

# Experimentation and Research Methods



It is actually way more exciting  
than it sounds!!!!

# Applied V. Basic Research

- Applied Research *has clear, practical applications.*
- ***YOU CAN USE IT!!!***
- Basic Research *explores questions that you may be curious about, but not intended to be immediately used.*

Looking for a cure for cancer

Research on therapies for drug addicts has a clear purpose.



Studying how kissing changes when you get older is interesting...but that's about it.

# The Need for Psychological Science

Psychologists, like all scientists, use the **scientific method** to construct theories that organize observations and imply testable hypotheses

## ■ Hindsight Bias

- *we tend to believe, after learning an outcome, that we would have foreseen it*
- *the “I-knew-it-all-along” phenomenon*

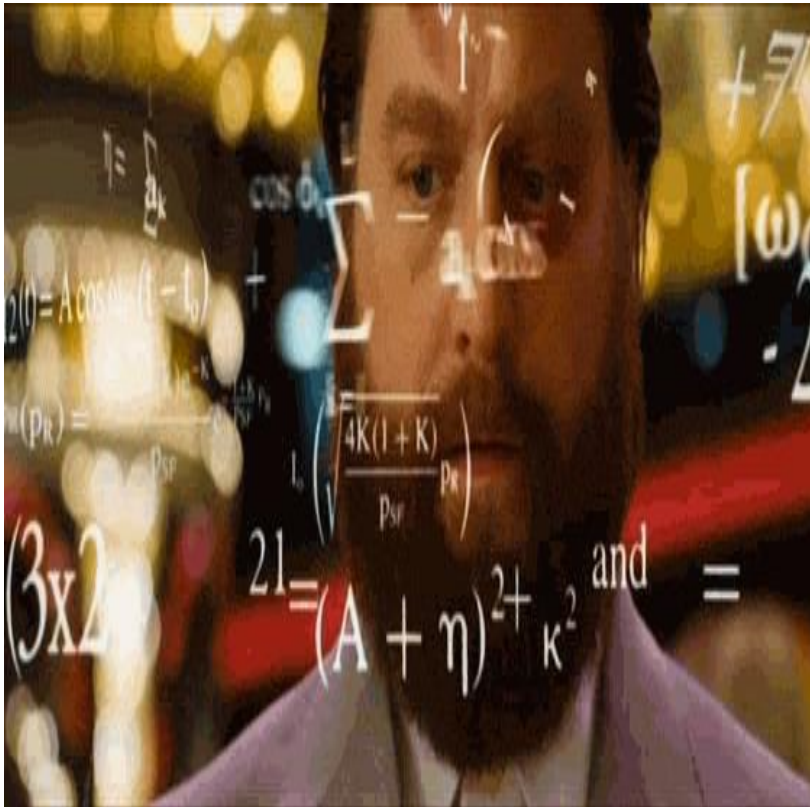
## ■ Overconfidence

- *we tend to think we know more than we do*
- **OVERCONFIDENCE WILL INHIBIT (OR STOP) CRITICAL THINKING (OR CREATIVITY)**

## ■ Critical Thinking

- *thinking that does not blindly accept arguments and conclusions*

- examines assumptions
- discerns hidden values
- evaluates evidence
- **Overconfidence will inhibit this**



- Theory

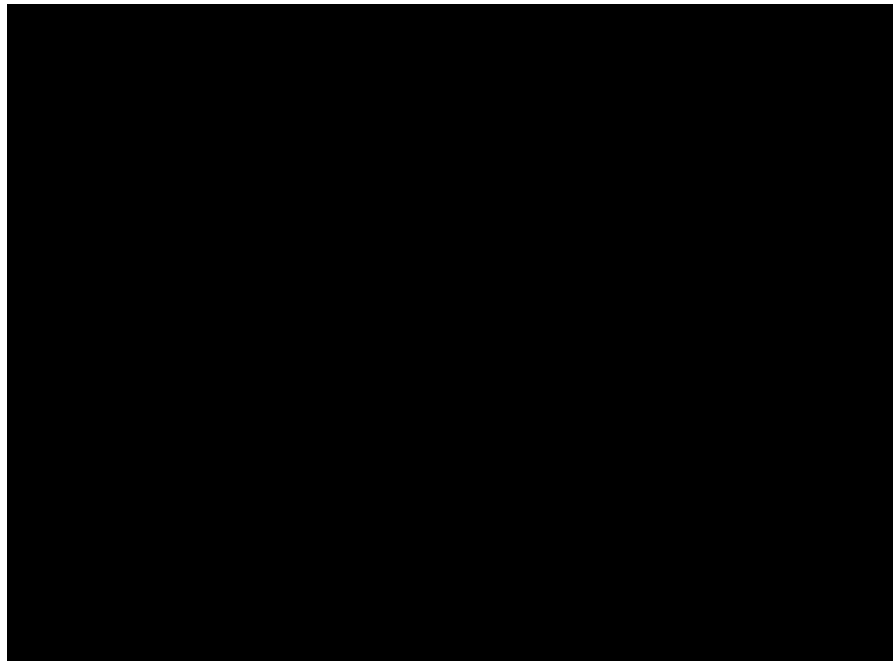
- *an explanation using an integrated set of principles that organizes and predicts observations*

- Hypothesis

- *a testable prediction*
- *often implied by a theory*

## ■ Operational Definition

- *a statement of procedures (operations) used to define research variables*
- Example-
  - intelligence may be operationally defined as what an intelligence test measures



## ■ Replication

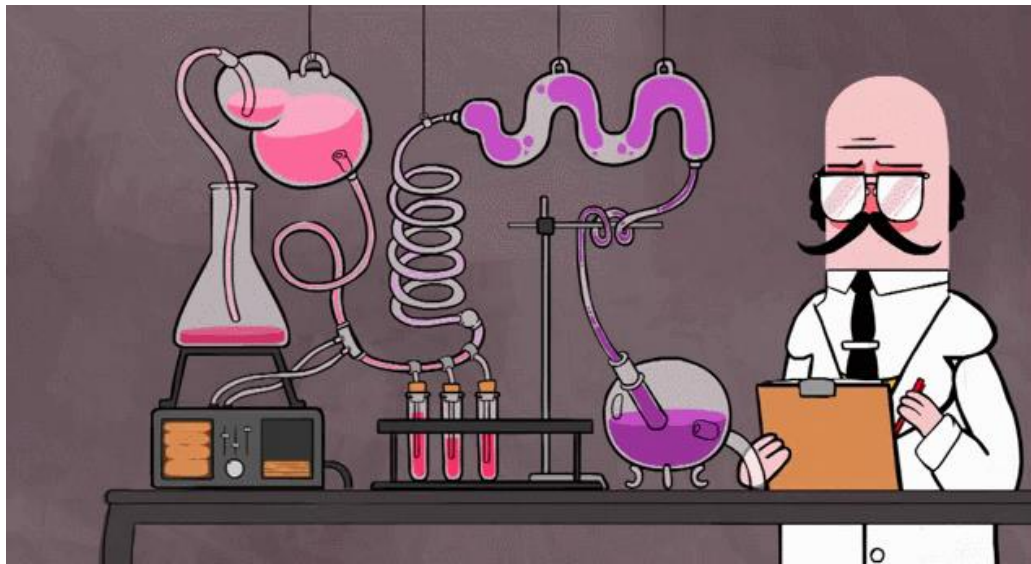
- *repeating the essence of a research study to see whether the basic finding generalizes to other participants and circumstances*
- usually with different participants in different situations





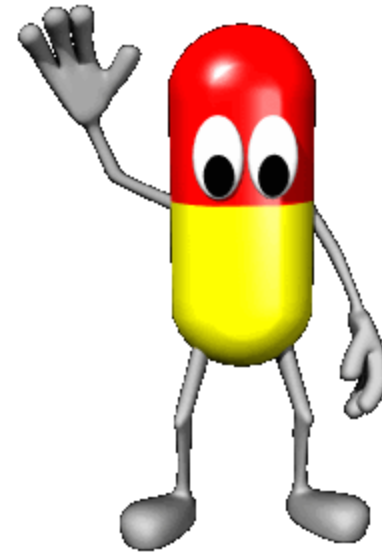
# ■ Experiment

- *an investigator manipulates one or more factors (independent variables) to observe their effect on some behavior or mental process (dependent variable)*
- *by random assignment of participants the experiment controls other relevant factors*
- *For study to be considered an experiment it needs to include either random assignment OR manipulation of one independent variables*



# Independent Variable

- *Whatever is being manipulated in the experiment.*
- *Hopefully the independent variable brings about change.*



*If there is a drug in an experiment, the drug is almost always the independent variable.*

# Dependent Variable



- *Whatever is being measured in the experiment.*
- *It is dependent on the independent variable.*

*The dependent variable would be the effect of the drug.*

# Beware of Confounding Variables



If I wanted to prove that smoking causes heart issues, what are some confounding variables?



Lifestyle and family history may also effect the heart.

- *The object of an experiment is to prove that A causes B.*
- *Factors which can influence or compromise the results of the experiment*