



Notes

## METHODS OF PSYCHOLOGICAL ENQUIRY-I

*“Mr. Bhagat teaches in a college. He has been noticing a growing trend of students being excessively dependent on their smart phones. He has often seen students glued to their cell phones while carrying out their day to day activities, be it eating, drinking, walking, climbing stairs, writing an assignment, reading a book and so on. This pattern has made him quite curious to explore what kind of impact this kind of gadget dependence has on the physical and mental health of his students. In order to study this in an objective in a systematic manner, Mr. Bhagat needs to follow a scientific research procedure which will offer him an insight into the current situation.”* The present chapter on Methods of Psychological Enquiry will help you understand this process of research.

In the previous chapter you have learnt about the nature of Psychology; its evolution as a discipline; the relationship of Psychology with other disciplines; different fields of Psychology and its applications. As we know Psychology is a scientific discipline that seeks to understand the complexities of human mind and behaviour by employing systematic scientific research. In this chapter you will study the nature of Psychological research with a special focus on the different methods of enquiry in understanding behaviour and their applications.



### LEARNING OUTCOMES

After studying this lesson, learner :

- explains the scientific nature of Psychological research;
- indicates different goals of Psychological research;

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- estimates different research designs and methods used in Psychological research;
- outlines different techniques of descriptive statistics including research design; and
- applies different methods of enquiry in understanding behaviour;

**3.1 WHAT IS SCIENTIFIC PSYCHOLOGICAL RESEARCH?**

Scientific research is a critical tool for successfully understanding and operating in our complex world. Without it, we would be forced to rely solely on intuition and common sense. While many of us feel confident in our abilities to interact with the world around us in order to make sense out of it, history is filled with examples of how very wrong we can be when we fail to recognize the need for evidence in supporting claims. Whether it was the strongly held belief that earth was the centre of the universe and sun revolves around it or whether it was the false belief that mental illness was a curse caused by possession of evil spirits, history has so many examples where random beliefs were treated ‘*as facts*’, without any scientific evidence. It was through systematic scientific research that preconceived notions and superstitions got challenged and an objective understanding of ourselves and the world was achieved.



Figure 3.1 showing the scientific aspect of psychological research



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The goal of all scientists is to gain a better understanding of the world around them. Psychologists focus their attention on understanding behavior, as well as the cognitive (mental) and physiological (body) processes that underlie behavior. Some people are surprised to learn that Psychology is a science. They generally agree that Physics, Biology, and Chemistry are sciences but wonder what Psychology has in common with these other fields. Before answering this question, however, it is important to reflect on what Physics, Biology, and Chemistry have in common with *each other*. It is clearly not their subject matter. It is also not the equipment and techniques that they use. What these sciences share in common is an organized and systematic approach to understand the natural world. Similarly Psychology is a science because it adopts a systematic and objective approach to understand one of the aspects of the natural world: mind and behavior. Just like other scientists, psychologists embrace scientific values such as curiosity, scepticism, objectivity, empiricism etc. in their research as discussed in the previous chapters.

In contrast to other methods that people use to understand behavior of others, such as intuition and personal experience, scientific knowledge of Psychology is empirical i.e. it is grounded in objective, tangible evidence that can be observed time and time again, regardless of who is observing.

### 3.2 GOALS OF PSYCHOLOGICAL RESEARCH

Psychological researchers want to learn and understand human behaviour in a scientific manner. This understanding can be about how people think, how they feel, how they behave, or combination of these issues. The goal of scientific Psychology is to describe behavior in detail, provide explanation in various settings, formulate general laws to understand, establish prediction, and support behavioral change.

Research in Psychology has five basic goals:

1. **To Describe** – The first goal is to observe behavior and describe, often in minute detail, what was observed as objectively as possible.

For example- Rajat seems unable to finish his homework.

2. **To Explain** – While descriptions come from observable data, psychologists must go beyond what is obvious and explain their observations. In other words, why did something happen?

For example- Rajat seems unable to finish his homework because he watches too much TV.

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3. **To Predict** – Once the psychologist knows what happens, and why it happens, they can begin to speculate what will happen in the future.

For example- Rajat can finish his homework if he starts watching less TV (as the explanation suggests a link between watching more TV and inability to finish homework.)

4. **To Control** – Once what happens, why it happens and what is likely to happen in the future is known, the psychologist can exercise control over it in a careful and systematic manner.

For example- By restricting the number of hours for watching TV, Rajat's behaviour could be controlled so that he spends less time watching TV and finishes his homework in time.

5. **To Improve** – Not only do psychologists attempt to control behavior, they want to do so in a positive manner. They want to improve a person's life and not make it worse.

For example- Rajat could be taught to exercise self-control and gradually reduce the time spent on watching TV on his own.



### INTEXT QUESTIONS 3.1

- 1 List the 5 goals of psychological research
2. Fill in the blanks with suitable answers
  - i. The goal of scientific Psychology is to describe \_\_\_\_\_ in detail.
  - ii. In contrast to other methods scientific knowledge of Psychology is \_\_\_\_\_.
  - iii. Psychologists focus their attention on understanding behavior, as well as the \_\_\_\_\_ and \_\_\_\_\_ processes that underlie behaviour.



### ACTIVITY

**Case Study:** Arpit is an 18 year old young boy who lives with his parents and a younger sister. He loves playing video games while munching on junk food and sipping soft drinks. He usually spends hours playing video games without taking any break.



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Of late he has realised that he has gained a lot of weight and has stopped fitting in his old clothes. He also experiences breathlessness whenever he walks a little. He has stopped going outdoors to play football with his friends. One day when his friends had forced him to join them, he couldn't run in the field. Also, his friends made fun of him. Now Arpit stays confined to home and spends most of the time playing video games and eating junk food. He does not like interacting with anyone. His parents are extremely worried for him.

Keeping in mind the above context, try to identify how the 5 goals of Psychological research can be implemented in Arpit's case.

### 3.3 TYPES OF PSYCHOLOGICAL RESEARCH

Psychological research can be classified in numerous ways, for example based on

1. The goals,
2. The setting for research, and
3. The applied methods.

#### 1. On the basis of Goals

- (i) **Fundamental research** also known as **basic research** aims to discover, describe and understand elementary features of behavior. Traditionally, fundamental studies focus on different aspects of problem solving, memory and learning etc. *For example:* How is the information stored and retrieved from memory?
- (ii) **Applied research** deals with more specific, practical problems, in real-life context. It is concerned with finding solutions to practical problems and putting these solutions to work in order to help others. *For example:* How to promote safe driving practices such as use of helmets and seat belts among youngsters?

It's important to understand that the two types of research are closely related and each contributes to the other. As basic research provides the foundation on which the applied research can build upon and the application-oriented nature of applied research helps in expanding the existing theoretical base of Psychology.

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**2. On the basis of Setting**

Based **on the setting of research**, both applied and fundamental research can be carried out in **laboratory or in a field setting**. However, fundamental research is mostly carried out in laboratory settings, and applied research is carried out in field settings.

- (i) **In laboratory**, the researcher has a closer control on every aspect of the study; on the other hand, field research provides more realistic models to real-life situations. Laboratory experiments are usually done in a controlled and artificial laboratory setting, for example: A lab research to investigate the effect of intensity of light on accuracy of reading or to put simply if proper lighting conditions improves reading accuracy. Although laboratory research often takes things away from real life situations, however such research has often led to important discoveries and provides a base for scientific requirements for field research.
- (ii) **Field research**, beyond searching for solutions to practical problems, is also used to test laboratory experiment results in real-life situations. For example in order to cope with stress the type of strategies used by people who have survived a natural disaster such as an earthquake or a cyclone etc. can be studied using a field research Moreover, the combination of the two is also employed by researchers.

**3. On the Basis of Methods of Research Employed**

Research can also be classified as **Quantitative and Qualitative research**.

- (i) **Quantitative** research collects numerical data subjected to statistical analyses; its research methods include experimental and correlational research.
- (ii) **Qualitative** analysis stands for a more comprehensive, realistic approach in which usually the obtained data is descriptive in nature. Interview and Observational research are examples of qualitative research methods. Qualitative approach often involves face to face interviews, observations or case studies, the findings for which cannot be summarized easily in a numerical way.



### INTEXT QUESTIONS 3.2

State whether the following statements are True or False

- |  |            |
|--|------------|
| 1. Interview method is used in Qualitative research.         | True/False |
| 2. Basic research is same as fundamental research.           | True/False |
| 3. Fundamental research is directed at problem solving.      | True/False |
| 4. Field Research is carried out in artificial lab settings. | True/False |
| 5. Qualitative research involves only numerical data.        | True/False |



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### ACTIVITY

Based on your own experience or on things you have already learned about Psychology, list three fundamental research areas and three applied research areas of interest to you.

People sometimes suggest that Psychology cannot be a science because of its subject matter i.e. mind, thoughts and feelings etc. cannot be observed directly. Do you agree or disagree with the statement? Prepare a list of reasons to support your answer.

### 3.4 RESEARCH DESIGNS

A **research design** is *the specific method a researcher uses to collect, analyze, and interpret data*. Psychologists use three major types of research designs in their research, and each provides a unique approach for scientific investigation.

- (i) **Descriptive research** is *research designed to provide a picture of the current state of affairs*.
- (ii) **Correlational research** is *research designed to discover relationships among variables and to allow the prediction of future events from present ones*.
- (iii) **Experimental research** is *research in which more than one group of comparable participants is created, followed by a manipulation of a given experience for these groups and a measurement of the effect of the manipulation*. Each of the three research designs varies according to its strengths and limitations, and it is important to understand how each differs.

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### 3.4.1 Characteristics of Research Designs

- i. **Descriptive Research: Assessing the Current State of Affairs:** Descriptive research is designed to create a view of the current thoughts, feelings, or behaviour of individuals. The most common research methods used for **descriptive research design** are: *case studies, surveys, and naturalistic observation. These methods would be explained in detail in chapter 4.*
- ii. **Experimental Research: Understanding the Causes of Behaviour**
  - a. **Description of Experimental Research :** The goal of experimental research design is to provide more definitive conclusions about the causal relationships among the variables in the research hypothesis than is available from correlational designs.

In order to understand the experimental research method, one must be familiar with the concept of variables. Variable can be defined as any measurable attribute of objects, things or beings. In an experimental research design, the two types of variables of interest are:

1. **Independent Variable**
2. **Dependent Variable.**

The **independent variable (IV)** is a variable *that is manipulated by the experimenter.*

The **dependent variable (DV)** is one on which the effect of manipulation of independent variable is measured. In experimental research independent and dependent variables share cause and effect relationship.

Other than independent and dependent variables there are **extraneous variables (EVs)** that are defined *as all those variables, which are not the independent variable, but could affect the results (DV) of the experiment.* EVs should be controlled where possible because it impacts the cause and effect relationship that the researcher wishes to study. The Extraneous variable that the experimenter is able to control in an experiment are called **control variables.**

**Confounding variables** are *those that have affected the results (DV), apart from the IV.* A confounding variable could be an extraneous variable that could not be controlled.



**Example:** Suppose a teacher is interested to know if discussion method of teaching leads to better retention of information. She/he would be acting as an experimenter and would be following the steps given below:

- i. **Forming a Hypothesis:** On the basis of previous knowledge and researches, the experimenter (E) forms a hypothesis. In the present case, the teacher states a possible tentative answer to the problem. She/he may hypothesize that the discussion method leads to better retention. To verify the hypothesis, she will undertake an experiment.
- ii. **Identifying Independent and Dependent Variables:** In the present example, independent variable would be the method of instruction (Discussion method) that the researcher would be manipulating. The dependent variable would be retention of information.

While studying the effect of IV on DV, the relationship is often influenced by a number of factors present in the environment. Such extraneous variables need to be controlled by the researcher. For example, in the present example the researcher needs to ensure that the two groups (discussion and no discussion) are similar in all respects (age, prior knowledge of the subject, intelligence etc.) except the treatment of IV.

- iii. **Sampling of Participants:** The next step is to decide the population for the study and the method of sampling. For example, if the teacher in this case decides to include all 8<sup>th</sup> class students studying in CBSE schools in East Delhi, then all those students meeting the mentioned criteria comprise the population for the study. Since the population is huge, it would not be feasible for the teacher to include all the students in the study, thus she/he would be taking out a representative sample of 8<sup>th</sup> class students studying in CBSE schools in East Delhi from the entire population. Random sampling is considered to be one of the best methods of sampling because in this method all members of population have equal chance of being selected in the sample.
- iv. **Planning (designing) the Experiment:** The experimenter will select group of students, divide them in half and expose them to the same learning material. However, one group continues to be instructed using traditional method of teaching. This group is called a 'control group' (absence of IV). While the other group called "experimental group" (presence of IV) would be exposed to discussion method. Retention of information for both the groups will then be compared.



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- v. **Verifying the Hypothesis:** If the experimenter finds a significant difference in the amount of learning material retained by the two groups, she/he may infer that discussion method is better for retention.

The above steps can help the experimenter to verify the hypotheses in a systematic manner.



Figure 3.1: Steps in conducting an Experiment

### b. Different types of experiments used in Experimental Design are

1. **Laboratory experiment:** In a laboratory experiment, researcher can manipulate the independent variable and has the liberty to assign people randomly to different groups and control extraneous variables.

For example, to study the effect of difficulty of study material on time taken for learning. In this experiment, IV would be materials of different levels of difficulty (**Group 1: Easy, Group 2: Difficult Level**) DV would be the time taken to learn and one of the control variables would be age of subjects as it is important for the subjects in both the groups to be in the same age group so that any change in the learning time could be attributed to manipulation of IV i.e. difference in the difficulty level of study material and not to age related differences. Further the fatigue level, environmental factors such as noise, lighting etc. should also be controlled.

In a nutshell these are the characteristics of true experiments:

1. Manipulating the IV, while
2. Controlling the extraneous variables in a
3. Controlled environment, in order to
4. Measure the DV.

These are the characteristics of a laboratory experiment but there are other types of experiment that don't have all of the above features:

2. **Quasi experiments:** Many a times in the experimental method discussed above, manipulating the IV and random assignment of subjects to both control and experimental group is not possible in the truest sense.



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Sometimes it is *impossible* to manipulate the IV; for example, you cannot make people left-handed or right-handed. Whereas at times it is *unethical* to manipulate the IV; for example, it's immoral to turn people into drug addicts to compare them to non-addicts. Such cases involve the use of quasi experimental design.

For example, effect of consumption of junk food on physical health in children. In order to conduct a true experiment, the researcher would be required to systematically manipulate IV i.e. amount of junk food consumption across different groups (for example **Group 1: no junk food consumption; Group 2: high amount of junk food consumption**) and subsequently measure the impact on physical health. However, since the experimental manipulation in this research requires making the subjects (children in this case) to consume junk food for the purpose of the study, this has ethical concerns. Therefore, the alternative solution is that the researcher would **select** the subjects who already belong to two different groups i.e. Group 1: who do not consume junk food; Group 2: who consume high amount of junk food. This makes it a quasi-experiment.

3. **Field experiments:** These experiments are conducted in a natural setting and the participants may/may not be aware they are being studied. Since the study is conducted in field, controlling extraneous variables become difficult.

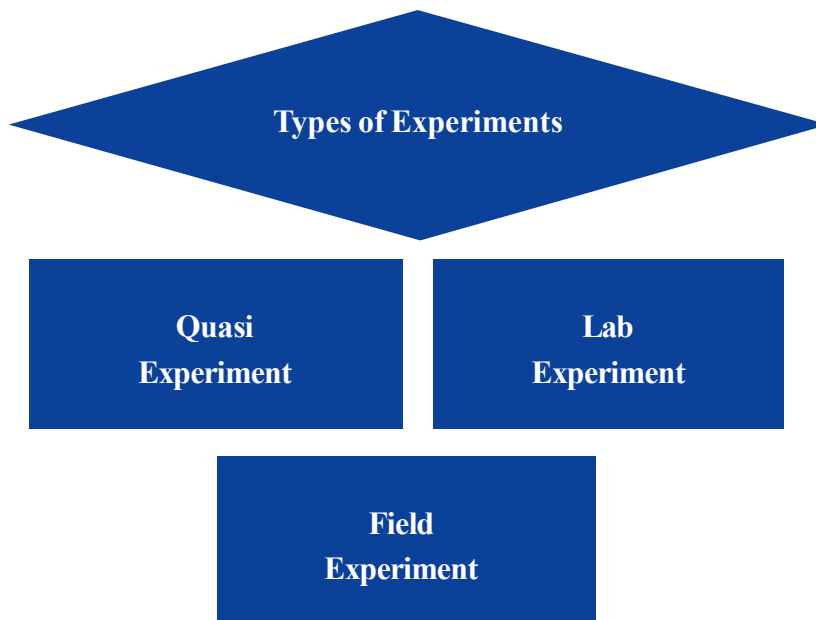


Figure 3.2: Types of Experiments used in Experimental research design

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### c. Strengths and Limitations of Experimental Research

#### Strengths:

1. It helps in establishing cause and effect relationship between independent and dependent variable.
2. The experimenter can exercise control. He/she can systematically manipulate some variables, carefully measure other variables and can also make some variables constant.
3. Replication of result under similar controlled conditions is possible.

#### Limitations

1. Exercising absolute control over variables is not possible.
2. Experimental laboratory setting is artificial, making the generalisation of the results to the real-life world a little difficult. The subjects may behave differently in a lab setting and in real life.
3. The results may get impacted by certain biases. Some of the most common biases encountered in experiments are:
  - a. **Selection Bias** – It occurs when differences between groups are already present at the beginning of the experiment. Example: differences in age, intelligence etc.
  - b. **Experimenter Bias** – These are the ways that the experimenter can accidentally influence the participant.  
For example: influence through their appearance or behaviour.
  - c. **Demand Characteristics:** These refer to the clues in an experiment that lead the participants to think they know what the researcher is looking for (for example experimenter's body language might suggest approval/disapproval to the subject and as a result may influence subject's responses).

#### iii. Correlational Research

- a. **Description of Correlational Research:** It enables the researcher to study the relationship between different variables. The correlational method involves looking at relationships between two or more variables. While researchers can use correlations to see if a relationship exists among variables, the variables themselves are not under the control of the researchers.



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Correlational research is a type of nonexperimental research in which the researcher measures two variables and assesses the statistical relationship (i.e., the correlation) between them with little or no effort to control extraneous variables. *There are essentially two reasons that the researchers interested in statistical relationships between variables would choose to conduct a correlational study rather than an experiment.*

- 1. The first reason is that the researcher does not believe that the statistical relationship is a causal one.** *For example,* a researcher might want to study the relationship between number of classes attended and marks obtained in exams by a student. This researcher might then check to see whether participants' exam scores are strongly correlated with the number of classes attended. Neither of the two variables in this case i.e. the number of classes attended and the exam scores, is thought to cause the other, so there is no independent variable to manipulate.
- 2. The other reason that researchers would choose to use a correlational study rather than an experiment is that the researchers cannot manipulate the independent variable because it is impossible, impractical, or unethical.** *For example,* if the researcher is interested in studying the effect of everyday stressors on physical and mental health of individuals, then in order to conduct an experiment, manipulation of amount of everyday stressors in this case would not be possible. Hence, the researcher would settle for measuring the number of everyday stressors along with the number of physical and mental symptoms. Later the researcher can find out if there's any relationship between the number of everyday stressors and number of physical and mental symptoms reported by the participants.

### Different types of correlations

- **Positive correlation** is a relationship between two variables in which both variables either increase or decrease at the same time. For example, the relationship between two variables: height and weight. As height increases, weight also increases.
- **Negative correlation** is a relationship between two variables in which an increase in one variable is associated with a decrease in the other. For example, increase in practice and decrease in errors. With increase in practice, errors tend to decrease.

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- **Zero correlation/no correlation** exist when there is no relationship between two variables. For example, there is no relationship between the color of eye and intelligence.

The correlation value or correlation index ranges from -1.00 to +1.00 in which the + and – only indicates the direction of the relationship and does not indicate anything about the strength of the relationship, whereas the correlation value indicates the strength of the relationship. For example: a correlation value of +0.15 indicates a weak positive correlation, -0.41 indicates a moderate negative correlation while a value of -0.89 indicates a strong negative correlation.

### b. Strengths and Limitations of Correlational Research

#### Strengths

1. Correlation allows the researcher to investigate naturally occurring variables that maybe unethical or impractical to test experimentally. For example, it would be unethical to conduct an experiment on whether alcohol consumption causes liver damage.
2. Correlation allows the researcher to clearly and easily see if there is a relationship between variables.

#### Limitations of Correlations

1. Correlation does not establish causation. Even if there is a very strong association between two variables, we cannot assume that one causes the other.

- c. **Differences between Correlations and Experiments** : An experiment isolates and manipulates the independent variable to observe its impact on the dependent variable. In an experiment, attempt is made to control the impact of extraneous variables on the findings. Thus, experiments help in establishing cause and effect relationship.

A correlation on the other hand identifies variables and looks for a relationship between them. Unlike experiments, that reflects on the effect that an independent variable has upon a dependent variable, a correlation looks for a relationship between two variables.

This means that the experiment can predict cause and effect (causation) but a correlation can only predict a relationship.

**Summing Up: Types of Research Designs**

Table 1: Comparative description of the three research designs

Research design	Goal	Advantages	Disadvantages
Descriptive	To create a snapshot of the current state of affairs	Provides a relatively complete picture of what is occurring at a given time.	Does not assess relationships among variables as control cannot be exercised
Correlational	To assess the relationships between two variables	Allows testing of expected relationships between variables.	Cannot be used to draw inferences about the causal relationships between and among the variables.
Experimental	To assess the causal impact of one or more experimental manipulations on a dependent variable	Allows establishing causal relationships among variables.	Difficulty in experimentally manipulating many important variables. May be expensive and time consuming. Source: Stangor, 2011.

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**Discussion:** For each of the following, decide whether it is most likely that the study described is experimental or correlational and explain why.

1. An education researcher compares the performance of students exposed to different training programs.

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2. A teacher wants to study the relationship between students' reading scores and writing scores.
3. A researcher is interested to study the recall of words in two conditions: a) when the participant is instructed to read it aloud and (b) when the participant is instructed to create an image related to the word in mind.
4. A food technology expert wants to study the relationship between the temperature set in refrigerators and the amount of bacteria found in refrigerated food.

**Ans.**

- |                  |                   |
|------------------|-------------------|
| 1. Experimental, | 2. Correlational, |
| 3. Experimental, | 4. Correlational  |



**INTEXT QUESTIONS 3.3**

1. **State whether following statements are True or False**

a) Experiment is observation under controlled condition.	True/False
b) Independent Variable is manipulated by the researcher.	True/False
c) Control group does not receive the treatment of IV.	True/False
d) Control group needs to be different from experimental group with respect to every aspect.	True/False
e) The value of correlation can only be positive.	True/False
2. **List the three types of research designs.**
3. **Match the following**

a. Descriptive Research.	i. manipulation of IV and measurement of DV
b. Correlational research	ii. Describing the existing state of affairs.
c. Experimental research	iii. Studies relationship between variables.



### 3.5 USE OF STATISTICAL METHODS IN PSYCHOLOGICAL RESEARCH

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The data obtained by the researcher using the methods of Psychological research is described, organised, classified and analysed using statistics.

Statistics can be defined as a science of classifying, analysing and organising of quantitative data. There are two components of statistics:

**1. Descriptive:** Its purpose is to organize and summarise data. When we collect data, sometimes it is in an unorganized form: *for example:* Radhika rolls out a dice 30 times and gets the following scores on it each time 1, 3, 6, 5, 2, 1, 3, 4, 5, 3, 2, 4, 5, 6, 6, 1, 2, 3, 5, 3, 2, 2, 5, 5, 3, 2, 2, 4, 5, 6.

The above raw scores fail to convey any meaning on their own. We can organize the data by placing the data into a frequency table. Further the data can also be depicted in terms of relative frequencies and percentages.

Number on Dice	Frequency	Relative Frequency (Frequency/Total)	Relative Frequency Percentages (Frequency/Total)*100
1	3	0.1	10
2	7	0.2333	23.33
3	6	0.20	20
4	3	0.10	10
5	7	0.2333	23.33
6	4	0.1333	13.33

Figure 3: Depicting frequency table

The frequency table has made the data better organised. However, the data can further be depicted using graphical methods of representation that shows how frequently a number on dice occurs with greater clarity. For example: Bar diagram, Frequency Polygon or Pie chart could be used.

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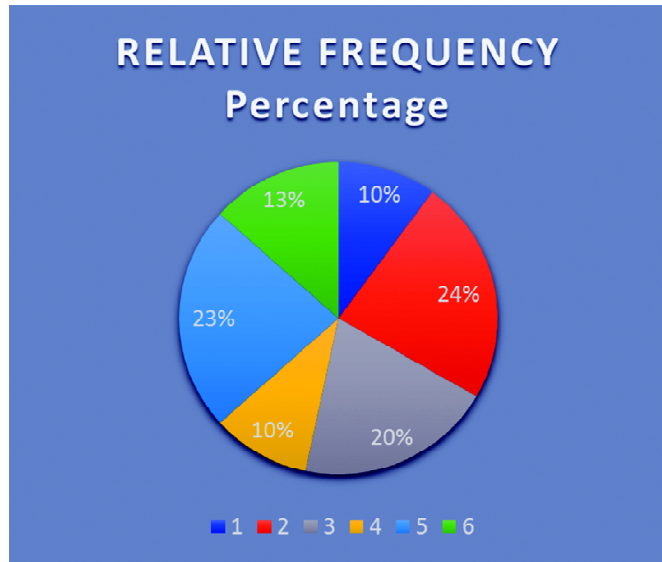


Figure 3.3: Depicting Pie Chart

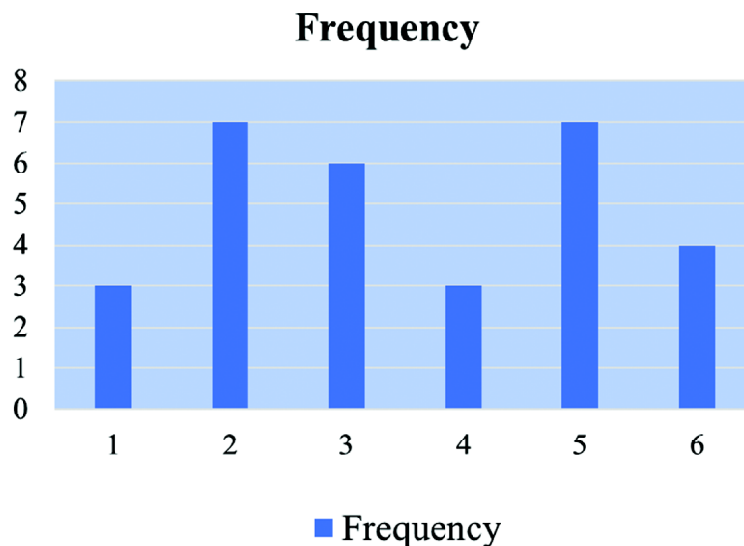


Figure 3.4: Depicting Bar diagram

Further measures of central tendency such as mean, median and mode could be used to give a single summary figure that best describes about the given set of observations. The detailed explanation of various measures used in descriptive statistics would be discussed in the subsequent chapters (chapter 5).

- Inferential:** Its purpose is to draw a conclusion about conditions that exist in a population from the study of a sample wherein population is defined as a complete set of observations about which the researcher wants to draw conclusions, whereas a sample is a small set of a population that the researcher studies.

*For example:* If the researcher is interested in studying the academic performance

of Class 10 students in Delhi, then the academic performance of all the Class 10th students studying across all schools (private, government) in entire Delhi would be of interest. Since it is not feasible to cover the entire population therefore the researcher would systematically study a small sample from the population. For example the researcher may divide Delhi into 4 main zones such as East, West, North and South and take out a sample from both government and private school of each of the 4 zones to ensure representative sample.



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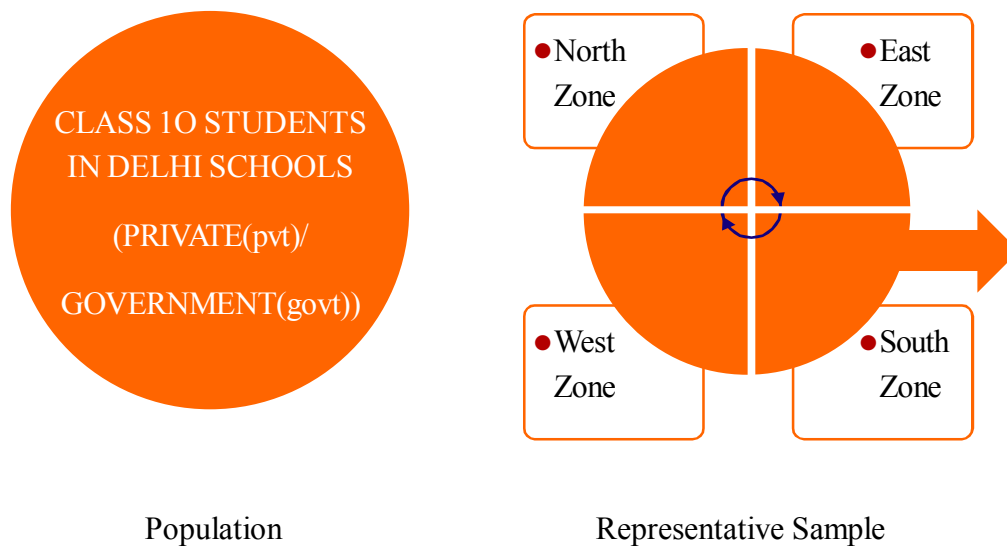


Figure 3.5: Depicting sample (Note: The figure is depicting population and sample)

### Role of Statistics in Psychological Research

Statistics play a very important role in psychological research because:

1. Data and information can be presented briefly and precisely.
2. Results obtained are more accurate and objective.
3. Analysis of data is made more scientific.
4. General conclusions can be arrived at.
5. Making comparative analysis is possible.
6. Relationship between two or more variables can be objectively investigated.
7. Predictions about behaviour can be made.

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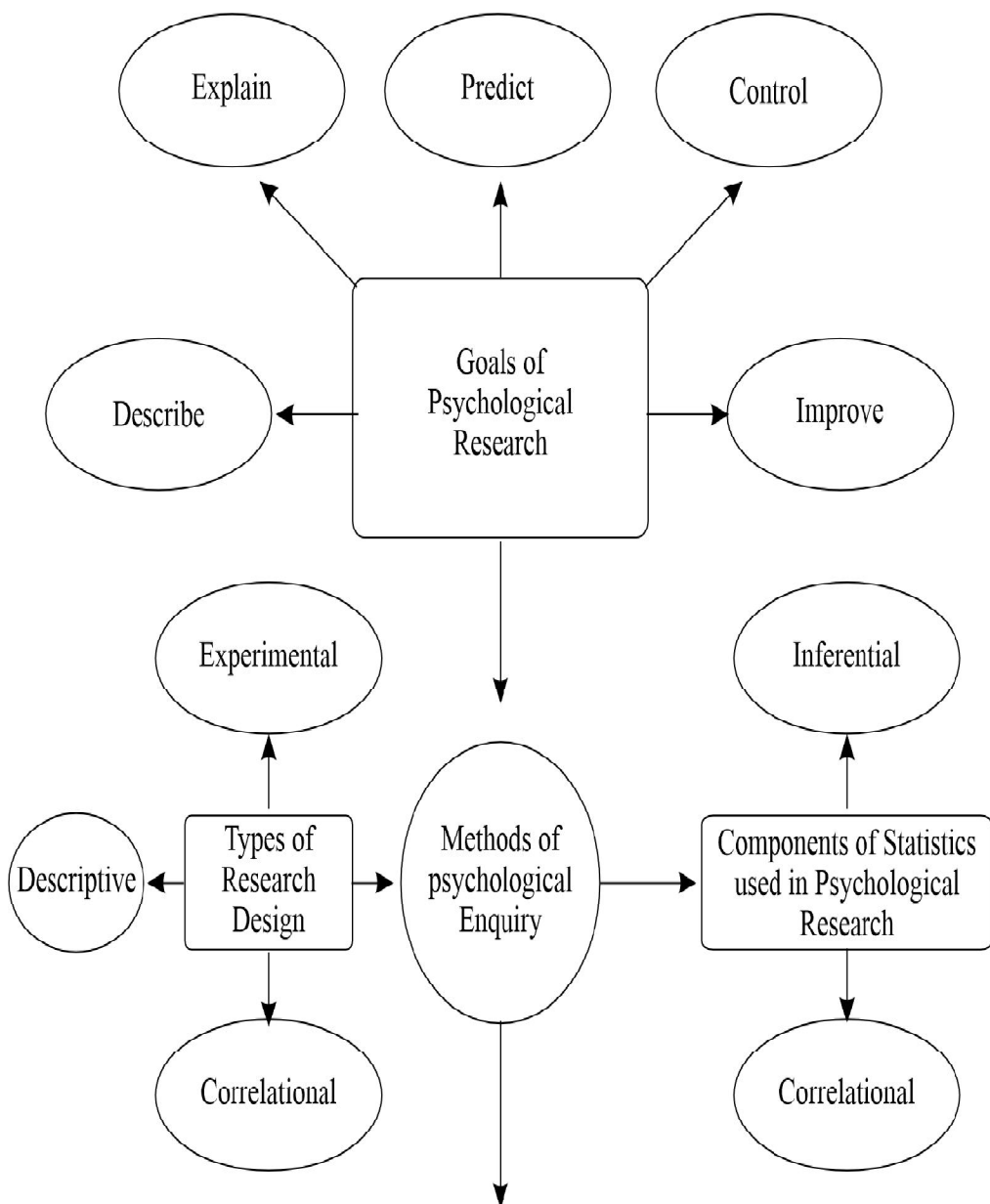


**INTEXT QUESTIONS 3.4**

1. What are the goals of psychological research?
2. Describe the different components of statistics used in psychological research?

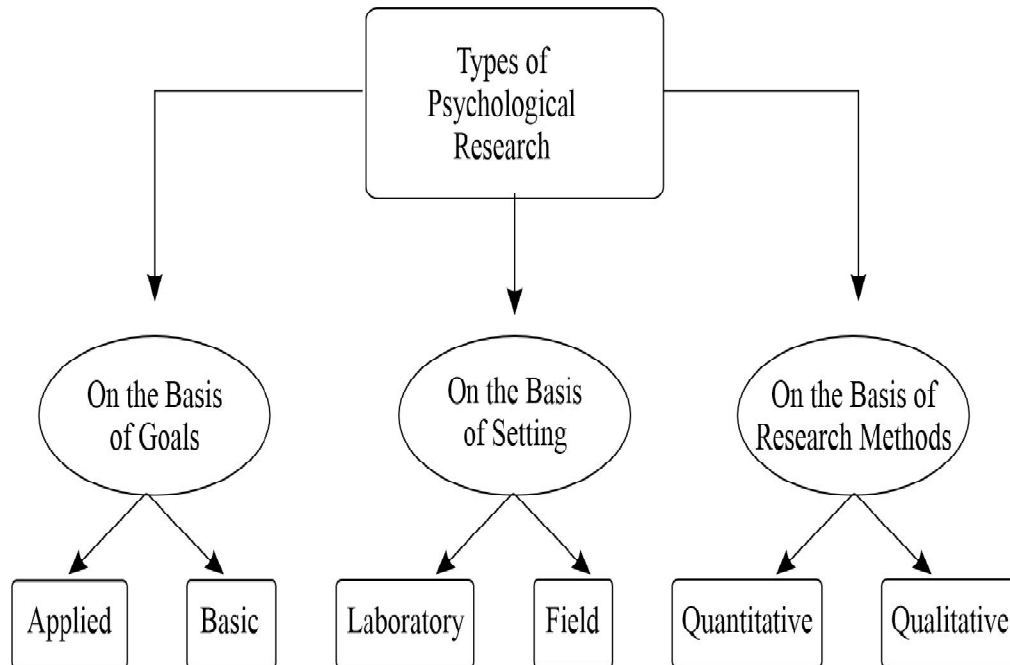


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**TERMINAL QUESTIONS**

1. What are the goals of psychological research?
2. What are the types of psychological research?
3. What is a research design? Explain the three types of research designs that Psychologists use in their research.
4. Discuss the difference between correlational and experimental method.
5. What is the difference between Descriptive and Inferential Statistics?
6. Explain the role of statistics in psychological research.
7. Discuss the different types of correlations.
8. What are the different types of experiments used in experimental design?
9. Explain the different steps involved in conducting an experiment.
10. In an experimental research design, what are the different types of variables?

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**ANSWERS TO INTEXT QUESTIONS**

3.1

**1. Goals of Psychological Research**

To describe, to explain, to predict, to control, to improve

Goals of Psychological research	Case analysis
<b>To Describe –</b>	Arpit with his constant weight gain is becoming increasingly unhealthy.
<b>To Explain</b>	Arpit seems to be gaining weight because he spends most of the time playing video games and eating junk food and does not engage in any physical activity
<b>To Predict –</b>	Arpit can keep a check on his extra weight if he starts playing less videogames and consuming less junk food(as the explanation offered suggests a link between playing videogames and eating junk food and weight gain.)
<b>To Control –</b>	By restricting the number of hours for playing videogames and fixing 1-2 days in a week when he can have junk food, Arpit’s behaviour could be controlled so that he spends less time playing video games, consumes less junk food and thus controls his weight gain.
<b>To Improve</b>	Arpit could be encouraged to get involved in some outdoor activity or sport that is of interest to him which could gradually reduce the time he spends on playing videogames and eating junk. Gradually with better fitness levels he could be encouraged to start playing football with his friends again and get back to his active life.

2. (i) Behavior,
- (ii) Empirical,
- (iii) Cognitive (mental) and Physiological (body)

### 3.2

#### True and False

1. True
2. True
3. False
4. False
5. False

### 3.3

#### 1. True and False

- a) False
- b) True
- c) True
- d) False
- e) False

#### 2. Three types of research design

Descriptive research

Experimental research

Correlational research

#### 3. Match the following

- a. ii.
- b. iii.
- c. i.



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**Notes**

**3.4**

1. Five goals of Psychological Research are:-

Describe, Explain, Predict, Control, Predict

2. Different components of statistics used in psychological research are:-

- Descriptive :- Its purpose is to organize and summarise data
- Inferential :- Its purpose is to draw a conclusion about conditions that exist in a population from the study of a sample