

search hypothesis may be derived from theories or may result in developing of theories.

Null hypothesis is reverse of research hypothesis. It is a hypothesis of no relationship. Null hypotheses do not exist in reality but are used to test research hypotheses (ibid.:128-129).

Why is research hypothesis changed in null hypothesis for verification? The main reasons according to Black and Champion are: (1) It is easier to prove something *false* than to prove it *true*. (2) When one tries to prove something, it indicates his firm belief and commitment to the idea but when he wants to disprove it, it indicates his objectivity. (3) It is based on *probability* theory, i.e., it can either be *true* or *false*. It cannot be *both*. (4) It is a convention in social research to use null hypotheses.

Statistical hypothesis, according to Winter (1962), is a statement/observation about statistical populations that one seeks to support or refute. The things are reduced to *numerical quantities* and decisions are made about these quantities, e.g., income difference between two groups: group A is richer than group B. Null hypothesis will be: group A is not richer than group B. Here, variables are reduced to measurable quantities.

<i>Research Hypothesis</i>	<i>Null Hypothesis</i>	<i>Statistical Hypothesis</i>
H_1	H_0	H_1 and H_0
Two industrial establishments differ in mean profits	Two industrial establishments do not differ but are the same in mean profits	$H_0 : \bar{X}_1 = \bar{X}_2$ $H_1 : \bar{X}_1, \neq \bar{X}_2$ H_0 is rejected
$H_1 : \bar{X}_1, \neq \bar{X}_2$	$H_0 : \bar{X}_1 = \bar{X}_2$	H_1 is proved Null hypothesis is not true Research hypothesis is supported
	H_0 is derived from H_1	
H_1 is researcher's proposition		H_0 is not true H_1 is supported

Symbolically, the hypothesis may be shown as below:

		(mean age)		(same)	(\bar{X} bar sub one)
Null	H_0	\bar{X}_1	=	\bar{X}_2	
	H_1	\bar{X}_1	≠	\bar{X}_2	
Working/research	H_2	\bar{X}_1	>	\bar{X}_2	(greater than)
	H_3	\bar{X}_1	<	\bar{X}_2	(less than)

In the above example, in *null hypothesis*, mean age for the first group (A) is the same one as mean age for the second group (B), i.e., *two groups do not differ in average age*. In *research hypothesis*, group A is older than group B.

$$H_0 : \bar{x}_1 < \bar{x}_2 \text{ less than}$$

$$= \text{equal to}$$

$$H_1 : \bar{x}_1 > \bar{x}_2 \text{ greater than}$$

It could be said that:

- Research hypothesis is a derived hypothesis.
- Null hypothesis is research hypothesis to be tested.
- Statistical hypothesis is numerical expression of null hypothesis.

The process of formulating hypotheses may start with developing working hypotheses, which are then gradually upgraded to research hypotheses and finally translated into statistical hypotheses (null hypotheses and alternative hypotheses). The collected data will then allow statistical testing and show whether the research hypothesis is accepted or rejected.

Goode and Hatt (1952:59-62) have given the following three types of hypotheses on the basis of level of abstractness:

1. which presents proposition in common sense terms or, about which some common sense observations already exist or, which seeks to test common sense statements.

For example:

bad parents produce bad children, or
committed managers always give profits, or
rich students drink more alcohol.

2. which are somewhat complex, i.e., which give statement of a little complex relationship.

For example:

- (i) Communal riots are caused by religious polarisation (V.V.Singh).
 - (ii) Growth of cities is in concentric circles (Burgess).
 - (iii) Economic instability hampers development of an establishment.
 - (iv) Crime is caused by differential associations (Sutherland).
 - (v) Juvenile delinquency is related to residence in slums (Shaw).
 - (vi) Deviant behaviour is caused by mental disorders (Healy and Bronner).
3. which are very complex, i.e., which describe relationship between two variables in more complex terms, e.g., high fertility exists more in low income, conservatives, and rural people than in high income, modern, and urban people. Here dependent variable is 'fertility' while independent variables are income, values, education, and residence, etc. The other example is: Muslims have high fertility rate than Hindus. We have to keep number of variables constant to test this hypothesis. This is abstract way to handle the problem.

DIFFICULTIES IN FORMULATING HYPOTHESES

According to Goode and Hatt (1952:57), three main difficulties in formulating hypotheses are:

1. Inability to phrase the hypothesis properly.
2. Absence of clear theoretical framework or knowledge of theoretical framework, e.g., awareness of rights among women depends upon personality, environment (education and family and aspirations).
3. Lack of ability to utilise the theoretical framework logically, e.g., workers' commitment and role skills and role learning.

Evaluating whether a hypothesis is good or bad depends upon the amount of information it provides about the phenomenon. For example, let us take the following hypothesis, given in three forms:

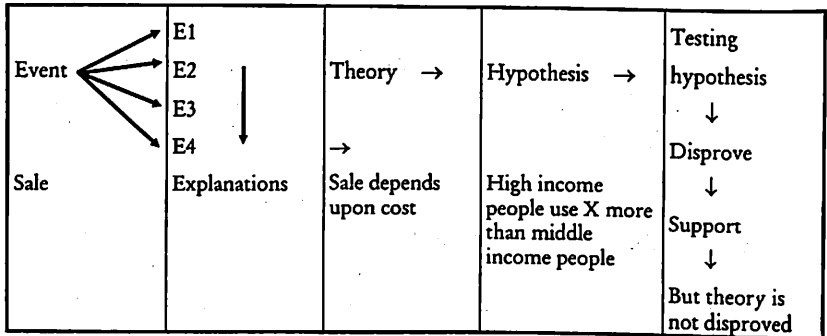
- (i) X is associated with Y.
- (ii) X is dependent on Y.
- (iii) As X increases Y decreases.

Of these three forms, third form explains the phenomenon better. We can take two more examples of good and bad hypotheses:

- (i) More the institutionalised controls, more the strains.

(ii) Rigid institutionalised control hampers goal-attainment.

The following illustration explains relation between theory, hypothesis and event:



CHARACTERISTICS OF A USEFUL HYPOTHESIS

Goode and Hatt (1952:67) have described the following characteristics of a good hypothesis:

1. *It must be conceptually clear.* This means that (i) concepts should be defined lucidly; (ii) these should be operationalised, (iii) these should be commonly accepted, and (iv) these should be communicable. In the hypothesis, "as institutionalisation increases, production decreases", the concept is not easily communicable.
2. *It should have empirical referents.* This means that it should have variables which could be put to empirical test, i.e., they should not merely be moral judgements. For example, capitalists exploit workers, or officers exploit subordinates, or young people are more radical in ideas, or efficient management leads to harmonious relations in an establishment. These hypotheses cannot be considered useful hypotheses.
3. *It should be specific,* e.g., vertical mobility is decreasing in industries, or exploitation leads to agitation.
4. *It should be related to available techniques,* i.e., not only the researcher should be aware of the techniques but these should be actually available. Take the hypothesis: "change in infrastructure (means of production and relations of production) leads to change in social structure (family, religion, etc.)". Such hypothesis cannot be tested with available techniques.
5. It should be related to a body of theory.

SOURCES OF DERIVING HYPOTHESES

Following sources have been identified for deriving hypotheses:

Cultural values of society

American culture, for example, emphasises individualism, mobility, competition and equality, while Indian culture emphasises tradition, collectivism, *karma* and unattachment. Therefore, Indian cultural values enable us to develop and test the following hypotheses:

- (i) Residential jointness in Indian family has decreased but functional jointness continues to exist.
- (ii) Divorce is used as a last resort by a woman to break her marriage.
- (iii) Caste is related to voting behaviour among Indians.
- (iv) Indian family comprises of not only primary and secondary kin but most often of tertiary and distant kin too.

Past research

Hypotheses are often inspired by past research. For example, a researcher studying the problem of student unrest may use the finding of another study that "students having spent two or three years in the college/university take more interest in students' problems in the campus than freshers; or that "students with high ability and high social status participate less in students' agitations than those who have low ability and low social status". Such hypotheses could be used either to replicate past studies or revise the hypotheses that the alleged correlation does not exist.

Folk wisdom

Sometimes researchers get the idea of a hypothesis from commonly held lay beliefs, e.g., caste affects individual's behaviour, or that geniuses lead unhappy married life, or married women without children are less happy, or that young illiterate married girls are more exploited in joint families, or that being an only child creates barriers in child's development of some personality characteristics, and so on. Although social scientists are often accused of stating the obvious, social researchers who test a hypothesis based on "what everybody knows is true" often find that it is not true after all.