

IMPACT OF HYPOTHESIS ON RESEARCH ETHICS



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What is Hypothesis?

- A hypothesis is an assumption that is made based on some evidence. This is the initial point of any investigation that translates the research questions into predictions. It includes components like variables, population and the relation between the variables.
- A research hypothesis is a hypothesis that is used to test the relationship between two or more variables.



□ Characteristics of Hypothesis

Following are the characteristics of the hypothesis:

- The hypothesis should be clear and precise to consider it to be reliable.
- The way of explanation of the hypothesis must be very simple and it should also be understood that the simplicity of the hypothesis is not related to its significance.
- Correspond with existing knowledge.
- Testable considering the current knowledge.
- Realistic.
- Clear and unambiguous terms.



□ Purpose of Hypothesis:

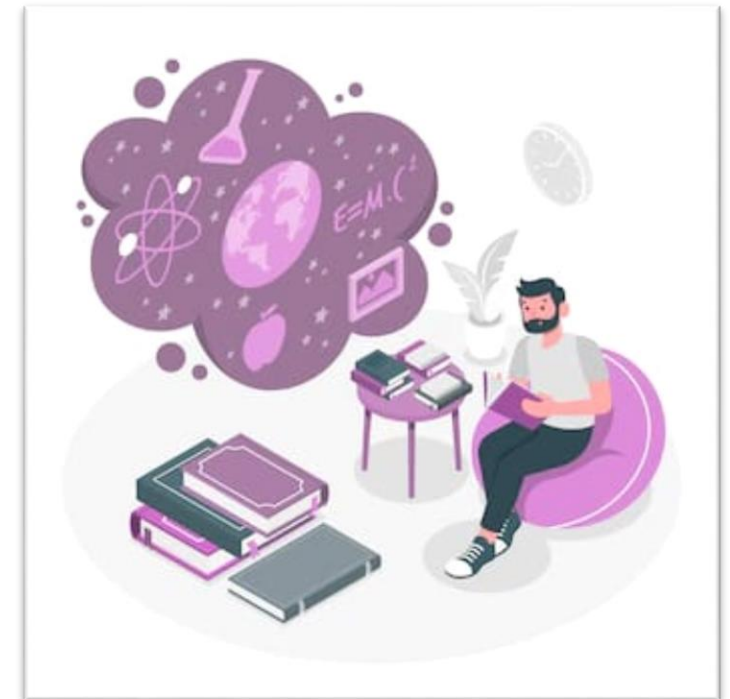
- ❖ It offers explanations for the relationships between those variables that can be empirically tested.
- ❖ It furnishes proof that the researcher has enough background knowledge to enable the person to make suggestions in order to extend existing knowledge.
- ❖ It gives direction to an investigation.
- ❖ It is a powerful tool in research process to achieve dependable knowledge.



❑ Sources of Hypothesis:

Following are the sources of hypothesis:

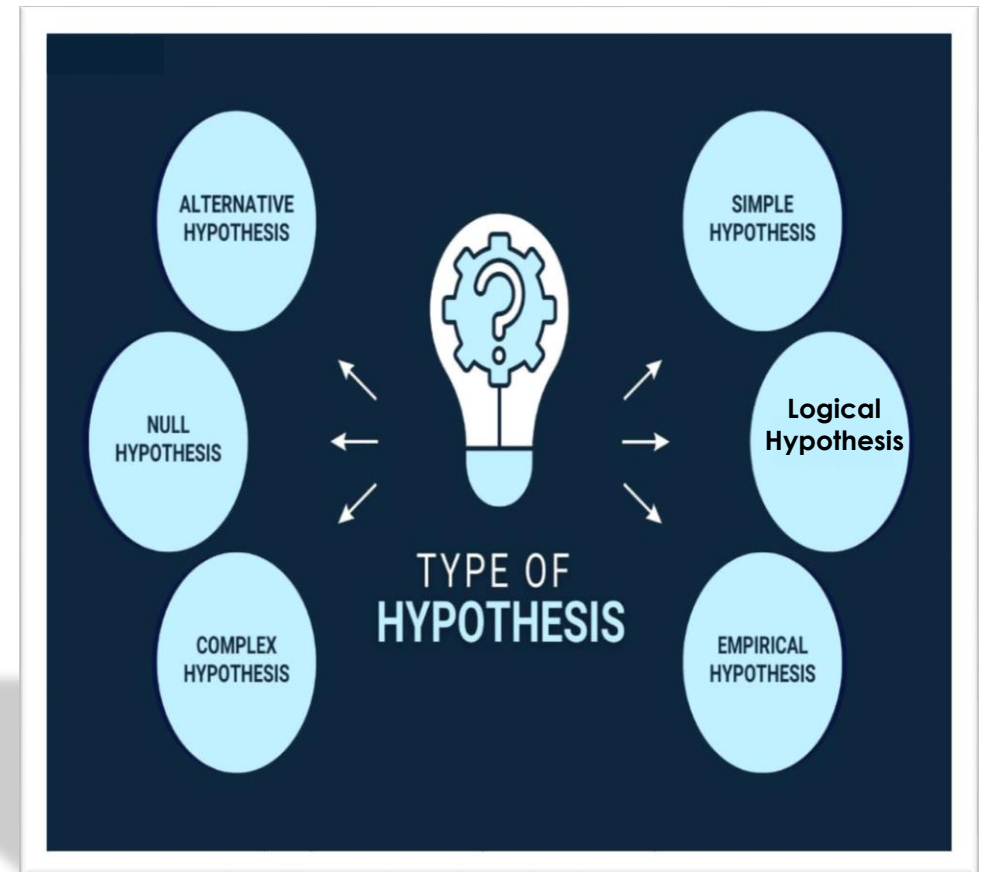
- The resemblance between the phenomenon.
- Observations from past studies, present-day experiences and from the competitors.
- Scientific theories.
- General patterns that influence the thinking process of people.



□ Types of Hypothesis:

There are six forms of hypothesis and they are:

1. Simple hypothesis
2. Complex hypothesis
3. Null hypothesis
4. Alternative hypothesis
5. Logical hypothesis
6. Empirical hypothesis



1. Simple hypothesis:

A simple hypothesis suggests only the relationship between two variables: one independent and one dependent.

Examples:

- If you stay up late, then you feel tired the next day.
- Turning off your phone makes it charge faster.

2. Complex hypothesis:

A complex hypothesis suggests the relationship between more than two variables, for example, two independents and one dependent, or vice versa.

Examples:

- Older people who live in rural areas are happier than younger people who live in rural areas.

3. Null hypothesis:

A null hypothesis, abbreviated as H_0 , suggests that there is no relationship between variables.

Examples:

- There is no difference in plant growth when using either bottled water or tap water.

4. Alternative hypothesis:

An alternative hypothesis, abbreviated as H_1 or H_A , is used in conjunction with a null hypothesis. It states the opposite of the null hypothesis, so that one and only one must be true.

Examples:

- Plants grow better with bottled water than tap water.

5. Logical hypothesis:

A logical hypothesis suggests a relationship between variables without actual evidence. Claims are instead based on reasoning or deduction, but lack actual data.

Examples:

- An alien raised on Venus would have trouble breathing in Earth's atmosphere.
- Dinosaurs with sharp, pointed teeth were probably carnivores.

6. Empirical hypothesis:

An empirical hypothesis, also known as a “working hypothesis,” is one that is currently being tested.

Examples:

- Washing your hands every hour can reduce the frequency of illness.

□ How will Hypothesis help in the Scientific Method?

Researchers use hypotheses to put down their thoughts directing how the experiment would take place. Following are the steps that are involved in the scientific method:

- Formation of question
- Doing background research
- Creation of hypothesis
- Designing an experiment
- Collection of data
- Result analysis
- Summarizing the experiment
- Communicating the results



□ How to write a hypothesis in 6 steps:

- i. Ask a question
- ii. Conduct preliminary research
- iii. Define your variables
- iv. Phrase it as an if-then statement
- v. Collect data to support your hypothesis
- vi. Write with confidence

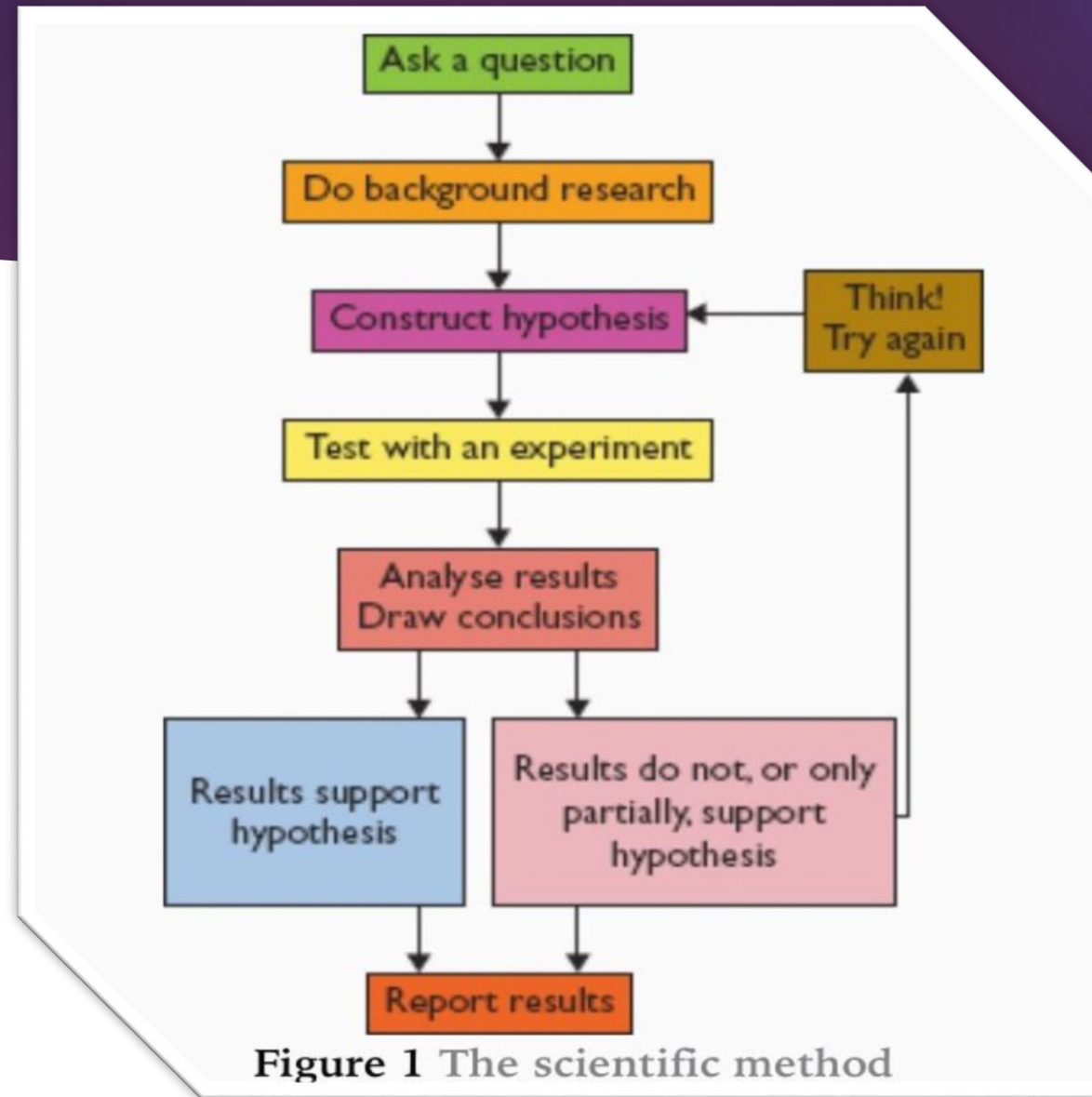


Figure 1 The scientific method

□ References:

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Thank You