

Lesson 5: Hypotheses

1. Meaning of Hypothesis

The word hypothesis consists of two words:

Hypo+ thesis = hypothesis

- ‘Hypo’ means tentative or subject to the verification
- ‘Thesis’ means statement about the solution of a problem.

As such, a hypothesis is a tentative statement about the solution of the problem. It offers a solution of the problem that is to be verified.

Another meaning of the word hypothesis which is composed of two words:

- ‘Hypo’ means composition of two or more variables which is to be verified.
- ‘Thesis’ means position of these variables in the specific frame of reference.

This is the operational meaning of the term hypothesis. Hypothesis is the composition of some variables which have some specific position or role of the variables i.e., to be verified. It is a proposition about the factual and conceptual elements. Hypothesis is called a leap into a dark. It is a brilliant guess about the solution of a problem (Singh, 2006, p.54).

2. Definitions of Hypothesis

The term hypothesis has been defined in several ways. Some important definitions have been given in the following:

- **According to J. E. Greigton**

“A hypothesis is a tentative supposition or provisional guess which seems to explain the situation under observation”.

- **According to J. W. Best**

“A hypothesis a shrewd guess or reference that is formulated and provisionally adopted to explain observed facts or conditions and to guide in further investigation”.

- **According to B. W. Tuckman**

“A hypothesis is defined as an expectation about events based on generalisation of the assumed relationship between variables”.

- **According to M. Verna**

“A hypothesis is a theory when stated as a testable proposition formally and clearly and subjected to empirical or experimental verification”

- **According to Barr and Scates**

“A hypothesis is a statement temporarily accepted as true in the light of what is, at the time, known about a phenomenon, and it is employed as a basis for action in the search for new truth, when the hypothesis is fully established, it may take the form of facts, principles and theories”.

- **According to G. J. Mouly**

“A hypothesis is an assumption or proposition whose testability is to be tested on the basis of the computability of its implications with empirical evidence with previous knowledge”.

It is important to distinguish between the three terms assumption, postulate, and hypothesis. In brief, the distinction is as follows:

- **Assumption:** It means taking things for granted so that the situation is simplified for logical procedure.
- **Postulate:** It is the working belief of most scientific activity. Postulates are not proven; they are simply accepted as they are and at their face value so that their basic work for the discovery of the other facts of nature can begin”.
- **Hypothesis:** A hypothesis is different from both of these. It is the presumptive statement of a proposition which the researcher seeks to prove (ibid).

3. Nature of Hypothesis

The following are the main features of a hypothesis:

- It is conceptual in nature.
- It is a verbal statement in declarative form.
- It indicates the tentative relationship between two or more variables.
- It has a future or forward reference. It relates to the future verification not to the past facts and information.
- It is the pivot of a scientific research. All the research activities are design for its verification.
- The nature of hypothesis can be well understood by differentiating it with other terms like assumption and postulate.

4. Functions of Hypothesis

The following are the main functions of hypothesis:

- It is a temporary solution of a problem concerning with some truth which enables researcher to start his/her research work.
- It may provide possible solutions to the problem.
- Each hypothesis may lead to formulate another hypothesis.
- Each hypothesis provides the researcher with definite statement which may be objectively tested and accepted or rejected and leads for interpreting results and drawing conclusions that is related to the original purpose.

In sum, the functions of a hypothesis may be condensed into the following:

- To delimit the field of research;
- To sensitise the research to have a realistic approach to the problem; and
- To offer the simple means for collecting evidences to the verification

5. Importance of Hypothesis

Research methodologists advocate the importance of hypothesis in the following ways:

- Hypotheses are indispensable in research because they build bridge between the problem and evidence that may solve the problem.
- A hypothesis provides the map that guides and expedites the investigation of the phenomena under consideration.
- The hypothesis directs the researcher’s efforts into productive channels.

- The hypothesis may suggest what subjects, tools, and instruments are needed.
- A hypothesis provides the framework for drawing conclusions.

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Forms of Hypotheses

According to **Bruce W. Tuckman**, there are four forms of hypotheses. These are: (1) Question (2) Declaration statement, (3) Directional statement, (4) Null form or Non-directional.

1. **Question form Hypotheses:** Some writers assert that the hypothesis may be stated as a question. However, there is no consensus on this view. **Question form** hypothesis stated as a question represents the simplest level of empirical observation. It fails to fit most definitions of hypothesis. It frequently appears in the list. There are cases of simple investigation which can be adequately implemented by raising a question, rather than dichotomizing the hypothesis forms into acceptable / reject able categories. In the question form hypothesis, a question is asked as to what the outcome will be \leftrightarrow instead of stating what outcome is expected. Suppose a researcher is interested in knowing whether programmed instruction has any relationship to test anxiety of children. The question form puts the statement in the form: “Will teaching children through \leftrightarrow programmed instruction decrease their test anxiety?”
2. **Declarative Statement:** A hypothesis may be developed as a declarative which can provide an anticipated relationship between variables or differences between variables. The declarative form of the hypothesis might be: “Teaching children through the \leftrightarrow programmed instruction material will decrease their test anxiety”.
3. **Directional hypothesis:** The hypotheses which stipulate the direction of the expected differences or relationships are terms as directional hypotheses. For example, the research hypothesis: “There will be a positive relationship between individual’s attitude towards high caste Hindus and his socio-economic status,” is a directional research hypothesis. This hypothesis stipulates that individuals with favourable attitude towards high cast Hindus will generally come from higher socio-economic Hindu families and therefore it does stipulate the direction of the relationship. Similarly, the hypothesis: “Adolescent boys with high IQ will exhibit low anxiety than adolescent boys with low IQ” is a directional research hypothesis because it stipulates the direction of the difference between groups.
4. **Non-directional hypothesis:** A research hypothesis which does not specify the direction of expected differences or relationships is a non-directional research hypothesis. For example, the hypotheses: “There will be difference in the adaptability of fathers and mothers towards rearing of their children” or “There is a difference in the anxiety level of adolescent girls of high IQ and low IQ” are non-directional research hypotheses. Although these hypotheses stipulate there will be a difference, the direction of the difference is not specified. A research hypothesis can take either statistical form, declarative form, the null form, or the question form

References

Creswell, J. (2015). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (5th Ed.). New York: Pearson.

Creswell, J. W. & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th Ed.). London: SAGE Publications, Inc.

Leavy, P. (2022) Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches (2nd Ed.). New York, NY: The Guilford.

Macintyre, C. (2000). The art of action research in the classroom. London: David Fulton.

Johnson, B., & Christensen, L. (2014). Educational Research: Quantitative, Qualitative and Mixed Approaches. California, CA: Sage Publications, Inc.