1. Overview
   1. Hindsight Bias
      1. Upon hearing research findings, the tendency to believe that you knew it all along
   2. Applied Research
      1. Has clear, practical applications
   3. Basic Research
      1. Explores questions that are of interest to psychologists
      2. Not intended to have immediate real world applications
2. Terminology
   1. Hypothesis
      1. Expresses a relationship between two variables
   2. Variables
      1. The dependent variable depends on the independent variable
      2. Things that can vary among the participants in the research
   3. Theory
      1. Aims to explain some phenomenon
      2. Allows researchers to generate testable hypotheses with the hope of collecting data that support the theory
   4. Operational Definitions
      1. Explanations of how variables will be measured
   5. Validity and Reliability
      1. Research is valid when:
         1. it measures what the researcher set out to measure
         2. it is accurate
      2. Research is reliable when:
         1. it can be replicated
         2. it is consistent
   6. Participants (Subjects)
      1. The individuals on which the research will be conducted
   7. Sampling
      1. The process by which participants are selected
   8. ​Sample
      1. ​The group of participants
   9. ​Population
      1. ​Includes anyone or anything that could possibly be selected in the sample
   10. ​Random Selection
       1. ​Every member of the population has an equal chance of being selected
       2. ​​Increases the likelihood of a representative sample
       3. Allows researchers to generalize about their results
   11. ​Stratified Sampling
       1. ​Allows a researcher to ensure that the sample represents the population on some criteria (ex. race)
       2. Sample size uses proportions equal to that of the population
3. ​​Experimental Method
   1. ​Laboratory Experiments
      1. ​​​Conducted in a lab
      2. Advantage- highly controlled
   2. ​Field Experiments
      1. ​Conducted out in the world
      2. Advantage- more realistic
   3. ​Experiment
      1. ​Only way to show a cause-effect relationship
      2. Preferred research method
   4. ​Confounding Variables
      1. ​Any difference between the experimental and control conditions that could affect the dependent variable
         1. ​(other than the independent variable)
   5. ​​Assignment
      1. ​The process by which participants are put into the experimental or control group
   6. ​Random Assignment
      1. ​Each participant has an equal chance of being placed into any group
      2. ​​Limits the effect of participant-relevant confounding principles
   7. ​Group Matching
      1. ​Divide the sample into groups based on some criterion and assign half of each group to each condition
      2. ​​ex: gender
   8. ​Situation-Relevant Confounding Variable
      1. ​Ex: time of day, weather, presence of others
      2. Each condition has to be equivalent with the exception of the independent variable
   9. ​Experimenter Bias
      1. ​​​A situation-relevant confounding variable
      2. The unconscious tendency for research members to treat members of the experimental and control groups differently to increase the chance of confirming the hypothesis
   10. ​Double-Blind Procedure
       1. ​Neither the participants nor the researcher are able to affect the outcome of the research
       2. ​​Eliminates experimenter and subject bias
   11. ​Single Blind
       1. ​Only the subjects don’t know to which group they’ve been assigned
       2. Minimizes demand characteristics and participant bias
       3. Demand characteristics
          1. ​cues about the purpose of a study that affect the participants’ responses
       4. ​Response/participant bias
          1. ​the tendency for subjects to behave in certain ways
          2. ​​social desirability
             1. ​the tendency to try to give politically correct answers
   12. ​​​Experimental Group
       1. ​Gets the treatment operationalized in the independent variable
   13. ​Control Group
       1. ​Gets none of the independent variable
       2. ​​Without it, knowing the effects of the experimental treatment is impossible
   14. ​Hawthorne Effect
       1. ​Selecting a group of people on whom to experiment affects the performance of that group, regardless of what is done to them
   15. ​Placebo Effect
       1. ​Controlled by the placebo method
          1. ​giving the control group an inert drug
   16. ​​Counterbalancing
       1. ​Using participants as their own control group
       2. ​To eliminate order effects, have half do one order, the other half the other, then switch
4. ​​Correlational Method
   1. ​Correlations
      1. ​Express a relationship between two variables
      2. Positive
         1. ​the presence of one predicts the presence of the other
      3. ​Negative
         1. ​the presence of one predicts the absence of the other
      4. ​Do not imply causation
   2. ​Ex-Post Facto Study
      1. ​Cause and effect cannot be determined
      2. ​​The assignment of the independent variable is predetermined
      3. Controls all other aspects of the research process
   3. ​Survey Method
      1. ​Asking people to fill out surveys
      2. Investigates relationships, but not causation
      3. No independent or dependent variables
      4. Participant-relevant confounding variables can’t be controlled for
      5. Controlling for situation-relevant confounding variables
         1. ​bring all participants to one place at one time to complete the survey
      6. ​Response rate
         1. ​people who send the survey back
5. ​​​Naturalistic Observation
   1. ​Naturalistic Observation
      1. ​Observe participants in their natural habitats without interacting with them
      2. Control is sacrificed
      3. Goal
         1. ​to get a realistic and rich picture of the participants’ behavior
   2. ​​Disparity with Field Experiments
      1. ​In field experiments:
         1. ​manipulate independent variable
         2. ​​attempt to eliminate all confounding variables
6. ​​​Case Studies
   1. ​Case Study
      1. Used to get a full, detailed picture of one participant or a small group of participants
      2. Findings can’t be generalized to a larger population
      3. Often used to research clinical disorders
7. ​​Descriptive Statistics
   1. ​Frequency Distributions
      1. ​Can easily be turned into:
         1. ​frequency polygons
         2. histograms
      2. ​Y-axis represents frequency
      3. X-axis represents what you’re graphing
   2. ​Central Tendency
      1. ​Mean, median, mode
      2. ​​Mean most common, but most affected by outliers/extreme scores
   3. ​Outliers Skew Distributions
      1. ​Positively skewed
         1. ​has high outliers
         2. contains more low scores
         3. ​the mean is higher than the median
      2. ​Negatively skewed
         1. ​low outliers
         2. the mean is less than the median
   4. ​​Measures of Variability
      1. ​Depict the diversity of a distribution
      2. Range
         1. highest score minus lowest score
      3. ​Variance and standard deviation
         1. ​relate the average distance of any score in the distribution from the mean
         2. the higher they are, the more spread out the distribution
         3. the square root of the variance is the standard deviation
      4. ​Z-scores
         1. ​measure the distance of a score from the mean in units of standard deviation
         2. scores above the mean have a positive z-score
         3. 600 on SAT: z-score of +1
      5. ​Normal curve
         1. ​one standard deviation from the mean- 68% of scores
         2. two standard deviations- 95%
         3. three standard deviations- 99.7%
      6. ​Percentiles
         1. indicate the distance of a score from zero
         2. 50th percentile = z-score of 0
8. ​​​Correlations
   1. ​Correlation Coefficient
      1. ​Range from -1 to +1
      2. -1 = perfect negative correlation
      3. +1 = perfect positive correlation
      4. 0 = weakest possible correlation
   2. ​Scatter Plot
      1. ​Correlations can be graphed using a scatter plot
      2. Line of best fit (regression line)
         1. ​drawn through it
9. ​​​Inferential Statistics
   1. ​Purpose
      1. ​To determine whether findings can be applied to the larger population from which the sample was selected
   2. ​Sampling Error
      1. ​The extent to which the sample differs from the population
   3. ​Tests
      1. ​ANOVAs, MANOVAs, t-tests
      2. Consider the magnitude of difference and size of sample
      3. Yield a p-value
         1. ​the smaller, the more significant the results
         2. p = .05 is the cut off for statistically significant results
            1. ​5% chance that results occurred by chance
10. ​​​​APA Ethical Guidelines
    1. ​Institutional Review Board (IRB)
       1. ​Any type of academic research must first propose the study to this ethics board
    2. ​Animal Research: Requirements for Psychological Studies
       1. ​They must have a clear scientific purpose
          1. ​research must answer a specific and important scientific question
             1. ​animals chosen must be best suited to answer it
       2. ​​Must care for and house animals in a humane way
       3. Must acquire animal subjects legally
          1. ​purchased from accredited companies
          2. trapped in a humane way
       4. ​Must design experimental procedures that employ the least amount of suffering feasible
    3. ​Human Research
       1. ​Coercion
          1. ​participation must be voluntary
       2. ​Informed consent
          1. ​participants must know that they are involved in research and give consent
          2. ​no extreme deception about the nature of the study
       3. ​Anonymity/confidentiality
          1. ​identity and actions of participants can’t be revealed
          2. can’t identify participants as the source of any of the data
       4. ​Risk
          1. ​participants can’t be placed at significant mental/physical risk
       5. ​Debriefing procedures
          1. ​participants must be told the purpose of the study and provided with ways to contact the researchers about study results