

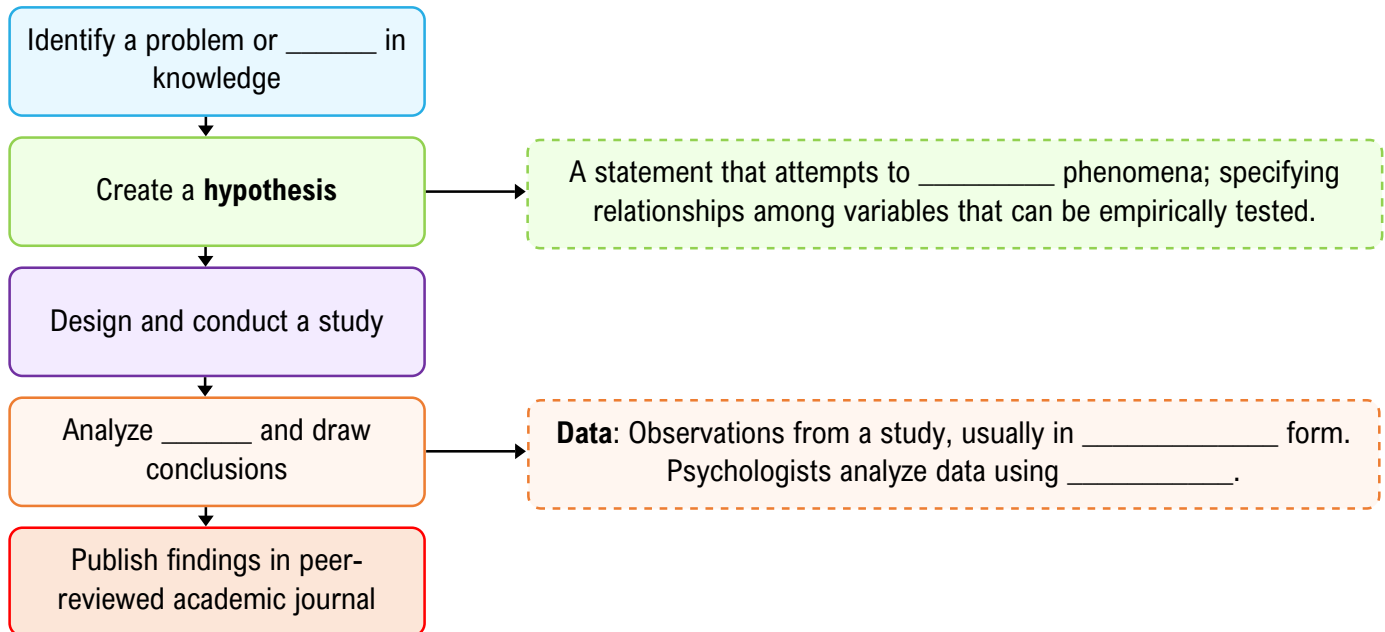
## TOPIC: THE SCIENTIFIC METHOD IN PSYCHOLOGY

### How the Scientific Method Applies to Psychology

◆ **Theory:** An organized system of assumptions and principles that attempts to \_\_\_\_\_ a set of phenomena.

- Good theories are \_\_\_\_\_, parsimonious, and supported by scientific evidence.

◆ Psychologists do research using the **scientific** \_\_\_\_\_:



### **EXAMPLE**

Max is a graduate student who studies human emotion. He noticed a gap in the current literature, so he created a hypothesis, designed and conducted a study to test it, and then analyzed his data. He was excited to find that the data supported his hypothesis, and so he immediately began designing a new study to address his next research question.

Which step of the scientific method did Max skip?

- a) Max failed to empirically test his hypothesis.
- b) Max did not examine his data through statistical testing, meaning the data are unreliable.
- c) Max did not publish his findings, so they have not been peer-reviewed.
- d) Max failed to identify a clear gap in the literature, making his research redundant.

## TOPIC: THE SCIENTIFIC METHOD IN PSYCHOLOGY

### Variables

◆ **Variables:** Construct of interest that can \_\_\_\_\_ from person to person (or situation to situation).

#### Independent Variable (IV):

A variable believed to influence or change another variable.

The hypothesized \_\_\_\_\_.

#### Dependent Variable (DV):

A variable that is measured or observed, assumed to be influenced by the IV.

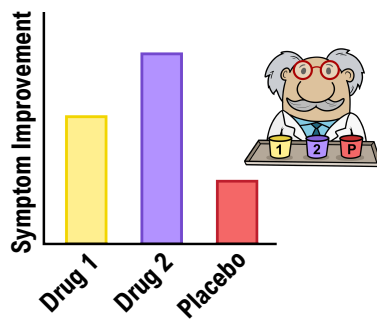
The hypothesized \_\_\_\_\_.



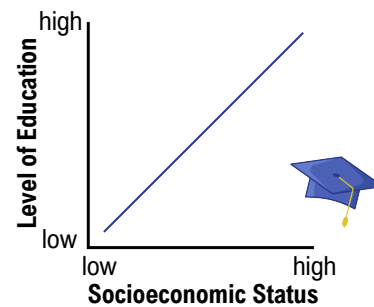
The **dependent** variable **depends** on the independent variable to help it change!

◆ Independent variables can be 1) manipulated or 2) measured. Dependent variables are always \_\_\_\_\_.

Example 1:



Example 2:



### EXAMPLE

Dr. O'Neil wants to study how sleep can affect working memory. She has 3 groups of participants. Group 1 gets 8 hours of sleep, Group 2 gets 6 hours of sleep, and Group 3 gets 4 hours of sleep. She then measures how participants perform on a working memory test. In Dr. O'Neil's experiment, what is the independent variable? What is the dependent variable?

IV: \_\_\_\_\_

DV: \_\_\_\_\_

### PRACTICE

A research team is investigating the effects of social media on self-esteem. They hypothesized that people who spend 3 or more hours per day using social media platforms will have lower self-esteem than people who spend less than 3 hours. In this research study, what is the dependent variable?

- a) Hours spent on social media.
- b) Self-esteem.

## TOPIC: THE SCIENTIFIC METHOD IN PSYCHOLOGY

### Operational Definitions

- ◆ Research topics in psychology are often abstract, so we need to *operationalize* our variables.
- ◆ **Operational Definition:** A description of a variable in \_\_\_\_\_ terms.
- ◆ Psychologists in different \_\_\_\_\_ may define the same term differently – read operational definitions carefully! Ex:



#### Developmental Psychologist

***“Attachment:*** A behavioral system that evolved to 1) promote infant safety and proximity to their caregiver and 2) promote infant exploration and mastery of the environment.”



#### Social Psychologist

***“Attachment:*** An affective bond between two people.”

- ◆ Operational definitions should \_\_\_\_\_ a researcher's measurement strategy!

### EXAMPLE

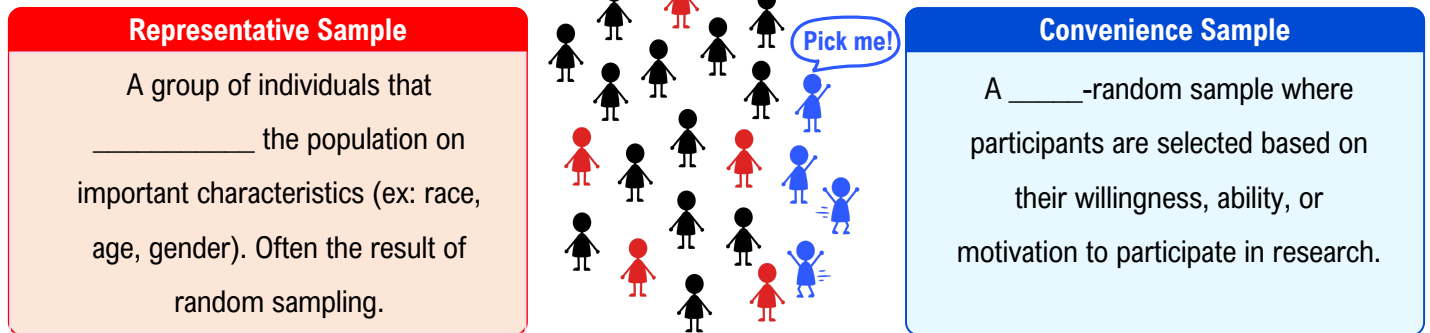
A research team is studying emotion regulation in 3–4-year-old children. In their study, they operationalize *emotion regulation* as *the ability to modify the expression of emotion*. Which of the following measurement tools would **best** map onto their operational definition?

- a) **The Emotional Expression Scale:** Designed for children 2-8. Includes questions about how frequently the child expresses the following emotions: fear, anger, sadness, joy, and excitement. Utilizes a Likert scale ranging from 1 (very frequently) to 6 (very infrequently).
- b) **The Emotion Scale:** Designed for ages 8 – 18. Includes questions about how well children can identify their emotions. Sample items include “I know when I feel anger” and “I can tell when my body is excited vs. nervous.” Utilizes a Likert scale ranging from 1 (almost always) to 4 (almost never).
- c) **The Preschool Emotion Regulation Scale:** Designed for children 2-5. Sample items include: “Exhibits unpredictable mood swings,” “Can calm down independently after experiencing anger,” and “Can control excitement during high-energy play.” Utilizes a Likert scale ranging from 1 (rarely/never) to 5 (almost always).

## TOPIC: THE SCIENTIFIC METHOD IN PSYCHOLOGY

### Research Samples

- ◆ **Population:** A large \_\_\_\_\_ of individuals the researcher is trying to understand.
- ◆ **Sample:** The group, selected from the \_\_\_\_\_, that participates in the research study.
- ◆ There are two types of samples:



- ◆ **Random Sampling:** Every member of the population has an \_\_\_\_\_ chance of being selected.
- ◆ Convenience samples are \_\_\_\_\_ in psychological research, mainly for practical and financial purposes.

### EXAMPLE

Dr. Eastman and his team want to study the exercise and sleep habits of high school students in a large metropolitan area. There are 602 high schools within this city. Which of the following sampling techniques would be **most** likely to produce a representative sample?

- Putting up flyers in each high school and letting students who are most interested in participating contact the researchers themselves.
- Selecting students from the 100 high schools that are closest to Dr. Eastman's lab.
- Randomly selecting students from all 602 high schools across the city.
- Networking through high school athletic departments and coaches to inform students about the study.

### PRACTICE

Which of the following describes a convenience sample?

- A sample that has been randomly selected from the population.
- A sample consisting of participants who were easily accessible to the researcher or were willing to do the study.
- A sample that matches the population in terms of main demographic characteristics.
- The population of interest.