

Description

The story of a research study begins by asking a question. Researchers all around the globe are asking curious questions and formulating research hypothesis. However, whether the research study provides an effective conclusion depends on how well one develops a good research hypothesis. Research hypothesis examples could help researchers get an idea as to how to write a good research hypothesis.

This blog will help you understand what is a research hypothesis, its characteristics and, how to formulate a research hypothesis

What is Hypothesis?

Hypothesis is an assumption or an idea proposed for the sake of argument so that it can be tested. It is a precise, testable statement of what the researchers predict will be outcome of the study. Hypothesis usually involves proposing a relationship between two variables: the independent variable (what the researchers change) and the dependent variable (what the research measures).

What is a Research Hypothesis?

Research hypothesis is a statement that introduces a research question and proposes an expected result. It is an integral part of the scientific method that forms the basis of scientific experiments. Therefore, you need to be careful and thorough when building your research hypothesis. A minor flaw in the construction of your hypothesis could have an adverse effect on your experiment. In research, there is a convention that the hypothesis is written in two forms, the null hypothesis, and the alternative hypothesis (called the experimental hypothesis when the method of investigation is an experiment).

Characteristics of a Good Research Hypothesis

As the hypothesis is specific, there is a testable prediction about what you expect to happen in a study. You may consider drawing hypothesis from previously published research based on the theory.

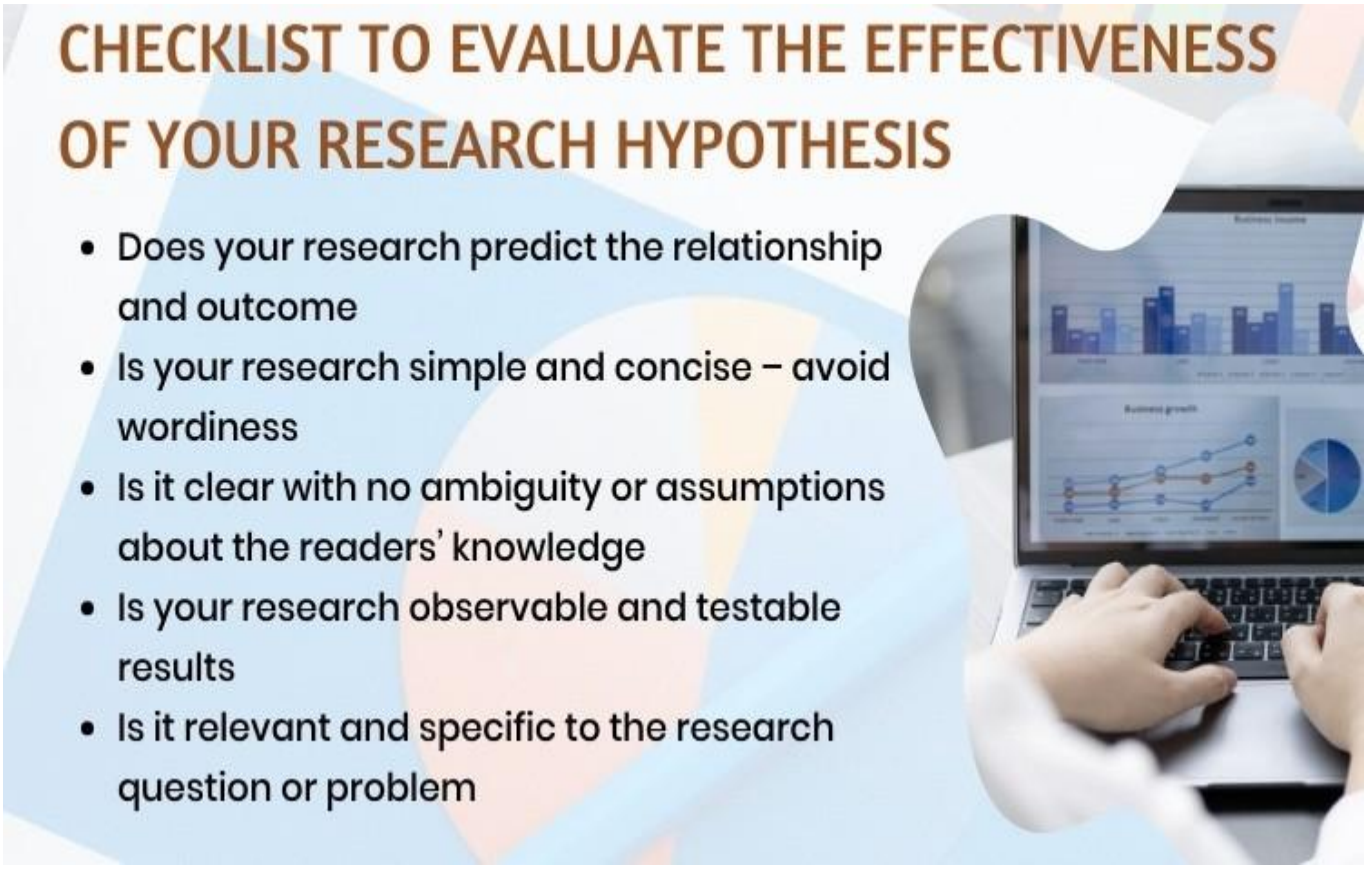
A good research hypothesis involves more effort than just a guess. In particular, your hypothesis may

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begin with a question that could be further explored through background research.

To help you formulate a promising research hypothesis, you should ask yourself the following questions:

1. Is the language clear and focused?
2. What is the relationship between your hypothesis and your research topic?
3. Is your hypothesis testable? If yes, then how?
4. What are the possible explanations that you might want to explore?
5. Does your hypothesis include both an independent and dependent variable?
6. Can you manipulate your variables without hampering the ethical standards?
7. Does your research predict the relationship and outcome?
8. Is your research simple and concise (avoids wordiness)?
9. Is it clear with no ambiguity or assumptions about the readers' knowledge
10. Is your research observable and testable results?
11. Is it relevant and specific to the research question or problem?



The questions listed above can be used as a checklist to make sure your hypothesis is based on a solid foundation. Furthermore, it can help you identify weaknesses in your hypothesis and revise it if necessary.

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How to Formulate a Research Hypothesis

A testable hypothesis is not a simple statement. It is rather an intricate statement that needs to offer a clear introduction to a scientific experiment, its intentions, and the possible outcomes. However, there are some important things to consider when building a compelling hypothesis.

1. State the problem that you are trying to solve.

Make sure that the hypothesis clearly defines the topic and the focus of the experiment.

2. Try to write the hypothesis as an if-then statement.

Follow this template: If a specific action is taken, then a certain outcome is expected.

3. Define the variables

Independent variables are the ones that are manipulated, controlled, or changed. *Independent variables* are isolated from other factors of the study.

Dependent variables, as the name suggests are dependent on other factors of the study. They are influenced by the change in independent variable.

4. Scrutinize the hypothesis

Evaluate assumptions, predictions, and evidence rigorously to refine your understanding.

Types of Research Hypothesis

The types of research hypothesis are stated below:

1. Simple Hypothesis

It predicts the relationship between a single dependent variable and a single independent variable.

2. Complex Hypothesis

It predicts the relationship between two or more independent and dependent variables.

3. Directional Hypothesis

It specifies the expected direction to be followed to determine the relationship between variables and is derived from theory. Furthermore, it implies the researcher’s intellectual commitment to a particular outcome.

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4. Non-directional Hypothesis

It does not predict the exact direction or nature of the relationship between the two variables. The non-directional hypothesis is used when there is no theory involved or when findings contradict previous research.

5. Associative and Causal Hypothesis

The associative hypothesis defines interdependency between variables. A change in one variable results in the change of the other variable. On the other hand, the causal hypothesis proposes an effect on the dependent due to manipulation of the independent variable.

6. Null Hypothesis

Null hypothesis states a negative statement to support the researcher's findings that there is no relationship between two variables. There will be no changes in the dependent variable due the manipulation of the independent variable. Furthermore, it states results are due to chance and are not significant in terms of supporting the idea being investigated.

7. Alternative Hypothesis

It states that there is a relationship between the two variables of the study and that the results are significant to the research topic. An experimental hypothesis predicts what changes will take place in the dependent variable when the independent variable is manipulated. Also, it states that the results are not due to chance and that they are significant in terms of supporting the theory being investigated.

Research Hypothesis Examples of Independent and Dependent Variables

Research Hypothesis Example 1
The greater number of coal plants in a region (independent variable) increases water pollution (dependent variable).

If you change the independent variable (building more coal factories), it will change the dependent variable (amount of water pollution).

Research Hypothesis Example 2
What is the effect of diet or regular soda (independent variable) on blood sugar levels (dependent variable)?

If you change the independent variable (the type of soda you consume), it will change the

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dependent variable (blood sugar levels)

You should not ignore the importance of the above steps. The validity of your experiment and its results rely on a robust testable hypothesis. Developing a strong testable hypothesis has few advantages, it compels us to think intensely and specifically about the outcomes of a study. Consequently, it enables us to understand the implication of the question and the different variables involved in the study. Furthermore, it helps us to make precise predictions based on prior research. Hence, forming a hypothesis would be of great value to the research. Here are some good examples of testable hypotheses.

More importantly, you need to build a robust testable research hypothesis for your scientific experiments. A testable hypothesis is a hypothesis that can be proved or disproved as a result of experimentation.

Importance of a Testable Hypothesis

To devise and perform an experiment using scientific method, you need to make sure that your hypothesis is testable. To be considered testable, some essential criteria must be met:

1. There must be a possibility to prove that the hypothesis is true.
2. There must be a possibility to prove that the hypothesis is false.
3. The results of the hypothesis must be reproducible.

Without these criteria, the hypothesis and the results will be vague. As a result, the experiment will not prove or disprove anything significant.

What are your experiences with building hypotheses for scientific experiments? What challenges did you face? How did you overcome these challenges? Please share your thoughts with us in the comments section.

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