Lecture 19: Experimental Studies II

Outline

• Review
  • Lab v. Correlational Studies
  • Threats to Internal Validity
  • Multifactorial Designs
  • Issues with Experiments

Review

• Two Disciplines of Psychology
• Internal Validity
  – Local
  – Molar
  – Causal
• Experiments
• Example with Violent Video Games
Study Details

- 210 Undergraduate Participants (49.5% Women)
- IV: Random Assignment to Video Game Condition.
- Use Duration of White Noise Blasts after the Lose Trials.
  - Participants in Violent Condition Gave Longer Blasts than Participants in Non-Violent Condition (6.81 versus 6.65)

Design 1: Randomized Two-Group Design

- Pool of Participants
- Treatment
- Control
- Outcome (DV)
- Outcome (DV)

Main Effect Comparison

- Nonviolent
- Violent
- Low
- High

Aggression after "Lose" Trials

- d = .31
- d = .37

Video Game Trait Irritability
Study Details

- 227 Undergraduate Participants (54% Women). Reported playing video games an average of 2.14 hours per week. At least 90% reported that they currently play video games.
- Most popular games: Super Mario Brothers, Tetris, Mortal Kombat
- Measured Aggressive Behavior, Aggressive Personality, Time Spent Playing Games, Violent Video Game Exposure, and GPA

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Working Definition of Internal Validity
(Source: Shadish, Cook, & Campbell, 2002, p. 38)

- Internal Validity refers to inferences about whether the observed covariation between X (the presumed treatment) and Y (the presumed outcome) reflects a causal relation from X to Y.
- Threats to internal validity are the other possible causes of the X and Y association.
- Validity is not a property of a method, it is a characteristic of inferences.
Threats to Internal Validity

Remember definitions of independent and dependent variables.

Selection

- Preexisting differences between individuals in the different conditions that may influence the dependent variable.
- When is selection a particular problem?

Maturation

- Naturally occurring processes within persons that could cause a change in their behavior.
- Setting: You want to evaluate whether or not a parenting program promoted knowledge of child development and parenting efficacy.
- Pretest – Intervention – Posttest Design
- Also known as the O₁ – Intervention – O₂ design (Campbell & Stanley, 1966)
Instrumentation

- Changes that occur over time in measurement procedures or devices.
- Basic Rule: Never switch measures in the middle of a study. Willett, Singer, and Martin (1998): "the time for instrument modification is during pilot work, not data collection" (p. 411).
- Still the meaning of measures can change.
- What if raters get more experienced between pretest and posttest?

Attrition (called Mortality in Book)

- People leave the study. Attrition is always a threat to external validity. When is it a threat to internal validity?
- Differential Attrition: Attrition is different for each experimental condition. Think of this as selection (out of a study) after random assignment.
- How can you account for this?

Insight from Campbell and Stanley (1966, p. 34)

- From the standpoint of the final interpretation... every experiment is imperfect. What a check list of validity criteria can do is make an experimenter more aware of the residual imperfections in her design so that on the relevant points she can be aware of competing interpretations of her data. She should, of course, design the very best experiment which the situation makes possible.
Other Experimental Designs

Design 2: Pretest-Posttest Two-Group Design

Pretest → Treatment → Posttest (DV: Post - Pre)

Pretest → Control → Posttest (DV: Post - Pre)

Design 3: Solomon Four-Group

Pretest → Treatment → Posttest

Pretest → Control → Posttest

Pretest → Treatment → “Posttest”

Pretest → Control → “Posttest”
Design 4: Between-Participants Factorial Design

Beauty is Talent: Task Evaluation as a Function of the Performer’s Physical Attractiveness (Landy & Sigall, 1974)

JPSP v. 29 p. 299-304

Basic Details

• Question: Do individuals evaluate the actual performances of attractive people more positively than those of unattractive people? (p. 300)
• Procedure: 60 male undergraduates read a short essay and then evaluated its overall quality. They used a 2 by 3 Factorial Design (Essay by Attractiveness)
Their Interpretations (p. 302)

- If you are [unattractive] you are not discriminated against a great deal as long as your performance is impressive. However, should performance be below par, attractiveness matters: You may be able to get away with inferior work if you are beautiful.
When to Use Lab Studies?

- First define the question as a universalistic or particularistic research question.
- Lab studies are well suited for universalistic questions.
- Questions about theoretically predicted associations between constructs.
- Significant Question: Can this effect be demonstrated at all?

Considerations of the Independent Variables

- Many interesting IVs cannot normally be manipulated (e.g., gender, intelligence)
- Many interesting IVs cannot be manipulated ethically (e.g., psychological effects of abuse, divorce)
- What is the time frame of the effect?

Manipulation is Crucial for an Experiment in the Laboratory

- Manipulating the Independent Variable ensures that everyone experiences similar levels of one variable under exactly the same conditions.
- One issue is how well the manipulation captures the precise psychological process that we care about.
How “real” is an experiment?

- **Mundane realism**: The extent to which an experiment is similar to real-life situations
  - Stanford Prison Experiment
  - Video Game Example
- **Psychological realism**: The extent to which the psychological processes triggered in an experiment are similar to psychological processes that occur in everyday life.

Types of Laboratory Studies

- **Impact Studies**: Something happens to participants.
- **Judgment Studies**: Participants are fairly passive. They make judgments about a stimulus or a set of stimuli.
- **Observational Studies**: Controlled setting for making observations. Not a strong emphasis on manipulation.