

## **10. Concept in Social Research – Hypothesis**

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#### **10.1 Introduction:**

There are many different reasons for carrying out social research and many different kinds of social research. The reason for researching a particular topic will determine the kind of research and the approach used. The purpose of much social research is to address a social issue or problem of some kind; and there are many more specific reasons for doing research, each of which influences the approach taken and the kind of research done. When you are planning a research project it is very important to clarify why the research is being done; this is an essential first step. The purpose of your research will determine the methods that you choose and the perspective or approach that you take.

#### **10.2 Some Common Reasons for Doing Social Research:**

##### **10.2.1 To Make Comparisons:**

Sometimes social research is done to compare the characteristics or behaviours of different groups; for example, comparing the health problems of different populations. In this kind of research, the aim is often to make links between variables in order to examine differences, using scientific methods and experimental designs. (Sarantakos, 1993 p 7)

##### **Problems:**

- Experimental designs are hard to apply to social phenomena. It is difficult to control variables in the 'real' world outside a laboratory.

- This kind of research needs expertise in statistical testing of results.
- This kind of research often overlooks or leaves out variables other than those being studied and so may not include the full picture.
- This kind of research cannot be completely objective and value free. The choice of what to research implies a set of values.
- If this approach is used to study social groups or particular categories of people (for example, ethnic groups) it may lead to stereotyping.
- Because of its empirical basis, it excludes subjective experience.
- There are many ethical issues in using humans as experimental subjects.

### **10.2.2 To Discover or Explore:**

This kind of research aims to understand the incidence, development and interpretation of social phenomena; for example, to explore the rise and decline of a particular sub-culture such as punk rock; or to explore the extent of drug use within a particular age group; or to trace the development of a new political movement. This kind of research is often done in response to the emergence of new social phenomena; for example, to examine the impact of new technology such as mobile phones. (Sarantakos, 1993 p 7)

#### **Problems:**

- This kind of research is usually an exploratory exercise, so results may not be conclusive or meaningful.
- This kind of research often uses raw data and simple methods of analysis and may lack depth.
- Sampling techniques tend to be non-probability and may lead to biased results.
- The motivation for this kind of research may be to push a particular point of view.
- This kind of research also has an empirical basis, and may overlook other perspectives and leave out subjective data.

### **10.2.3 To Study Social Changes:**

Social research is often done to examine how a particular community changes over time or to examine the impact of new social phenomena on a particular target group; for example, tracing the changes to cultural traditions in a migrant community over two or more generations; examining the impact of petrol sniffing on a remote population. (Sarantakos, 1993 p 7)

#### **Problems:**

This kind of research is similar to exploratory research and has similar problems:

- Uses raw data and simple methods of analysis.
- Raises ethical issues - for example, what to do about the 'problem' after the research is completed.
- By targeting specific groups, it can contribute to marginalizing them
- It is generally done with the assumption that there is a problem, so it can encourage negative views and stereotyping.

#### **10.2.4 To Inform Policy Development and Planning:**

A lot of social research is done to develop policies and plan services. This kind of research is usually carried out by or for an organisation and examines trends and patterns of social behaviour and social phenomena as part of a planning process. For example, this kind of research may examine trends in cigarette smoking, use of alcohol, or patterns of exercise in a population in order to develop policies and services to address health issues.

##### **Problems:**

- The research often comes too late to prevent serious problems - it is often done after the problem has developed.
- Results may not be accurate - trends and patterns are often identified by a 'best guess'.
- It may take years for trends to emerge, so this kind of research can take a long time.
- Political and economic expediency may compromise results.
- This kind of research often uses census methods to collect data and there is often resistance to disclosing information.

#### **10.2.5 To Analyse and Criticize:**

Social research is sometimes done in order to criticize the results of someone else's research or to examine the legitimacy of someone else's research.

##### **Problems:**

- Results and findings may be taken out of context.
- The researcher often has his or her own agenda - for example, may wish to discredit someone else's research (this is common in academia!)

#### **10.2.6 To Conduct Social Experiments:**

This kind of research is often undertaken to examine the impact of a particular service, program or intervention on a particular target group, or to study the effects of a particular social 'problem' on an identified population. In this kind of research, the program or intervention is delivered, and its effects are examined.

##### **Problems:**

- This kind of research often focuses on a very narrow range of variables and may miss important factors.
- Usually large scale and requires extensive, complex statistical testing of results.
- Often uses experimental designs and encounters all the problems of using experimental designs outside a controlled environment and with human subjects.
- May be affected by the 'Hawthorn effect' (the impact of being studied on the subject of study - for example, if people know they are part of a research project or experiment, and they know they are being studied, this changes their behaviour)

- If a control group and an experimental group are used, this can raise serious ethical issues - for example, denying the control group access to a treatment or program which may benefit them.
- this kind of research is also empirically based and may overlook other perspectives and leave out subjective experience.

### **10.2.7 To provide evidence that a social injustice is occurring:**

This kind of research has an explicit values base and seeks to find data to support claims that an injustice is being done or that a particular group is being treated unfairly.

#### **Problems:**

- Underlying ideological factors may distort the results; that is, the researcher may only look for data which supports his or her point of view.
- there can be confidentiality issues if identifying information is included in data to add credibility.
- even if subjects' personal details are disguised, workers and others who know the subjects may be able to work out who they are.
- There are issues about informed consent - subjects may not be able to anticipate all the consequences of participating in the study.

### **10.2.8 To Evaluate Services and Assess Needs:**

Research is often done to evaluate the effectiveness of services and programs, to review progress and achievements, or to explore and identify the service needs of particular client groups or communities.

## **10.3 Hypothesis Meaning:**

The word hypothesis consists of two words -Hypo+Thesis. 'Hypo' means tentative or subject to the verification. 'Thesis' means statement about solution of the problem. Thus, the literal meaning of the term hypothesis is a tentative statement about the solution of the problem. Hypothesis offers a solution of the problem that is to be verified empirically and based on some rationale. Again, 'hypo' means the composition of two or more variables which are to be verified and 'thesis' means position of these variables in the specific frame of reference.

The word hypothesis is a compound of two words 'hypo' and 'thesis' where 'hypo' means under and 'thesis' means reason or rational view. Thus, hypothesis is a below reasoned view. It is a view, which is not fully reasoned. In social research and other research, hypothesis is used to mean a statement about the relationship, which helps to be investigated.

#### **Definitions of Hypothesis:**

According to F.N. Kerlinger, "Hypothesis is the most powerful tool man has invented to achieve dependable knowledge".

**According to G.A. Lundberg:**

“A hypothesis is a tentative generalization the validity of which remains to be tested. It may be any hunch, imaginative idea or intuition whatsoever, which becomes the basis of action or investigation.”

**According to W. Goode and P.K. Hatt: -**

“A hypothesis is a proposition, which can be put to test to determine its validity. It may seem contrary to, or in accordance with common sense.”

"Any supposition which we make in order to endeavor to deduce conclusions in accordance with facts which are known to be real under the idea that if the conclusions to which the hypothesis leads are known truths, the hypothesis itself either must be or at least likely to be true." **J. S. Mill.**

"It is a shrewd guess or inference that is formulated and provisionally adopted to explain observed facts or conditions and to guide in further investigation." **John W. Best**

"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. "**Barr and Scates.**

"Hypothesis is an assumption whose testability is to be tested on the basis of the compatibility of its implications with empirical evidence and previous knowledge." **Gorge J. Mouly.**

Once the problem to be answer is defined, the researcher formulates theory. Theory formulation leads to hypothesis formulation. Data collection and analysis revolve around the hypothesis, when hypothesis comes to be true, it originates theory. Hypothesis is an educated guess about a problem’s solution. It shows the relation between two or more variables, which need to be investigated for the truth. Non-hypothesis can be defined as logically conjectured relationship between two or more variables in testable statements. Hypothesis is always presented in declarative sentence form. They can be general or specific.

**10.3.1 Nature of Hypothesis:**

- a. Conceptual: Some kind of conceptual elements in the framework are involved in a hypothesis.
- b. Verbal statement in a declarative form: It is a verbal expression of ideas and concepts. It is not merely mental idea but in the verbal form, the idea is ready enough for empirical verification.
- c. It represents the tentative relationship between two or more variables.
- d. Forward or future oriented: A hypothesis is future-oriented. It relates to the future verification not the past facts and information.
- e. Pivot of a scientific research: All research activities are designed for verification of hypothesis.

### **10.3.2 Functions of Hypothesis:**

H.H. Mc Ashan has mentioned the following functions of hypothesis;

- a. It is a temporary solution of a problem concerning with some truth which enables an investigator to start his research works.
- b. It offers a basis in establishing the specifics what to study for and may provide possible solutions to the problem.
- c. It may lead to formulate another hypothesis.
- d. A preliminary hypothesis may take the shape of final hypothesis.
- e. Each hypothesis provides the investigator with definite statement which may be objectively tested and accepted or rejected and leads for interpreting results and drawing conclusions that is related to original purpose.
- f. It delimits field of the investigation.
- g. It sensitizes the researcher so that he should work selectively and have very realistic approach to the problem.
- h. It offers the simple means for collecting evidences for verification.

### **10.3.3 Importance of a Hypothesis:**

- a. Investigator's eyes: Carter V. Good thinks that by guiding the investigator in further investigation hypothesis serves as the investigator's eyes in seeking answers to tentatively adopted generalization.
- b. Focuses research: Without hypothesis, a research is unfocussed research and remains like a random empirical wandering. Hypothesis serves as necessary link between theory and the investigation.
- c. Clear and specific goals: A well thought out set of hypothesis places clear and specific goals before the research worker and provides him with a basis for selecting sample and research procedure to meet these goals.
- d. Links together: According to Barr and Scates, "It serves the important function of linking together related facts and information and organizing them into wholes."
- e. Prevents blind research: In the words of P.V. Young, "The use of hypothesis prevents a blind search and indiscriminate gathering of masses of data which may later prove irrelevant to the problem under study."
- f. Guiding Light: "A hypothesis serves as powerful beacon that lights the way for the research work."
- g. It provides direction to research and prevent the review of irrelevant literature and the collection of useful or excess data.
- h. It sensitizes the investigator certain aspects of situation which are irrelevant from the standpoint of problem at hand.
- i. It enables the investigator to understand with greater clarity his problem and its ramification.
- j. It is an indispensable research instrument, for it builds a bridge between the problem and the location of empirical evidence that may solve the problem.
- k. It provides the investigator with the most efficient instrument for exploring and explaining the unknown facts.
- l. It provides a frame work for drawing conclusion.
- m. It stimulates the investigator for further research.

### 10.3.4 Forms of Hypothesis:

According to Bruce W. Tuckman following are the forms of hypothesis;

- a. **Question Form:** A 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.
- b. **Declarative Statement:** A hypothesis developed as a declarative statement provides an anticipated relationship or difference between variables. Such a hypothesis developer has examined existing evidence which led him to believe that a difference may be anticipated as additional evidence. It is merely a declaration of the independent variables effect on the criterion variable.
- c. **Directional Hypothesis:** A directional hypothesis connotes an expected direction in the relationship or difference between variables. This type of hypothesis developer appears more certain of anticipated evidence. If seeking a tenable hypothesis is the general interest of the researcher, this hypothesis is less safe than the others because it reveals two possible conditions. First that the problem of seeking relationship between variables is so obvious that additional evidence is scarcely needed. Secondly, researcher has examined the variables very thoroughly and the available evidence supports the statement of a particular anticipated outcome.
- d. **Non -Directional Hypothesis or Null Hypothesis:** This hypothesis is stated in the null form which is an assertion that no relationship or no difference exists between or among the variables. Null hypothesis is a statistical hypothesis testable within the framework of probability theory. It is a non-directional form of hypothesis.

There is a trend to employ or develop null hypothesis in research in most of the disciplines. A null hypothesis tentatively states that on the basis of evidence tested there is no difference. If the null hypothesis is rejected, there is a difference, but we do not know the alternative or the differences. In this the researcher has not to anticipate or give the rational for the declaration or directional form. It does not make researcher biased or prejudiced. He may be objective about the expected outcomes of the research or findings.

Actually, this is a statistical hypothesis which is self- explanatory. Null hypothesis means zero hypotheses. A researcher has not to do anything in developing it. While research hypothesis is second step in the process of reflective thinking.

A null hypothesis in an appropriate form is order to accommodate the object of inquiry for extracting this information. It does not necessarily reflect the expectations of the researcher so much as the utility of the null form as the best fitted to the logic of chance in statistical knowledge or science.

It is the no difference form, i.e., there is no difference or relationship between or among variables under certain conditions.

Statistical tests of significance are used to accept and reject the null hypothesis. If it is rejected, the general hypothesis is accepted.

Non-directional hypothesis is known as null hypothesis because it 'nullifies' the positive argument of the findings or non-directional statement of the generalization. It is also termed as statistical or zero hypothesis because it denies the existence of any systematic principles apart from the effect of chance. It assumes that none or zero difference exists between the two population means or the treatments.

### **10.3.5 Formulation of Hypothesis:**

Formulation of Testable Hypothesis: A hypothesis is a tentative assumption drawn from knowledge and theory. It is used as a guide in the investigation of other facts and theory that are as yet unknown. Its formulation is one of the most difficult and most crucial step in the entire scientific process. A poorly chosen or poorly worded hypothesis can prevent the following:

- a. The obtaining of enough pertinent data,
- b. The drawing of conclusions and generalizations, and
- c. The application of certain statistical measures in the analysis of the result.

Hypothesis is the central core of study that directs the selection of the data to be gathered, the experimental design, the statistical analysis and the conclusions drawn from the study. A study may be devoted to the testing of one major hypothesis, a number of subsidiary hypothesis, or both major and subsidiary hypotheses.

When several hypotheses are used, each should be stated separately in order to anticipate the type of analysis required and in order to definitely accept or reject each hypothesis on its own merit. Irrespective of number or type used each hypothesis should be testable and based upon a logical foundation.

### **10.3.6 Fundamental Basis of Hypothesis:**

The researcher deals with reality on two levels.

- a. The Operational Level: On the operational level researcher must define events in observable terms in order to operate with the reality necessary to do researches.
- b. The Conceptual Level: On the conceptual level the researcher must define events in terms of underlying communality with other events. Defining at a conceptual level, the researcher can abstract from single specific to general instance and begin to understand how phenomena operate and variables interrelate. The formulation of a hypothesis very frequently requires going from an operational or concrete level to the conceptual or abstract level. This movement to the conceptual level enables the result to be generalized beyond the specific conditions of a particular study and thus to be of wider applicability.

Research requires the ability to move from the operational to the conceptual level and vice-versa. This ability is required not only in constructing experiments but in applying their findings as well.

The process of making conceptual contrasts between operational programmes is called conceptualization or dimensionalization.



### 10.4 Formulation of Hypothesis:

- a. **Deductive Method/Approach/Logic:** The deductive method is one in which the researcher develops hypothesis from theory and design a research strategy to test them. There, hypothesis formulation is preceded by theory formulation. A clear theoretical portion is developed prior to data collection.
- b. **Inductive Method/Approach/Logic:** The inductive method is in which the researcher develops hypothesis from specific observation. Here, the researcher first collects data and then develops theory as a result of data analysis. It is based on the principle of developing theory after the data have been collected. The two approaches are closely interlinked. Theory and research go side by side. They have never ending interaction. The deductive approach owes more to positivism and the inductive approach to interpretive. However, such labeling is potentially misleading and of no practical value.

### Differences between Deductive and Inductive Method:

Difference	Deductive method	Inductive method
<b>Precedence</b>	It moves from theory to data. It develops hypothesis from theory.	It constructs theory or principle from specific observation. It moves from data to theory.
<b>Data Flexibility</b>	It collects quantative. Data.	It collects qualitative data.
<b>Generalization</b>	It is a highly. Structured approach.	It is a more flexible structured. Approach to permit changes of research emphasis as the research progresses.
<b>Others</b>	<p>It has necessity to collect samples of sufficient size in order to generalize. Conclusions.</p> <ul style="list-style-type: none"> <li>• It has need to explain causal relationship between variables.</li> <li>• It is application or controls to ensure validity of data.</li> <li>• It is the operationalization of concepts to ensure clarity of definition.</li> </ul>	<p>It has less concern with the need to generalize.</p> <ul style="list-style-type: none"> <li>• It gains an understanding of meanings of human attach to events.</li> <li>• It is a realization that the researcher is a part of the research process.</li> <li>• It is a close understanding of the research context.</li> </ul>

**Difficulties in the Formulation of Useful Hypothesis:** Moving from the operational to the conceptual level and vice -versa is a critical ingredient of the research to demonstration process. The following are the difficulties in the formulation of hypothesis:

- a. Absence of knowledge of a clear theoretical framework.
- b. Lack of ability to make use of the theoretical framework logically.
- c. Lack of acquaintance with available research technique resulting in failure to be able to phrase the hypothesis properly.

### 10.5 Types or Research Hypothesis:

#### Null Hypothesis:

Null hypothesis is one, which indicates a definitive exact relationship between two variables. It is so called because this hypothesis usually reflect 'no difference' or 'no effect' situation. It means that there is no difference between two populations in aspect of some property and that the difference if any is only accidental and unimportant. The null hypothesis is akin to the principle that a man is innocent until he is proved guilty. It constitutes a challenge and the function of a research to give facts a chance to reflect this challenge. Example: -There is no difference between male and female in their productivity.

Statistically expressed:  $H_0: \mu_1 = \mu_2$

Where,

$H_0$  is null hypothesis.

$\mu_1$  is the productivity of male worker.

$\mu_2$  is the productivity of female worker.

- **Alternative Hypothesis:** It is opposite of the null hypothesis. The alternative hypothesis is a statement, which expresses a relationship between two variables or indicates difference between groups. It is the statement of acceptance condition for each of the alternative courses of action or solution to problem. Example: male worker will have more productivity than female workers.

Statistically expressed:  $H_1: \mu_1 > \mu_2$  Where  $H_1$  = alternative hypothesis

$\mu_1$  = the productivity of male worker

$\mu_2$  = the productivity of female worker

- **Variables and Their Types:** Variable is a concept which can take on different quantitative values. For example, height, weight, income, age etc. The main focus of the scientific study is to analyse the functional relationship of the variables. A variable is a quantity which can vary from one individual to another. The quantity which can vary from person to person.

"Variable is a property that taken on different value", Kerlinger.

It is any feature or aspect of an event, function or process that, by its presence and nature, affects some other event or process, which is being studied.

- a. **Continuous Variable:** It is that which can assume any numerical value within a specific range.

- b. **Discrete Variable:** A variable for which the individual values fall on the scale only with distinct gaps is called a discrete variable.
- c. **Dependent Variable or Criterion variable:** If one variable depends on or is a consequence of other, it is termed as dependent variable. Criterion variable is the basis on which the effectiveness of the experimental variable is studied.
- d. **Independent Variable or Experimental Variable:** The variable that is antecedent to the dependent variable is termed as an independent variable. The variable whose effect is going to be known is known as experimental variable.
- e. **Controlled Variable:** The effectiveness of an experimental variable is examined by comparing with other variable, known as controlled variable.
- f. **Confounding Variable:** Those aspects of study or sample, that might influence the dependent variable (outcome measures), and whose effect may be confused with the effects of the independent variable. They are of two types: Intervening and extraneous variable.
- g. **Intervening Variable:** Intervening Variable: There are a number of abstract variables in educational/social experiments, which intervene the effect of experimental or criterion variable. For controlling intervening variable appropriate research design should be used. Intervening variables are hard if not impossible, to observe because they usually have to do with an individual's feelings like boredom, stress, fatigue, excitement etc. Extraneous variable on the other hand, are more readily observed or measured and thus are more easily controlled.
- h. **Extraneous Variable:** Independent variables that are not related to the purpose of the study but may affect the dependent variable are termed as extraneous variables. Suppose the researcher wants to test the hypothesis that there is a relationship between children's gain in social studies achievement and their self-concept. Here self-concept is independent variable and achievement in social study is dependent variable. Intelligence may as well affect the social studies achievement; but since it is not related to the purpose of the study undertaken by the researcher, it will be termed as extraneous variable. Whatever effect is noticed on dependent variable as a result of extraneous variable(s) is technically described as an 'experimental error.'

A study must always be so designed that the effect upon the dependent variable is attributed entirely to the independent variables and not to some extraneous variable(s). When the dependent variable is not free from the influence of extraneous variable(s), the relationship between the dependent and independent variable is said to be confounded by an extraneous variable(s). Extraneous variable can be controlled by removing the variable causing distraction. It may be eliminated by selecting cases with uniform characteristics and through randomization.

- i. **Organismic Variable:** There are some variables which cannot be manipulated. They are accepted by the researcher as they are. They are levels of intelligence, sex, class levels, and the like. The researcher can classify the subjects by sex but he cannot modify to suit his research condition. If a researcher attempts to compare boys and girls on some learning task, any differences might be attributed to sex differences but not necessarily so. The differences between boys and girls could be due to differences in intelligence, training, motivation or a myriad of other conditions present in all human beings and not necessarily to biological differences between sexes. Those variables which cannot be manipulated and cannot themselves point out causal relations are called organismic variables.