



Human Computer Interaction

Chapter 6: Evaluation Part 2

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Summary Experimental Design



Cause & effect

Experiments try to discover
cause and **effect** relationships
by comparing two situations:

Experimental condition:
Supposed cause is **present**

Experiment (Cause - present)

Control Condition:
Supposed cause is **absent**

Control => Cause (No)



Design considerations

- Define what you want to **manipulate** (independent variable)
- What you want to **measure** (dependent variable)
- Independent (**between groups**) or repeated measures (**within groups**) design
- Use randomisation to rule out **unsystematic variance**
- Consider **ethical issues** in your design



Summary: Experimental Design

Course ; Representation.



Be careful with conclusions

Insufficient Cause aspects.

- The **independent variables** may not exactly isolate the suspected cause
- The **dependent variables** may be invalid representations of what you intend to measure
- Your sample may **bias the outcome**
- The results you obtained may not replicate in other settings (**external validity**)
- Experiments are not the proof in a sense of a logical 'true' (**Popper's Falsifiability**)

All swans are white; observe black swan → Popper's falsifiability.



**Thank you
for your attention**