

What is a Hypothesis?

A hypothesis is a clear, testable statement or prediction about the relationship between variables in a study.

It is the foundation of the research question and guides what data will be collected and how it will be analyzed.

WHAT IS A HYPOTHESIS?

Null Hypothesis (H₀)

Definition:

The null hypothesis proposes that there is no effect, relationship, or difference between the variables being studied.

Purpose:

It serves as the default assumption that researchers test against.

Examples:

There is no difference in test scores between students who study in the morning and those who study at night.

There is no association between exercise frequency and stress levels. Think: "No change, no difference, no effect."

Alternate Hypothesis (H₁ or H_a)

Definition:

The alternative hypothesis proposes that there is an effect, relationship, or difference between variables.

Purpose:

This is the hypothesis the researcher hopes to support.

Examples:

Students who study in the morning perform better on tests than those who study at night.

There is a significant relationship between exercise and reduced stress. This is what researchers try to "prove" through evidence.

HOW ARE HYPOTHESES FORMED?

Hypotheses are formed through:

Reviewing prior research and theory
Identifying gaps in existing knowledge
Creating a testable statement related to your research question

Good hypotheses are:

- Specific
- Testable with measurable variables
- Based on theory or prior evidence

~ **Example:** After reviewing studies on sleep and performance, a researcher hypothesizes that "Getting less than 6 hours of sleep per night negatively affects reaction time in athletes."

WHY DO HYPOTHESIS MATTER?

- Guides the research process
- Helps determine study design, variables, and data collection
- Enables statistical testing
- Hypothesis testing is the core of inferential statistics
- Clarifies purpose
- Makes the researcher's expectations and goals clear
- Drives interpretation
- Results are analyzed in terms of supporting or rejecting H₀