

Explaining Behavior: Scientific Approaches to Explanation & Understanding

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PSY 6217 – Research Design



Value of a Scientific Attitude

A scientific attitude and skill in scientific thinking are characteristics of critical thinkers.

- ☞ **Problem solving**
 - ♦ *Development of training programs or treatment plans*
- ☞ **Evaluation of proposed solutions to problems**
 - ♦ *Program evaluation*
- ☞ **Evaluation of research products**
 - ♦ *Mozart effect*
 - ♦ *Adoption of a new method to use in a clinical practice*

Methods for Establishing Beliefs

- ☞ **C. S. Peirce (1877)**
- ☞ **Tenacity**
- ☞ **Authority**
- ☞ **Rational (a priori method)**
- ☞ **Science**

Potential Sources of Error in Scientific Explanations

- ☞ **Faulty Inferences**
 - ♦ *Logical errors in reasoning about data*
 - ♦ *Acceptance of faulty assumptions for logical reasoning*
 - ♦ *Failure to consider alternative explanations*
 - ♦ *Confirmation bias – Failure to seek out evidence that disconfirms a potential explanation*
- ☞ **Pseudoexplanations**
 - ♦ *Circular explanations or tautologies*
 - ♦ *Accepting a label for a phenomenon as an explanation*

What Constitutes a Scientific Explanation?

- ☞ **Empirical**
- ☞ **Rational**
- ☞ **Testable**
- ☞ **Parsimonious**
- ☞ **General**
- ☞ **Tentative**
- ☞ **Rigorously Evaluated**

Types of Research

- ☞ **Basic Research**

- ☞ **Applied Research**