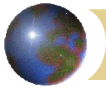


# *Research Methods*



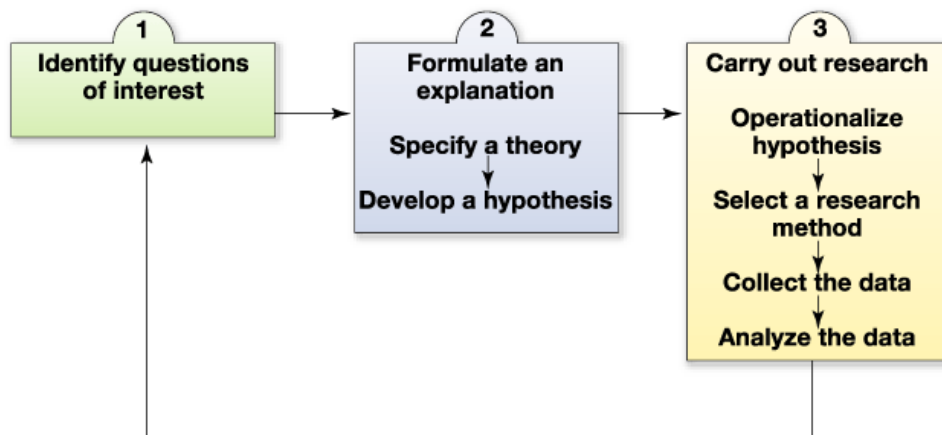
## **Research Methods**

- This is what we will focus on in class
- After reading and attending class, you should be able to do the following:
  1. **List various types of research methods and the strengths and weaknesses of each.**
  2. **Choose the most appropriate research method for a given research question.**
  3. **Design an experimental study to investigate a given research question**
    - Write an hypothesis
    - Identify population and sample
    - Identify independent and dependent variables
    - Identify experimental and control groups
    - Discuss the APA ethical guidelines.



## *Research Methods*

- ✦ The **SCIENTIFIC METHOD** is the process of posing and answering questions using careful, controlled techniques that include systematic, orderly observation and the collection of data.





## *Scientific Inquiry*

- ✦ Facts are what need to be explained
  - ❖ objective - viewable by others
  - ❖ based on direct observation
  - ❖ reasonable observers agree are true
- ✦ Theory is a set of ideas that
  - ❖ explains facts
  - ❖ makes predictions about new facts
- ✦ Hypothesis
  - ❖ prediction about new facts
  - ❖ can be verified or falsified



## *Descriptive Study*

- ✦ Describes a set of facts
- ✦ Does not look for relationships between facts
- ✦ Does not predict what may influence the facts
- ✦ May or may not include numerical data
- ✦ Example: measure the % of new students from out-of-state each year since 1980



## *Types of Descriptive Studies*

- ✦ Naturalistic Observation
  
- ✦ Case Study
  
- ✦ Surveys



## *Research Strategies...*

- ✦ **Correlational Research**
  - seeks to identify whether an association or relationship between two factors exists.
- ✦ A correlation measures the degree of relationship between two variables
  - ▣ Correlations range from -1.0 to 1.0
  - ▣ Positive correlation v. Negative correlation



## Correlation vs. Causation

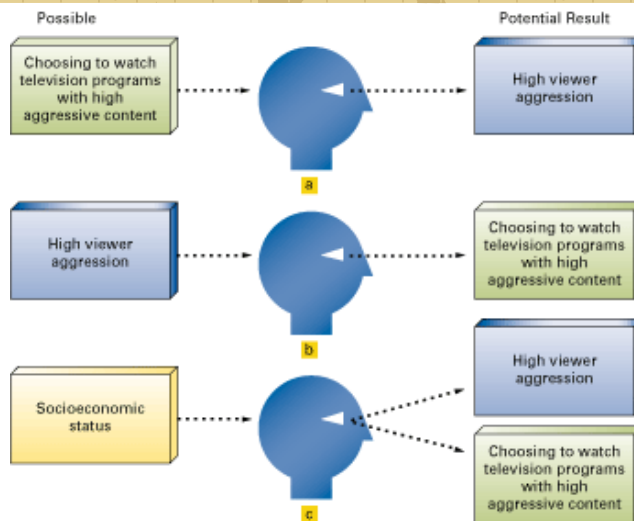
### ✚ Correlation $\neq$ Causation

- ✚ Bidirectional
- ✚ Third variable could be cause
  - i.e. ice cream & crime rates

### ✚ Experiments are the only way to establish cause and effect!



Suppose a study found that watching aggression on TV is correlated with aggressive behavior...3 possible correlations...





## *Experiments*

- ⊕ Direct way to test an hypothesis about a cause-effect relationship between factors
- ⊕ Factors are called *variables*
- ⊕ One variable is controlled by the experimenter
  - ⊞ e.g., democratic vs. authoritarian classroom
- ⊕ The other is observed and measured
  - ⊞ e.g., cooperative behavior among students



## *Experimental Variables*

- ⊕ Independent variable
  - ⊞ the controlled factor in an experiment
  - ⊞ hypothesized to cause an effect on another variable
  
- ⊕ Dependent variable
  - ⊞ the measured facts
  - ⊞ hypothesized to be affected



## *Experimental Method*

- ✦ Operational Definitions
  - ▣ Aggressive
  - ▣ Outgoing
- ✦ Experimental & Control Group
  - ▣ Or various treatment groups
- ✦ Placebo Effect



## *Experimental Design*

- ✦ Population V. Sample
  - ▣ Population refers to the entire group that you want to know about.
  - ▣ Sample is the smaller subset of the population that actually use in your study.
- ✦ Types of Samples
  - ▣ Random Sample
  - ▣ Representative Sample
  - ▣ Convenience Sample



## *Ethics and Research*

The American Psychological Association have developed ethical guidelines for researchers.

- Freedom from harm
- Informed consent
- Use of deception
- Maintenance of privacy
- Debriefing



## *Research Strategies*

### Comparing Research Methods

Research Method	Basic Purpose	How Conducted	What is Manipulated
Descriptive	To observe and record behavior	Case studies, surveys, and naturalistic observations	Nothing
Correlational	To detect naturally occurring relationships; to assess how well one variable predicts	Computing statistical association, sometimes among survey responses	Nothing
Experimental	To explore cause and effect	Manipulating one or more factors and using random assignment to eliminate preexisting differences among subjects	Independent variable(s)