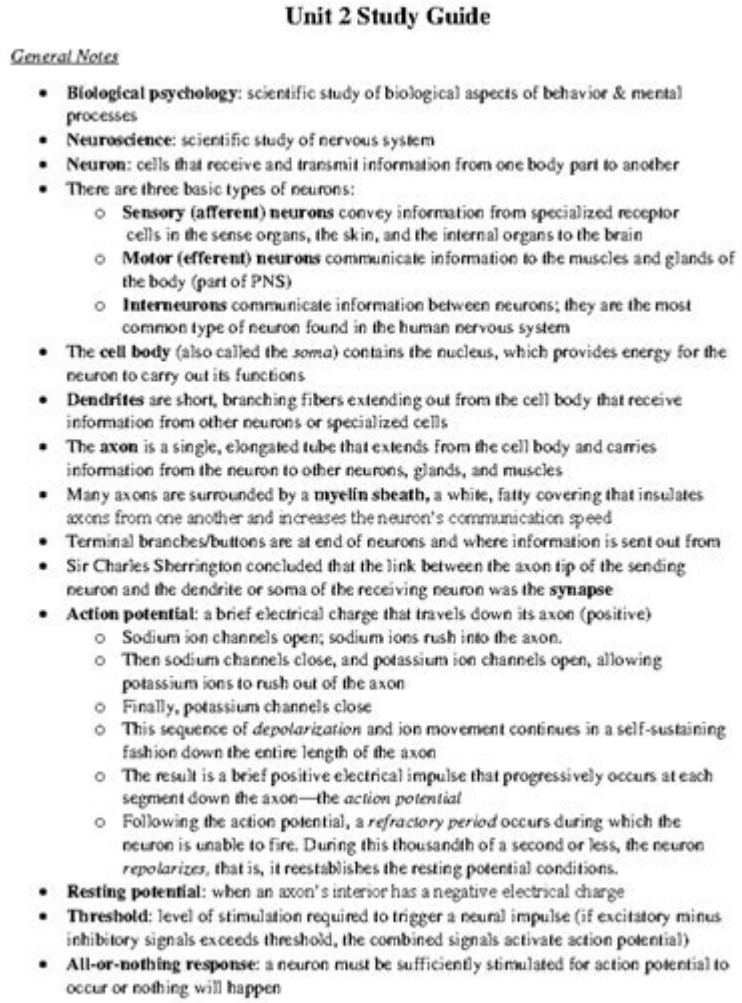
Ap Psychology Unit 2 Study Guide



Unit 2 Study Guide

General Notes

- **Biological psychology**: scientific study of biological aspects of behavior & mental processes
- **Neuroscience**: scientific study of nervous system
- **Neuron**: cells that receive and transmit information from one body part to another
- There are three basic types of neurons:
  - **Sensory (afferent) neurons** convey information from specialized receptor cells in the sense organs, the skin, and the internal organs to the brain
  - **Motor (efferent) neurons** communicate information to the muscles and glands of the body (part of PNS)
  - **Interneurons** communicate information between neurons; they are the most common type of neuron found in the human nervous system
- The **cell body** (also called the *soma*) contains the nucleus, which provides energy for the neuron to carry out its functions
- **Dendrites** are short, branching fibers extending out from the cell body that receive information from other neurons or specialized cells
- The **axon** is a single, elongated tube that extends from the cell body and carries information from the neuron to other neurons, glands, and muscles
- Many axons are surrounded by a **myelin sheath,** a white, fatty covering that insulates axons from one another and increases the neuron's communication speed
- Terminal branches/buttons are at end of neurons and where information is sent out from
- Sir Charles Sherrington concluded that the link between the axon tip of the sending neuron and the dendrite or soma of the receiving neuron was the **synapse**
- **Action potential**: a brief electrical charge that travels down its axon (positive)
  - Sodium ion channels open; sodium ions rush into the axon.
  - Then sodium channels close, and potassium ion channels open, allowing potassium ions to rush out of the axon
  - Finally, potassium channels close
  - This sequence of *depolarization* and ion movement continues in a self-sustaining fashion down the entire length of the axon
  - The result is a brief positive electrical impulse that progressively occurs at each segment down the axon—the *action potential*
  - Following the action potential, a *refractory period* occurs during which the neuron is unable to fire. During this thousandth of a second or less, the neuron *repolarizes*, that is, it reestablishes the resting potential conditions.
- **Resting potential**: when an axon's interior has a negative electrical charge
- **Threshold**: level of stimulation required to trigger a neural impulse (if excitatory minus inhibitory signals exceeds threshold, the combined signals activate action potential)
- **All-or-nothing response**: a neuron must be sufficiently stimulated for action potential to occur or nothing will happen

AP Psychology Unit 2 Study Guide

The AP Psychology exam requires a comprehensive understanding of various psychological concepts, theories, and practices. Unit 2 of the AP Psychology curriculum focuses primarily on research methods and statistics, which are essential for understanding how psychologists gather and interpret data. This study guide aims to provide you with a structured overview of the key concepts, terminology, and techniques that you'll need to master for this unit.

Overview of Research Methods

Understanding research methods is crucial for any psychological study. In this section, we

will cover the different types of research methods used in psychology, their advantages, and limitations.

Types of Research Methods

1. Descriptive Research
- Definition: This type of research aims to observe and record behavior. It does not manipulate variables.
- Methods:
- Observational Studies: Researchers observe subjects in their natural environment.
- Case Studies: In-depth analysis of a single subject or group.
- Surveys: Questionnaires or interviews to gather self-reported data from participants.
- Advantages: Provides a wealth of qualitative data; useful for generating hypotheses.
- Limitations: Cannot establish cause-and-effect relationships; potential for bias.

2. Correlational Research
- Definition: This method examines the relationship between two or more variables to determine if they are associated.
- Types of Correlation:
- Positive Correlation: As one variable increases, the other variable also increases.
- Negative Correlation: As one variable increases, the other variable decreases.
- Advantages: Identifies relationships between variables; useful for predicting outcomes.
- Limitations: Correlation does not imply causation; other variables may influence results.

3. Experimental Research
- Definition: This method involves manipulating one variable (independent variable) to observe the effect on another variable (dependent variable).
- Key Components:
- Control Group: A group that does not receive the experimental treatment.
- Experimental Group: A group that receives the treatment.
- Random Assignment: Participants are randomly assigned to groups to reduce bias.
- Advantages: Can establish cause-and-effect relationships; high degree of control.
- Limitations: May lack ecological validity; ethical concerns with manipulation.

Understanding Variables

In psychological research, understanding the types of variables is essential for designing studies and interpreting results.

Types of Variables

- Independent Variable (IV): The variable that is manipulated by the researcher.
- Dependent Variable (DV): The variable that is measured to assess the effect of the independent variable.
- Confounding Variable: An outside influence that affects the dependent variable,

potentially skewing results.

Operational Definitions

Operational definitions specify how variables will be measured or manipulated in a study. This clarity is vital for replicating research and ensuring consistent interpretations.

Research Ethics

The ethical considerations in psychological research protect the rights and welfare of participants. Key ethical principles include:

1. Informed Consent: Participants must be fully informed about the nature of the study and any risks involved.
2. Confidentiality: Personal information about participants must be kept private.
3. Debriefing: Participants should be informed about the study's purpose and any deceptions that were used once the study is complete.
4. Minimizing Harm: Researchers must ensure that the physical and psychological well-being of participants is prioritized.

Statistics in Psychology

Statistics play a critical role in analyzing research data. This section will outline the key statistical concepts you need to understand for Unit 2.

Descriptive Statistics

Descriptive statistics summarize and organize data to provide a clear picture of the results.

- Measures of Central Tendency:
- Mean: The average score.
- Median: The middle score when data is arranged in order.
- Mode: The most frequently occurring score.
- Measures of Variability:
- Range: The difference between the highest and lowest scores.
- Standard Deviation: A measure of the average distance of each score from the mean.

Inferential Statistics

Inferential statistics allow researchers to make conclusions about a population based on sample data.

- Hypothesis Testing: Involves formulating a null hypothesis (no effect) and an alternative hypothesis (some effect) to test the validity of claims.
- p-Value: Indicates the probability of obtaining the observed results if the null hypothesis is true. A p-value less than 0.05 is commonly considered statistically significant.
- Confidence Intervals: A range of values that is likely to contain the population parameter.

Research Design and Analysis

Choosing the right research design is crucial for addressing specific psychological questions. Below are some common designs and their applications.

Common Research Designs

1. Cross-Sectional Study: Examines data from different groups at one point in time.
- Use: Useful for identifying correlations and trends.
2. Longitudinal Study: Observes the same subjects over a prolonged period.
- Use: Effective for studying developmental changes and long-term effects.
3. Case-Control Study: Compares subjects with a specific condition (cases) to those without it (controls).
- Use: Often used in clinical research to identify risk factors.

Key Terminology

Familiarity with key terms is essential for successful navigation of Unit 2 concepts. Below is a list of important terms:

- Hypothesis
- Variable
- Random Sampling
- Placebo Effect
- Double-Blind Study
- Reliability
- Validity

Conclusion

Mastering the content of AP Psychology Unit 2 is essential for your success on the exam. By understanding research methods, ethical considerations, statistical analysis, and key terminology, you will be well-prepared to tackle questions in this unit. Regular review and practice with sample questions can further enhance your understanding and retention of these concepts. As you study, remember to apply these principles to real-world scenarios, which will deepen your understanding and appreciation of the field of psychology.

Frequently Asked Questions

What are the key components of the scientific method as outlined in AP Psychology Unit 2?

The key components of the scientific method include making observations, forming a hypothesis, conducting experiments, collecting data, and drawing conclusions.

How do different research methods, such as experiments and surveys, impact the validity of psychological studies?

Experiments allow researchers to determine cause-and-effect relationships, enhancing internal validity, while surveys can provide a broader understanding of attitudes and behaviors but may suffer from biases affecting external validity.

What is the importance of operational definitions in psychological research?

Operational definitions provide clarity by specifying how variables will be measured or manipulated, ensuring that research findings can be replicated and understood consistently.

What ethical considerations must researchers keep in mind when conducting psychological studies?

Researchers must ensure informed consent, protect participants from harm, maintain confidentiality, and debrief participants after the study to explain its purpose and findings.

What are the differences between longitudinal and cross-sectional studies in psychology?

Longitudinal studies track the same group of individuals over time to observe changes, while cross-sectional studies compare different groups at a single point in time, offering a snapshot of various demographics.

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