

Research Methods in Psychology

Introduction & What Science Is



What We Will Cover in This Section

- Course requirements.
- Approaches to knowledge.
- Assumptions in the scientific method.
- Hypothesis testing, a review.



Course Requirements

- Required materials.
 - Beins
 - Patten
 - Study Guide
- Optional
 - Galvin, *Writing Literature Reviews*
- Reserve
 - Electronic Reserve
- Attendance
- Contacting me

Course Web Site

- Syllabus.
- How to contact me.
- PowerPoint slides.
- Interesting sites.
- Pictures of me.



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Evaluation #1

- Quiz after each section.
 - Each quiz worth about 15-25 points.
 - Drop lowest quiz in computing grade.
 - Drop the first missed quiz as the lowest quiz.
 - Make up subsequent quizzes with excuse.

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Evaluation #2

- Homework Assignments
 - Article reviews.
 - Each worth 5 points
 - Due the day of quiz on that section.
 - Ethics certification
 - Complete federal on-line ethics training found at <http://cme.nci.nih.gov/>.
 - "Human protections education for research teams".
 - Give me a copy of the certificate.
 - Completion worth 5 points.
 - If you have already completed the training, give me a copy of the certificate.

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Evaluation #3

- Paper: Literature review.
 - Worth 75 points.
 - Key Dates.
 - Topic selection: Tuesday, September 18
 - Written purpose statement: Tuesday, October 9.
 - Outline due: Tuesday, November 6.
 - Final paper: Tuesday, December 11.

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Other Evaluation Things

- No extra credit.
- No final examination.

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Reality Check

- My assumptions about you.
 - You expect to MASTER your profession.
 - You have had at least an introduction to statistics.
 - You have the courage to ask...
- What are your assumptions?

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Be Advised!

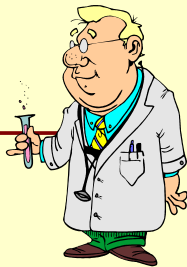


I get to answer
all cell phones
that ring during
class.

Major Goal of the Course

Give you the basic knowledge
needed to understand,
interpret, and evaluate routine
research.

The Science of Psychology



Approaches to Knowledge

TRADITION

Accepting knowledge because everyone has **always thought this way.**

INTUITION

Acquiring knowledge on the basis of **feelings, instinct or inspiration.**

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Approaches to Knowledge

AUTHORITY

Accepting knowledge because it is acquired from **a highly credible source.**

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Current Approaches

RATIONALISM

Acquiring knowledge on the basis **logic and reasoning.**

EMPIRICISM

Acquiring knowledge on the basis **experience.**

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Working Assumptions of Science

DETERMINISM

*The belief that events are caused by **specific natural phenomena.***

RATIONALITY

*There is a **set of knowable rules.***

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Assumptions of Science

REGULARITY

*Events follow the **same laws** and rules and occur in the same way at **all times and in all places.***

DISCOVERABILITY

*We can **discover** the uniformities that exist.*

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Goals of Research

DESCRIPTION

*The **accurate portrayal** of a situation of phenomenon.*

EXPLANATION

*The **statement of the cause** of some situation of phenomenon.*

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Goals of Research

PREDICTION

The ability to **anticipate the occurrence** of some event.

CONTROL

Manipulation of the conditions to **produce a change** in behavior.

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CAUSATION

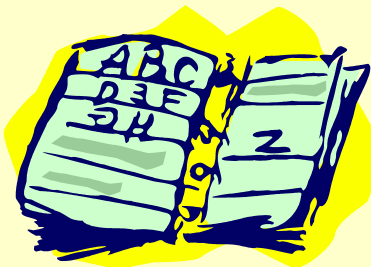
The manipulation of one event to produce another event.

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Organizing our Knowledge



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Terms

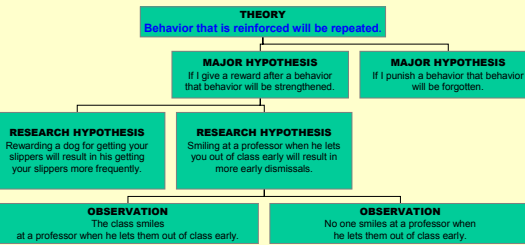
- **THEORY**
 - A general statement about the relationship between variables.
- **HYPOTHESIS**
 - A specific statement about the relationship between two or more variables.
- **Observation**
 - The formal collection of data to assess a specific hypothesis.

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How the System Works

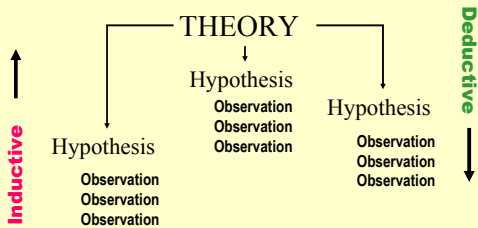


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Organizing Our Knowledge



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Types of Hypotheses

- Research hypothesis.
- Statistical hypothesis.
- Logical Hypotheses
 - Null hypothesis
 - Alternative hypothesis.

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Example

- Research hypothesis.
 - There is a positive relationship between grades and time spent studying.
- Logical hypotheses.
 - H_0 : There is a zero or negative relationship between grades and time spent studying.
 - H_a : There is a positive relationship between time spent studying and grades.
- Statistical hypothesis:
 - $r_{\text{grades.study time}} > 0$

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Testable

A theory or hypothesis can be evaluated empirically.

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Falsifiable

A theory or hypothesis that is stated in such a way that it can be judged as being correct or incorrect.

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IMPORTANT!!

In research we **NEVER PROVE** anything. Research hypotheses are either supported or fail to receive support.

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Critical Concepts



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Internal vs. External Validity

INTERNAL VALIDITY

The extent to which the results of an experiment can be attributed to the independent variable.

EXTERNAL VALIDITY

The extent to which a research data can be generalized.

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Major Goal of the Course

Give you the basic skills needed to independently evaluate the internal and external validity of psychological research.

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Special Assignment: The Mozart Effect

- Group A.
 - Find three articles including the initial article supporting the Mozart Effect.
- Group B.
 - Find three articles that do not support the Mozart Effect.

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