Pre-exam answers
Research ethics in empirical studies

Lecture 6

Usability evaluation CS-E5210

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Guest lecture advertisement

Next Tuesday: Esko Kurvinen

Service design lead at Elisa

Doctor or Arts (industrial design)

Experimentation, A/B testing, theory, practices, examples…

Pre-exam answers

Questions

1. Scenarios are important in both walkthroughs and empirical usability evaluations. Why? (10 p)

2. Using the concepts of reliability and/or validity, explain why it is a good idea that a heuristic evaluation is carried out by 3–5 evaluators. (10 p)

3. Consider a heart rate monitoring machine installed in a hospital. Briefly describe three critical aspects of usability from the perspective of nursing staff and patients. Explain why you identified these aspects in particular. (10 p)

Why did we have an exam?

Improved group communication:

- Same knowledge basis helps you understand each other
- Faster and more precise communication

Quality control:

- Students' different starting levels get closer to each other

Professionality:

- You can now meet the customer companies with good confidence

Rewarding you for personal effort:

- You can affect your grade and prove your skills to us in more ways than just participating in group work

Question 1

Scenarios are important in both walkthroughs and empirical usability evaluations. Why? (10 p)

- Scenario is a fictitious story and context that depicts a typical user persona, her motivations, needs, and activities
- How the user can accomplish an action or goal?
- Also exposes associated problems and limitations
- A typical scenario documents the process via which a user might use the design
- User scenario are often used in various stages of product design particularly ideation and usability evaluation

Significance of scenarios

- Inexpensive, quick, and easy to create
- Reflect multiple tasks, use context, and user characteristics
- Can be tailored to test new features
- Evaluations become more realistic and natural
- Actual needs, motivations, and problems can be better comprehended

Question 2…

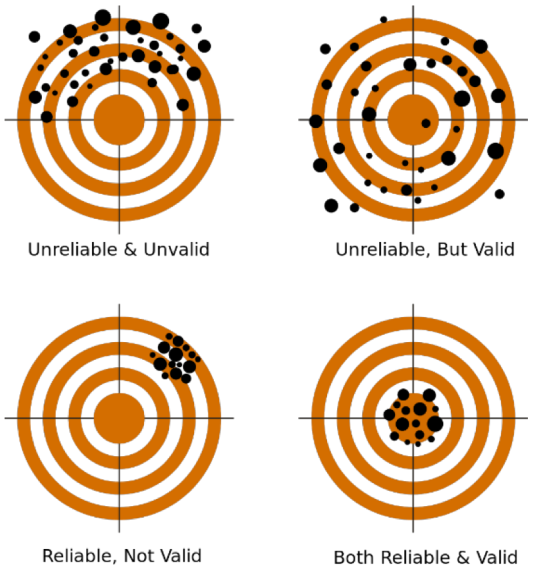
Using the concepts of reliability and/or validity, explain why it is a good idea that a heuristic evaluation is carried out by 3–5 evaluators. (10 p)

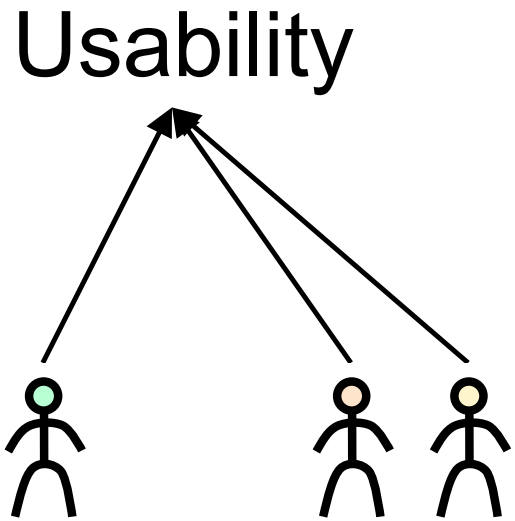
"How many evaluators are needed to make the analysis work? That depends on how knowledgeable the evaluators are. If the evaluators are experienced interface experts, then 3 to 5 evaluators can catch all of the "heuristically identifiable" major problems […]"

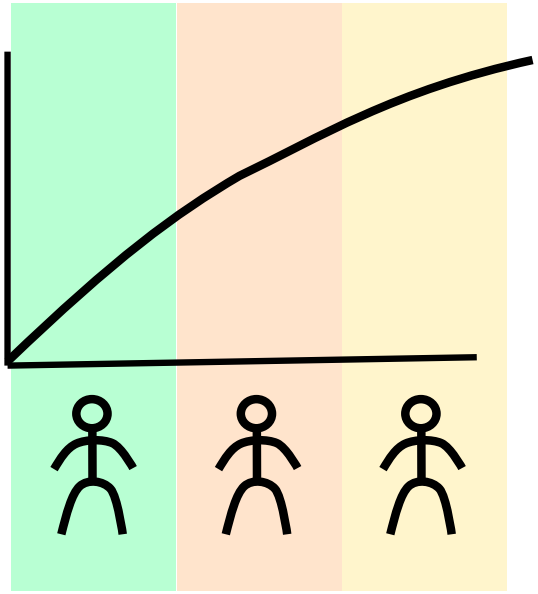
Lewis, C. & Rieman, J. (1994) Task-Centered User Interface Design, Heuristic Analysis.

Question 2

Using the concepts of reliability and/or validity, explain why it is a good idea that a heuristic evaluation is carried out by 3–5 evaluators. (10 p)







Question 3

*Consider a heart rate monitoring machine installed in a hospital. Briefly describe **three critical aspects** of usability from the perspective of nursing staff and patients. Explain **why** you identified these aspects in particular. (10 p)*

This question did not have a simple correct answer

- The purpose was to elicit analyses and prioritizations of different aspects

A possible answer structure:

- General analysis of the context of use
- Staff viewpoint: 3 x (aspect + explanation)
- Patient viewpoint: 3 x (aspect + explanation)

Research ethics in empirical studies

How human participants need to be treated

Ownership and access to research data

Research ethics

Informed consent

Ethics guidelines

Anonymity

Access to raw data vs only findings

Reporting the results to companies

Intellectual property rights

Experimental evidence of massive-scale emotional contagion through social networks

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Emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness. Emotional contagion is well established in laboratory experiments, with people transferring positive and negative emotions to others. Data from a large real-world social network, collected over a 20-y period suggests that longer-lasting moods (e.g., depression, happiness) can be transferred through networks [Fowler JH, Christakis NA (2008) *BMJ* 337:a2338], although the results are controversial. In an experiment with people who use Facebook, we test whether emotional contagion occurs outside of in-person interaction between individuals by reducing the amount of emotional content in the News Feed. When positive expressions were reduced, people produced fewer positive posts and more negative posts; when negative expressions were reduced, the opposite pattern occurred. These results indicate that emotions expressed by others on Facebook influence our own emotions, constituting experimental evidence for massive-scale contagion via social networks. This work also suggests that, in contrast to prevailing assumptions, in-person interaction and nonverbal cues are not strictly necessary for emotional contagion, and that the observation of others' positive experiences constitutes a positive experience for people.

computer-mediated communication | social media | big data

Emotional states can be transferred to others via emotional contagion, leading them to experience the same emotions as those around them. Emotional contagion is well established in laboratory experiments (1), in which people transfer positive and negative moods and emotions to others. Similarly, data from a large, real-world social network collected over a 20-y period suggests that longer-lasting moods (e.g., depression, happiness) can be transferred through networks as well (2, 3).

The interpretation of this network effect as contagion of mood has come under scrutiny due to the study's correlational nature, including concerns over misspecification of contextual variables or failure to account for shared experiences (4, 5), raising important questions regarding contagion processes in networks. An experimental approach can address this scrutiny directly; however, methods used in controlled experiments have been criticized for examining emotions after social interactions. Interacting with a happy person is pleasant (and an unhappy person, unpleasant). As such, contagion may result from experiencing an interaction rather than exposure to a partner's emotion. Prior studies have also failed to address whether nonverbal cues are necessary for contagion to occur, or if verbal cues alone suffice. Evidence that positive and negative moods are correlated in networks (2, 3) suggests that this is possible, but the causal question of whether contagion processes occur for emotions in massive social networks remains elusive in the absence of experimental evidence. Further, others have suggested that in online social networks, exposure to the happiness of others may actually be depressing to us, producing an "alone together" social comparison effect (6).

Three studies have laid the groundwork for testing these processes via Facebook, the largest online social network. This research demonstrated that (*i*) emotional contagion occurs via text-based computer-mediated communication (7); (*ii*) contagion of psychological and physiological qualities has been suggested based on correlational data for social networks generally (7, 8); and (*iii*) people's emotional expressions on Facebook predict friends' emotional expressions, even days later (7) (although some shared experiences may in fact last several days). To date, however, there is no experimental evidence that emotions or moods are contagious in the absence of direct interaction between experiencer and target.

On Facebook, people frequently express emotions, which are later seen by their friends via Facebook's "News Feed" product (8). Because people's friends frequently produce much more content than one person can view, the News Feed filters posts, stories, and activities undertaken by friends. News Feed is the primary manner by which people see content that friends share. Which content is shown or omitted in the News Feed is determined via a ranking algorithm that Facebook continually develops and tests in the interest of showing viewers the content they will find most relevant and engaging. One such test is reported in this study: A test of whether posts with emotional content are more engaging.

The experiment manipulated the extent to which people (N = 689,003) were exposed to emotional expressions in their News Feed. This tested whether exposure to emotions led people to change their own posting behaviors, in particular whether exposure to emotional content led people to post content that was consistent with the exposure—thereby testing whether exposure to verbal affective expressions leads to similar verbal expressions, a form of emotional contagion. People who viewed Facebook in English were qualified for selection into the experiment. Two parallel experiments were conducted for positive and negative emotion: One in which exposure to friends' positive emotional content in their News Feed was reduced, and one in which exposure to negative emotional content in their News Feed was reduced. In these conditions, when a person loaded their News Feed, posts that contained emotional content of the relevant emotional valence, each emotional post had between a 10% and

Significance

We show, via a massive (N = 689,003) experiment on Facebook, that emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness. We provide experimental evidence that emotional contagion occurs without direct interaction between people (exposure to a friend expressing an emotion is sufficient), and in the complete absence of nonverbal cues.

Author contributions: A.D.I.K., J.E.G., and J.T.H. designed research; A.D.I.K. performed research; A.D.I.K. analyzed data; and A.D.I.K., J.E.G., and J.T.H. wrote the paper.

The authors declare no conflict of interest.

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Kramer et al. 2014

ing area of social science research that needs to be approached with sensitivity and with vigilance regarding personal privacy issues.

Questions have been raised about the principles of informed consent and opportunity to opt out in connection with the research in this paper. The authors noted in their paper, "[The work] was consistent with Facebook's Data Use Policy, to which all users agree prior to creating an account on Facebook, constituting informed consent for this research." When the authors prepared their paper for publication in PNAS, they stated that: "Because this experiment was conducted by Facebook, Inc. for internal purposes, the Cornell University IRB [Institutional Review Board] determined that the project did not fall under Cornell's Human Research Protection Program." This statement has since been confirmed by Cornell University.

Obtaining informed consent and allowing participants to opt out are best practices in most instances under the US Department of Health and Human Services Policy for the Protection of Human Research Subjects (the "Common Rule"). Adherence to the Common Rule is PNAS policy, but as a private company Facebook was under no obligation to conform to the provisions of the Common Rule when it collected the data used by the authors, and the

Excerpt from a preface to Kramer et al.'s (2014) paper by PNAS editor-in-chief I. M. Verma

Exercise

1. Make a list of issues that your group work will have to address (silent work 2 min)
2. When you listen to the following slides, make additions
3. Discuss these issues in your group mentor meeting

Informed consent

Ethics guidelines

Anonymity

Access to raw data vs only findings

Reporting the results to companies

Intellectual property rights

Aspects of participant-facing ethics

Old University of Helsinki psychologists' guidelines:

- Respect for the participant
- Anonymity
- Informed consent + voluntariness of participation
- Possibility to opt out
- Debrief after the study
- Priority in participant's well-being
- (+ and many other aspects)

Also other dimensions of ethics exist (e.g., lawfulness, fairness in academic publishing, independence and integrity, etc.)

When you are in the planning stage

Your study needs to be approved by a Research Ethics Committee if it includes at least one of the following:

1. Intervention in the **physical integrity** of subject
2. The study deviates from the principle of **informed consent** (excluding archival data)
3. The subjects are **children** under the age of 15
4. **Exceptionally strong stimuli** whose harmfulness needs to be evaluated by an expert
5. Possible long-term **mental harm** (trauma, depression, sleeplessness)
6. Possible **security risk** to subjects

(see http://www.tenk.fi/en/ethical-review-human-sciences/ethical-review)

@ Aalto: see more information at:

https://inside.aalto.fi/display/aallosta/Tutkimuseettinen+toimikunta
https://inside.aalto.fi/display/AboutAalto/Research+Ethics+Committee

Before starting an experiment with participant

Researcher describes the study, its requirements, participant's rights, researchers' responsibilities, etc:

- Who are the members of the research team that organize this study
- That the purpose is not to evaluate the participant, but to investigate a research question
- That the participant may opt out any time during the study
- That the **relevant** material created by participants may be used in reports and publications
  - material not relevant to the RQ will not be reported
- Confidentiality of the data: who will see it and in what form (see the next slide)

Get the participant sign an informed consent

Levels of anonymity + access to data

(with some suggestions)

1. All (“raw”) data

   Including the participant’s name

   ➔ Access to research team only

2. Aggregated data

   = Anonymized and not traceable to individuals in other ways either

   ➔ Access to research team only or also to companies

3. Reportable data

   = Data that addresses the research questions or is evidence of your emergent findings

   ➔ Can be published and delivered to e.g., involved companies, preferably not as datasets but as reports

If you have third parties in the project

Possible third parties:

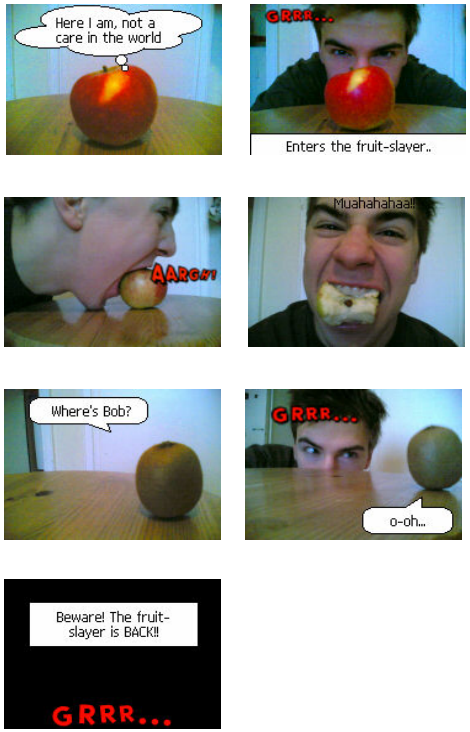
- **“The client”**: one that is interested in the results
- **“The case company”**: the context where the study is conducted
- **“Instrument provider”**: a company that provides an instrument (e.g., collaboration platform) that is used in the research

Different access rights to data may be needed for each party

Never promise access to raw data!

- You would have to tell this to participants and this would potentially bias your data ☹
- ➔ Provide only reports to 3rd parties
- ➔ Report to each party only the findings that are relevant to them
- ➔ Tell the participants which 3rd party will be reported what

Intellectual property rights



© Unnamed participant in Salovaara (2007)

- Participant-created works of art are participants' IPR
  - E.g., in communication studies
- Publication of others' works of art requires participant's permission
  - Remember to mention the intention to publish participants' works already in the beginning of study
  - Usually participants are proud of having their works published!
- If in doubt, ask your school's legal team

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Service design lead at Elisa

Doctor or Arts (industrial design)

Experimentation, A/B testing, theory, practices, examples…