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Causal-Comparative Research Design

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Overview

- Definition
- Characteristics
- When To Use
- Grouping
- When Not To Use
- Steps Involved
- Research Examples
- Data Analysis
- Statistics
- Limitations

What's in a name?

Ex Post Facto

Retrospective

Descriptive

Causal-Comparative



Definition

- Non-Experimental Designs that investigate *causal* relationships
- Researchers try to identify the ~~causes of~~ differences that already exists within individuals or groups

3 Types

- Exploration of Effects
- Exploration of Causes
- Exploration of Consequences

Characteristics

- Pre-existing Differences or conditions
- Pre-existing groups
- No control
- No manipulation
- Can make **reasonable** inferences about causation

When to use

- When variables cannot be manipulated
- When experiments are not possible
- Attempts to identify causes or consequences while the assumption of this design is inaccurate and not always true
- Attempt to understand cause and effect

Grouping

- Pre-formed groups
- Subject matching
- Homogeneous groups
- Differences within groups

When not to use

- Two or more groups are different
- Comparisons are different
- Retrospective mostly in Educational Research
- When you cannot manipulate variables because in doing so may cause mental or physical harm

Steps Involved

- Develop the research question
- Identify the independent and dependent variable
- Select **two** comparison groups
- Collect data from pre-existing data
- Analyze and interpret the data
- Report findings

Research Examples

- Compare the body composition or weight loss of people who only use free weights vs. people who only use exercise machines
- The effects of drinking large amounts of soda on childhood obesity
- Non ADHD Brain vs. ADHD Brain and brain size

Data Analysis & Interpretation

- Descriptive statistics
 - Mean
 - Standard Deviation
- Inferential statistics
 - T-test
 - Analysis of variance
 - Chi square

Statistics

- Compare averages
- Use Crossbreak Tables
- Independent or Dependent T-Tests
- T-tests for comparison of two groups
- ANOVA for comparison of more than two groups
- Chi-square for comparison of group frequencies between groups

Limitations

- There must be a pre-existing independent variable and you cannot manipulate it
- There is a lack of randomization
- Inappropriate interpretations can occur: making it hard to identify cause and effect relationships
- There are often other variables that affect the dependent variable instead of the independent variable
- Reversal causation may exist
- Possibility of subject selection bias
- Other threats: location, instrumentation, and loss of subjects
- Caution in interpreting results

Resources

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Questions

