HUMAN-COMPUTER INTERACTION

METHODOLOGY MATTERS

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CS/Psych-770 Human-Computer Interaction
Doing research is the systematic use of some set of theoretical and empirical tools to try to increase our understanding of some set of phenomena or events.
All research brings together:

Content

Ideas

Techniques and procedures
THREE DOMAINS OF RESEARCH

Substantive

  Actors and context

Conceptual domain

  Behavior or relations

Methodological domain

  Modes and techniques
TECHNIQUES

Techniques for measurement
Techniques for manipulation
Techniques for controlling impact
MEASUREMENT

Measuring some feature of a research situation
MANIPULATION

Systematically varying components of a system

Giving instruction

Imposing constraints

Selecting materials

Giving feedback

Using confederates
CONTROL

Controlling the impact of various *extraneous* features of the situation

- Experimental control
- Statistical control
- Distributing impact (e.g., randomization)
COMPARISON

Independent variables
Dependent variables
The research process, like a three-legged stool, always depends on materials from all three domains—content, ideas, and techniques.
LIMITATIONS

Methods pose opportunities and limitations;

Might have weaknesses that limit evidence

Can offset weaknesses by using multiple methods
CHOOSING A SETTING

Three key considerations

  Generalizability
  Precision of measurement
  Realism of the situation

Seek to maximize all three

  Not attainable but we do our best
RESEARCH STRATEGIES

Field strategies
Experimental strategies
Respondent strategies
Theoretical strategies
Figure 2: The strategy circumplex (adapted from Runkel & McGrath).

Maxima for each criterion:
- A = Generalizability
- B = Precision
- C = Realism
QUESTIONS?
COMPARISON TECHNIQUES

Correlation

Systematic covariation in the values of two properties of a system
Linear or nonlinear

Difference

Variance in a variable across different levels of another variable
RANDOMIZATION

Random assignment of cases to conditions

A “true” experiment

Sampling technique plays an important role
VALIDITY

Internal validity
Construct validity
External validity
MEASUREMENTS

Self-reports

Observations
  By visible or hidden observers

Archival records
  Private or public

Trace records
MANIPULATION

Selection

Varying the population across conditions

Direct intervention

Varying the structure of or processes in a system

Indirect inductions

Evoking varied responses
Methods dictate the results the researcher will obtain.

This is why it is extremely important to report all details of your method.

It is impossible to maximize all desirable features of a method.

Hence we have “limitations” sections in our papers.

You need to interpret your results in the light of other related results.

This is why we include relevant background in our papers and interpret our results in the light of the results from this background.
QUESTIONS?