Proposing and testing Hypothesis

- A hypothesis is a tentative statement about the relationship between two or more variables. It is a specific, testable prediction about what you expect to happen in a study. It is a preliminary answer to your question that helps guide the research process.
- Consider a study designed to examine the relationship between sleep deprivation and test performance.
- The hypothesis might be: "This study is designed to assess the hypothesis that sleep- deprived people will perform worse on a test than individuals who are not sleep-deprived."
- A hypothesis is crucial to scientific research because it offers a clear direction for what the researchers are looking to find.
- This allows them to design experiments to test their predictions and add to our scientific knowledge about the world.
- This article explores how a hypothesis is used in psychology research, how to write a good hypothesis, and the different types of hypotheses you might use.

The Hypothesis in the Scientific Method

In the scientific method, whether it involves research in psychology, biology, or some other area, a hypothesis represents what the researchers think will happen in an experiment.[1] The scientific method involves the following steps:

1. Forming a question
2. Performing background research

3. Creating a hypothesis
4. Designing an experiment
5. Collecting data
6. Analyzing the results
7. Drawing conclusions
8. Communicating the results

- The hypothesis is a prediction, but it involves more than a guess. Most of the time, the hypothesis begins with a question which is then explored through background research. At this point, researchers then begin to develop a testable hypothesis.
- Unless we are creating an exploratory study, our hypothesis should always explain what we *expect* to happen.
- In a study exploring the effects of a particular drug, the hypothesis might be that researchers expect the drug to have some type of effect on the symptoms of a specific illness. In psychology, the hypothesis might focus on how a certain aspect of the environment might influence a particular behavior.
- Remember, a hypothesis does not have to be correct. While the hypothesis predicts what the researchers expect to see, the goal of the research is to determine whether this guess is right or wrong. When conducting an experiment, researchers might explore numerous factors to determine which ones might contribute to the ultimate outcome.

- In many cases, researchers may find that the results of an experiment *do not* support the original hypothesis. When writing up these results, the researchers might suggest other options that should be explored in future studies.

Hypothesis Format

- In many cases, researchers might draw a hypothesis from a specific theory or build on previous research.
- For example, prior research has shown that stress can impact the immune system. So, a researcher might hypothesize: "People with high-stress levels will be more likely to contract a common cold after being exposed to the virus than people who have low-stress levels."
- In other instances, researchers might look at commonly held beliefs or folk wisdom. "Birds of a feather flock together" is one example of folk adage that a psychologist might try to investigate.
- The researcher might pose a specific hypothesis that "People tend to select romantic partners who are similar to them in interests and educational level."

Elements of a Good Hypothesis

So how do you write a good hypothesis? When trying to come up with a hypothesis for your research or experiments, ask yourself the following questions:

- Is your hypothesis based on your research on a topic?
- Can your hypothesis be tested?
- Does your hypothesis include independent and dependent

variables?

Before you come up with a specific hypothesis, spend some time doing background research. Once you have completed a literature review, start thinking about potential questions you still have. Pay attention to the discussion section in the journal articles you read. Many authors will suggest questions that still need to be explored.

To form a hypothesis, you should take these steps:

- Collect as many observations about a topic or problem as you can.
- Evaluate these observations and look for possible causes of the problem.
- Create a list of possible explanations that you might want to explore.
- After you have developed some possible hypotheses, think of ways that you could confirm or disprove each hypothesis through experimentation. This is

Falsifiability of a Hypothesis

- In the scientific method**,** falsifiability is an important part of any valid hypothesis. In order to test a claim scientifically, it must be possible that the claim could be proven false.
- Students sometimes confuse the idea of falsifiability with the idea that it means that something is false, which is not the case. What falsifiability means is that *if* something was false, then it is possible to *demonstrate* that it is false. One of the hallmarks of pseudoscience is that it makes claims that cannot be refuted or proven false.