Mark Van Selst

San Jose State University

Cozby & Bates:
Methods in Behavioral Research

Chapter 9: Conducting Experiments

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Chapter 8 Review

- Confound
- Contrast Effect
- Counterbalancing
  - Latin square
  - Full
- Independent Groups (Between-subject) design
- Repeated Measures (Within-subject) design
- Matched Pairs Design

- Mortality
- Posttest-only design
- Pretest-posttest design
  - Solomon 4-group design
- Random Selection
- Random Assignment
- Selection Effects
- Order Effects
  - Fatigue
  - Practice
- Internal Validity

Selecting Participants

- Representative sample

- Generalizable results

- Sufficient sample size

Manipulating the IV

Operational Definition of IV

"Setting the stage"

- Informed consent
  - Rationale
  - Etc.

Straightforward Manipulations

- Direct 'simple' manipulation (e.g., word frequency)

Staged (or 'event') Manipulations

- Use of a confederate

                                        and/or

- developing a particular psychological state (e.g., mood manipulation)

Strength of the Manipulation of the IV

"bigger" effects can be produced with stronger manipulations

- E.g., alcohol, mood

Factor Manipulations:

- Multiple levels vs. two-level comparisons (e.g., alcohol)

Limiting Factors:

- Ethics
- Cost (time and/or money)

Measuring the DV

Operational Definition

Types of Measures
- Self-report Measures
- Behavioral Measures
- Physiological Measures (GSR, EMG, EEG, fMRI)

Sensitivity of the DV
- Sensitivity (fidelity)
- Ceiling & Floor Effects

Multiple Measures (DV)

Multiple measures of the DV can provide convergent support for a particular conclusion in a similar way that multiple different types of research can provide convergent support for a particular hypothesis or interpretation

Order effects can be a concern

Limiting Factors:

- Ethics
- Cost (time and/or money)

Experimental Controls

Manipulation Checks

Participant Expectations

Avoiding demand characteristics

- Use of "filler items" or "cover stories"

Placebo groups

Experimenter Bias / Expectancy Effects

- The example of "Clever Hans"

The importance of consistency

Developing the Experiment

Research "programs" rather than "individual studies"

Research Proposals – planning based on prior research; explicit statement of the research question, etc.

Pilot Studies – testing the manipulations / experiment to see if it "works" (can also use a "think aloud" procedure and/or experimental debriefing to evaluate effectiveness of the manipulations and measures)

Manipulation Checks & Debriefing

Analysis and Interpretation

Play "devils advocate" and critique the design / possible conclusions from a strongly skeptical point of view (non-believers will be better critics than those who have "drank the Kool-aid")

Statistical Conclusion Validity

Chapter 9 Terminology

- Behavioral measure
- Ceiling & floor effects
- Confederate
- Debriefing
- Demand characteristics
- Double- and single-blind controls
- Physiological Measures
    - Electroencephalogram
    - Functional MRI
    - Galvanic Skin Response
- Expectancy Effects
- Experimenter Bias
- Filler items

- Manipulation check
- Manipulation Strength
- Factor (manipulated variable)
- Factor Levels (levels of the IV)
- Pilot Study
- Placebo Control
- Self-report measure
- Sensistivity (fidelity)
- Staged Manipulation
    - Confederate
    - Psychological State
- Straightforward Manipulation

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