



Hypothesis Development

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INTRODUCTION

- A hypothesis is a formal tentative statement of the expected relationship between two or more variables under study.
- A hypothesis helps to translate the research problem & objectives into a clear explanation or prediction of the expected results or outcomes of the research study.
- A clearly stated hypothesis includes the variables to be manipulated or measured, identifies the population to be examined, & indicates the proposed outcome for the study.

DEFINITION

- 'Hypothesis is a tentative prediction or explanation of the relationship between two variables.' It implies that there is a systematic relationship between an independent & a dependent variable.
- For example, dietary compliance will be greater in diabetic patients receiving diet instruction in small groups than in diabetic patients receiving individualized diet instructions.
- Good & Hatt define hypothesis as a shrewd guess or inference that is formulated & provisionally adopted to explain observed facts or conditions & to guide in further investigation.

IMPORTANCE OF HYPOTHESIS IN RESEARCH

- Hypotheses enables the researcher to objectively investigate new areas of discovery. Thus , it provides a powerful tool for the advancement of knowledge.
- Hypotheses provides objectivity to the research activity.
- It also provides directions to conduct research such as defining the sources & relevance of data.
- Hypotheses provides clear & specific goals to the researchers. These clear & specific goals provide the investigator with a basis for selecting sample & research procedures to meet these goals.

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- Hypotheses provides link between theories & actual practical research.
- It provides a bridge between theory & reality.
- A hypothesis suggests which type of research is likely to be most appropriate.
- As it is a tentative statement of anticipated results, it guides the researcher towards the direction in which the research should proceed.
- It stimulates the thinking process of researcher as the researcher forms the hypothesis by anticipating the outcome.

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- It also determines the most appropriate research designs & techniques of data analysis.
- Hypotheses provides understanding to the researchers about what expect from the results of the research study.
- It serves as framework for drawing conclusions of a research study.
- Without hypotheses, research would be like aimless wandering.


CHARACTERISTICS OF A GOOD HYPOTHESIS



• **Conceptual clarity:**

Hypothesis should consist of clearly defined & understandable concepts. It should be stated in very terms, the meaning & implication of which cannot be doubted. To facilitate the conceptual clarity, hypothesis can be stated in declarative statement, in present tense.

• **Empirical referents:**



Research must have an ultimate empirical referent. No usable hypothesis can embody moral judgments. A good hypothesis must have empirical basis from the area of enquiry.

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- **Objectivity:**



Hypothesis must be objective, which facilitates objectivity in data collection & keeps the research activity free from researcher value - judgment.

- **Specificity:**

It should be specific, not general, & should explain the expected relations between variables. For example, regular yoga reduces stress.



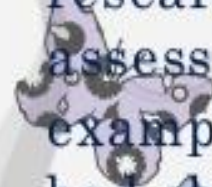
• Relevant:

The hypothesis should be relevant to the problem being studied as well as the objectives of the study. Hypothesis must have relevance with theory under test in a research process.



• Testability:

Hypothesis should be testable & should not be a moral judgment. It must be directly/indirectly observable & measurable. The researcher can set up a situation that permits one to assess if it is true or false. It must be verifiable. For example, a statement such as 'bad partners produce bad children'. This sort of hypothesis cannot be tested.



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✱ **Consistency:**

A hypothesis should be consistent with an existing body of theories, research findings, & other hypotheses. It should correspond with existing knowledge.

✱ **Simplicity:**

A hypothesis should be formulated in simple & understandable terms. It should require fewer conditions & assumptions.

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- **Availability of techniques:**

The researchers must make sure that methods are available for testing their proposed hypotheses

- **Purposiveness:**

The researcher must formulate only purposeful hypotheses, which has relevance with research problem & objectives.

- **Verifiability:**

A good hypothesis can be actually verified in practical terms.

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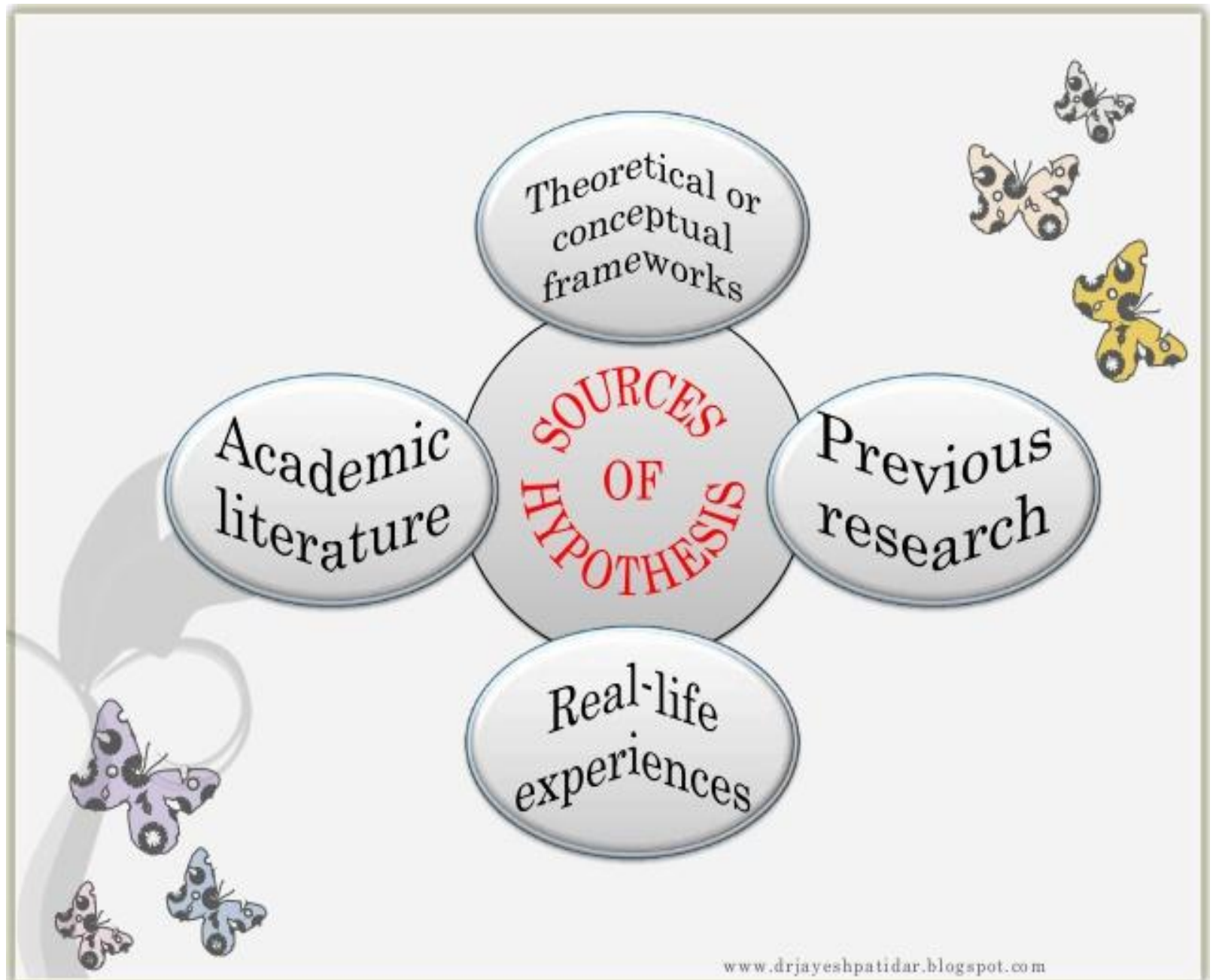
- **Profundity of effect:**

A good hypothesis should have profound effect upon a variety of research variables.

- **Economical:**

The expenditure of money & the time can be controlled if the hypotheses underlying the research undertaken is good.





Theoretical or conceptual frameworks:

- The most important sources of hypotheses are theoretical or conceptual frameworks developed for the study.
- Through a deductive approach these hypotheses are drawn from theoretical or conceptual frameworks for testing them.
- For example, Roy's adaptation Model is used in a research study, where a hypothesis can be drawn from a concept of the theoretical mode that 'patient's adaptation to a chronic illness depends on availability of social support for them.'

Previous research:

- Findings of the previous studies may be used for framing the hypotheses for another study.
- For example, in a small sample descriptive study, a researcher found that a number of patients admitted with coronary artery disease had increased body mass index.
- In another research study, a researcher may use this finding to formulate a hypothesis as 'Obese patients have increased risk for development of coronary artery disease'.

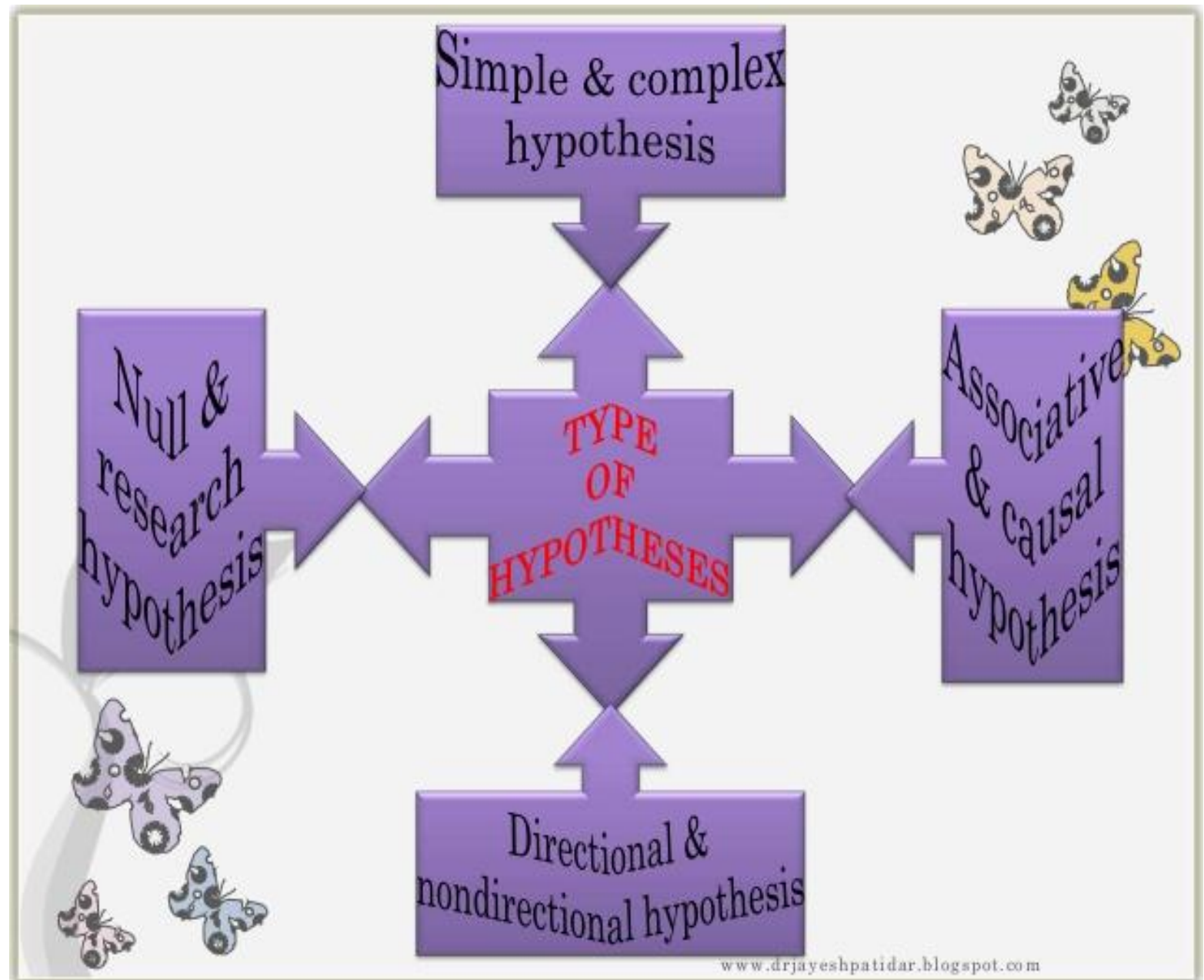
Real-life experiences:

- Real-life experiences also contribute in the formulation of hypotheses for research studies.
- For example, Newton had a life-changing experience of the falling of an apple & formulated a hypothesis that earth attracts all the mass towards its centre, through several researchers were conducted before generating a law of central gravity.



Academic literature

- Academic literature is based on formal theories, empirical evidences, experiences, observation, & conceptualizations of academicians.
- These literatures may serve as good sources for formulating hypotheses for research studies.



Simple & complex hypothesis

• Simple hypothesis:

- ✓ It is a statement which reflects the relationship between two variables.
- ✓ *For example*, 'the lower the level of hemoglobin, the higher is the risk of infection among postpartum women'.

• Complex hypothesis:

- ✓ It is a statement which reflects the relationship between more than two variables.
- ✓ *For example*, 'satisfaction is higher among patients who are older & dwelling in rural area than those who are younger & dwelling in urban area'.

Associative & causal hypothesis



• **Associative hypothesis:**

- ✓ It reflects a relationship between variables that occurs or exists in natural settings without manipulation.
- ✓ This hypothesis is used in correlational research studies

Examples of associative hypothesis	prediction
Communication skills of health care providers & cost of care related to the satisfaction of patients	Predicts relationship among variables but not the type of relationship

• **Causal hypothesis:**

- ✓ It predicts the cause-and-effect relationship between two or more dependent & independent variables in experimental or interventional setting, where independent variable is manipulated by research to examine the effect on the dependent variable.
- ✓ The causal hypothesis reflects the measurement of dependent variable to examine the effect of dependent variable, which is manipulated by the researcher(s).
- ✓ *For examples,* prevalence of pin site infection is lower in patients who receive pin site care with hydrogen peroxide as compared to patients who receive the pin site care with Betadine solution.

Directional & nondirectional hypothesis

• **Directional hypothesis:**

- ✓ It specifies not only the existence, but also the expected direction of the relationship between variables.
- ✓ Directional hypothesis states the nature of the relationship between two or more variables such as positive, negative, or no relationship.
- ✓ To express the direction of relationship between variables, the directional terms are used to state the hypothesis such as positive, negative, less, more, increased, decreased, greater, higher, lower, etc.
- ✓ *For examples*, 'there is a positive relationship between years of nursing experience & job satisfaction among nurses.'

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- **Nondirectional Hypothesis:**

- ✓ It reflects the relationship between two or more variables, but it does not specify the anticipated direction & nature of relationship such as positive or negative.
- ✓ It indicates the existence of relationship between the variables.
- ✓ *For example*, 'there is relationship between years of nursing experience & job satisfaction among nurses.'



Null & research hypothesis:

• Null hypothesis (H_0):

- ✓ It is also known as statistical hypothesis & is used for statistical testing & interpretation of statistical outcomes.
- ✓ It states the existence of no relationship between the independent & dependent variables.
- ✓ *For example*, 'there is no relationship between smoking & the incidence of coronary artery disease'.

• Research hypothesis (H_1):

- ✓ It states the existence of relationship between two or more variables.
- ✓ *For examples*, 'there is relationship between smoking & incidence of lung cancer.'