

Psychology 202

Chapter 2: Research Methodology

What Is Scientific Inquiry?

- We will come to understand how psychologists study behavior and mental processes: describing *what* happens, predicting *when* it happens, controlling *what causes* it to happen, and explaining *why* it happens
- This is known as the *scientific inquiry*
- **Scientific method:** Reflects a cyclical relationship: Theory, hypothesis, conducts research to test the hypothesis, may reevaluate theory depending on results from research. A good theory evolves over time and the result is an increasingly accurate model of some observable thing

The Scientific Method Depends on Theories, Hypothesis, and Research

- The scientific method reflects dynamic interaction between three essential elements: theories, hypotheses, and research
- **Theory:** A model of interconnected ideas or concepts that explains what is observed and makes predictions about future events
 - Explanation of how a phenomenon works
- **Hypothesis:** A specific prediction of what should be observed if a theory is correct
 - If the theory is accurate, the prediction framed in the hypothesis should be supported
- **Research:** A scientific process that involves the systematic and careful collection of data

- **Data:** Objective observations or measurements
- **Replication:** Repetition of an experiment to confirm the results

Theories Should Generate Hypotheses

- A good theory provides a wide variety of testable hypotheses

Unexpected Findings Can Be Valuable

- Many significant findings are the result of serendipity
- **Serendipity:** Unexpectedly discovering something important
- Scientists can make mistakes when doing their research, but it can turn into following up on their unexpected findings

What Types of Studies Are Used in Psychological Research?

- Once a scientist has come up with their hypothesis, they must decide what study of design they are going to use
- There are three main types of designs: descriptive, correlation, and experimental
- **Variable:** Something in the world that can vary and that a researcher can measure
- The term can refer to something that the researcher can manipulate, something the researcher can measure, or both
- Must define variables precisely and in ways that reflect the method used — operational definition
- **Operational definition:** Identifying variables and *quantifying* them so they can be measured
- Meaning that each variable is specified in a way that makes it possible to record its *quantity*

Descriptive Studies Involve Observing and Classifying Behavior

- **Descriptive studies:** Sometimes called observational studies — A research method that involves observing and noting the behavior of people or other animals to provide a systematic and objective analysis of the behavior
- There are two basic types of descriptive studies: Naturalistic observation or participant observation
- **Naturalistic observation:** A type of descriptive study in which the researcher is a passive observer, making no attempt to change or alter ongoing behavior
- **Participant observation:** A type of descriptive study in which the researcher is actively involved in the situation
- Descriptive techniques are especially valuable in early stages of research
- Sometimes researchers want to watch changes unfold naturally
- **Longitudinal studies:** A research method that studies the same participants multiple times over a period of time
- Research designs of this type, comparing different groups to make inferences about both are known as cross-sectional studies
- **Cross-sectional studies:** A research method that compares participants in different groups at the same time
- Longitudinal studies are expensive, they take a long time, and can be jeopardized when some participants drop out of the experiment
- Cross-sectional studies are faster and less expensive, but they include the possibility that they may have a unidentifiable variable which may be responsible for any difference between the groups