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# Cozby & Bates
# Methods in Behavioral Research (11th)

# Chapter 1:
# Scientific Understanding of Behavior

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# **Uses of Research Methods**

- Why do research?
  - Describe
  - Predict
  - Explain
  - Control
- Why should you know about research?
  - Critical evaluation (e.g., government sponsored programs)

# Why study Methods?

- Evaluating Research / Claims
- Good vs Bad Research (establishing the validity of the methodology)
- Justified vs Unjustified conclusions
- Performing Research (awareness of pitfalls)
- Useful skill to have (example of poor methodology: engineers at NASA who develop systems based on single-subject evaluations)
- Awareness of experimenter bias issues and the importance of operational definitions
- Thinking about Research (connection between the data and theory)
- Justified vs Unjustified conclusions

- **The GOAL of Behavioral Research:** To understand behavior; to discover how people perceive their world, how they think and feel, how they change over time, how they make decisions, and how they interact with others.  To describe the thoughts, feelings, and behavior of individuals.
- **Why should you know about Behavioral Research Methods?** You will learn to be an informed consumer with the ability to make critical evaluations of claims (e.g., the role of a control group).
- **The constraints on Behavioral Research** come from the difficulty of determining and measuring all of the variables of interest, and difficulties in data analysis and interpretation.
- **Behavioral Research is EMPIRICAL**: based on systematic collection and analysis of data
- **To perform behavioral research, we collect DATA**: information collected through formal observation or measurement

# **Scientific Method**

- Scientific Approach (vs. intuition and authority)
  - Avoids illusory correlation / magical thinking
  - Authority versus skepticism
  - The empirical (observation-based) approach the set of assumptions, rules, and procedures scientists use to conduct research
- Theory → Data → Analysis → Theory ….
- Procedures must be objective (free from personal bias or emotions)
- Findings should be replicable (→ accumulation of knowledge)

# Goldstein's "Evolved" theory of Science

- Accurate observations (data) is central
- Search for discovery and verification of ideas
- Open exchange and competition among ideas
- Peer review of research (and replication)

# **Pseudoscience**

- Non-*falsifiable* (testable) hypotheses
- Where data exists, methodology is suspect, thus data and conclusions are suspect
- Supportive evidence tends to be anecdotal and/or relies heavily on authority (e.g., Rorschach test)
- Claims ignore conflicting evidence
- Claims are often made in scientific sounding terminology and ideas
- Claims tend to be vague, rationalize strongly held pre-existing beliefs, and appeal to preconceived ideas
- Claims are never revised (e.g., as a result of new evidence)

# **Goals of Science (why study behavior?)**
(text says: *describe, predict, determine cause,* and *explain*… I just don't get it)

- Describe
- Predict
- Explain (determine cause)
  - Temporal precedence
  - Covariation of cause and effect
  - Elimination of alternative explanations
- Control

# **Basic versus Applied Research**
## (actually a continuum)

- Basic Research
  - Seeks to answer fundamental questions
- Applied Research (e.g., program evaluation)
  - Seeks to address immediate practical questions
  - Addresses practical problems
  - Evaluation of potential solutions

# **Chapter 1 Terminology**

- Alternative Explanations
- Applied Research
- Authority
- Basic Research
- Covariation (cause and effect)
- Empirical
- Goals of Science

- Illusory correlation
- Intuition
- Peer Review
- Program Evaluation
- Pseudoscience
- Skepticism
- Temporal Precedence

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