

Unit II: Research Methods

The Need for Psychological Science

1. What are the three reasons that we can't rely solely on intuition and common sense? Be sure to explain all three of these reasons in detail.

2. What is critical thinking? _____

The Scientific Method and Description

1. Define AND give an example for each of the following.

- Scientific method _____

- Theory _____

- Hypothesis _____

- Operational definitions _____

- Replicate (no example needed for this one) _____

2. Describe each of the following three different ways to tests a hypothesis:

- Descriptive methods _____

- Correlational methods _____

- Experimental methods _____

3. Read pg. 40-42. Complete the chart of advantages and disadvantages of each research method. While advantages and disadvantages are not clearly given, many of them are implied in the reading—

Research Method & Definition	Advantages	Disadvantages
Case Studies		
Naturalistic Observation		
Surveys		

4. Using the methods above, what would be the *best* research method to use to study each of these?

Explain why.

- People who have one or more hobbies report more job satisfaction than people with no hobbies. _____

- Conjoined twins are stared at by younger children more often than by adults.

- Unmarried cab drivers talk more with their customers than do married cab drivers.

- More men than women report fantasies of making large sums of money.

5. Describe an example of the wording effect in surveys.

6. What is a sampling bias? What happens if you have a sampling bias in a survey (or even an experiment)? _____

7. All surveys and experiments start with a representative sample. For example, if the population I want to survey is all students in Wyoming, I would take 10 students from each high school in Wyoming. Those 10 students per school would be my representative sample and I would make sure that they have the same age, gender, ethnic, religious, etc. background as all the students in Wyoming.

- Define population. _____
- What is the population in this study that I want to do? _____
- Define random sample. _____

- How could I make sure that the students in Wyoming that I am giving this survey to are a random sample? _____

Module 6: Correlation and Experimentation

1. What is a correlation? Give an example of one. _____

2. Define the following:

- Correlation Coefficient _____
- Scatterplots _____
- Negative correlation _____
 - Give an example of a negative correlation.

- Positive correlation _____

- Give an example of a positive correlation.

3. Correlation Coefficients range from -1 to +1. What does it mean when a score is very close to -1 or +1 (for example, the coefficient is -.98 or +.87)?

4. Give an example of where correlation does not prove causation.

5. What is an illusory correlation? Give an example.

6. Briefly define the following about experiments:

- Experiment _____
- Experimental Group _____
- Control Group _____
- Randomly Assign _____
- Double-Blind Procedure _____
- Placebo Effect _____
- Independent Variable _____
- Confounding Variable _____
- Dependent Variable _____

7. Each of the following is a hypothesis of an experiment. For each one list the Independent Variable (IV), Dependent Variable (DV), Experimental Group (EG), and Control Group (CG).

- “There will be a statistically significant difference in graduation rates of at-risk high-school seniors who participate in an intensive study program as opposed to at-risk high-school seniors who do not participate in the intensive study program.”
 - IV: _____
 - DV: _____
 - EG: _____
 - CG: _____

- “After watching a videotaped re-enactment of a bank robbery, people will recall more about the robbery while being questioned under hypnosis by a police officer as opposed to not being under hypnosis.”
 - IV: _____
 - DV: _____

- EG: _____
 - CG: _____
 - “A new drug will increase the maze running performance of older rats.”
 - IV: _____
 - DV: _____
 - EG: _____
 - CG: _____
8. What is validity? _____
9. Why is random assignment so important? _____
- _____

Module 7: Statistical Reasoning in Everyday Life

*Statistics is the hardest part of research methods in psychology—please read this carefully! If you need to take extra notes to be clear on terms, do that. ☺

1. Why is it important to understand basic statistics in psych? _____
- _____
2. Define the following:
- Descriptive statistics _____
 - Histogram _____
 - Measures of central tendency
 - Mode _____
 - Mean _____
 - Median _____
 - Measures of variation
 - Range _____
 - Standard deviation _____
3. What does it mean when data has a skewed distribution? How does this happen? Why could this be misleading?
- _____
- _____
- _____
- _____
4. Why is standard deviation the most useful way of measuring how much scores deviate from one another?

5. What is the normal curve or normal distribution? Draw it below. Be sure to include everything in Figure 8.3, **including the percentages under each section of the curve.**

6. Let's see how much you understand this normal curve stuff! You take the Wechsler Adult Intelligence Scale test (a type of intelligence test we'll talk about next semester) and you score a 115. What percentage of people will score at or below your score? _____

7. Define inferential statistics. _____

8. What three principles should you keep in mind to make sure your generalizations are reliable?

9. Define statistical significance. _____

10. What is the number that psychologists stick to—for results to be statistically significant their odds of occurring by chance are less than _____ %?

Module 8: Frequently Asked Questions About Psychology

Read the section on ethics animal research (page 61) to help you respond to the following scenario.

1. Having read the ethics section explaining the question of animal research, would you approve the following research? Why or why not?

Professor King is a psychobiologist working on the frontiers of a new and exciting research area of neuroscience called brain grafting. Research has shown that neural tissue can be removed from the brains of monkey fetuses and implanted into the brains of monkeys that have suffered brain damage. The neurons seem to make the proper connections and sometimes are effective in improving performance in brain-damaged animals. These experiments offer important animal models for human

degenerative diseases such as Parkinson's and Alzheimer's. Professor King wants to transplant tissue from fetal monkey brains into the entorhinal cortex of adult monkeys; this is the area of the human brain that is involved with Alzheimer's disease.

The experiment will use 20 adult rhesus monkeys. First, the monkeys will be subjected to ablation surgery in the entorhinal cortex. This procedure will involve anesthetizing the animals, opening their skulls, and making lesions using a surgical instrument. After their recovery, the monkeys will be tested on a learning task to make sure their memory is impaired. Three months later, half of the animals will be given transplant surgery. Tissue taken from the cortex of monkey fetuses will be implanted into the area of the brain damage. Control animals will be subjected to the sham surgery, and all animals will be allowed to recover for two months. They will then learn a task to test the hypothesis that the animals having brain grafts will show better memory than the control group.

Professor King argues that this research is in the exploratory stages and can only be done using animals. She further states that by the year 2030 about 72 million Americans will have Alzheimer's disease and that her research could lead to a treatment for the devastating memory loss that Alzheimer's victims suffer.

2. Describe the four basic ethical principles developed by the American Psychological Association (APA) that guide researchers with human participants.

3. What does an IRB do? Why is it important?
