

## Methods

*Hypothesis* = tentative statement about the relationship between two or more variables

*Independent Variable* = attribute that the experimenter changes and has control over

*Dependent Variable* = attribute that is measured by the experimenter

*Theory* = an explanation of a phenomenon that allows researchers to generate testable hypotheses with hope of collecting data that can support the explanation

*Operational Definition* = a statement of the procedures or ways in which a researcher is going to measure behaviors or qualities

*Validity* = a test's ability to measure what it is supposed to measure

*Reliability* = how well a research can be replicable

*Participants/Subjects* = individuals on which the research is conducted on

*Sample* = group of people who take part in the investigation

*Population* = total group of individuals from which the sample might be drawn

*Sampling* = process by which participants are selected

*Representative* = when a sample accurately reflects statistics of the members of the entire population

*Random Selection* = when every member of the population has an equal chance of being selected as a subject

*Stratified Sampling* = selecting subjects from a population based on specific criteria

## Experiments

- Experiment = research where independent variable is manipulated and the dependable variable is measured in response to determine a causal relationship, requires both control group and experimental group
- Random Assignment = each participant has an equal chance of being placed into a group (experimental or control)
- Confounding Variable = any difference between experimental and control conditions that may affect the dependent variable
- Bias = tendency for prejudiced behavior that may affect the study
  - Demand Characteristics = cues about the purpose of the study
  - Social Desirability = tendency for participants to give answers that make them look well

- Hawthorne Effect = the alteration of behavior by the subjects of a study due to their awareness of being observed
- Placebo Effect = phenomenon where recipient perceives an improvement in condition due to personal expectations, rather than the treatment itself
- Order Effect = when the order of treatments in an experiment matters
- Counterbalancing = when all possible treatments are offered in all possible orders to control for order effects

### **Correlations**

- Correlation = a relationship between two variables without ascribing a cause
- Positive Correlation = the presence of one thing predicts the presence of another
- Negative Correlation = the presence of one thing predicts the absence of another
- Correlation Coefficient = ranges from -1 to +1 (both ends are strong, 0 is weak)

### **Naturalistic Observation**

- Observing participants in their natural habitats

### **Case Study**

- Descriptive approach to obtain in-depth analysis of individual(s) or phenomena

### **Descriptive Statistics**

- Frequency Distribution = a table or graph that displays the frequency of various outcomes in a sample
  - Positively Skewed = a distribution with many low scores and a few very high scores
  - Negatively Skewed = a distribution with many high scores and a few very low scores
- Central Tendency = marks center of a distribution
  - Mean = sum of the data divided by the number of data points
  - Median = midpoint value of a set of data
  - Mode = the value that occurs most often in a set of values
  - Outlier = an observation point that is distant from other observations
- Measures of Variability = depicting the diversity of a distribution
  - Range = distance between highest and lowest score in a distribution
  - Variance = measures how far a set of (random) numbers are spread out from their average value
  - Standard Deviation = measure that is used to quantify the amount of variation or dispersion of a set of data values
  - Z Scores = measure of distance of score from the mean in units of standard deviation

### **Ethical Guidelines – Animal Research**

- Psychological studies using animals must meet the following requirements:
- They must have a clear scientific purpose
- The research must answer a specific, important scientific question
- Animals chosen must be best-suited to answer the question at hand
- They must care for and house animals in a humane way
- They must acquire animal subjects legally. Animals must be purchased from accredited companies. If wild animals must be used, they need to be trapped in a humane manner
- They must design experimental procedures that employ the least amount of suffering feasible

### **Ethical Guidelines – Human Research**

- Participation must be voluntary
- Participants must know they are involved in research and give consent. Deception used must be reduced and taken care to reduce trauma.
- Participant's privacy must be protected. Identities and actions must not be revealed, either via anonymity or confidentiality.
- Participants cannot be placed at significant mental or physical risk. It is permissible for participants to experience temporary discomfort or stress, but activities that cause long-term mental or physical harm must be avoided.
- After the study, participants need to be debriefed and told the purpose of the study and provided with ways to contact researchers about the results