Research Methods in Psychology

Internal & External Validity

What We Will Cover in This Section

- Overview
- Internal Validity.
- External Validity.
- Key Learning Points.

Validity Revisited

- In the context of measuring variables, validity implies that you are measuring what you say you are measuring.
- In the context of research methods, validity focuses on the extent that you can make appropriate inferences or conclusions based on the research design and implementation.

Internal Validity

Internal Validity

- Traditionally refers to
  The accuracy of the research in concluding a relationship between the independent and dependent variables.
  - Applied to experimental research.
    - Can I unambiguously conclude that the independent variable caused a change in the dependent variable.
  - Can apply to correlational, survey, and naturalistic research.

Correlational Design
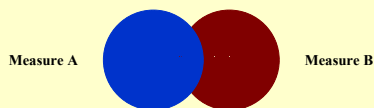
Measure A   Measure B

Survey Research

- Are there flaws in the data collection process that might make the results suspect?
  - Poor questions.
  - Poor coding.
  - Etc.

Naturalistic Research

- How is data captured?
- How was content analysis done?
- Is there a potential for reactivity?

Experimental Design

Independent Variable	Dependent Variable
Group A	Common outcome measure.
Group B	

Confounding

Any variable other than the independent variable that could reasonably have caused changes in the dependent variable.

Confounding Variable: Example

	Independent Variable	Dependent Variable
Confounded by time of day.	Given orange juice at 9:00 AM	Alertness two hours later.
	Given distilled water at 1:00 PM	

Natural Confounding

The typical association of one variable with another.

- Race
- Gender
- Ethnicity
- Profession

Treatment Confounding

The independent variable is associated with some other variable for ONE condition.

- Female experimenter in one condition and male in another.
- Cool Pepsi vs. warm Coke.
- Group A at 10:00, Group B at 12:00.

Measurement Confounding

The measure assesses more than one construct (construct validity).

- Depression is usually associated with anxiety, so any measures of depression will also assess anxiety.
- Leadership vs. assertiveness
- Verbal intelligence vs. Vocabulary

Confounding Based on Subject Selection

Key Assumption

In experimental research there is RANDOM SELECTION from the population and RANDOM ASSIGNMENT to treatment conditions.

Target Population

Sample Frame

Random Sampling

Sample

Group 1   Group 2   Group 3

Randomization
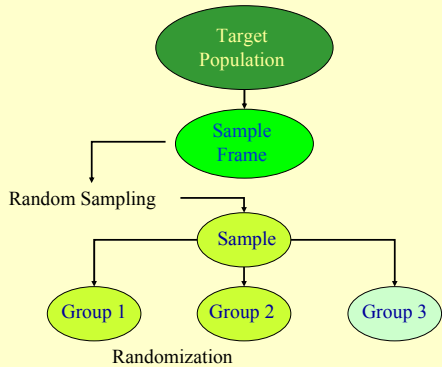
Selection Bias

1. When participants are not randomly selected from the population, this limits generalizability (External Validity).
2. When participants in one condition differ in some way from those in another condition you have confounding (Internal Validity).
   - Non-random assignment
   - Pre-existing groups.
   - Differential mortality.

Measurement Reactivity

1. Evaluation apprehension.
    - Avoid feedback.
2. Novelty effects.
    - Give participants time to adjust.
3. Response bias.
    - Social desirability.
    - Negative or positive response bias.

Demand Characteristics

- *Cues in the research setting that allow the participant to form their own opinions about the research hypothesis.*
    - The Good participant.
    - The Negative participant.
    - The Apathetic participant.

Controlling for Demand Characteristics

1. Cue reduction.
2. Motivation.
    Reduce evaluation apprehension.
3. Separate the dependent variable from the study (unobtrusive).

Experimenter Influences

1. Biased observation.

2. Influencing participants' responses.

Reducing Experimenter Effects

1. Rehearsal.
2. Monitoring.
3. Minimize experimenter influence.
4. Use double blind.
5. Minimize data snooping.

External Validity

External Validity

The extent to which research results can apply to a wide range of situations.

KEY IDEA: **Similarity to the real world environment enhances external validity.**

Structural Component

- How has the study been carried out?
  - Method
  - Setting
  - Procedures
  - Sample

Functional Component

- Do the psychological processes in the study operate in the same way in the real world?
  - Paper people research.
  - Simulated people evaluations.

Conceptual Component

- The degree to which the problems being studied match those in the real world.

Research Procedure

- Artificiality.

- Operational definitions.

- Levels of the independent variable.

Assessing External Validity

- This is judgmental based on an assessment of all of the factors.
  – Are field and laboratory results similar.
  – Are field conclusions similar to laboratory conclusions.
  – Does a phenomenon exist in both the laboratory and the field.

Key Learning Point

Internal validity is a prerequisite for external validity.

The End