagine your friend called you and told you he saw this message and asked you what to do....

Prepare: 1 day before interview

- Print out:
 - Protocol, including detailed interview script w/ space to take notes
 - Official consent form
 - Payment sheet
- Prepare:
 - Compensation payment
 - Audio/video recording (devices, extra batteries, extension cords)
- Send an email reminder to the interviewee including date/ time/place, contact info, how to get there, where to park
 - Arrange to meet at location that is easy to find or post signs
 - Another researcher might be in charge of greeting participants and bringing them to the interview room

During the interview

- Introduce yourself and any research assistants
- Explain purpose of study (unless you need to hide it to avoid biasing participant)
- Ask participant to read and sign the consent form
- If recording/video taping, turn it on
- Perform the study
- Debrief participant (if applicable)
- Ask participant to sign payment sheet
- Provide payment and thank participant

Interview best practices

- Make participants feel comfortable
 - Comfortable environment, refreshments for long interviews
- Avoid leading questions. Stay neutral!
- Support whatever participants say (don't make them feel like they're incorrect or being judged)
- Know when to follow up
- Interview a broad range of people

Focus groups

Focus groups

- Similar to interviews, but more efficient as you can interview 5-10 people at once
- Good for getting a lot of opinions quickly or for topics that benefit from group discussion
- Less detail from any interviewee than you would get in an individual interview
- Not great for testing usability because you can't watch multiple people use software at the same time
- Sometimes an opinionated individual can dominate a focus group
- Hard to publish paper based only on one or two focus groups

Planning a focus group

- Develop very detailed script to guide you
- Pre-screen participants to get a good mix of people who meet your criteria
- Setup audio and video recorders, but don't make people feel under surveillance
- Helpful to have at least 2 people: moderator + note taker
- Give people name tags with their first name only
- Plan to do multiple focus groups to mitigate effects of dominant participant steering conversation

Conducting a focus group

- Make the session fun, informal, relaxed feel
 - Provide drinks and snacks
- Promote a free flowing conversation that engages all participants
 - Ask open ended questions
 - Show people multiple things and ask them to compare
 - Give demos or show videos to start-off discussion
 - Give people handouts and ask them to circle things they like/don't like, or jot down first impressions before discussing with the group

Diary studies

Why do a diary study?

- Rich longitudinal data from a few participants in a natural environment
 - Explore natural reactions and occurrences
 - Examine over longer time periods
 - “Existence and quantity” of phenomena
 - Provide concrete examples to discuss during interview
- Examples
 - Record every time you self-censor a Facebook post
 - Record every time you authenticate
 - Record every time you share a file
 - Take a photo of anything you see that helps people protect privacy
 - Every evening, think about your day and write about the most frustrating thing that happened

Logistics

- Participants may record words on paper, on a computer, on a mobile device, with camera, with voice recorder
 - Unstructured and open ended, or filling out form
- Once per day diaries, quick entries throughout the day, or quick entries with detail added once per day
- Provide clear instructions and expectations
- A lot of work for participants, pay them well

Analyzing qualitative data

Qualitative data

- Generally unstructured
- Open ended responses to surveys
- What people said in interviews or focus groups
- Drawings, photos, ...

Coding

- Process of assigning labels (“codes”) to qualitative data
- Develop “code book” and use codes consistently
- Technology can help automate some aspects of coding and manage codes

Developing codes

- Codebook = hierarchy of allowable codes
- Often iteratively develop codes
 - One or more coders use current codebook to code some number of interviews
- Codes should be well-defined, unambiguous
- Intentionally limited number of codes
- Know what you're going to do with codes

Applying codes

- Software (TAMS Analyzer, ATLAS.ti, MAXQDA) or online apps
- Generally use multiple coders for all or some of the data
- Coding process can be applied to entire interviews, open ended survey questions, drawings, photographs, or other artifacts

Coding interview data

- Transcribe interview data (yourself or with hired transcription service)
 - Depending on purpose of study, transcribing only selected quotes may be sufficient
- Iteratively review transcripts and create code for concepts mentioned by participants
- As new codes are added, check to see whether those concepts were mentioned in previously analyzed transcripts
- Keep track of how many participants mentioned each concept to find concepts that resonate with a lot of participants
- Group similar codes together into categories
- Note interesting quotes

Analyzing interview data

- Interview can be formally analyzed through a coding process
- Qualitative approach
 - Use concepts and categories to develop theory (Grounded theory approach, does not start with hypotheses)
- Quantitative approach
 - With large number of interviewees (~30), and questions that ask participants to provide numerical ratings, quantitative analysis may be feasible
 - Important to validate for coder reliability
- Can be used to develop mental models

Coding example

I would...we believe that the kids, that there's a...

`{why>space}{why>parentexp}`my wife is a social worker. So she comes from the bent of, and I agree, that our kids need a space that's theirs, that they can go to and shut the door and be alone and whatever.`{/why>parentexp}{/why>space}`

`{teenprivacy>nonprivacy>choosegive}`If there were ever a taking advantage of that somehow to do something harmful to themselves or that would be harmful to our household or whatever, then we would take some action to take away the right. The privilege, actually, not the right.

`{/teenprivacy>nonprivacy>choosegive}`

Some intercoder agreement metrics

- Percentage agreement
 - Don't use this by itself
- Cohen's Kappa
 - Easy to compute
 - Two coders, mutually exclusive categories
- Krippendorff's Alpha
 - Accounts for any number of coders
 - Allows for missing (uncoded) values

Affinity diagramming

- Interactive “group” coding
- Print out individual quotes and physically put them into groups by themes



Interview demo

Appendix B

Interview script for mental model study

Greeting

Thank you for being here today.

This interview is part of research at Carnegie Mellon, aiming to understanding what activities people value being able to perform on their computer, either at their home, their job, or their places of study. Also, to understand what people consider a risk or threat when they are using a computer system and to understand how people react when they encounter a computer warning in several everyday scenarios.

This interview will be anonymous and confidential. It will take us approximately an hour, and will be divided into three parts. In the first one, I will ask you some general computer related questions. In the second one, I will describe a fictitious scenario and ask you what would you do in such a situation. Then in the third, I will ask some general questions. I would like to stress the fact that we are not testing you in any way. Please feel free to say anything that may come up to you during the interview.

Before we start, do you have any questions?

[Begin audio recorder.]

Open questions about activities and risks

Please think about all computers available to you, either at home, at your work or place of study, or those that you carry with you (iPhone, Blackberry, etc.), or even those computers that do not belong to you, but that you use anyway (for example, your husband/wife's computer, your friends' computers, etc.)

What activities or tasks do you value being able to perform with these computers? (Prompt: sending emails?)

Anything else? (Keep asking, "Anything else?" until they say No.) (Make list of activities/tasks they mention.)

What kind of problems do you think you might encounter when doing [this activity] [use list from previous question]? (Prompt: What kinds of things might happen to your computer by doing [an activity they mentioned].) (Ask for each activity mentioned.) (Make list of problems they mention.)

Why do you think [this problem] might happen? What measures can you take to avoid/fix [this problem]? (Prompt: A problem might occur because of the reliability of software?) (Use list of problems they mentioned, ask for each problem.)

Scenarios description

Description only for experts: Imagine you have a close friend, Paul, who knows nothing about computers. He knows you are an expert, he trusts you, and he has asked you for help in case he runs into problems using his new laptop. You have agreed to help him. One day, he calls you on the phone, and you can notice by his voice that he is very nervous. He tells you the following.

Description only for non-experts: Imagine you have a close friend, Paul, who knows nothing about computers. He thinks you are a more experienced computer user than him, he trusts you and he has asked you for help in case he runs into problems using his new laptop. You have agreed to help him. One day, he calls you on the phone, and you can tell by his voice that he is very nervous. He tells you the following.

Scenario 1: Disk-full warning (1: Information deletion or loss)

I was reading my email, and I remember I saw Rob the other day using this awesome screensaver of a waterfall, with authentic sound and everything, so I thought of looking for one of those. It took me a while but I found it, and the website said that I should download it and click on it twice. So I did that and everything was fine. I started to see some pictures of my daughter, and then this happened. (Show warning #1) I don't know what's wrong, it was working all right.

1. Could you please tell me what this message is?
2. (Skip this question if participant says "I don't know" to the previous) What does that mean?
3. What do you think will happen if I click on OK?
4. (Skip this question if it is already answered) Is that bad?
5. What should I do?

Scenario 2: Encryption-conflict warning (2: Information disclosure)

(A few days later, Paul calls you again and says) I was trying to send one of these funny postcards to Rob, because today's his birthday. I have never used Outlook before, so I don't know what's going on. The only thing that I did was to type the greeting on a message and to click on the 'Send' button. [Show warning #2]

1. Could you please tell me what this message is?
2. (Skip the following question if participant says "I don't know" to the previous) What does that mean?
3. What do you think will happen if I click on 'Send unencrypted'?
4. (Skip this question if it is already answered) Is that bad?
5. What should I do?

(Next week he calls again, very concerned and tells you) I'm sorry to bother you again, but it seems that I have the same problem as last week, remember? But now I'm trying to send my boss some information, he asked me about a possible fraud occurring here at the office, a real big problem for the company and for some employees.

1. What do you think will happen if I click on 'Send unencrypted' this time?
2. What should I do?

Scenario 3: Address book warning (4: Execution of malicious code)

(An hour later Paul calls you again) I'm terribly sorry, but a new message has just showed on my screen. I'm a nervous wreck. (Show warning #3)

1. Could you please tell me what this message is?
2. (Skip the following question if participant says "I dont know" to the previous) What does that mean?
3. What do you think will happen if I click on 'Yes'?
4. (Skip this question if it is already answered) Is that bad?
5. What should I do?

(In response to any inquiry about how the message appeared or what his actions were leading up to the message appearing.) Well, I was reading my email, and a message appeared from my bank, and a message from Carol, my wife, and also a message from Rob inviting me to his Birthday. After that a message appeared saying that I had a virus or something like that, but I clicked on 'Clean it' and the message went away. And now I'm stuck with this message, and I don't know what to do.

Scenario 4: Attachment warning (4: Execution of malicious code)

(Imagine you are a bit bored of this friend, and you send him by email a digital copy you bought of "Computers for dummies." After a few hours, he calls you up again.) Thank you very much for the book! I will try to read it, so I dont bother you as much, but... well, I'm sorry, but it happens that when I clicked on the book something happened again. (Show warning #4)

1. Could you please tell me what this message is?
2. (Skip this question if participant says "I dont know" to the previous) What does that mean?
3. What do you think will happen if I click on 'Open'?
4. (Skip this question if it is already answered) Is that bad?
5. What should I do?

You know what? This same thing happened to me a couple of weeks ago, with one of these funny chain emails... I tried to click on the email and then this appeared on my screen, and it annoyed me a bit so I just tried to get rid of it and I clicked on the email again, and the same thing happened.

1. What do you think would have happened if I clicked on 'Open'?
2. What was I supposed to do?

Scenario 5: Unknown certificate warning (5: Trust in malicious third-parties)

(After a few weeks of not calling you) Hi, I'm sorry to bother you again. I've been reading the book and it's quite interesting. I've solved most of the problems I've seen myself, but I don't know what to do with a very confusing message that has just appeared on my screen. I was visiting a website, and suddenly this message appeared. (Show warning #5)

1. Could you please tell me what this message is?
2. (Skip this question if participant says "I dont know" to the previous) What does that mean?

3. What do you think will happen if I click on 'Yes'?
4. Is that bad?
5. What should I do?

(If inquired about what kind of website) Well, it's the website of a small online store where I bought some toys for my daughter. I would like to give her a present for her birthday. I bought something here about a year ago, but it was on a different computer. I don't remember having seen something like this.

The other day I was trying to check my online bank account and the same message appeared. Is that any different?

1. What do you think would have happened if I clicked on 'Yes'?
2. Is that bad?
3. What was I supposed to do?

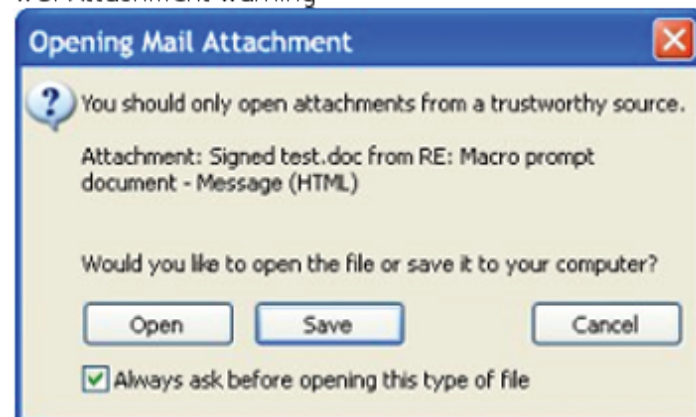
General ending questions

1. Have you ever received any of these five warnings?
2. Have you seen any other types of warnings?
 - (a) Was it ever unclear what a warning meant? [Prompt: Do you remember anything that was unclear?]
 - (b) How do you usually respond to these warnings? [Prompt: Do you close them, or click 'OK' or look for more information?]
3. (Pull out their list of problems they stated they might encounter while using their computer) (Ask for each problem) Have you ever seen any type of warnings when you encounter (this problem)? What type of warnings? Was it ever unclear what that warning meant?
4. Would you do the same that you advised this fictitious friend to do?
5. What kind of computers do you use? What kind of operating system do these computers have?
6. What program do you use to read your e-mail? Do you use any other email programs?
7. Do you have a spam filter on your email account?
8. What web browser do you usually use to access the Internet? Any other?
9. Do you have any type of software or programs on your computer that is supposed to help keep your computer safe?
 - (a) What are they?
 - (b) What does that program do?
 - (c) (If not mentioned) Do you have antivirus software installed on your computer? What software do you use?
10. What is your occupation? How old are you? (write the gender of the person)

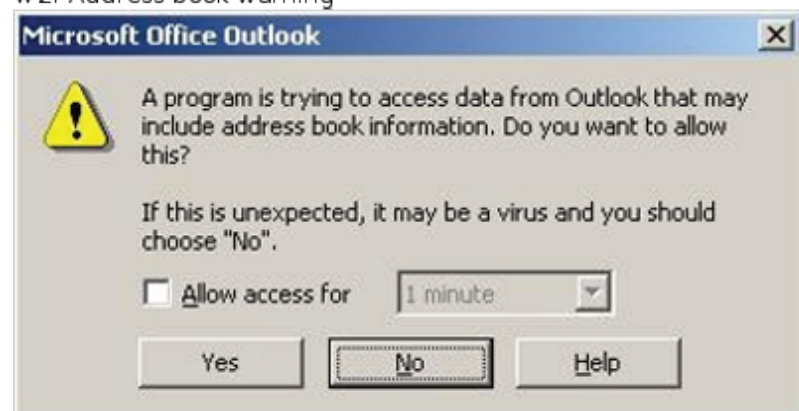
W1: Encryption warning



W3: Attachment warning



W2: Address book warning



W4: Certificate warning

