

The Brookbush Institute Publishes a NEW Glossary Term: 'Experimental Research'

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-- - Excerpt from Glossary Term:

[Experimental Research](#)

- Additional Glossary Term:

[Observational Research](#)

- Related Courses: [Physical Therapy Continuing Education](#)

DEFINITION

Experimental research is a study design in which researchers actively manipulate one or more independent variables (interventions, conditions, or exposures) and measure their effects on dependent variables (outcomes). Experimental research establishes a structured framework that infers a stronger causal relationship than non-experimental approaches. This is due to the directional sequence of changing a variable and then observing an outcome, as well as assigning participants to groups, controlling extraneous variables, and applying interventions under standardized conditions.

SEMANTIC CLARIFICATION

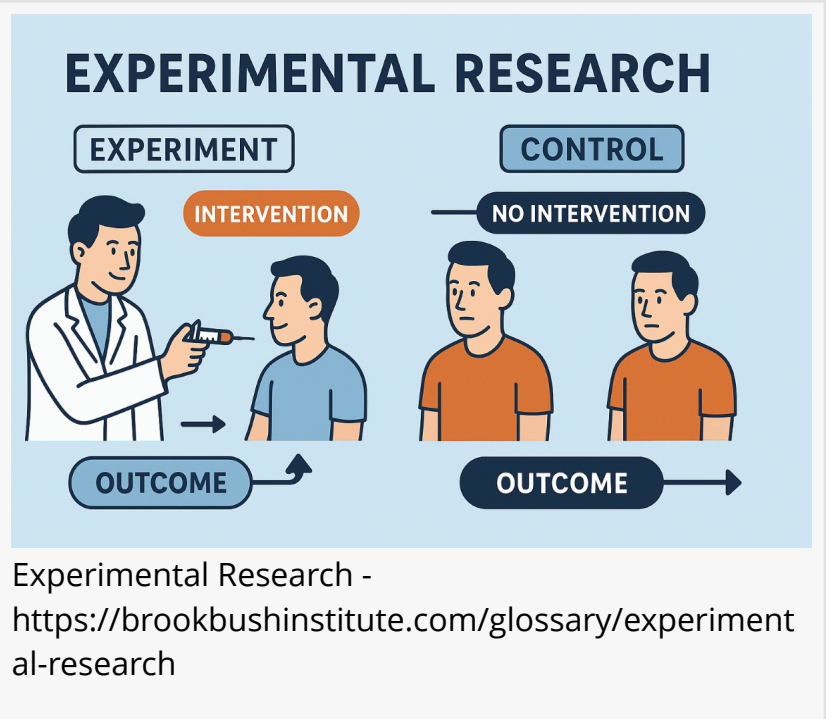
- "Experimental" indicates deliberate manipulation of variables by the researcher, distinguishing it from observational designs where variables are only measured.
- "Research" emphasizes the systematic and replicable process of data collection, analysis, and interpretation aimed at answering a specific question or hypothesis.

STRENGTHS AND LIMITATIONS

Strengths:

- Strongest framework for testing causal hypotheses.
- Allows for precise control over variables and conditions.
- Facilitates replication, reducing uncertainty in findings.

Limitations:





Experiments can demonstrate that an intervention causes a change, but they do not explain why the effect occurred. Mechanistic claims often require converging evidence from multiple areas of study."

Dr. Brent Brookbush, CEO of Brookbush Institute

- Not always feasible or ethical (e.g., intentionally assigning harmful exposures).
- It may lack external validity if experimental conditions are too "artificial" to be comparable to real-world practical applications.
- Resource-intensive, requiring careful design, participant recruitment, and adherence to protocols.

TYPES OF EXPERIMENTAL RESEARCH

- Randomized Controlled Trial (RCT) : Participants are randomly assigned to either an intervention or a control group. This is often cited as the gold standard for testing causality.
- Quasi-Experimental Design: Lacks randomization but still

includes manipulation and control (e.g., pre-post studies with comparison groups).

Field Experiment: Conducted in real-world settings to enhance ecological validity.

- Laboratory Experiment: Conducted in controlled environments to maximize precision and internal validity.

APPLIED EXAMPLE

- Research Question: Does a 6-week plyometric training program improve vertical jump height in collegiate basketball players?
- Experimental Research Design: Randomly assign players to either a plyometric program (experimental group) or a standard strength program (control group). Measure vertical jump height before and after the intervention.

FREQUENTLY ASKED QUESTIONS

What is the difference between experimental and observational research

- Experimental research involves active manipulation of variables and controlled conditions to investigate the potential of a cause-and-effect relationship. Observational research measures associations without intervention, making it less definitive for causality.

Are all experiments randomized controlled trials?...

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