

**Research** is a process to discover new knowledge

**Research** is a purposeful investigation.

**Research** is a process of collection of data, arrangements of data, analysis of data, interpretation and to conclusion of a particular or specific problem.

**Research** is a careful investigation or inquiry specially to search for new facts in any branch of knowledge.

Research is an application of the scientific methods to problem solving.

**Research** is a systematic inquiry to describe, explain, predict and control the observed phenomenon.

**Research** is a process which a person observed a particular or specific problem and wants to solve that problem through research collection and analysis of data again and again.

**Research** is a systematic, formal and intensive process of carrying out a scientific method of analysis.

### **Scientific method in research psychology**

The scientific method is an approach that practitioners of psychology are interested in for assessing, measuring, and predicting behavior. It is the process of appropriately framing and properly answering questions. It is used by psychologists.

### **Scientific Nature of Psychology**

Psychology is a science because,

**Science:** An approach using the scientific method for the observation, description, understanding, and prediction of any phenomenon.

**Scientific method:** The procedure employing a systematic, pre-defined, series of steps for attaining optimal efficiency, accuracy, and objectivity in investigating the problem of interest.

**Science means** objectively and abstractly understanding of phenomenon/events and objectively collects the data and information about these events under the standardized conditions. Science itself doesn't a subject, the subject which uses the scientific method for the investigation and research is called science. Many subjects called science because they use scientific method for investigation. Now psychology is also a science because its studies depend upon scientific investigation.

**Systematic:** it follows a specified system, an organized ways of collecting and tabulating information.

**Pre-defined series of steps:** certain steps following a specific sequence that is not to be altered; disruption of the sequence will ruin the essence of the approach.

**Objectivity:** It is unbiased; the researcher's likes and dislikes do not interfere with the study or its findings.

### **The Four Basic Tents of Science**

Before the understanding and description of psychology as a science, we need the understanding about basic canons (standards) of science. It is important to know the four primary principles that come into view to be accepted by almost all scientists.

#### **1. Determinism**

The first standard of science is the determinism; it means that any event or phenomena has meaningful and systematic causes. Scientists have to follow the canon of determinism in order to keep the logic of science, if they do not follow then orderly, systematic causes would not exist.

#### **2. Empiricism**

The second principle of science is empiricism; too simply empiricism means to make observation of events or phenomena, but in deep logic of pure science empiricism means the deductive analysis of events. This is the best way to find out the orderly principle to explore the events to identify the causes. Empiricism or observation is favorite tool for both scientist and psychologists (social scientists).

3. Parsimony

The third essential supposition of science to which most scientific schools of thoughts are agreed is parsimony, is often referred to as Occam’s razor, because most of argument about parsimony were made by English philosopher William of Occam. According to the principle of parsimony the scientific theories and investigations should be simple, concise, focused, and should avoid unnecessary concepts and explanations. Approximately all scientists have the same opinion that if we have any problem with solution of two theories and both are equal in their work then we should prefer the simpler, parsimonious theory to make empirical observation. The inner and centered tender of parsimony canon is to keep continue the process of investigation or theory until to make it as simple and focused as possible. Psychology as a behavior science also follows the role of science called parsimony in the development of theories as well as in investigations.

4. Testability

The ultimate and chief tenet of science is the supposition that scientific theories are supposed to be testable by using present accessible research techniques. Here testability and research techniques are indication of empiricism and falsifiability. Falsifiability means that researchers do extra work to examine the every dimension and concepts of theory in order to seek that theory could be false. In social science or in psychology, the concepts of testability and falsifiability are extremely significant for psychologists, because many important and most running theories like the theory of Freud and work of post-Freudian are much difficult to put them any kind of objective observation or test.

Social Science

In broadest sense of words, the social science is the scientific study of society and its norms. A society is a group of people living together under their norms, rules, rituals, traditions, manners, and criterion. Social science is the scientific study of these manners and norms in which people behave and influence around us.

Our focus is the research and how to conduct a research. We are social scientists and psychology is a social science so we should have awareness about social science and developing periods of psychology and field of research. We are social scientists and our main goals should be;

- To understand the problems, occurring in the natural settings.
- To finds the causes of these problems.
- To understand the behavior of people.
- To assess the effects of problems on individual, groups, societies, and natural system.
- To help (treat, therapy, counseling) the people who are in problems
- To improve the people’s quality (psychologically, socially, and economically.)

The above given tasks are mostly done by social scientists and researchers of social science. The term “Social science” is vast in its scope.

**Ethnographic Research** refers to the investigation of a culture, through an in-depth study of the members of the culture; it involves the systematic collection, description, and analysis of data for development of theories of cultural behaviour.

The purpose of ethnographic research is to attempt to understand what is happening naturally in the setting and to interpret the data gathered to see what implications.

Characteristics of Scientific & Non-Scientific Method

	Non-Scientific Method	Scientific Method
General Approach	Inductive and Natural	Deductive and Empirical
Observation	Causal, Uncontrolled	Systematic, controlled
Reporting	Biased, Subjective,	Unbiased, Objective,
Concepts	Ambiguous, with surplus meanings	Clear definition, Operational
Specificity		
Instruments	Invalid, Inaccurate	Accurate, Valid
Measurement	Not valid and unreliable	Valid and Reliable
Hypothesis	Un-testable	Testable
Logic	Specific to General	General to Specific
Data Representation	Text-based	Number based
Analysis of Data	Non-Statistical	Statistical

According to Purposes

Basic/ Fundamental Research

Pure or Fundamental Research, It is also called theoretical research. Study or investigation of some natural phenomenon or relating to pure science are termed as basic research. Basic researches sometimes may not lead to immediate use or application. It is not concerned with solving any practical problems of immediate interest. But it is original or basic in character. It provides a systematic and deep insight into a problem and facilitates extraction of scientific and logical explanation and conclusion on it. it is mostly conducted to increase in knowledge by describing the behavior, event, and phenomenon. Basic research seeks primarily to understand behavior and mental processes. People often describe basic research as seeking knowledge for their own purposes. Basic research is also used to test a theory conducted in laboratory settings. There is no direct benefit because it is a research for the achievement of research. It is conducted to satisfy any interest such as: (a) what makes things occur, (b) why culture changes and (c) why societal relations are in a certain way. In fact, it is the foundation of most new theories, principles and ideas. Basic research infrequently helps anyone openly. It only stimulates new ways of thinking. The main motivation is to enlarge man's information. There is absolutely no profitable value to the discovery resulting from such research.

Applied Research

- Research on creating changes is frequently called “Applied Research”
- It is use of basic research or past theories, knowledge and methods for solving a presented problem. It interacts with practical problems. It is different to pure research which is not problem-oriented but for the increase in knowledge which may or may not be used in future.
- In the nearby situation, more importance is being given to applied research to solve problems arising out of overpopulation and shortage of natural resources.

In applied research psychologists conduct research in order to change people lives for the betterment for misery mental disorders, to find out and treat the problems in organization settings. However applied psychologists are involved with many types of intervention including those aiming at the lives of students in school, employ at work and industrial in the community.

Differences between Basic and Applied Research

Basic Research	Applied Research
Addition to Theoretical knowledge	Solution to Existing Problems
Seeks generalization	Studies individual or specific cases without the objective to generalize
Aims at basic processes	Aims at any variable which makes the desired difference
Attempts to explain why things happen	Tries to say how things can be changed
Tries to get all the facts	Tries to correct the facts which are problematic
Discovery/Invention mere Academics problems	Innovation/Application practical use in solving problems
Focuses Extensive (overall) in Nature	Focuses Intensive (On a Single Dimension) in Nature
Reports in technical language of the topic	Reports in common language

Hypothesis

- A **hypothesis** is a tentative statement about the relationship between two or more variables. It is a specific, testable prediction about what you expect to happen in a **study**.
- **Hypothesis** is used, formed, and tested in scientific **research**
- Hhe possible outcome of a scientific **research study** based on a particular property of a population,

## Quantitative research

- It is numerical, non-descriptive, applies statistics or mathematics and uses numbers.
- It is an iterative process whereby evidence is evaluated.
- The results are often presented in tables and graphs.
- It is conclusive.
- It investigates the what, where and when of decision making.

## Qualitative research

- It is non-numerical, descriptive, applies reasoning and uses words.
- Its aim is to get the meaning, feeling and describe the situation.
- Qualitative data cannot be graphed.
- It is exploratory.
- It investigates the why and how of decision making.

## Mixed Research

Mixed research- research that involves the mixing of quantitative and qualitative methods or paradigm characteristics. Nature of data is mixture of variables, words and images.

## Reliability

Reliability refers to how consistently a method measures something. If the same result can be consistently achieved by using the same methods under the same circumstances, the measurement is considered reliable.

## Validity

Validity refers to how accurately a method measures what it is intended to measure. If research has high validity, that means it produces results that correspond to real properties, characteristics, and variations in the physical or social world

## Example

**Reliability** implies consistency: if you take the test five times, you should get roughly the same results every time. A test is **valid** if it measures what it's supposed to.