



JCHS

AP PSYCHOLOGY

Research Methods: Experiments



■ **Psych Immersions?**

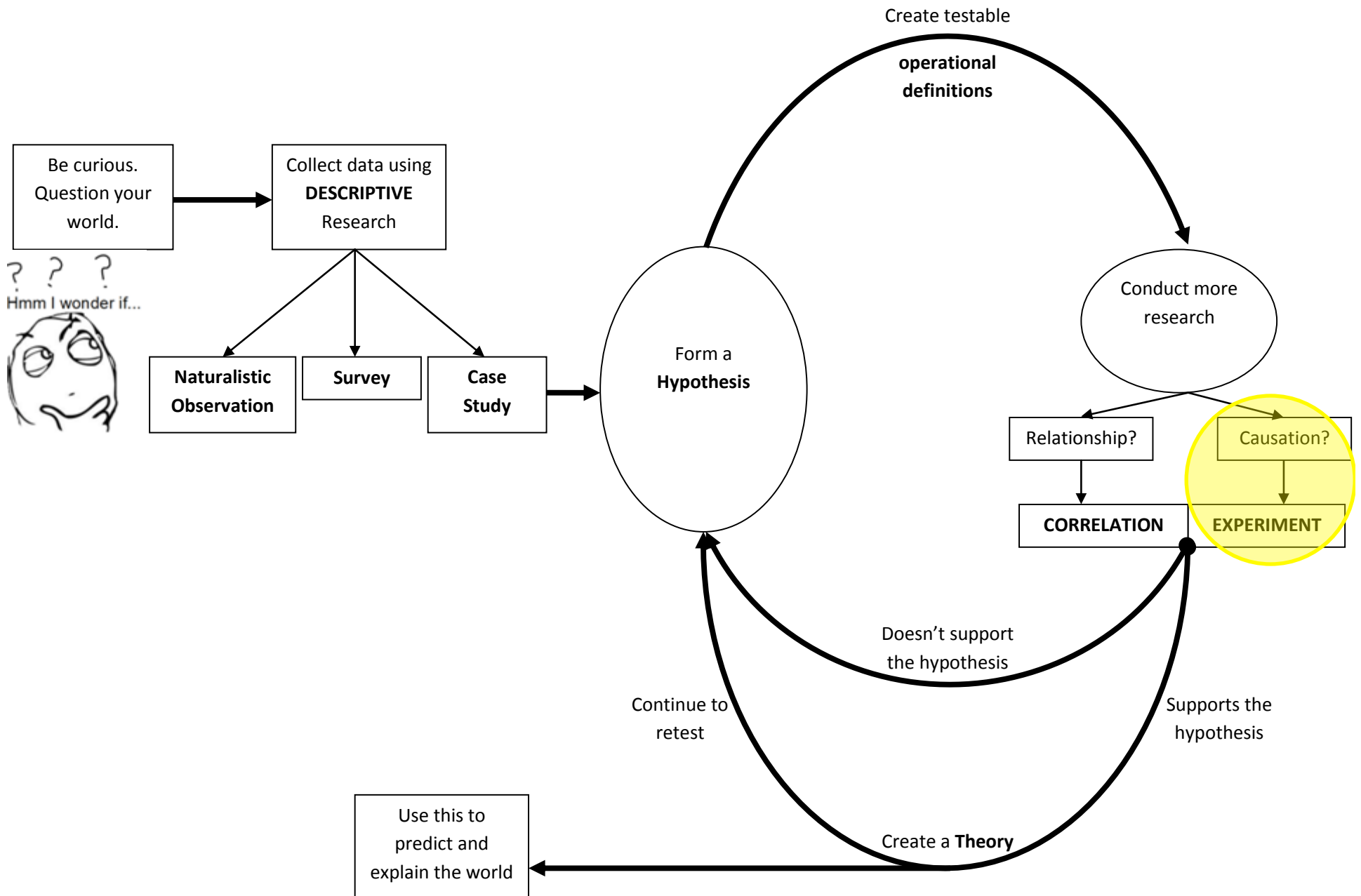
(Connections to something else in psychology,
another text, or your world.)

■ **Critical questions from
the reading?**

Essential Questions

- EQ 1-3: How do psychologists use the scientific method to study behavior and mental processes?
- EQ 1-4: What are the strengths and weaknesses of the different research methods?
- EQ 1-5: How do psychologists draw appropriate conclusions about behavior from research?

Scientific Method



Research Methods in Psychology

- Experimental Research
 - The **only** research method that can be used to determine **cause and effect**
 - Often called the experimental method
 - A researcher systematically manipulates a variable under controlled conditions.

Components of an Experiment

- Participants¹ or subjects
- Variable² – Factors that can have different values
- Operational Definition³ – Describes the specific procedure used to determine the presence of a variable
- Independent variable (IV)⁴
 - Cause (what you are studying)
 - This is the variable that is manipulated by the experimenter
- Dependent variable (DV)⁵
 - Effect (result of experiment)
 - This is the variable that is measured by the experimenter
 - It *DEPENDS* on the independent variable

Hint

- A good way to determine the IV from the DV is to word the Hypothesis in the form of an “If . . . then . . .” statement.
- What follows the IF is the IV
- What follows the THEN is the DV

Components of an Experiment cont' d

- Things to worry about
 - **Confounding Variables**⁶ – differences (other than the IV of course) that arise due to poor planning, sloppy work, or bias.
 - **Experimenter Bias**⁷ - Expectations by the experimenter that might influence the results of an experiment or its interpretation.

Components of an Experiment that involves treatments of some kind.

- Experimental group⁸

- Receives treatment or has the DV changed

- Control group⁹

- Does not receive treatment or doesn't have the DV changed, but is the same in every other way

- Demand Characteristics¹⁰ – clues participants perceive about the experiment suggesting how they should respond.

Clinical Research

Studies performed in humans that are intended to increase knowledge about how well a diagnostic test or treatment works in a particular patient population.

Clinical Research cont'd

Single-blind Procedure^{11a}

Participants don't know which treatment group – experimental or control – they are in

Placebo / Placebo effect¹²

Fake treatment / Some participants expect improvement in health so they imagine it

Double-blind Procedure^{11b}

In evaluating drug therapies it important to keep the patients and experimenter's assistants blind to which patients got real treatment and which placebo.

Clinical Research cont'd

Random Assignment¹³

Assigning participants to experimental (Breast-fed) and control (formula-fed) conditions by random assignment minimizes pre-existing differences between the two groups.

This is not the same as random selection!

A summary of steps during experimentation.

Breast milk makes babies smarter!

Random assignment
(controlling for other variables
such as parental intelligence
and environment)



Condition	Independent variable	Dependent variable
Experimental	Breast milk	Intelligence score, age 8
Control	Formula	Intelligence score, age 8

Experimentation

Exploring Cause and Effect

Like other sciences, experimentation makes the backbone of research in psychology.
Experiments isolate causes and their effects.

COMPARING RESEARCH METHODS

Research Method	Basic Purpose	How Conducted	What Is Manipulated	Weaknesses
Descriptive	To observe and record behavior	Do case studies, surveys, or naturalistic observations	Nothing	No control of variables; single cases may be misleading
Correlational	To detect naturally occurring relationships; to assess how well one variable predicts another	Compute statistical association, sometimes among survey responses	Nothing	Does not specify cause and effect
Experimental	To explore cause and effect	Manipulate one or more factors; use random assignment	The independent variable(s)	Sometimes not feasible; results may not generalize to other contexts; not ethical to manipulate certain variables

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