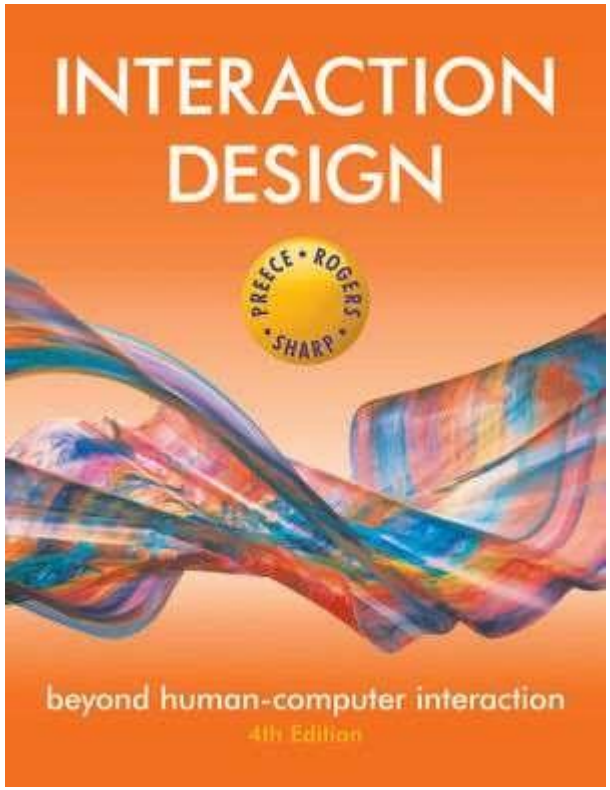


Empirical Studies

Empirical Studies

You have solved a problem or answered a research question.

How do we know your solution is useful or your answer true?

Solution: conduct an empirical study!

1. Choose a methodology to investigate research questions
2. Use methodology to collect data
3. Interpret data to find answers and verify if hypotheses

Often the only way to find answers & convince people.

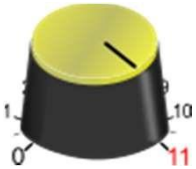
Types of Empirical Studies

vs

Lab vs Field Study:

- Lab: More control, less "contamination" by uncontrolled variables
- Field: More realism, harder to interpret

Controlled Study (usually lab study):



- Change independent variables
  (try different values)
- Measure dependent variables
  (to find out about effects)
- Keep everything else the same as much as possible

Observational Study (usually field study):

- Variables are not controlled, but merely observed
- Try to infer what's happening from observations
- Sometimes necessary because variables can be difficult to control (e.g. weather, user behaviour)

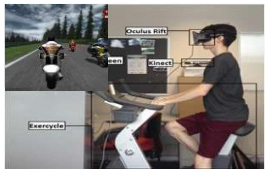
Requirements for Empirical Studies

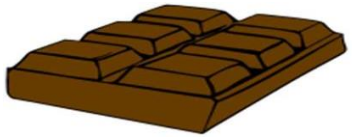
Ethics Approval:

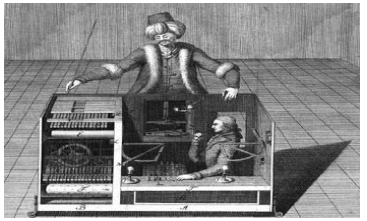
- Is the study ethical?
- Most big organizations require approval process
- Regulate risks: damage, power abuse, deception...
- Standard practice: give participants info sheet to read, and consent form to sign

Participants:

- How to recruit people from the target population?
  - Ideally need a representative sample (e.g. gender balance)
- Advertise in the right places (often low response rate)
- Motivation: intrinsic & extrinsic







How to Conduct an Empirical Study

1. Choose research questions
   - Specific enough to be answerable, general enough to be interesting
   - Specify the scope (e.g. target population)

2. Specify methodology, i.e. how we get data
   For example:
   - Define tasks (i.e. what do users do during the study)
   - Define variables and specify how they are measured
   - Specify hypotheses based on the variables
   - Create a script for the study (step-by-step guide)

3. Conduct a pilot study and revise methodology

4. Use script to collect data (e.g. from participants)

5. Analyze the data, test hypotheses, interpret & discuss