

Hypothesis: Concept and Types



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Lecture-1

Concept:

A hypothesis is a scientific guess assumption of any phenomena occurring over the earth's surface. A hypothesis is a conjectural statement of the relation between two or more variables (Kerlinger, 2002). We may define a hypothesis as a testable statement of potential relationship between two or more valuables (Me Guigan, 1998). It is an assumption which serves as a tentative explanation for a researcher, it is a question put to nature to be observations (Calpine, 1975). Hypothesis is therefore, any statement, proposition or assumption that serves as a tentative explanation of certain facts (Rebar & Rebar, 2001).

Example: Students attending regular classes perform better than the students not attending classes.

George A Lumberg has defined "The hypothesis is a tentative generalization, the validity of which remains to be tested. In its most elementary stage, the hypothesis may be a guess, imaginative ideas, which become the basis for action or investigation."

According to Goode and Halt "The formulation of a deduction however constitutes a hypothesis. If verified it becomes a part of theoretical construction."

According to Webster "A hypothesis is a proposition, condition or principle which is assumed, perhaps without belief, in order to draw out its logical consequences and by this method to test its accord with facts which are known or may be determined."

Characteristics of hypothesis: Hypothesis must possess the following characteristics;

1. Hypothesis should be a conjectural statement.
2. It should be in the format of a clear and precise statement.
3. It should be specific and related to the problems of research.
4. It should be logical and must explain the relationship between the variables.
5. It should be quantifiable and capable of being tested.
6. Hypothesis should be consistent with most known facts i.e. it must be consistent with a substantial body of established facts.
7. Hypothesis must explain the facts that gave rise to the need for explanation. Thus hypothesis must actually explain what it claims to explain (Predictable).

Sources used in hypothesis formulation:

1. Personal experience- of area, process, objects
2. Previous researches
3. Research abstracts, journals, books, thesis, dissertations etc
4. Theories/ models
5. Analogues/ Analogues

Difficulties in the Formulation of hypothesis:

1. Lack of clean theoretical background
2. Lack of logical background

3. *Lack of knowledge of scientific method*
4. *Scientific theory*
5. *Analogies*
6. *Personal experience*

Types of Hypothesis:

Broadly there are two types of hypotheses;

1. *Universal Hypothesis – which may be scientifically proved and universally accepted- in physical sciences- Newton's Law etc.*
2. *Limited Hypothesis – for limited area in social sciences – verifiable, based on deductions.*

According to Kerlinger, there are two types of hypothesis;

1. *Simple Hypothesis – shows relationship between two or more variables.*
2. *Difference Hypothesis – shows difference or comparison of two variables eg. Non-tribal's are more developed than the tribal's.*

Statistically there are two types of hypothesis;

1. *Null Hypothesis (H_0) – Null hypothesis testifies the significance of difference between the means. Null (German language- means zero). Hence it means the difference between the two means is zero or the difference is non-significant. It is a hypothesis of no difference- non-directional –two tailed test –signifying correct / incorrect. It is usually formulated for the purpose of being rejected.*

2. *Alternative Hypothesis (H1) – also called experimental hypothesis. It is a conjectural statement of difference between the two means. The alternative hypotheses assume that the differences are not due to fluctuations of sampling, they are real.*

H0: mean = 120 (Null hypothesis)

H1: mean \neq 120 (Alternative hypothesis) eg. Mean is greater or lesser than 120.

Practically there are two types of hypothesis;

1. *Directional Hypothesis – one tailed hypothesis. It indicates towards one variable. For example- Urban area is more prone to disease in comparison to rural area.*

2. *Non-directional Hypothesis – two-tailed hypothesis. This hypothesis does have fixed direction. In this hypothesis researcher does not make any statement about the direction of any variable eg. There is a difference between the development level of rural and urban areas.*

Significance:

1. *Hypothesis gives point to enquiry.*
2. *It helps in deciding the direction to proceed with*
3. *It helps in selecting relevant variables*
4. *It helps in drawing specific conclusions*

