SYLLABUS (PSYCHOLOGY)

B.A. PART-I: Semester I

(For Regular and Distance Education students)

Session 2021-22, 2022-23 and 2023-24

THEORY PAPER: GENERAL PSYCHOLOGY-A

For Regular Students Max. Marks: 50	Time Allowed: 3 hours Pass Marks: 35% of the subject Lectures to be delivered: 6 per week (For Regular Students)
For Distance Education Students Max. Marks: 70	

INSTRUCTIONS FOR THE PAPER-SETTER

For Regular Students: The question paper will consist of three sections A, B and C. Syllabus of each section (i.e. A&B) will have two subparts. Examiner will set two questions from Section A (each question having internal choice covering both parts of syllabus of section A) and two questions from section B (each question having internal choice covering the entire syllabus of section B). Each question will carry 8 marks. Section C is compulsory, and shall comprise nine short answer type questions carrying 2 marks each. The short type answer should be written in approximately 25-30 words.

For Distance Education Students: The question paper will consist of three sections A, B and C. Syllabus of each section (i.e. A&B) will have two subparts. Examiner will set two questions from Section A (each question having internal choice covering both parts of syllabus of section A) and two questions from section B (each question having internal choice covering the entire syllabus of section B). Each question will carry 8½ marks. Section C is compulsory, and shall comprise nine short answer type questions carrying 4 marks each. The short type answer should be written in approximately 25-30 words.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt one question from each subpart of both the sections A & B of the question paper and the entire section C. The short type answer should be written in approximately 30 words i.e. 3-4 lines.

SECTION A

(i) Introduction to Psychology; Approaches: Biological and Evolutionary, Psychodynamic, Behaviourist, Cognitive, Humanistic; Nature and Scope; Methods of Psychology: Observation, Case Study, Experimental Method, Survey.

(ii) Learning: Nature, Determinants; Trial and Error method; Gestalt Approach: Max Wertheimer and Wolfgang Kohler.

SECTION B

(i) Personality: Nature, Biological and Socio-Cultural Factors; Theories: Freud, Allport, Cattell , Eysenck; Assessment of Personality.

(ii) Statistics: Measures of Central Tendency (Mean, Median, Mode) and Variability (Range, Average Deviation, Quartile Deviation, Standard Deviation). Graphical Representation of Data: Histogram, frequency polygon and ogive.

Note: Use of Non-Programmable Calculators and Statistical Tables allowed.

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	B.A. PART-I **PSYCHOLOGY** **(SEMESTER-I)** **GENERAL PSYCHOLOGY** **Academic Session : 2022-23** **Unit 1 and 2**
	UNIT 1 : **1.1 DEFINITIONS AND BRANCHES OF PSYCHOLOGY** **1.2 HISTORICAL BACKGROUND AND APPROACHES** **1.3 METHODS OF PSYCHOLOGY** **1.4 LEARNING THEORIES** **1.5 TRIAL AND ERROR LEARNING AND GESTALT LEARNING** **UNIT 2** **2.1 PERSONALITY : NATURE AND DETERMINANTS** **2.2 THEORIES OF PERSONALITY** **2.3 ASSESSMENT OF PERSONALITY** **2.4 MEASURES OF CENTRAL TENDENCY** **2.5 MEASURES OF VARIABILITY** **2.6 GRAPHICAL REPRESENTATION OF DATA** **NOTE : Students can download the syllabus from department's website www.dccpbi.com**

LESSON NO. 1.1 LAST UPDATED JANUARY 2023

DEFINITIONS AND BRANCHES OF PSYCHOLOGY

LESSON STRUCTURE

1.1.0 Objectives:

This lesson provides an introduction to the field of psychology. We shall discuss as to how the science of psychology developed, starting from its earliest definitions and then proceeding onto its other definitions. We shall also brief upon the various branches of psychology.

By the end of this lesson, you should be able to :

* explain how the term psychology originated;
* describe the viewpoints of various theorists abou psychology; and
* describe the various branches of psychology.

1.1.1 Introduction:

Human behaviour is a complex phenomenon. We are all interested in understanding behaviour. Primarily, it was philosophers who took up the subject of human behaviour, and tried to find out the cause for such behaviour. Thus, psychology was wrenched out of the bosom of philosophy, and gradually developed into an independent branch of study.

1.1.2 Definitions of psychology :

In order to understand the nature of psychology, it is necessary to have an overview of the various definitions of psychology, how the term originated and asto how it was regarded by different theorists.

1.1.2.1 Psychology as Science of Soul

The term psychology is derived from the two Greek words. "Psyche" and "Logus". "Psyche" means "soul. Logus" means "talks". Hence, psychology was regarded as talk about soul. Later on it was observed that it was better to call psychology as the science of soul rather than talk about soul. This definition was initially given by the Greek philosophers Plato and Aristotle.

Then later psychologists realised that it is not possible to have any direct knowledge of the soul. They thought that though the mental activities are also intangible and unstable, one can get direct knowledge of them atleast when they are taking place within himself. Each person can directly know whether he is perceiving, remembering, imagining, thinking, etc. at a certain moment. All those are open to his own direct observation, but the soul to which he related them is always beyond the grasp, and is unknown.

1.1.2.2 Psychology as Science of Mind

From the study of soul, psychologists changed the concept of psychology as "study of mind." The term mind or mental processes was considered better, and it was substituted for soul. Theorists referred them to matter or a substance to which they were supposed to belong. Similarly, mental activities were related to mind as a substance, whose activities and functions they were supposed to constitute. But it was gradually realised that mind as a substance was unknown as the soul. Mind too, could not be subjected to experiment like soul.

1.1.2.3 Psychology as Science of Consciousness:

Psychologists, therefore (for reasons explained earlier) introduced the term "consciousness" or "conscious experience" as a general name for mental activities and defined psychology as the "study of experience" or consciousness." They selected this term because it could be used for whatever a person has been aware of at the moment, and whatever he is likely to be aware of in the future. The term has a personal reference. Experience was thus, sought to be the most suitable label that could be attached to mental activities to make them different from the natural processes studied by the physical sciences.

1.1.2.4 Psychology as Science of Behavior:

Still later, some more ambitious psychologists objected to the term "experience". They argued that experience is something very personal and private. What science studies is something public. None can observe the mental activities of another person. The psychologists, therefore insisted that the subject matter of psychology should consist only of those activities of a man that are open to everybody's observation. But a person's behaviour is open to everybody to observe, it can be directly studied and it is better to confine the study of psychology to behaviour alone as the activities of the individual can be observed, compared and analysed by all. They defined psychology as the "Science of Behaviour". It is a systematic study of all that man does in response to his world of things and persons.

It is, however, noted that confining psychology only to the study of bodily activities of man and animals, would not serve the purpose of understanding how and why these activities do really take place. If we consider psychology as a science, then it should not only describe behaviour, but it should also be able to explain behaviour. Mental activities are always at the back of bodily activites of man. The mental and

bodily activities, experience and behaviour, are so closely related that one cannot be separated from the other. We would therefore, refer to define psychology as a systematic study of experience and behaviour.

1.1.2.5 Definitions given by Other Psychologists

Having studied different definitions given by different psychologists, it is necessary to have a clear idea about the definitions given by other psychologists.

1.1.2.6 Analysis of Various Definitions

From the above definitions, one can say that psychology is the scientific study of the activities of an organism in relation to the environment. It is a positive science of behaviour because it studies facts as a positive and is concerned with "what is ?" It is a systematic study under controlled conditions.

A science is a body of knowledge obtained in a systematic manner. It is also defined as the systematic study of the nature and behaviour of the material and the physical world based upon the experiment, observation, measurement and the formulation of laws to describe the facts in general terms and accepted by all.

In Psychology with the advent of experimental method, the study of the organismic variable is very systematic and the observation is done under controlled conditions. In psychology also predictions can be made regarding the organisms behaviour. Many of the human behavioural aspects are measured accurately by conducting the experiment. The results can be verified through repeating the experiment under similar conditions. In psychology the staistical techniques are used (Mean, S.D, t-test) for quantifying and interpreting the results. Hence in psychology certain laws and theories are formulated as in any other science.

The term activity is used in a broader sense. It includes cognitive activities like seeing, hearing, remembering and thinking, motor activities like walking and speaking and emotional activities like laughing, weeping and feeling happy or sad. Therefore it includes three activities namely cognitive, conative and affective. Psychology studies the activities of an organism in relation to the environment. The environments influence plays a vital role in determining the behaviour of an individual. The individual is always responding to the environmental forces in his behaviour patterns.

Psychologists have taken into account various aspects of the study of psychology.

McDougall believes that "Psychology is the positive science of conduct and behaviour."

Murphy opines "Psychology is the science that studies the responses which the living individuals make to their environment."

According to Woodworth, "Psychology is the scientific study of the activities of the individual in relation to his environment."

Munn opines that "Psychology is a positive science of behaviour and experience interested in terms of experience."

1.1.3 Branches of Psychology

During recent times, psychology has made great progress. Psychology is a tremendously different field and quite a large one; infact, there are currently more than 20,000 psychologists in North America alone, and more than 50,000 worldwide (American Psychological Association, 1999). It is concerned with various forms and aspects of human behaviour taking place under different conditions. For one person, psychology may mean psychoanalysis; for another, it may mean the study of how the brain controls behaviour, and for yet another, it may mean the precise analysis of sensory system. With so many approaches, the individual psychologists has strong tendency to specialize in one particular area even in the same branch. This had led to the division of psychology into several branches. Some of the important branches are described below :

1.1.3.1 Clinical Psychology

Clinical psychology is one of the largest branches of psychology. It studies the diagnosis, cause and treatment of mental disorders. It tells how persons can be helped with their behavioural problems. Because sometimes, a person may not know how to act in a given situation. He may remain undecided. Another person may act in a particular manner, but he may not get the desired results. A third person may act in a highly unusual manner. All such persons are said to be facing behaviour problems. Clinical psychology helps in overcoming their difficulties. For example, clinical psychologists have recently devised several effective forms of treatment for reducing depression. The clinical psychologist uses several kinds of psychological tests. He also gathers information about a person by interviewing him and other persons associated with that person. In order to help the person, the

clinical psychologist applies all that he knows about the ways of understanding and modifying human behaviour. He produces such mental conditions that lead him to change his feelings, his attitudes, his way of looking at things and persons, and even at himself.

1.1.3.2 Abnormal Psychology

It studies behaviour which is unusual and different from the normal. Such abnormalities of behaviour may be due to defect, disease or disorder of the mind. We expect that under similar circumstances, man behaves more or less like other people in a similar situation. But we generally find that some human beings do not behave in the same way as others do. Their behaviour is different from what we come across when we observe other person's behaviour. Abnormal psychology tries to study why abnormal people behave in a very different manner from the normal, what makes a man abnormal, what are the types and causes of abnormal behaviour, and how can abnormal behaviour be changed into normal behaviour.

1.1.3.3 Social Psychology

We all are social animals and our personalities develop through social influence while studying human behaviour, we notice that a person acts, feels and thinks in one way when he is alone. In the company of others, he acts, feels and thinks in a very different way. Social psychology thus, studies the social interaction of man. We study the influence of the society in which a child grows and lives, on the formation of his habits and on the development of his ideas and beliefs. Social psychology also provides answers to such questions like why and how do a mass of people fight against each other when they know the result of the fight might be harmful to both, why and how are people attracted to each other, and why we like some people and dislike some.

1.1.3.4 Child Psychology :

It is concerned with the development of the child. Psychology studies human behaviour. Man's behaviour undergoes constant change from the moment of his birth. Child psychology tells us about the physical and mental development of the child. It tells us about the early sensory capacities of the child. How does the child's perception of his environment develop ? How and at what stage in his development the child learns to hold or grasp objects and walk ? What is the first sound a child produces ? How his language development takes place ? Child psychology enables us to understand the development of thinking in a child.

1.1.3.5 Experimental Psychology

It studies all aspects of basic psychological process such as sensation, memory, perception, learning and motivation. In this branch, an attempt is made to test, study and analyse the behaviour of human through experiments. This field is concerned with understanding the fundamental principles of behaviour. In recent years, some experimental psychologists have also been working with social behaviour, personality and behaviour disorders.

1.1.3.6 Physiological Psychology

It studies the physiological process which directly or indirectly affect behaviour. It investigates the biological bases of behaviour by explaining the role of complex biochemical events in our nervous systems and bodies in everything we do sense, feel or think. It is the study of physiological processes in relation to mental life. It gives an account of the structure and functions of the human brain and of its various parts. It also tells us about the structure and functions of the organs that are involved in the activities of digestion, breathing circulation of blood, and so on.

1.1.3.7 Counselling Psychology

This branch of Psychology helps in explaining the biological causes of depression, anxiety and also helps in diagnosing the etiology of various mental disorders. It assists individual in dealing with many personal problems that do not involve mental disorders, Counselling psychologists deal with milder emotional problems. They also counsel people with vocational and academic problems, and in doing so, they put a person through a battery of tests to assess aptitudes, interests, and personality characteristics. They assist people in career planning and in developing more effective interpersonal skills.

1.1.3.8 Developmental Psychology:

In this branch of psychology, the physical and psychological development of a person is studied. I t studies man as a dynamic and developing being. Developmental psychologists study changes in behaviour from conception to death. It studies how people change physically, cognitively and socially over the entire life span. It has both pure and applied aspects. Developmental psychologists, for instance, have recently found that tendency towards shyness may occur very early in life, and is an inherited characteristic.

1.1.3.9 Educational Psychology:

It studies all aspects of the educational processes from technique of teaching to learning disabilities in students. It enables us to know what are the characteristics of a good teacher, and what methods should be adopted for selection of a successful teacher. It also enables us to know what method of teaching can produce effective learning. Educational psychology tells us how to deal with the gifted child and tells us about the best method of teaching the mentally backward children. Methods of improving their learning capacity are also suggested in educational psychology.

1.1.3.10 Industrial Psychology

It studies all aspects of behaviour in work setting like selection of employees, evaluation of performance, work motivation, leadership. It tells about the ways of maintaining and improving the efficiency of workers, about the ways of reducing fatigue in workers, and preventing accidents. It deals with the methods of maintaining good relationship between the workers and employers. For example, industrial and organisational psychologists have found that individuals work harder when they have concrete goals than when they do not have specific goals. Most recent application of psychology to industry which began during world war II, sometimes called Engineering Psychology.

1.1.3.11 Comparative and Animal Psychology

It is a study of the differences and similarities of behaviour between different groups of humans with respect to culture & race and also between humans and animals. How far is human behaviour similar to the behaviour of other animals ? In what respects does human behaviour differ from the behaviour of other animals? Comparative psychology answers all such types of questions. Experiments on animals have shown how the nervous system functions and what are the condition of learning-comparing the developing mind of man with the lower manifestations of behaviour among animals brings out the nature of simpler forms of behaviour.

1.1.3.12 Environmental Psychology

Environmental Psychology is newly established branch of Psychology. The study of the ways that the Environment influences and channels individual behaviour. Environmental Psychology includes the study of such factors as territoriality and personal space, ergonomic design, and the physical attributes of surroundings.

1.1.3.13 Criminal Psychology

Criminal Psychology is a branch of psychology. Criminal psychology deals with crime, criminal, punishment theories of criminal behaviour and prevention of crime. This branch encapsulated the causes of crime, theories of punishment. How to prevent and minimize the crime. What are methods to modify the behaviour of criminals and juvenile delinquents. What are the differences of criminals and delinquents.

1.1.3.14 Legal Psychology

Forensic or legal psychologists apply psychological principles to human problems in the field of law enforcement. Legal psychologists help the criminals (jailinmates) in rehabilitation by providing counselling. They also help the courts in crime detection eg. through the use of lie detector.

1.1.3.15 Health Psychology

Health psychology holds the view that both body and mind are important determinants of health and illness. Health psychology explains about the consequences of stress, anxiety, depression etc. on the physiology of an individual and also how the self efficacy, attitude & optimism helps in combating with an illness.

1.1.3.16 Sports Psychology

This deals with the application of psychology principles in training the sportpersons. It helps the players in dealing with anxiety and stress before the game. Sports psychologists provide counselling to sportspersons regarding maintaining motivation and discipline during the game.

1.1.3.17 Human Factors Psychology

Human factors is an area of psychology that focuses on a range of different topics, including ergonomics, workplace safety, human error, human capability and human computer interaction.

1.1.3.17 Positive Psychology

This is a recent branch of psychology which focuses on happiness and self-contentment i.e. it deals with how common people can become happier and more content. It urges people to focus on what they are good at, so they achieve more goals and are content. It also deals with inculcation of positive emotions like empathy, love, compassion for the well being.

1.1.4 Cross Cultural Perspective

Cross Cultural psychology is new and emerging branch of psychology that studies the influence of culture on human behaviour. In the past many aspects of human behaviour were considered universal. But the study of impact of cultural differences on human behaviour leads to surprising in low people think, feel and behave.

1.1.4.1 What is Culture?

Culture refers to characeristics of a group of people, including attitudes, values, customs, rituals and traditions that are transmitted from one generation to next generation. Cultures throuhout the world share many similar attitudes but are marked by considerable differences. For example, people of all cultures get married, how they get married, rituals they perform, traditions they follow and attitudes they hold varies from culture to culture.

1.1.4.2 Major Topics of Cross Cultural Perspective

-Emotions

-Language aquisition

-Child Development

-Personality

-Social Behaviour

-Family and Social relationships

1.1.4.3 History and importance

The International Association of Cross-Cultural Psychology (IACCP) was established in 1972, and this branch of psychology has continued to grow and develop since that time. Since psychology emerges mainly in North America and Europe, researchers began to question whether the observations and ideas of these culture are reliable or not. In this branch of psychology researchers try to find the difference in the results of participants of different culturer. For eg. some cultures prefer individualism and personal autonomy whereas, other cultures place a higher value on collectivism. The result may get siased if findings of one culture is generalized over another culture.

1.1.4.4 Approaches

Cross cultural psychologists follow these approaches :

The etic approach -

This approach focused on studing how different cultures are similar.

The emic approach -

This approach focuses on studing the difference between cultures.

Overview of the Branches of Psychology : The entire study and scope of psychology has been divided into the branches and fields explained above. These branches named above however, do not entirely cover the scope of psychology. Other branches are also worth mentioning such as criminal psychology (which studies the behaviour of criminals and its legal implications), military psychology (which deals with war and other allied problems) and the like.

1.1.5 Summary

The lesson "Definitions and Branches of Psychology" provides a thorough introduction to the field of psychology, examining its historical development as well as its various branches of study. It begins by introducing Greek philosophy as the science of mind, consciousness, and behaviour. The emphasis eventually shifted to the systematic study of experience and behaviour, emphasising observable actions as the subject of investigation. The lesson emphasises psychology's broad scope and its importance in understanding the complexities of human behaviour. Students gain a broader perspective on how psychology contributes to diverse fields such as healthcare, education, industry, and interpersonal relationships by exploring the various branches. Understanding the various aspects of psychology is critical for anyone attempting to comprehend the complexities of human nature and behaviour. Thus to conclude scope of psychology is way vast as it is applied in understanding, explaining predicting and controlling an organisms behaviour. Psychology is applied in all spheres of life and is applicable in understanding the human behaviour right from the conception till death. Psychology has an application in industries, schools, hospitals, military, sports, etc. Where ever human factor or behaviour is involved psychology comes into action.

1.1.6 Keywords

Experimental Psychology :

It studies all aspects of basic psychological process such as sensation, memory, perception, learning and motivation. In this branch, an attempt is made to test, study and analyse the behaviour of human through experiments.

Clinical Psychology :

Clinical psychology is one of the largest branches of psychology. It studies the diagnosis, cause and treatment of mental disorders. It tells how persons can be helped with their behavioural problems.

Positive Psychology :

This is a recent branch of psychology which focuses on happiness and

self-contentment i.e. it deals with how common people can become happier and more content. It urges people to focus on what they are good at, so they achieve more goals and are content. It also deals with inculcation of positive emotions like empathy, love, compassion for the well being.

Cross Cultural Perspective :

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Culture:

Culture refers to characeristics of a group of people, including attitudes, values, customs, rituals and traditions that are transmitted from one generation to next generation. Cultures throuhout the world share many similar attitudes but are marked by considerable differences.

1.1.7 Long questions

1. Discuss the key contributions of different theorists in shaping the understanding of psychology over time.

2. Explain the significance of various branches of psychology in understanding human behaviour.

3. Describe the cross-cultural perspective in psychology and its importance in understanding how cultural differences influence human behaviour.

1.1.8 Short questions

1. What are the different early definitions of psychology, and how did the concept evolve over time?

2. List and briefly explain three branches of psychology.

3. What is the significance of experimental psychology, and how does it contribute to our understanding of fundamental psychological processes?

1.1.9 Suggested Readings

- Morgan, C.T. King, R.A., Weisz. J.R. Schoper, J. (1987). *Introduction to Psychology*. McGraw-Hill, New York.
- Munn, N.L., Fernald Jr. L.D., & Fernald, P.S. (1972). *Introduction to Psychology.*

- Oxford & IBH Publishing Co., New Delhi.

LESSON NO. 1.2 LAST UPDATED JANUARY 2023

HISTORICAL BACKGROUND OF PSYCHOLOGY

LESSON STRUCTURE :

1.2.0 Objectives :

In this lesson, we shall provide you with the historical background of psychology as to how its study started and developed. We shall render information about :

* the early schools of psychology.
* the modern perspectives.

1.2.1 Introduction:

Ideas, concepts, methodology, theories and subject matter of every science is observed to undergo change and development, and at the beginning of every branch; knowledge is seen to be shrouded in confused, disordered and underdeveloped thought. As new advances are made, these same thoughts take an order, clarity and organisation. In the history of psychology, strong differences of opinion about what psychology should study and how it should do were represented in schools of psychology. Today, many psychologists share the idea that psychology should study behaviour; even those who want to study internal events generally agree that this must begin with a look at behaviour. Sometimes, psychologists may disagree about what they see and what it means. Thus, fundamental differences in viewpoints shows up in the very definition of psychology and in ideas about what psychology should study and how. Some historical

background will help to bring these point of view into focus.

1.2.2 Early Schools of psychology :

Ever since man woke to the mystery of thought and began to make some conjectures on the various changes that took place in his mind and body during conditions of sleep, walking, dreaming etc., he has been making a progress in the field of psychology. It is only a historical study of psychology which can reveal the fundamental assumptions that are to be seen in Greek times. Although the theories and assumptions of the modern psychologists appear to be completely at variance with their Greek counterparts, but a minute study will reveal elements of identity and relationship. Formal ideas about behaviour and mind in western culture began with the classical Greek philosophers and have continued to the day as part of the fabric of philosophy. Psychology, as a separate area of study, split away from philosophy a little over 100 years ago. The success of the experimental method in the physical sciences encourages some philosophers to think that mind and behaviour could be studied with scientific

methods. In 1879, the German philosopher and psychologist Wilhelm Wundt established the first psychological laboratory at the university of Leipzig in Germany. Stanley Hall (1844-1924) founded the first formal psychological laboratory in the United States
was set up at Johns Hopkins University in 1883, and within few years, more universities and psychological laboratories and departments were established. In Wundt's opinion, psychology should be the study of conscious experience. Our task is that of analyzing sensation, feelings and images into their most basic parts, just as chemists analyze complex substances. In that way, will come to understand the nature of human mind. We can accomplish this through introduction-asking individuals to describe what is going on in their own minds as they perform various tasks or have specific experiences.

William James, author of an early influential text, 'Principles of Psychology disagrees with Wundt's views. He said that mind is not static. It is always changing. So, the key task for psychology should be that of understanding how the mind functions in every day life. How does our basic psychological nature help us to adapt a complex and ever-changing world. To understand human mind, we have to study how it functions.

Watson, one of the most prominent American psychologist, moved psychology away from studying the contents of the mind to study only observable behaviour because we can't see 'mind or' conscious experience. All we can observe is overt behaviour and people can't report accurately about what goes on in their minds.

Overt behaviour can be observed or measured scientifically so that should be the focus of psychology.

As we see, these three individuals held sharply contrasting views about the nature of psychology. Wundt and other structuralists belived that psychology should focus on conscious experience and on the talk of analyzing such experience into basic
parts. James and other functionalists felt that psychology should focus on observable, overt activities. Schools of thought formed around these psychologists. These schools of thought are known as the schools of psychology.

1.2.2.1 Structuralism :

This early school of physiologist grew up around the ideas of Wilhelm Wundt, a German Psychologist in 1879, and also he established first psychology laboratory at Leipzig university in Germany, his student Edward B. Titchner in his earlier studies investigated sensations and imagery. Wundt and his followers were called structuralists. They worked

on this premise that it was the prime duty of the psychologists to explore the structure of consciousness and evolve the law of its formations. The main method used by structuralists to explore these elementary units of mind was Introspection (looking into). Subjects were trained to report as objectively as possible what they experienced in connection with a certain stimulus, disregarding the meaning they had come to associate with that stimulus.

1.2.2.2 Functionalism :

About twenty years later, a school of psychology was formed by functionalists who were dissatisfied with the structuralists emphasis on mental states. Instead of asking 'what is consciousness' as the structuralists did, they asked, "what is consciousness for ? What is its purpose or function ? Functionalists, such as William James Dewey (1873-1954), James R. Angell (1869-1949) and Barvey Carr (1873-1954) were specifically interested in the fact that mind and behaviour are adaptive - they enable an individual to adjust to a changing environment. They did experiments on the ways in individual memory, problem solving, and help people and animals adapt to their environments.

1.2.3 Approaches of Psychology:

An approach is a perspective (i.e., view) that involves certain assumptions (i.e., beliefs) about human behavior: the way they function, which aspects of them are worthy of study and what research methods are appropriate for undertaking this study. There may be several different theories within an approach, but they all share these common assumptions. Since Wilhelm Wundt opened the first psychology lab in 1879, psychologists have studied various aspects of human behavior, such as personality, brain functions and socio-cultural influences. As psychology progressed, it began to tackle the question of why we do what we do from different angles, including: biological, psychodynamic, behavioral, cognitive and humanistic perspectives.

Each perspective has its strengths and weaknesses, and brings something different to our understanding of human behavior. For this reason, it is important that psychology does have different perspectives on the understanding and study of human and animal behavior.

Below is a summary of the six main psychological approaches (sometimes called perspectives) in psychology.

1.2.3.1 Biological Approach

Theorists in the biological perspective who study behavioral genomics consider

how genes affect behavior. Now that the human genome is mapped, perhaps, we will someday understand more precisely how behavior is affected by the DNA we inherit. Biological factors such as chromosomes, hormones and the brain all have a significant influence on human behavior, for example, gender. Biopsychologists look at how your nervous system, hormones and genetic makeup affect your behavior. Biological psychologists explore the connection between your *mental states* and your *brain, nerves and hormones* to explore how your thoughts, moods and actions are shaped.

Biological approach suggests you are the sum of your parts. You think the way you do because of the way your brain is built and because of your body's needs. All of your choices are based on your physical body. The biological approach attempts to understand the healthy brain, but it also examines the mind and body to figure out how disorders like schizophrenia develop from genetic roots.

The biological approach believes that most behavior is inherited and has an adaptive (or evolutionary) function. For example, in the weeks immediately after the birth of a child, levels of testosterone in fathers drop by more than 30 per cent. This has an evolutionary function. Testosterone-deprived men are less likely to wander off in search of new mates to inseminate. They are also less aggressive, which is useful when there is a baby around.

Biological psychologists explain behaviors in neurological terms, i.e., the physiology and structure of the brain and how this influences behavior. Many biological psychologists have concentrated on abnormal behavior and have tried to explain it. For example, biological psychologists believe that schizophrenia is affected by levels of dopamine (a neurotransmitter).

These findings have helped psychiatry take off and help relieve the symptoms of the mental disorders through drugs. However, Freud and other disciplines would argue that this just treats the symptoms and not the cause. This is where health psychologists take the finding that biological psychologists produce and look at the environmental factors that are involved to get a better picture.

1.2.3.2 Behaviouristic Approach

Behaviorism is different from most other approaches because they view people (and animals) as controlled by their environment and specifically that we are the result of what we have learned from our environment. Behaviorism is concerned with how environmental factors (called stimuli) affect observable behavior (called the response).

The behaviorist approach proposes two main processes whereby people learn from their environment: namely classical conditioning and operant conditioning. Classical conditioning involves learning by association, and operant conditioning involves learning from the consequences of behavior.

Classical conditioning (CC) was studied by the Russian psychologist Ivan Pavlov. Though looking into natural reflexes and neutral stimuli he managed to condition dogs to salivate to the sound of a bell through repeated associated with the sound of the bell and food. The principles of CC have been applied in many therapies. Systematic desensitizing has been used extensively for the treatment of phobias (step-by-step exposed to a

feared stimulus at once). Aversion therapy is used for the treatment of alcohol de-addiction treatment. In this therapy an unpleasant stimulus is added so that the subject experiences unpleasantness after consuming alcohol.

B.F. Skinner investigated the role of reinforcement and punishment in shaping the behaviour of an organism and termed it as operant conditioning. Skinner felt that some behavior could be explained by the person's motive. Therefore behavior occurs for a reason, and the three main behavior shaping techniques are positive reinforcement, negative reinforcement, and punishment.

Behaviorism also believes in (e.g., controlled experiments), and that only observable behavior should be studied because this can be objectively measured. Behaviorism rejects the idea that people have free will, and believes that the environment determines all behavior. Behaviorism is the scientific study of observable behavior working on the basis that behavior can be reduced to learned S-R (Stimulus- Response) units.

Behaviorism has been criticized in the way it under-estimates the complexity of human behavior. Many studies used animals which are hard to generalize to humans, and it cannot explain, for example, the speed in which we pick up language. There must be biological factors involved.

1.2.3.3 Cognitive Approach

Psychology was institutionalized as a science in 1879 by Wilhelm Wundt, who found the first psychological laboratory.

His initiative was soon followed by other European and American Universities. These early laboratories, through experiments, explored areas such as memory and sensory perception, both of which Wundt believed to be closely related to physiological processes in the brain. The whole movement had evolved from the early philosophers, such as Aristotle and Plato. Today this approach is known as cognitive psychology.

Cognitive Psychology revolves around the notion that if we want to know what makes people think then the way to do it is to figure out what processes are actually going on in their minds. In other words, psychologists from this perspective study cognition which is 'the mental act or process by which knowledge is acquired.'

The cognitive perspective is concerned with "mental" functions such as memory , perception and attention etc. It views people as being similar to computers in the way we process information (e.g., input-process-output). For example, both human brains and computers process information, store data and have input an output procedure.

This had led cognitive psychologists to explain that memory comprises of three stages: encoding (where information is received and attended to), storage (where the information is retained) and retrieval (where the information is recalled).

1.2.3.4 Evolutionary Approach

This perspective was founded in part by Charles Darwin and his theory of natural selection. His theories began to gain additional traction throughout the 19th and 20th centuries. In this way, other psychologists increased their

own research of these ideals. A central claim of evolutionary psychology is that the brain (and therefore the mind) evolved to solve problems encountered by our hunter-gatherer ancestors during the upper Pleistocene period over 10,000 years ago.

The Evolutionary approach explains behavior in terms of the selective pressures that shape behavior. Most behaviors that we see/display are believed to have developed during our EEA (environment of evolutionary adaptation) to help us survive.

Observed behavior is likely to have developed because it is adaptive. It has been naturally selected, i.e., individuals who are best adapted survive and reproduce. Behaviors may even be sexually selected, i.e., individuals who are most successful in gaining access to mates leave behind more offspring.

The mind is therefore equipped with 'instincts' that enabled our ancestors to survive and reproduce.

A strength of this approach is that it can explain behaviors that appear dysfunctional, such as anorexia, or behaviors that make little sense in a modern context, such as our biological stress response when finding out we are overdrawn at the bank.

1.2.3.5 Psychodynamic Approach

Freud believes that events in our childhood can have a significant impact on our behavior as adults. He also believed that people have little free will to make choices in life. Instead, our behavior is determined by the unconscious mind and childhood experiences.

Freud's psychoanalysis is both a theory and therapy. It is the original psychodynamic theory and inspired psychologists such as Jung and Erikson to develop their own psychodynamic theories. Freud's work is vast, and he has contributed greatly to psychology as a discipline.

Freud, the founder of psychoanalysis, explained the human mind as like an iceberg, with only a small amount of it being visible, that is our observable behavior, but it is the unconscious, submerged mind that has the most, underlying influence on our behavior. Freud used three main methods of accessing the unconscious mind: free association, dream analysis and slips of the tongue.

He believed that the unconscious mind consisted of three components: the 'id' the 'ego' and the 'superego.' The 'id' contains two main instincts: 'Eros', which is the life instinct, which involves self-preservation and sex which is fuelled by the 'libido' energy force. 'Thanatos' is the death instinct, whose energies, because they are less powerful than those of 'Eros' are channeled away from ourselves and into aggression towards others.

The 'id' and the 'superego' are constantly in conflict with each other, and the 'ego' tries to resolve the discord. If this conflict is not resolved, we tend

to use defense mechanisms to reduce our anxiety. Psychoanalysis attempts to help patients resolve their inner conflicts.

An aspect of psychoanalysis is Freud's theory of psychosexual development. It shows how early experiences affect adult personality. Stimulation of different areas of the body is important as the child progresses through the important developmental stages. Too much or too little can have bad consequences later.

The most important stage is the phallic stage where the focus of the libido is on the genitals. During this stage little boys experience the 'Oedipus complex,' and little girls experience the 'Electra complex.' These complexes result in children identifying with their same-sex parent, which enables them to learn sex-appropriate behavior and a moral code of conduct.

However, it has been criticized in the way that it over emphasizes the importance of sexuality and under emphasized of the role of social relationships. The theory is not scientific, and can't be proved as it is circular. Nevertheless, psychoanalysis has been greatly contributory to psychology in that it has encouraged many modern theorists to modify it for the better, using its basic principles, but eliminating its major flaws.

1.2.4 Summary

In conclusion, there are so many different perspectives in psychology to explain the different types of behavior and give different angles. No one perspective has explanatory powers over the rest. Only with all the different types of psychology, which sometimes contradict one another (nature-nurture debate), overlap with each other (e.g. psychoanalysis and child psychology) or build upon one another (biological and health psychologist) we can understand and create effective solutions when problems arise, so we have a healthy body and a healthy mind. The fact that there are different perspectives represents the complexity and richness of human (and animal) behavior.

1.2.5 Keywords

Structuralism :

This early school of physiologist grew up around the ideas of Wilhelm Wundt, a German Psychologist in 1879, and also he established first psychology laboratory at Leipzig university in Germany, his student Edward B. Titchner in his earlier studies investigated sensations and imagery. Wundt and his followers were called structuralists.

Functionalism :

Instead of asking 'what is consciousness' as the structuralists did, they asked, "what is consciousness for ? What is its purpose or function ? Functionalists, such as William James Dewey (1873-1954), James R. Angell (1869-1949) and Barvey Carr (1873-1954) were

specifically interested in the fact that mind and behaviour are adaptive - they enable an individual to adjust to a changing environment.

Biological Approach :

The biological approach believes that most behavior is inherited and has an adaptive (or evolutionary) function. For example, in the weeks immediately after the birth ofa child, levels of testosterone in fathers drop by more than 30 per cent. This has an evolutionary function. Testosterone-deprived men are less likely to wander off in search of new mates to inseminate. They are also less aggressive, which is useful when there is a baby around.

Behaviourism

Behaviorism is different from most other approaches because they view people (and animals) as controlled by their environment and specifically that we are the result of what we have learned from our environment. Behaviorism is concerned with how environmental factors (called stimuli) affect observable behavior (called the response).

1.2.6 Long Questions:

1. Discuss the contributions of Wilhelm Wundt, William James, and John B. Watson in shaping different perspectives within psychology.
2. Compare and contrast the early schools of psychology, namely structuralism and functionalism. Analyze their approaches to understanding behaviour.
3. Describe the main approaches of psychology, including the biological, behavioristic, cognitive, evolutionary, and psychodynamic approaches.

1.2.7 Short Questions:

1. What is the main difference between structuralism and functionalism in psychology?
2. Briefly explain the key principles of the behavioristic approach in psychology.

1.2.8 Suggested Readings

- Morgan, C.T. King, R.A., Weisz. J.R. & Schoper, J. (1987). *Introduction to Psychology*. McGraw-Hill, New York.
- Munn, N.L., Fernald Jr. L.D., & Fernald, P.S. (1972). *Introduction to Psychology.*
- Oxford & IBH Publishing Co., New Delhi.

METHODS OF PSYCHOLOGY

1.3.0 Objective:

The objective of this lesson is to introduce the methods of psychology, highlighting their significance and applications. The lesson will cover observation, experimental method, case study, and survey methods of psychology, providing an understanding of each method's strengths and limitations.

1.3.1 Introduction :

Psychology is the science of behaviour and experience of the organism in relation to the environment. Being a science, it has its specific tools, methods of procedures which help in the collection and organisation of facts or data. Methods save time, efforts, energy, and aid efficiency. Some psychologists are of the view that because of these methods, psychology is a science, and this very thing speaks of the importance of methods.

1.3.2 Methods of psychology :

Methods of psychology have undergone a drastic change. They depend on the needs of the society. Previously, we used methods like introspection, but later on, other methods of scientific inquiry became prevalent.

1.3.2.1 Meaning of Methods :

Charles Gide has said, "In scientific language, the term "method" is used to designate the road that must be followed to lead to the discovery of truth."

According to Oxford dictionary, method is a way of doing something, system of procedures, orderliness, conscious regularity, etc.

1.3.3 List of Methods of Psychology :

The following methods are prevalent in psychology :

1) Observation,
2) Experimental method,
3) Case history
4) Survey

1.3.3.1 Observation :

All sciences use observation to obtain facts. Psychology is a systematic description and explanation of man's behaviour. But to describe any facts, it is necessary that one should have observed that fact of event. It is the study of behaviour as it occurs in its natural settings. But our observations may be either useless or unnecessary. The psychologist also observes the description given by those persons of their mental activities for whom its possible. Such descriptions have been called verbal behaviour, because it is made with the use of words, that is, spoken or written language. A psychologist has one advantage over other scientists. He can observe the phenomena both from within and without. He may watch other people's behaviour, and may also look into his own behaviour from inside or ask other people to report about their behaviour.

There are thus, two kinds of observation. One is objective or naturalistic method and the other is subjective method or introspection. Observation which can be verified by others as well as the subject is called Naturalistic or Objective Observation. In this method, the observer acts as a non-participant observer.

By this, he is more likely to maintain an objective viewpoint. For example, anybody can see how fast or accurately I type, walk or play

cricket and such observation is objective, but while doing these acts, I may be feeling pain, fatigue or hunger and may be conscious of them. When we study this consciousness, our observation becomes subjective. Our behaviour can be observed in its bodily aspect, that is thoughts, feelings, wishes, purposes which accompany bodily movements or changes. Both kinds of observation are needed in psychology for every act of behaviour, because every act has both mental and physical aspects.

This method has some merits and demerits also. This method is basically an objective method and therefore, quite scientific. Through this method, it is possible to make the observation about all sources of individuals and it has been used since ages. It is the most ancient method of study. It is used by almost all the sciences. It is quite an easy method. Every human being can use this observation with little efforts. But this method suffers from some disadvantages also. In order to have correct and accurate information, it is necessary to wait for the desired situations. For example, if we want to study the psychology of man in his happy mood, we have to wait till the man concerned is in a happy mood. Since the observer or investigator is also a human being, it is quite possible that this personal feelings and emotions may influence the observations. That is why the data provided by this method is not 100% dependable, and the data becomes unreliable. Prejudice also plays a very vital role in observation.

1.3.3.2 Experimental Method :

Psychology is the positive science of human behaviour. Hence, experimental method is most important in the study of psychology. This method has the credit of bringing psychology to the level of an exact science. Experiment is observation under conditions which we can control and vary. One advantage of this control is that we can repeat our observations as often as we like, and obtain better and more accurate results. Here are some main steps in the process of experimentation. The first step in this method is the formation of problem.

Problem : Problem is any statement that is testable.

Hypothesis : On the basis of previous knowledge and research and through insight, you make some hypothesis in relation to certain facts. It is necessary that this hypothesis or provisional explanation should be sensible. The second step is to deduce consequences from that hypothesis which can be experimented upon. The next step is to arrange an experiment to test and see if those consequences can be verified or not. If they are verified, the hypothesis is strengthened and may be accepted. If the experiment gives negative results,

the hypothesis stands disproved and will not be supported. Then, we will have to frame another hypothesis.

Let us now describe some of the essential features of an experiment. First of all, an experiment is an observation which we can repeat as often as we wish. The advantages of repetition are very much clear. It removes all possible doubts.

Because of repetition, we may be reasonably sure that our results are valid and reliable. In this method, we do not have to wait for an opportunity for right
observation and arrange for it ourselves, and check it up by repeating. It saves a lot of time. Second, generalization can be possible only because of repetition. For sound generalization, repeated observations must be made under similar conditions, that is, conditions must be controlled. If conditions change, the results may not be the same. It is difficult to keep all the conditions similar and under control, but we have to see that all the relevant and important conditions remain unchanged.

Suppose we want to study the effect of caffeine on the alertness of a person. Many factors would be involved, but it is possible that a person might be influenced by the fact that caffeine is being tried on him. In order to control this factor, two group of people are taken. They resemble in age, sex, and intelligence. Two kinds of pills are prepared. One pill containing caffeine and another similar in appearance but not containing caffeine. The latter pills are called *placebos*. The group taking the caffeine pill is called the experimental group and the group taking the placebo is called the control group. By comparing the behaviour of the two groups, we can find the effect of caffeine. The person on whom an experiment is done is called a subject. The person who does the experiment is the experimenter.

Thirdly, every experiment must have a variable. A variable is any characteristic that may appear in changed amount or quality in different instances. In organizing the experiment, the investigator or experimenter decides which stimulus and organising variables he intends to study in relation to which response variable. In the above experiment, caffeine and alertness are two variables. Caffeine is called the independent variable because we can change its amount independently of the other. Alertness on the other hand, is the dependent variable because we are trying to see if it depends on caffeine.

Experimental method is a scientific method, but it cannot be said to be always successful and accurate. In the first place, human feelings and emotions are quite fickle and transitory and it is, therefore, very

difficult to apply this method. Secondly, an experiment is an artificially arranged observation and the psychologist has to check what he want to control and observe. Thirdly, another great disadvantage of the method that we cannot use it wherever we like and we cannot make experiments with human beings or animals as we like, as is possible with materialistic things. Fourthly, psychological experiments are sure to interfere with the very thing they aim at studying. Natural sciences are able to isolate the object of their observation but such isolation is not possible in psychology. People on whom experiments are done are highly sensitive and the mere knowledge that their behaviour is being studied will make them behave differently.

1.3.3.3 The Case Study Method

The case study, or case history is another descriptive research method used by psychologists. In a case study, a single individual or a small number of persons are studied in great depth, usually over an extended period of time. A case study involves the use of observation, interviews and sometimes psychological testing. The case study is exploratory in nature, and its purpose is to provide a detailed description of some behaviour or disorder. This method is particularly appropriate for studying people who have uncommon psychological or physiological disorder or brain injuries. The case study method is not limited to the social sciences. This method is also used in business to make a number of presonnel evaluations and to make selection of persons for appointment or promotion. Case histories are also conducted and maintained in schools, prisons, mental clinics, armed forces, marriage and family consultation etc.

Case studies have provided the foundation for psychological theories. The theory of Sigmund Freud is based primarily on case studies of his own patients.

Advantages of Case Study Method

1. The case study approach is used in social sciences primarily for the insights it can offer to guide further research on large samples. The purpose of the case history is to see how action and attitudes develop over a period of time.
2. Case study adds to over knowledge and its a tremendous produces of ideas suggestions and hypothesis about behaviour.
3. By this method the researcher gets a detailed data on a few cases hence it helps in formulating new concepts or a new framework within which to carry out controlled experiments later on.

4. Case studies are flexible enough. It can be conducted in any kind ofsocial setting.
5. Case study method like any other method can be used for testing theories.

Disadvantages

1. Although the case study has establish the cause of behaviours observed in a case study, and observer bias is a potential problem. Moreover, because so few individiuals are studied, researchers do not know how applicable, or generalizable their findings may be to larger groups or to different cultures.

2. The major disadvantages of case history method is that the generalization to larger sample is almost impossible.

3. The case studies depend upon retrospective data, there is a real possibility that the subject may either forget important details or may purposefully falsify them.

1.3.3.4 Survey Method

A Survey allows researcher to gather a large amount of information from a large number of people in a relatively short time. Surveys are used to obtain information related to consumer preferences, opinion polls, political opinions, social issues etc. An adequate survey requires a carefully pretested questionnaire, a group of interviewers trained in its use, a sample carefully selected to ensure that the respondents are representative of the population to be studied, appropriate methods of data analysis and reporting so that the results are properly interpreted.

There are various steps involved in conducting a survey. First the problem is defined objectively. Then the sample to be studied and size of sample is planned. A list of questions or questionnaire is prepared. Then the researcher decides the type of survey to be conducted i.e. mail survey, personal interview, telephone survey. Then the content analysis is done and finally reporting of the data is done.

Types of Survey

There are various modes of conducting survey.

1. Mail Survey : Mail surveys represent the most common means of distributing self-administered questionnaries. Mail surveys can be done relatively quickly. Mail surveys are the best for dealing with

highly personal or embarrasing topics, especially when anonymity of respondents is preserved. The major limitation of this type of survey is law response rate. Quite often people are not interested or they are too busy to return a questionnaire.

2. Personal Interviews : This is a face to face interview. Personal interview allows much greater flexibility in asking questions than does the mail survey. The personal interview is very costly as the sample size is large and the respondents have to be contacted personally. There are chances of bias as well, interviewer tries to adjust the wording of a question to 'fit' the respondent or records only selected portions of respondents answers.

3. Telephone Survey : Telephone survey have become very popular as its provides quick and speedy. Collection of information about the respondents. The major disadvantages is that the people who do not have a telephone can't be interviewed.

1.3.4 Summary :

Various methods are prevalent in psychology, each having its own advantages and disadvantages. These methods may be used individually as well as in combination to render significant information. The importance of these specific tools of methods cannot be ignored since they save time, effort, money and energy, and provide us with concrete and empirically established results.

1.3.5 Key words

Mail Survey : Mail surveys represent the most common means of distributing self-administered questionnaries. Mail surveys can be done relatively quickly. Mail surveys are the best for dealing with highly personal or embarrasing topics, especially when anonymity of respondents is preserved. The major limitation of this type of survey is law response rate. Quite often people are not interested or they are too busy to return a questionnaire.

Telephone Survey : Telephone survey have become very popular as its provides quick and speedy. Collection of information about the respondents. The major disadvantages is that the people who do not have a telephone can't be interviewed.

Variable: A variable is any characteristic that may appear in changed amount or quality in different instances. In organizing the

experiment, the investigator or experimenter decides which stimulus and organising variables he intends to study in relation to which response variable.

Case study : A case study involves the use of observation, interviews and sometimes psychological testing. The case study is exploratory in nature, and its purpose is to provide a detailed description of some behaviour or disorder. This method is particularly appropriate for studying people who have uncommon psychological or physiological disorder or brain injuries.

1.3.6 Long Questions

Explain the nature and Scope of psychology.
Discuss the most scientific method of Psychology.
Discuss various schools of Psychology.

1.3.7 Short Questions

Write short notes on :

Survey Method
Industrial Psychology
Observation Method

1.3.8 Suggested Readings

- Morgan, C.T. King, R.A., Weisz. J.R. Schoper, J. (1987). *Introduction to Psychology*. McGraw-Hill, New York.
- Munn, N.L., Fernald Jr. L.D., & Fernald, P.S. (1972). *Introduction to Psychology*. Oxford & IBH Publishing Co., New Delhi.
- D, Thakur; (1993). *Reserach Methodology in Social Sciences*. Deep and Deep Publications New Delhi.

LEARNING

CHAPTER PLAN

1.4.0 OBJECTIVE

In this lesson the students will get acquainted with the nature of learning, types of

learning and the various laws of learning.

1.4.1 INTRODUCTION

"Learning is a discipline of psychology that attempts to explain how an organism learns. It consists of many different theories of learning, including instincts, social facilitation and observation. Learning is one key process that many people take for granted . They just assume it happens and happens basically the same way for most people. Definition of learning is comprised of several different components:

The 4 Factors That Form The Definition of Learning:

1) Learning is inferred from a change in behavior/performance*
2) Learning results in an inferred change in memory
3) Learning is the result of experience
4) Learning is relatively permanent

This means that behavior changes that are temporary or due to things like drugs, alcohol, etc., are not "learned. It is the combination of these 4 factors that make definition of learning. “Learning is a relatively durable change in behavior, behavioural potential or knowledge that is due to experience” here Behavior Potential means that once something is learned, an organism can exhibit a behavior that indicates learning as occurred. Thus, once a behavior has been "learned", it can be exhibited by "performance" of a corresponding behavior.

1.4.2 NATURE OF LEARNING

As learning always involves some kind of experience , the behavioural changes occurring because of it are relatively permanent e.g. suppression of orienting reflexes resulting in habituation . Habituation is a decrease in response to a stimulus after repeated presentations. For example a new mobile ring tone, may initially draw your attention or even become distracting. After you become accustomed to this sound, you pay less attention to the noise and your response to the sound will diminish. This diminished response is habituation. But if it occurs due to fatigue or drugs it is not learning. Habituation is an example of non-associative learning.

Learning may be both vertical and horizontal. It is vertical in so far precision in increased or information is added to that already learned. It is horizontal in so far as what is learned is integrated and organized as a part of a functioning unit of expanding experience. Thus the former means qualitative and latter is quantitative in nature.

Learning is expected to bring about more or less permanent change in the learner's behavior. This change may range from the acquisition of a relatively simple skill. item of information to the mastery of complicated mechanical performance and application of difficult and abstract reading material, change in response or behavior is caused partly or wholly by experience. It includes behavior change in the emotional sphere, refers to the acquisition of symbolic knowledge or motor. skills. it however does not include physiological changes like fatigue, temporary sensory resistance and hunger.

Learning should enable us to make the least use of the things in the world around us. For example, one has to learn the art of living harmoniously with others by learning how to establish good relations with his fellows. Learning not limited

to the school alone, it being earlier and continues even after the school days.

1. **Learning is growth :**

The individual grows as he lives. This growth implies both physical as well as mental development of the learner. The individual gains experiences through various activities. These are all sources of learning. The individual grows through living and learning. Thus growth and learning are inter-related and even synonymous.

2. **Learning is adjustment :**

Learning enables the individual to adjust himself properly, with the new situations. The individual faces new problems and new situations throughout his life and learning helps him to solve the problems encountered by him. That is why; many psychologists describe learning as "a process of progressive adjustment to the ever changing conditions which one encounters." The society in which we live is so complex and so dynamic that any one type of adjustment will not be suitable for all of many situations and problems. It is through learning that one could achieve the ability to adjust adequately to all situations of life.

3. **Learning is purposeful :**

All kinds of learning is goal-oriented. The individual acts with some purpose. He learns through activities. He gets himself interested when he is aware of his objectives to be realized through these activities. Therefore all learning is purposive in nature.

4. **Learning is experience :**

The individual learns through experiences. Human life is full of experiences. All these experiences provide new knowledge, understanding, skills and attitudes. Learning is not mere acquisition of the knowledge, skills and attitudes. It is also the reorganization of experiences or the synthesis of the old experiences with the new.

5. **Learning is intelligent :**

Mere cramming without proper understanding does not make learning. Thus meaningless efforts do not produce permanent result. Any work done mechanically cannot yield satisfactory learning outcomes. Learning therefore must be intelligent.

6. **Learning is active :**

Learning is given more importance than teaching. it implies self-activity of the learning. Without adequate motivation he cannot work whole-heartedly and motivation is therefore at the root of self-activity. Learning by doing is thus and important principle of education, and the basis of all progressive methods of education like the project, the Dalton, the Montessori and basic system.

7. **Learning is both individual and Social :**

Although learning is an individual activity, it is social also. Individual mind is consciously or un-consciously affected by the group activities. Individual is influenced by his peers, friends, relatives' parents and classmates and learns their ideas, feelings and attitudes in some way or others. The social agencies like family, church, markets and clubs exert immense, influence on the individual

minds. As such, learning becomes both individual as well as social.

8. **Learning is-the product of the environment :**

The individual lives in interaction of the society. Particularly, environment plays an important part in the growth and development of the individual. The physical, social, intellectual and emotional development of the child is molded and remolded by the objects and individuals in his environment. Therefore, emphasized that child's environment should be made free from unhealthy and vicious matters to make it more effective for learning.

9. **Learning affects the conduct of the learner :**

Learning is called the modification of behavior. It affects the learner's behavior and conduct. Every learning experience brings about changes in the mental structure of the learner. therefore attempts are made to provide such learning experiences which can mould the desired conduct and habits in the learners.

The sequence of events and corresponding cognitive processes that are present in learning are:

(1) Gaining attention (reception)
(2) Informing regarding objective (expectancy)
(3) Recall of prior learning (retrieval)
(4) the stimulus (selective perception)
(5) learning guidance (semantic encoding)
(6) performance (responding)
(7) feedback (reinforcement)
(8) performance (retrieval)
(9) retention and transfer (generalization).

These events should satisfy or provide the necessary conditions for learning and as is clear from these that learning is an inferred process. Inference here means the act or process of deriving logical conclusions from premises known or assumed to be true. In other words it is the act of reasoning from factual knowledge or evidence.

1.4.3 TYPES OF LEARNING

Learning can take place in many ways depending upon simple or complex form of responses that needs to be learnt. The simplest form of learning is conditioning. Two types of conditioning has been identified

1. Classical conditioning definition
2. Instrumental / operant conditioning

The other form of learning include

3. Observational Learning
4. Verbal Learning
5. Concept Learning
6. Insight

1.4.4 CLASSICAL CONDITIONING

Ivan Pavlov, a Russian physiologist who was studying digestion in dogs, discovered classical conditioning accidentally. Pavlov noticed that a dog salivated at the sight of a food bowl. Pavlov recognized this as an important phenomenon. It represented the triggering of a biological reflex (salivation) by learning (in this case, by the sight of the bowl). Pavlov studied this phenomenon in the laboratory and called it conditioning.

1.4.5 OPERANT CONDITIONING

Classical conditioning forms an association between two stimuli. *Operant* conditioning forms an association between a behavior and a consequence. Operant conditioning is also called instrumental conditioning, because the subject uses its own behavior as an "instrument" to pursue some goal.

An operant is defined as a behavior producing a certain effect on the environment. Thus a bar-press operant is *any* behavior which results in a bar press, whether it is accomplished (for example) with the animal's paw or the animal's nose.

In a "rat lab" students start by teaching a rat to find food pellets in a small enclosure, the food magazine. Next the rat is reinforced (given food pellets) for any behavior that brings it close to the bar that sticks out of the cage wall. Then the rat is required to actually press the bar, to receive a pellet. This process of gradually reinforcing steps toward a desired behavior is called *shaping*.

1.4.6 OBSERVATIONAL LEARNING

Observational learning, also known as modeling or imitation, proposes that learning occurs as a result of observation and consequence. Behavior is learned through imitation; however behavior that is rewarded is more readily imitated than behavior that is punished. Termed vicarious conditioning, this type of learning is present when there is attention to the behavior, retention and the ability to reproduce the behavior, and motivation for the learning to occur. Observational learning is learning stimulated also by observing the behavior of another organism. *Modeling* is one form of observational learning. It occurs when one person performs a behavior, while others look on and learn from it.

Specialized nerve cells called mirror neurons may account for this ability. Mirror neurons are found in many different primate species. They fire the same patterns whether a creature is performing an action itself or watching another member of the same species performing the action. This provides a way for actions seen externally to be taken into the nervous system, through a sort of automatic motor empathy.

Observational or social learning is based primarily on the work of Albert Bandura. He and his colleagues were able to demonstrate through a variety of experiments that the application of consequences was not necessary for learning to take place. Rather learning could occur through the simple processes of observing someone else's activity. Bandura formulated his findings in a four-step pattern which combines a cognitive view and an operant view of learning.

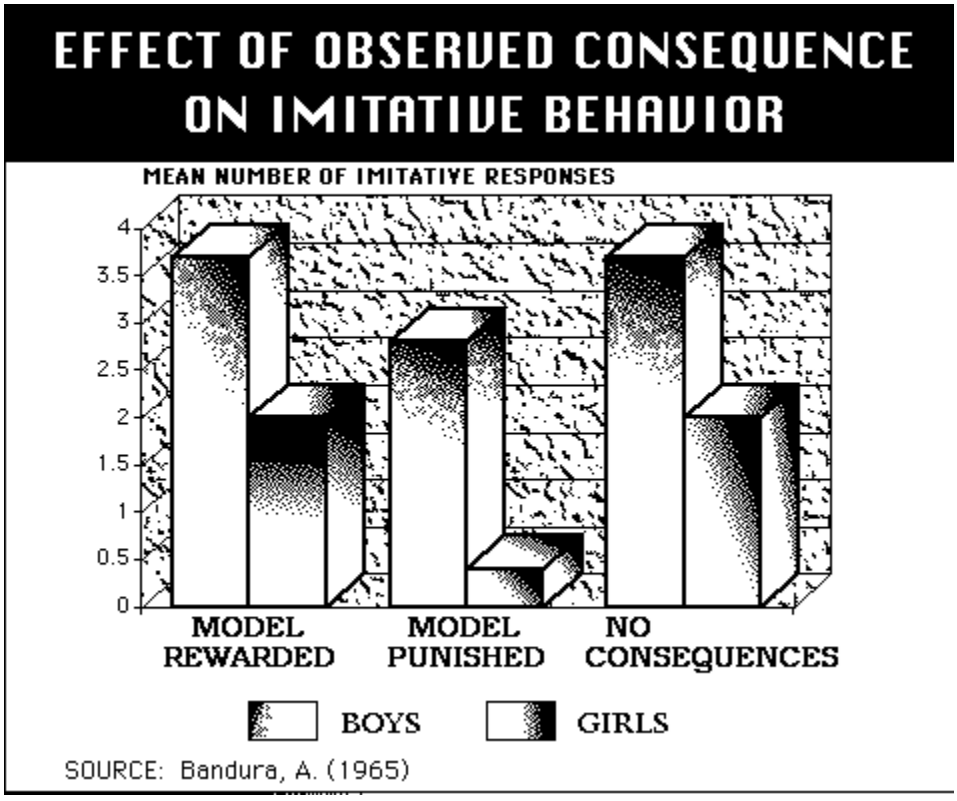
1. Attention -- the individual notices something in the environment

2. Retention -- the individual remembers what was noticed
3. Reproduction -- the individual produces an action that is a copy of what was noticed
4. Motivation -- the environment delivers a consequence that changes the probability the behavior will be emitted again (reinforcement and punishment)

Bandura's work draws from both behavioral and cognitive views of learning. He believes that mind, behavior and the environment all play an important role in the learning process.

In a set of well known experiments, called the "Bobo doll" studies, Bandura showed that children (ages 3 to 4) would change their behavior by simply watching others.

Three groups of children watched a film in which a child in a playroom behaved aggressively (e.g., hit, kick, yell) towards a "bobo doll." The film had three different endings. One group of children saw the child praised for his behavior; a second group saw the child told to go sit down in a corner and was not allowed to play with the toys; a third group (the control) group saw a film with the child simply walking out of the room. Children were then allowed into the playroom and actions of aggression were noted. The results are shown below



1.4.7 GESTALT'S INSIGHT LEARNING

In contrast to classical and operant conditioning, which describe learning in terms of observable behavior, other theories focus on learning derived from motivation, memory, and cognition.

Wolfgang Köhler, a founder of the Gestalt school of psychology, observed the importance of cognition in the learning process when he studied the behavior of chimpanzees. In his experimentation, Köhler concluded that insight was key in the problem-solving conducted by chimpanzees. The animals did not just stumble upon solutions through trial and error, but rather they demonstrated a holistic understanding of problems that they solved through moments of revelation.

In the 1920s, Edward Tolman illustrated how learning can involve knowledge without observable performance. The performance of rats who negotiated the same maze on consecutive days without reward improved drastically after the introduction of a goal box with food, indicating that they had developed cognitive maps of the maze prior to the reward although it had not been observed in their behavior.

1.4.8 VERBAL LEARNING

A field of experimental psychology which studies the formation of certain verbal associations; deals with acquisition of the associations. Verbal learning is limited to human beings, as humans acquire knowledge largely in terms of words. the methods used in studying this kind of learning

1. **Paired -Associates Learning**: This method mimics S-S conditioning and S-R learning. It is used in learning some foreign language equivalents of mother-tongue words. First a list of paired associates is prepared. The first word of the pair is used is the stimulus and the second word as a response. Members of each pair may be from the same language or two different languages. A list of such words is given.

Ghar- home chhat- roof billi- cat etc.

The, first members of the pairs (stimulus term) are consonant-vowel-consonant (CVC) nonsense syllables and the second are English nouns (response term). The learner is first shown both the stimulus-response pairs together, and is instructed to remember and recall the response after the presentation of each stimulus term. after that a learning trial begins. One by one the stimulus words are presented and the participant tries to give the correct response term. In case of failure; he or she is shown the response word. In one trial all the stimulus terms are shown. Trials continue until the participant gives all the response words without any error. The total number of trials taken to reach the criterion becomes the measure of paired associate learning.

2. **Serial Learning**: This method of verbal, learning is used to find out how participant learn the lists of verbal items, and what processes are involved in it. First, lists of verbal items. i.e. nonsense syllables, most familiar or least familiar words, interrelated words. etc. are prepared. The participant is presented the entire list and is required to produce the items in the same serial order as the list. In the first trial, the first item of the list is shown and the participant has to produce the second item. If, he or she fails to do so within the prescribed time, the experimenter presents the second item. Now this item becomes the stimulus and the participant has to produce the third item that is the response word. If he

or she fails the experimenter gives the correct item, which becomes the stimulus item for the fourth word. This procedure is called serial anticipation method. Learning trials continue until the participant correctly anticipates all the items in the given 'order.

3. Free Recall: In this method participants are presented a list of words, which they read and speak out. Each word is shown at a fixed rate of exposure duration.

Immediately after the presentation of the list, the participants are required to recall the words in any order they can. Words in the list may be interrelated or unrelated. More than ten words are included in the list. The presentation order of words varies from trial to trial. This method is used to study how participants organise words for storage in memory. Studies indicate that the items placed in the beginning or end of the lists are easier to recall than those placed in the middle which are more difficult to learn.

Verbal learning depends strongly on meaningfulness and category clustering. It has been found that verbal learning is both associative as well as organisational. Length of the list, meaningfulness, frequency, the usage of words and interrelatedness of the words in the list determine the learning difficulty. More the time spent in learning, stronger is the learning. Verbal learning is both intentional and incidental.

1.4.9 CONCEPT LEARNING

The world in which we live consists of innumerable objects, events and living beings. These objects and events are different in their structures and functions. One of the many things human beings have to do is to organise the objects, events, animals etc. into categories so that within the category objects are treated as equivalent even though they are different in their features. Such categorisations involve concept learning.

What is a concept?

A concept is a category that is used to refer to a number of objects and events. A concept is a name expressed in words, often only in one word. Cow, fruit, building and crowd are examples of concepts or categories. A concept may be used to refer to a number of instances. It may be noted that the terms concept and category are interchangeable. A concept is defined as 'a set of features or attributes connected by some rule.' Instances of a concept are those objects or events or behaviours , which have common features. A feature is any characteristic or aspect of an object or event or living organism that is observed in them and can be considered equivalent to some features observed or discriminated in other objects. Features are of innumerable kinds and their discriminability depends upon the degree of the observer's perceptual sensitivity. Properties like colour, size, number, shape, smoothness, roughness, softness, and hardness are called features.

Rules that are used to connect the features to form a concept may be very simple or complex. A rule is an instruction to do something. Keeping in view the rules that are used in defining concepts, psychologists have studied two types of concepts- artificial concepts and natural concepts or categories.

1.4.10 LAWS OF LEARNING

Laws and principles of learning are attempts to define the fundamental conditions

of the learning process. In general, we have five almost universally accepted laws of learning. Each of these laws has common sense applications based on lessons people have learned over the years. Your mastery of these applications will greatly enhance your ability to influence your students to learn and perform at a high level.

LAW OF READINESS

According to the law of readiness students learn best when they are physically, mentally, and emotionally ready to learn. Since learning is an active process, students must have adequate rest, health, and physical ability. Students who are exhausted or in ill health obviously cannot learn much. Although these areas are beyond your control, you must know how to address them in your classroom. For students to be mentally ready to learn, they must master certain knowledge and skills at one level before they can learn those required at the next higher level. For example, students who have not learned the basic application of a law have little chance of applying that law to more complex situations. Just as students must be ready to learn, you must be ready to teach. Always prepare your lesson plans, training materials, and classroom or laboratory before you begin to teach. Your readiness is an important step in gaining the confidence and attention of your students. Remember, you only get one chance to make a first impression.

LAW OF EFFECT

An individual learns best those things which result in satisfying consequences. Since the law of effect has a direct relationship to motivation, it has many practical applications for you in the training environment.

One of the most basic applications is in your relationship with adult students. Adults want immediate benefits from training, so begin your instruction by presenting the benefits of the lesson. Continue to remind students of these benefits throughout the training. Point out the value of the training in meeting the needs of your students: self-satisfaction, self-confidence, improved skills, and so forth. Begin each lesson with a statement of objectives to help students establish goals, and let them know you expect them to meet those goals. Motivate students by providing positive reinforcement as they proceed from success to success. That is the basis of the law of effect.

LAW OF PRIMACY

Based on the law of primacy, students retain information they learn for the first time longer than they retain information they must relearn. Unlearning incorrect procedures (or bad habits) is always more difficult than learning the correct procedures in the beginning. Therefore, the law of primacy plays an important role in Navy training. Navy training courses allow a limited amount of time for learning do not include time for students to relearn improperly taught information. Make sure you teach the correct information and procedures the first time; proceed from the simple to the complex, from the known to the unknown. Clarify misunderstandings and errors before moving on. Remember, your students must be ready to learn new material.

LAW OF EXERCISE

This law is based on the old maxim that practice makes perfect. It has been proven that students learn best and retain information longer when they have meaningful practice

and repetition. The key here is that the practice must be meaningful. It is clear that practice leads to improvement only when it is followed by positive feedback. That means that as an instructor, you need to follow upon every homework assignment, every lab exercise, and any other student activities you assign. Students must have supervised practice in applying new skills to reach the required level of expertise to master course objectives. That is how the transfer method of learning takes place; from the information you teach, to the students' use of it.

LAW OF INTENSITY

The law of intensity states that a vivid experience is learned better and retained longer. Make your instruction powerful enough to have a strong, positive effect on your students by getting them actively involved in the lesson. Instruction that allows students to sit passively in the classroom doesn't have much intensity. You can talk about the effects of tear gas all day. But talking will never have the same impact as putting students in a controlled environment and letting them experience tear gas without a gas mask. That is **Intensity.**

Use the best instructional media available, including the real thing. Use examples, analogies, and personal experiences to make learning come to life. Make learning interactive by initiating and controlling your students' involvement in the learning process.

1.4.11 FACTORS AFFECTING LEARNING

Many factors affect learning. Everyone does not learn in exactly the same way or at the same rate. Each is subject to a variety of negative and positive influences in the overall process. You need to be aware of as many factors that affect learning as you can. The more you know, the better chance you have of positively influencing the learning process.

MOTIVATION

Perhaps the single most important factor in learning is motivation. Unfortunately, it is one of the hardest to get a handle on or to channel effectively. Humans basically try to succeed and, conversely, try vigorously to avoid failure, and thus constant efforts towards new learning are made. Without a will to learn, a person would resist any efforts towards acquiring new skills, behaviors, or cognitive mechanisms or modifying the existing patterns of functioning. Similarly, a motivated person would learn even if he gets a small opportunity. Little doubt exists that motivation, either internally or externally stimulated, initiates learning; directs it; and, when derailed, can reduce or stop it.

THE LEARNING SENSES

Sensory learning is the first that occurs for any human being. Its influence is apparent in children as we watch them grow up. Each sense, either singularly or in various combinations, provides a pathway to learning. With that in mind, the learning process to be optimum it is essential that all the organs are functioning normally and any sensory deficit would be a factor hindering learning.

Sight is considered the most important sense, accounting for as much as 75 percent of our basic learning. Most early learning comes from seeing and imitating. Hearing is the second most important sense, accounting for a large percentage of the remaining sensory learning capacity. Experts differ on specific numbers, but the

significance of sight and sound together is overwhelming. The sense of touch, while important in itself, becomes a major learning factor when combined with other senses. For eg. children do not associate/learn the word "hot" with anything in particular until they associate the word with their sense of touch. Through experience, we become sensitive to temperature, pressure, and the overall feel of things. For instance, an experienced engineer doesn't need a temperature gauge to determine if a bearing is running hot, just as an experienced damage control investigator doesn't need one to decide that the temperature of a watertight door is above normal. The importance of taste is important to the training/learning of cooks and bakers. The sense of smell is part of our human warning system. For example, electricians immediately recognize the smell of burning insulation. Therefore, the sense of smell is a valuable learning tool in certain narrow applications.

Although it is not normally identified as one of the senses, the phenomenon of kinesthesia is an extension of sensory learning. Think of it as a sensory perception residing in one's muscles, joints, and tendons that gives people a special awareness of their spatial relationship with their surroundings. Kinesthesia is actually a blend of all senses with psychomotor and perceptual skills. It manifests itself in people's ability to balance or move with coordination and determines the learning of skills through practice

Retention It has been estimated that people retain only 10 percent of what they read, 20 percent of what they hear, and 30 percent of what they see. When those senses are combined, however, retention takes a dramatic leap forward. Those same estimates tell us that when someone hears and sees, retention jumps to 50 percent. Hence the role of senses in learning is undeniable.

INDIVIDUAL DIFFERENCES

There are marked individual differences among learners. The physical differences, besides those for sight and hearing impairments, are those dealing with physical prerequisites for training/learning of psychomotor skills. More subtle differences exist in aptitude and ability. Aptitude depends on the student's intelligence, inquisitiveness, ambition, reasoning ability, and other mental traits. Ability is somewhat similar to aptitude but deals more with skills in processing information to acquire concepts or to master physical skills.

Being slow learner or fast learner, prior knowledge and leadership qualities would also affect the type, pace and amount of learning of different individuals even when they are exposed to the same inputs. Emotional differences and personalities ranging from introverted to extroverted also play a major role in learning. Social stereotypes like gender bias and bias towards certain classes may be internalized ,and result in individuals efforts towards learning .For eg , a girl may feel that she can never be good in numbers and hence may not learn accounts keeping.

Such attitudes undoubtedly affect performance since they indicate how person feels about learning at a particular time. The motivation levels would be indicated by attitudes and will channel the efforts toward success.

LEARNING STYLES

Individuals have different styles of learning. One person's learning style may not be

effective for another person. Concrete learners prefer an experience-based approach to learning. They rely heavily on their own feelings and personal judgments. They learn best by imitation after watching others take part in role playing and simulations. They very much like to be involved with the "real thing." For example, suppose you were trying to teach how to operate a fire pump. Concrete learners would prefer to watch you demonstrate the operation. They could then operate the pump by imitating your performance.

Active learners prefer to learn by becoming involved with the subject and taking an active step-by-step approach. They learn best from small group discussions, structured exercises, and problem-solving approaches. Active learners are experimenters who prefer to systematically try out new skills. A trial-and-error way of learning appeals to them. To operate the fire pump, active learners would systematically try out several different ways of operation.

Reflective learners like to observe and reflect (make comparisons and contrasts) before drawing conclusions. They learn best from lectures, films, and reading. Reflective learners prefer to play the role of the impartial observer while watching others. To operate the fire pump, reflective learners would watch others operate the pump and reflect (think) about the different ways of operation. They would then analyze their observations before attempting to operate the pump themselves.

Abstract learners refer a theory-based, analytical approach to learning. They learn best from lectures by experts, theoretical reading, case studies, and activities that require solitary thinking. Abstract learners like to find the "theory" behind the subject matter and analyze the approach to discover what concepts are involved. In operating the fire pump, they would prefer to read about its principles of operation and to analyze the concepts involved in its operation before attempting to operate it.

The input which matches with the persons style of learning would get best results.

CONTROL FORGETTING

One of the most common causes of forgetting is disuse. People tend to forget what they don't use. Planning the learning around conceptual bases avoids forgetting Concentrating on concept building by reviewing frequently, providing examples, and providing time for practice what has been learned forgetting can be minimized.

Another cause of forgetting is interference. Interference occurs when the memory of one event hinders the recall of another. This too is avoided when current learning is complete and conceptual. Once there has been sufficient practice to learn the information as a concept, person will retrieve the information more easily.

MEANINGFULLNESS EFFECT

Highly meaningful materials are easier to learn and remember than less meaningful ones. This is true whether meaningful is measured by

1) the number of associations the learner has for the material,
2) by frequency of the association
3) or by familiarity with the sequential order of the concept,
4) or the tendency of the work to elicit clear images.

An implication is that retention will be improved to the extent the user can make meaning of the material to be learnt.

PRACTICE EFFECT

Active practice or rehearsal improves retention of learnt material, and distributed practice in learning is usually more effective than massed practice. The advantage to distributed practice is especially noticeable for lists, fast presentation rates or unfamiliar stimulus material. The advantage to distributed practice apparently occurs because massed practice allows the learner to associate a word with only a single context, but distributed practice allows association with many different contexts.

TRANSFER EFFECTS

Transfer effects are effects of prior learning on the leaning of new material. Positive transfer occurs when previous learning makes new learning easier. Negative transfer occurs when it makes the new learning more difficult. The more that two tasks have in common, the more likely that transfer effects occur.

ORGANIZATION EFFECTS

Organization effects occur when learners chunk or categorize the input. Free recall of learnt material is better when learners organize the items into categories rather than attempt to memorize the material in serial order..

ABSTRACTION EFFECTS

Abstraction is the tendency of learners to pay attention to and remember the gist of a passage rather than the specific words of a sentence. In general, to the extent that learners assume the goal is understanding rather than verbatim memory and the extent that the material can be analyzed into main ideas and supportive detail, learners will tend to concentrate on the main ideas and to retain these in semantic forms that are more abstract and generalized than the verbatim sentences included in the passage.

PRIOR KNOWLEDGE EFFECTS

Prior knowledge effects will occur to the extent that the learner can use existing knowledge to establish a context or construct a schema into which the new information can be assimilated.

MATHEMAGENIC EFFECTS

Mathemagenic effects, coined by *Rothkopf (1970)* , refer to various things that learners do to prepare and assist their own learning. These effects refer to the active information processing by learners. Mathemagenic activities include answering adjunct questions or taking notes and can enhance learning.

SOME OTHER FACTORS AFFECTING LEARNING INCLUDE

- **Readiness**
- **Active involvement**
- **Feedback**
- **Simple to complex**
- **Cultural barriers**

– **Language, cultural values & practices**

1.4.12 SUMMARY

1. Of all the creatures in this world humans are the most capable in changing behaviour through learning. Learning is any relatively permanent change in behaviours or behavioural potential produced by experience or practice. It is an inferred process and differs from performance which is the observed behaviour / response / action.
2. The temporary change in behaviour due to continuous exposure to stimuli is called habituation.
3. The main types of learning are: classical and operant conditioning, observational Learning, concept learning, and skill learning.
4. Pavlov first investigated classical conditioning in the course on studies on digestion in dogs. In this kind of learning an organism comes to associate stimuli. A neutral stimulus (CS) that signals an unconditioned stimulus (US) begins to produce a response (CR) that anticipates and prepares the organism for US.
5. Using time relation involved in pairing CS and US jour major variations are noted: I simultaneous, delayed, trace and backward. US may be appetitive or aversive. The former elicits approach response while the later elicits avoidance responses.
6. Skinner first investigated operant or instrumental conditioning (OC). An operant is any response voluntarily emitted by an organism. OC is a type of learning in which, response is strengthened ,if followed by reinforcement.
7. In observational learning, also known as imitation, modeling and social learning, one acquires knowledge by observing a model's behaviour. The performance depends on whether the model's behaviour is rewarded or punished.
8. In verbal learning words get associated with one another on the basis of structural, phonetic, and semantic similarity and contrast. They are often organised in clusters.

1.4.13 Keywords

1. Paired -Associates Learning:

This method mimics S-S conditioning and S-R learning. It is used in learning some foreign language equivalents of mother-tongue words. First a list of paired associates is prepared. The first word of the pair is used is the stimulus and the second word as a response. Members of each pair may be from the same language or two different languages.

2. Serial Learning:

This method of verbal, learning is used to find out how participant learn the lists of verbal items, and what processes are involved in it. Recalling patterns of facts or stimuli in the order in which they were presented. In some research on memory for words, the learner is exposed to stimuli to be remembered and later recalls those stimuli in the same order in which they initially appeared. This procedure is called **serial learning**.

3. Law of exercise

This law is based on the old maxim that practice makes perfect. It has been proven that students learn best and retain information longer when they have meaningful practice and repetition. The key here is that the practice must be meaningful. It is clear that practice leads to improvement only when it is followed by positive feedback.

4. Transfer effects

Transfer effects are effects of prior learning on the leaning of new material. Positive transfer occurs when previous learning makes new learning easier. Negative transfer occurs when it makes the new learning more difficult. The more that two tasks have in common, the more likely that transfer effects occur.

5. Control forgetting

One of the most common causes of forgetting is disuse. People tend to forget what they don't use. Planning the learning around conceptual bases avoids forgetting Concentrating on concept building by reviewing frequently, providing examples, and providing time for practice what has been learned forgetting can be minimized.

1.4.14 LONG QUESTIONS

1. Define learning. What are different types of learning?
2. Discuss the nature of learning. What different laws govern learning
3. Describe factors which affect learning

1.4.15 SHORT QUESTIONS

1. Briefly describe the laws of learning.
2. Write a short note on concept formation.

1.4.16 SUGGESTED READINGS

Hilgard, E.R. and Bower, G.H. (1975).Theories of Learning: Fourth Edition. Prentice-Hall, Inc. Englewood Cliffs, NewJersey

Morgan , C.T.King, R.A.Weisz et al (1986), introduction to psychology, McGraw Hill, New York

B.A. PART-I **PSYCHOLOGY**

LESSON NO. 1.5 **LAST UPDATED JANUARY 2023**

TRIAL AND ERROR LEARNING and GESTALT LEARNING

LESSON STRUCTURE

1.5.0 OBJECTIVE

The student will learn the principles underlying trail and error learning theory. The learner will be able to differentiate between trail and Error learning and Gestalt learning.

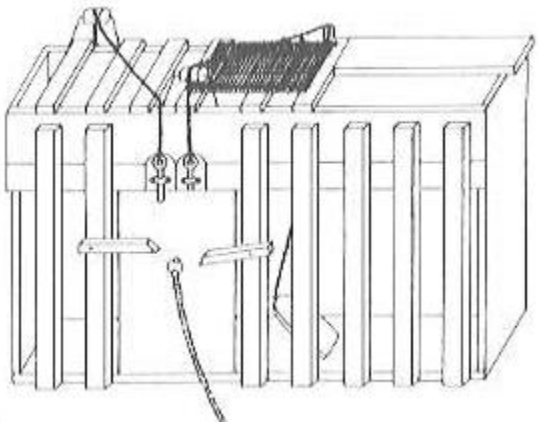
1.5.1 INTRODUCTION:

Learning has been described, studied and recorded through various theoretical models depending on the school of psychological thought which prevailed at the time of the respective theorist. The two theories that we are going to examine are related to the Behaviorist and the Gestalt era of psychology respectively, and hence have viewed learning as learnt through reward/practice , and through perceptual principles. We will examine them in detail.

1.5.2 TRIAL AND ERROR LEARNING:

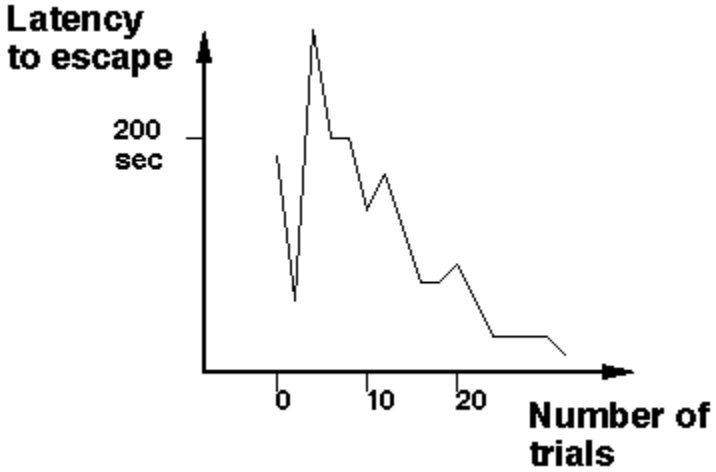
It is associated with the work of E Thorndike who pioneered extensive experimental work while understanding the acquisition and consolidation of behaviors in novel situations in animals The learning theory of Thorndike represents the original S-R framework of behavioral psychology: Learning is the result of associations forming between stimuli(S) and responses(R). Such associations or "habits" become strengthened or weakened by the nature and frequency of the S-R pairings. The paradigm for S-R theory was “trial and error” learning in which certain responses come to dominate others due to rewards. The hallmark was that learning could be adequately explained without referring to any unobservable internal states.

Edward Thorndike attempted to develop an objective experimental method for the mechanical problem solving ability of cats and dogs. Thorndike devised a number of wooden crates which required various combinations of latches, levers, strings and treadles to open them.



Puzzle box

A dog or a cat would be put in one of these 'puzzle-boxes' and, sooner or later would manage to escape from it. Thorndike's initial aim was to show that the anecdotal/accidental achievements of cats and dogs could be replicated in controlled, standardized circumstance, thus representing trial and error learning However, he soon realized that he could now measure animal intelligence using this equipment and principles of trial and error learning. His method was to set an animal the same task repeatedly, each time measuring the time it took to solve it. Thorndike could then compare these 'learning-curves' (see figure below) across different situations and different species. Latency to escape would be time required by an animal to escape from the puzzle box through repeatedly trying to manipulate by hit and try the latches or levers whereby the box door could open.



Thorndike was particularly interested in discovering whether his animals could learn their tasks through imitation or observation. He compared the learning curves of cats who had been given the opportunity of observing others escaping from a box with those who had never seen the box being solved and found no difference in their rate of learning. He obtained the same null result with dogs and, even when he showed the animals the methods of opening a box by placing their paws on the appropriate levers and so on, he found no improvement. He then gave “trial and error” explanation of learning.

Occasionally, quite by chance, an animal performs an action which frees it from the box. When the animal finds itself in the same position again it is more likely to perform the same action again. The reward of being freed from the box somehow strengthens an association between a stimulus,(being in a certain position in the box), and an appropriate action(through which it had accidentally gained freedom). After much trial and error behavior, the cat learns to associate pressing the lever (S) with opening the door (R). This S-R connection is established because it results in a satisfying state of affairs (escape from the box). Reward acts to strengthen stimulus-response associations. The animal learns to solve the puzzle-box not by reflecting on possible actions and really puzzling its way out of it but by a quite mechanical development of actions originally made by chance.

Thorndike formalized this notion into a 'law' of psychology:

"*Of several responses made to the same situation those which are accompanied or closely followed by satisfaction to the animal will, other things being equal, be more firmly connected with the situation, so that, when it recurs, they will be more likely to recur; those which are accompanied or closely followed by discomfort to the animal will, other things being equal, have their connections to the situation weakened, so that, when it recurs, they will be less likely to occur. The greater the satisfaction or discomfort, the greater the strengthening or weakening of the bond.*"

Thorndike's theory consists of three primary laws:

(1) L**aw of effect** - responses to a situation which are followed by a rewarding state of affairs will be strengthened and become habitual responses to that situation i.e. habits in behavior are an outcome of rewards received for such acts.

(2) L**aw of readiness** - a series of responses can be chained together to satisfy some goal which will result in annoyance if blocked i.e. behaviors are not a single event but a set of behaviors generally directly towards a specific end result If these behaviors are interfered with ,at any stage, this 'readiness' is negatively affected and would result in discomfort, anger or frustration.

(3) L**aw of exercise** - connections become strengthened with practice and weakened when practice is discontinued. Thus learning would be dependent on how much is the practice of behaviour. A corollary of the law of effect was that responses that reduce the likelihood of achieving a rewarding state (i.e., punishments, failures) will decrease in strength i.e. the 'effect' of reward is learning to acquire the behaviour while the effect of absence of reward to any response is learning to not exhibit the behavioural acts .

The way his experiment worked was by placing a hungry cat into the box, then observing its behavior as it tried to escape and obtain some food. For the most part, he noticed that the cats obtained the food only by "trial-and-error." On a successive attempt, the mere trial-and-error behavior decreased and the cat would escape quickly. Thorndike studied several cats, and plotted the time it took for them to escape from the puzzle box on successive trials. These learning curves did not suddenly improve, but rather the amount of time the animal spent in the box gradually got to be shortened. From this, the animal did not merely realize what it had to do to escape, but the connection between the animal's situation and the response that gradually freed him was stamped in.

With these observations, Thorndike suggested that certain stimuli and responses become connected or dissociated from each other according to his law of effect. He stated, "When particular stimulus-response sequences are followed by pleasure, those responses

tend to be ‘stamped in'; responses followed by pain tend to be ‘stamped out'." The final interpretation of the law of effect was that the immediate consequence of a mental connection can work back upon it to strengthen it.

This evaluation led Thorndike to conclude that animals learn, solely, by trial and error, or reward and punishment. Thorndike used the cat's behavior in a puzzle box to describe what happens when all beings learn anything. The theory suggests that transfer of learning depends upon the presence of identical elements in the original and new learning situations; i.e., transfer is always specific, never general.

As per Thorndike it could explain all of human behavior in terms of the development of myriads of stimulus-response associations i.e. human behavior as a whole is a combination of multiple layers of stimulus-response associations depending on whether they resulted in rewards and whether they were practiced The strength of connections is related to greater number of associations, and is a measure of the intellectual ability. More connections would require lesser number of ‘hit and trial’ behaviors .The goal would be achieved with minimum number of errors

Principles of Trial and Error Learning: This learning theory contributed some principles to the field of learning which may be summed up as follows:

1. Learning requires both practice and rewards (laws of effect /exercise)
2. A series of S-R connections can be chained together if they belong to the same action sequence (law of readiness).
3. Transfer of learning occurs because of previously encountered situations.
4. Intelligence is a function of the number of connections learned.

1.5.3 GESTALT PSYCHOLOGY.

In 1912, Wertheimer, Koffka, and Kohler began to form what is known as Gestalt Psychology. Gestalt Psychology or Gestalt theory is a theory of the mind and brain that informs that functional concepts of the brain is holistic, parallel and analog with self organizing tendencies or whole is greater than the sum of the parts.

Gestalt Insight Learning . A form of cognitive learning, originally described by the Gestalt psychologists, in which problem solving occurs by means of a sudden reorganization of perceptions.

This learning process is clearly within the sphere of Gestalt psychology. The laws of organization in perception are seen as applicable to learning problems. Gestalt theorists emphasized the psychological rather than the physical environment. Thus trial and error learning and a strict stimulus response view were seen as not fully representing the possibilities of learning Kohler's work on chimpanzees illuminates the point. His results were used by Koffka to challenge in a detailed fashion the theory of trial and error learning to the point that insight was offered as a replacement for it as a means of accounting for the learning process. The trial and error hypothesis assumes that in learning a large number of random movements are made, that the correct responses are gradually learned, and that the incorrect ones are eliminated. A variety of explanations are offered as to why this takes place. During the years in question the differentiation between those responses stamped in and those stamped out was attributed to the respective pleasure and pain that accompanied them.

To Koffka, learning is not a gradual mechanical process, but involves the same principles as perceptual Gestalten. Koffka rejected trial and error as an explanatory

principle for learning He pointed out that the customary puzzle boxes and mazes were apparatuses that forced the animals to learn by trial and error because no other approach was possible under these circumstances. The results of trial and error learning studies, were seen as an outcome of the laboratory procedure. He modified the lab procedures whereby, an obstacle between the animal and the goal must be provided, but it should be of such a nature as to allow intelligent, insightful behavior, if the animal is capable of it. This was the case with Kohler's procedures. The intelligent relations or connections leading to the goal were made open to the animals' observation, and the resultant was insight learning and not “trial and error” learning. Insight took the place of practice or repetition as the crux of learning in the Gestalt description of learning.

Lets examine these experiments in detail.

Köhler went of Canary Islands to study intelligence and problem solving ability of great apes in 1913. When World War I began and he was unable to leave until 1917 He conducted most of his studies on insightful learning during this period. The accepted theory for explaining at the time was Thorndike’s Law of Effect with emphasis on trial and error and reward. . He was dissatisfied with the behaviorists’ explanation for learning, which he found too limiting, and so he sought to develop his own theories. To Köhler’s way of thinking, mental processes had to be an essential component of learning, even though they had been criticized as being unscientific speculation or hypothesis by the behaviorists. To press his point, Köhler took advantage of a primate research facility on Tenerife to study chimpanzee behavior.

Köhler showed that his chimps could solve complex problems by combining simpler behaviors they had previously learned separately. This was illustrated by Sultan, the brightest chimp in his laboratory. Sultan had learned to pile up boxes and scramble on top of them to reach fruit suspended high in his cage, and to use sticks to obtain fruit that was just out of reach. So, when Köhler presented Sultan with a novel situation, fruit suspended even higher in the air, the chimp first attacked it unsuccessfully with sticks, in trial-and-error fashion. In apparent frustration, Sultan finally threw the sticks away, kicked the wall, and sat down. According to Köhler’s report, the animal then scratched his head and began to stare at some boxes nearby. Suddenly, he jumped up and dragged a box and a stick underneath the fruit, climbed on the box, and knocked down his prize with the stick.

Remarkably, Sultan had never before seen or used this combination of responses. This suggested to Köhler that the animals were not mindlessly using conditioned behaviors but were learning by reorganizing their perceptions of problems. He ventured that such behavior shows how apes, like humans, learn to solve problems by suddenly perceiving familiar objects in new forms or relationships—a decidedly mental process, rather than a behavioral one. He called this insight learning

An experiment of Köhler’s with chicks, performed during these years, simple in nature though it is, brings out clearly what the Gestalt psychologists were trying to demonstrate. Two shades of gray paper on which grain was scattered were exposed. Hens were trained to take grains from one of these papers, a darker shade of gray than that of the other paper. If they pecked at a grain on the darker paper, they were permitted to swallow it; if they pecked at a grain on the lighter paper, they were driven away. After hundreds of trials, they learned finally to peck only at grain on the darker paper.

So far this is only preliminary to the experiment itself. The crucial series of trials was now inserted. The darker gray paper of the learning trials was used again, but now it was accompanied by a sheet of a still darker gray, instead of the original lighter sheet. If the hens pecked on the original gray they were responding to specific brightness, as such; if they pecked at what now was the darker paper, they would be reacting to a total situation or Gestalt, that is, to a relation of lighter-darker.

As a rule, the hens pecked at the darker gray, not the particular one on which they had learned to peck. This was a relative response in which "darker of two" was the clue, not the specific gray. The hens reacted, not to a specific element in the learning situation, but to the pattern or Gestalt.

These and similar results were interpreted by Kohler as evidence of 'insight' -the seeing of relations. These Gestalt occur in the process of solving problems. There is an activity on the part of learner which is a continuous whole in which everything falls into place. There is continuity, a direction toward a goal, and closure. The insightful solutions they displayed are interpreted as making for closure of the gap in the animal's psychological field. Capacity for perception of relations varied in different animals and thus became an indication of intelligence.

As per Kohler insightful problem solving is dependent on taking the total situation and reorganizing it through logical inference to reach a solution. Gestalt psychologists did not argue that trial and error learning played no role in insight. Rather they argued that the trial and error took place on a cognitive level. Gestalt psychologists continued to emphasize the processes of thinking. In 1945 Wertheimer published "Productive Thinking." It was in this book that he argued for learning as a process of restructuring.

(i) He demonstrated this by giving children problems teaching them different ways to solve them, either rote or insightful

(ii) Insightful learning involves appropriate organization of the psychological environment to recognize structural requirements of the situation, not simply a strong of associations, but rather a process of inference. Thus learning should be done in wholes as should teaching. Teachers should present topics as integrated wholes. The aspects of a problem should be presented only in relation to the whole. This would be conducive to the occurrence of insight.

If you are shown the following sequence of number 1 4 9 1 6 2 5 3 6 4 9 6 4 8 1, it is difficult to remember. If you realize that the numbers are squares 1 4 9 16 25 36 49 64 81 you will have no difficulty remembering them. Thus the inferences at the cognitive level of reorganizing the environment in a meaningful way would result in learning.

Problems with Gestalt approach to learning: Although the experiments were elaborate and the explanations convincing, some problems remained

(i) The psychological environment, which is basic to insight, is difficult to define independent of the behavior it is supposed to explain. Further the theory could explain behaviors but was not able to predict behaviors which is equally significant in learning (ii) Insightful learning is in fact dependent on past experiences which suggests that associative learning plays a crucial role in insight. They may not be two distinct processes but may be working in a continuum.

1.5.4 CONCLUSION:

There are no real discrepancies between the trial and error learning theory and the

Gestalt learning theory. When an animal learns a new kind of problem, he solves it according to a behaviorist learning theory model by slow painful plodding trial and error. However, if he has experience with a large number of problems of a single type or class; the trial and error is replaced by the Gestalt learning theory model so that the individual problems are eventually solved insight-fully. Thus trial and error learning theory and insight learning theory may be merely two phases of a learning model, an initial phase and an ending phase, although they have developed and maintained separate entities .

1.5.5 KEYWWORDS

1. L aw of readiness:

A series of responses can be chained together to satisfy some goal which will result in annoyance if blocked i.e. behaviors are not a single event but a set of behaviors generally directly towards a specific end result If these behaviors are interfered with ,at any stage, this 'readiness' is negatively affected and would result in discomfort, anger or frustration.

2. Insight learning:

Insight learning is a process that leads to a sudden realization regarding a problem. often, the learner has tried to understand the problem, but steps away before the change in perception occurs. Insight learning is often compared to trial-and-error learning, but it's slightly different.

3. Stimulus:

In experimental psychology, a stimulus is the event or object to which a response is measured. A stimulus constitutes the basis for behavior. In this context, a distinction is made between the *distal stimulus* (the external, perceived object) and the *proximal stimulus* (the stimulation of sensory organs).

4. Gestalt Psychology:

Gestalt psychology is a school of thought that looks at the human mind and behavior as a whole. When trying to make sense of the world around us, Gestalt psychology suggests that we do not simply focus on every small component. Instead, our minds tend to perceive objects as part of a greater whole and as elements of more complex systems.

1.5.6 LONG QUESTIONS

1. Explain the principles underlying Trial and Error learning.
2. Describe the laws of learning proposed by Thorndike. What are its implications?

1.5.7 SHORT QUESTIONS

1. Differentiate between trial and error learning and gestalt learning.
2. How does learning happen through insight?

1.5.8 SUGGESTED READINGS:

Thorndike, E. (1932). The Fundamentals of Learning. New York: Teachers College Press.

Zimbardo,P G, Johnson R L, Weber A L.(2005). Psychology: Core Concepts. Boston: 5/e Allyn & Bacon/Longman.

2.1 Personality : Nature And Determinants

Lesson Structure :

2.1.0 Objectives :

In this lesson, you will learn about "Personality: Nature and Determinants." The goals are to understand the complexities of personality, to study Trait and Type theories, and to analyse factors influencing development. The biological aspects such as ductless glands, physique, and body chemistry,

psychological factors such as family patterns, maternal deprivation, discipline, and unfavourable parental models, and socio-cultural influences from home, school, peer groups, and society are covered in this chapter. By achieving these objectives, students gain insights into human behaviour and individual differences, which contributes to a more comprehensive understanding of personality.

2.1.1 Introduction :

People often talk about personality as if it were a commodity. Generally, a common man's notion about personality is that it consists only of appealing, admirable traits : affection, charm, honesty, etc. But to a psychologist, personality is much more complex than the ordinary, use of the word implies, it includes both negative and positive qualities.

It is easy to talk about aspects or traits of personality without defining the term. We often say, "I don't trust that man. He is not honest" or "I love that girl. She is good-hearted." But a broad definition of personality is difficult, partly because personality is not one characteristic or ability but consists of a whole range of them.

A definition of personality proposed by Phrase is regarded as comprehensive definition. According to him, personality is the "pattern of characteristics, thoughts, feelings and behaviours that persists over time and situations and that distinguishes one person from another." Two important parts of this definition need special mention. First, personality refers to those aspects that distinguish a person from everybody else. Personality is thus,a person's psychological signature : the behaviours, attitudes, motives, tendencies, outlooks, and emotions with which he or she responds to the world. In this sense, personality is both characteristic and unique to a

particular person. A second aspect of this definition is that personality persists over time and across situations. Whether we are reflecting on our own behaviour or interpreting the actions of others, we expect to find consistency. If a person is friendly one day, we would be surprised if he

or she were unfriendly the next day. If a relative who is usually quiet and mannerly suddenly turns loud and disrespectful, we become concerned and seek explanations. We know that life is not as predictable as a television serial, but we do expect a degree of consistency, a pattern of behaviour that reflects each person's unique personality. And when we are faced with inconsistency, we suspect that something is wrong. Thus, the concept of personality lends a degree of predictability and stability to an individual.

2.1.1.1 Characteristics of Personality :

New comb has discussed personality in the light of certain characteristics and traits. These characteristics and traits are as follows :

1. **Personality is something which is unique in each individual** : Personality refers to internal as well as external qualities, some of which are quite general. But it is unique to each individual. It is not possible for any other individual to reproduce or imitate the qualities of the personality

of the individual.

2. **Personality refers particularly to persistent qualities of an individual :**

Every individual has certain feeling as well as other permanent traits and qualities. Personality is mainly composed of the persistent or permanent qualities that exhibit themselves in form of social behaviour and attempt to make adjustment with the environment.

3. **Personality represents a dynamic orientation of organism to environment:**

Personality represents the process of learning. It takes place in reference to the environment. We do not acquire all the traits of personality all at once.

4. **Personality is greatly influenced by social interactions** : Personality is not an individual quality. It is a result of social-interaction. In other words, it means that when we come in contact with other members of the society, we acquire certain qualities while we exhibit certain others. All these come to form personality.

5. **Personality represents a unique organisation of persistent dynamic and social predisposition** :

In personality various qualities are not put together. They are, in fact,

integrated into one. This integration is nothing but a result of organisation which may be different from man to man. The behaviour of a person directed to one particular individual may differ from the behaviour of another person. That is why; we put the condition of suitable environment. This suitability is concerned with individual specificity.

2.1.1.2 Foundations of Personality :

On the basis of various definitions it can be said that personality is founded on certain structures. These are (i), Physiological structure of the organism,

(ii) Psychic structure of the organism and (iii) Social and cultural structure. These structures contribute to the formation of personality. Individual is born with certain physical and psychological traits or structures. The physiological and psychological traits react to the social and cultural atmosphere. Consequently, the personality is made up. Various structures that form the personality are discussed below.

1. **Physiological structure** :

Physiological structure of an individual influences the development of personality to a large extent. The foundation of this structure is laid in the mother's womb. Thy physiological structure is deeply influenced by certain internal as well as external agencies. Heredity as well as social environment influence the development of the physiological structure. Heredity contributes to intelligence and mental traits. These factors do influence the development of personality, because they have a place in the society.

Heredity imposes several limitations and restrictions on the personality of an individual. Culture is very much a gift of the heredity. Due to this culture, it is possible for an individual to adjust himself to different situations. Besides biological inheritance, in social heredity there is a transmission of personality characteristics from one generation to another through pattern of relationship. The vehicle of transmission is not the germ plasma but a psychogenetic influence of parent on child. Heredity may prove the raw material, out of which experience moulds the personality.

2. Psychic Structure of the Personality :

The Psychic structure consists of (a) attitudes (b) traits, (c) sentiments (d) feelings and emotions (e) values and ideals.

The attitudes influence the psychic structure and latter on, physiological structures. Traits are inherent as well as the acquired qualities of an individual.

3. **Social and Cultural Structure** :

Every society has a culture of its own and in the atmosphere of that socio cultural background, the personality of individual develops in its own way. The attitudes of an individual are largely influenced by cultural order. We find difference in the behaviour of individuals due to sociocultural environment. That is why culture play an important role in the developmentof personality.

Besides the above structures, experience play in important role in the formation of personality. Man is the child of experience. The experience are of two types, one that the infant acquires in his group, for example family. The parents being very intimate to the child make a deep impact of him. The child is fashioned in his home after his parents. He picks uptheir patterns, manners and poise. The learning of social norms form parents and other agents of socialisation has significant formative influence on him.

2.1.2 Approaches to Study Personality :

In order to understand the complexity of personality, theorists have adopted one of the two alternatives of conceptions. The first is a *description* view which emphasizes the *structure* of personality, either in terms of major behaviour dimensions called *personality traits* or in terms of broader categories of *personality types.* The second is development orientation in which the task is to describe how personality develops and how individual adapt to their diverse environments.

2.1.2.1 Trait Theory :

A trait is a stable and enduring attribute of a person that is revealed consistently in a variety of situations. Here a trait theorist studies all possible characteristics that can be used to describe individuals, the number of possibilities would be overwhelming. The most cited number in the psychology of personality may be 17,953 traits. This is the number of distinguishing adjectives that Gordon Allport and Henry Odbert were able to extract from the English language when they set to create a dictionary of trait names that could be used to distinguish one person's behaviour from another's. Thirty years later, Warren Norman developed a new pool of some 40,000 trait- descriptive terms, using experimental and statistical methods. However, Norman was able to reduce this number dramatically, and finally proposed three paired polar opposite adjectives in each of the five major trait dimensions; namely extroversion, agreeableness, conscientiousness, emotional stability, and openness. These were named as five "basic" traits.

Raymond Cattell proposed a more statistical and mathematical approach to the study of traits in order to reduce the vast number of traits to a more manageable and efficient list. He used a sophisticated statistical technique known as factor analysis, which makes it possible to analyse data for a large number of variables and to group together those variables that are associated with one another. Two or more characteristics that correlate highly as assumed to reflect the existence of one underlying trait. In this way, he eventually concluded that 16 traits were sufficient to convey the important underlying differences in personalities. Cattell called these 16 traits as the source traits, which were divided by him into different major dimensions, including ability source traits (e.g., intelligence), temperament traits (responsible for level of emotional stability), and dynamic traits (traits that motivate the individual, such as curiosity and sensuality). He believed that everyone possesses the same source traits, but to different degrees. Cattell also proposed that with the information obtained through these 16 traits, it would be possible to predict individual's behaviour in a particular situation.

Cattell contended that both heredity and environment determine personality. He considered some source traits to be genetically transmitted and others to be environmentally produced.

2.1.2.2 Type Theory :

Types are broad inclusive patterns of traits of which some psychologists have attempted to classify people. One of the first type theory was proposed by Hippocrates (400 BC) who grouped people in four types according to four different humors present in their bodies.

Blood (Sanguine) : In this type a person has a lot of blood and he is cheerful, vigorous, confident and optimistic.

Black Bile (Melancholic) : Melancholic people are depressed, sadand brooding.

Yellow Bile (Choleric) : Choleric people are hot tempered and irritable.

Phlegmatic : Such people are calm, slow moving, sluggish and unexcitable.

Sheldon (1936, 1954) investigated the relationship between biologically determined characteristics and personality traits. Sheldon classified three general body types :

Mesomorphs are muscular and strong, of medium weight, their temperaments are described as somatotonic (concerned with the body). They love adventure, they are assertive and bold and have lust for power.

Endomorphs : They are obese and have viscerotonic temperaments. They are fond of eating, sociable, tolerant, complacent, love comfort and have slow reactions.

Ectomorphs : They are frail and slender, and are described as cerebrotonic. They are hypersensitive to pain, they love privacy, secretive and unsocial by nature.

Perhaps the most famous of all typologies is that of introversion-extroversion, first described by Carl Jung. According to Jung, the extrovert is outgoing, exuberant, lively and inclined towards direct action. The introvert presents the opposite side of the behavioural coin, and is more prone to thoughtful reflection. This attractive typology unfortunately shares the two major shortcomings of all simple typologies. First, typologies put people into extreme categories that apply only to few individuals. As with most dimensions of human variation, the gradation from introversion is a continuous one on which people are normally distributed. Most peoplefall in the middle of the dimension and show

both introversion and extroversion to a degree. Second, in their simplicity, typologies ignore one of the most important facts about personality, that it is multidimensional and consists of many attributes.

These shortcomings have been partially overcome in the work of a famous British psychologist, Hans J. Eysenck. Eysenck's major contribution was to suggest that the traits were not randomly distributed among individuals, but rather clustered in certain predictable patterns. Thus, people can be divided into basic personality types. These types are composed of sets of traits that are the basic habitual response patterns.

Eysenck identified two dimensions along which people could be sorted : *introversion-extroversion,* and *neuroticism.* He believed that an individual's position on these two dimensions defined his or her personality. Eysenck later added a third type *psychoticism.*

Eysenck emphasized the role of heredity in personality. He also proposed that differences in personality resulted from differences in the excitability of the brain and nervous system. Results of his research suggest that extroverts and introverts differ in their level of cortical arousal. Under similar conditions : extroverts tend to show much less psychological arousal than introverts. Eysenck has suggested that because of this, introverts tend to avoid arousing situations, while extroverts tend to seek them out. That is, extroverts in an attempt to avoid the boredom of a generally lower level of psychological arousal seek stimulation, whereas introverts, with a higher level of general arousal, desire less stimulating situations.

Eysencks Type - Trait Theory : Eysenck a British Psychologist believes in biological basis of personality. He described human personality in terms of extroversion, introversion, neuroticism and psychoticism. He suggested that low level of cortical arousals led to etrovert personality type. Low level of cortical arousal means the person needs more and more of stimulation to get aroused. On the other hand introverts has a high level of cortical arousal which means even little stimulation is enough to arousethat is why they prefer to avoid parties, social gatherings etc. to minimise stimulations.

Hierarchy of behaviour organisation.

Specific responses at lowest level. eg. Blushing, crying, smiling etc.
Habitual responses at second level eg. Habits of person.

Traits at third level eg. shy, active, outgoing etc.

The highest level is the organisation of traits into type :- eg. Introver, extrovert etc.

Types/Dimensions of Personality :

1. Introversion-Extroversion:

It refers to the degree to which people are socially outgoing or socially withdrawn. At one extreme are those who are active, thrill seeking and outgoing etc. At other extreme are people who are passive, quiet and reserved etc.

2. Neuroticism vs. emotional stability :

It refers to the degree of control people have over their feelings. At one extreme lies the people who are neurotic. They are moody, touchy and quickly lose control. At the other extreme lie people who are calm, reliable and under control.

3. Psychoticism vs. sociability :

The third dimension of psychoticism indicates the traits of solitary, egocentric, hostility etc. These persons are opposed to accepted social norms while on the other extreme people with sociability are empathatic, less adventurous and bold.

2.1.3 Factors Affecting Personality :

An individual's personality is created by a unique combination of influences from biological and constitutional factors, socio-cultural factors, and psychological factors.

2.1.3.1 Biological Factors :

The biological factors which are crucial in the development of personality are of three types :

(a) ductless glands,

(b) physique, and

(c) body chemistry.

2.1.3.1.1 Ductless glands :

The ductless glands secrets their hormones directly into the blood. These secretions produce profound effects in personality development. Each gland secretes either one or more than one hormones.

Endocrinologists are convinced that moderate over activity of the pituitary gland makes the individual muscular, aggressive and self controlled, while under-activity of this gland produces muscular weakness, sluggishness, easy discouragement, and a tendency to give up and cry.

Thyroid deficiency leads to sluggishness, but if the subject is constantly criticized for his sluggishness he may develop an irritable behaviour quite different from what one would expect from the thyroid deficiency alone. Lack of gonadal hormones naturally leads to lack of sex interest, but the subjects reaction as already stated, may lead him into some atypical form of sexual behaviour.

Its difficult to suggest that the variations in personality occur due to alterations in the endocrine glandular secretions. Within the normal range of glandular functions personality differences are probably due to other causes. Some of the other causes are biological and some social.

2.1.3.1.2 Physique :

Sheldon proposed that people might have three types of body build, each

Type	Physique	Temperament
Endomorphic	Soft, round	Comfort-loving, sentimental, pleasure-seeking, socializing.
Mesomorphic	Strong, Muscular, athletic	Active, energetic, more achievement-oriented, aggressive
Ectomorphic	Slender, fragile	Sensitive, delicate, intellectual, withdrawing

associated with particular type of temperament.

Kretschmer named these three types as *pyknic, athletic* and *asthenic* respectively.

2.1.3.1.3Body Chemistry :

Body chemistry has been known to be associated with personality make-up temperament. The relationship between body chemistry and temperament is :

Type	Body Chemistry	Temperament
Sanguine	Greater amount of blood and its proper circulation	Hopeful, energetic
Choleric	Greater amount of bile	Irritated, tense
Phlegmatic	Greater amount of phlegm	Serene, Calm
Melancholic	Greater amount of spleen	Sad, depressed

Neurotransmitters also play a vital role in the personality make up of an individual. Neurotransmitters or neurochemicals, such as serotonin, dopamine Acth is not maintained, the result can be behavioural problems. If the chemicals are released, less or more than required, it results into the disturbance of cognitive, conative and affective behaviour of an individual. The relation of hormonal disturbances to our personality and behaviour is a subject of discussion.

2.1.3.2 Psychological Factors :

2.1.3.2.1 Family patterns :

As the infant progress into childhood, he must learn new competencies, develop usable and realistic assumptions about himself and his world, and exert increasing control over his behaviour.

During this period, the family unit remains the crucial guiding influence in the child's personality development. Sometimes, parents do too much, and at other times they do too little. Faulty parent-child and sibling relationships produce negative influence on the development of personality in the growing child.

2.1.3.2.2 Maternal deprivation :

Maternal deprivation might be due to separation from the mother and placement in the institution or lack of adequate "mothering" in home. The emphasis here is on lack of warmth and stimulation on the part of persons responsible for the child's rearing.

2.1.3.2.3 Unrealistic demands :

Sometimes, parents place excessively strong pressures on their children to excel in schools and other activities. Generally, it becomes difficult for the child to live up to parental expectations and demands.

2.1.3.2.4 Discipline :

Discipline needs to be inculcated in the child judiciously. Inadequate discipline, harsh and overly severe discipline and inconsistent discipline may lead to many behavioural problems which are certainly not congenial to healthy personality development.

2.1.3.2.5 Undesirable Parental Models :

Children observe and initiate the parents behaviour they see around them. Ordinarily, the child's key models are his parents, who serve as his guides and educators. If the parent's behaviours has not been ideal for the child, the child's behaviour and eventually, the personality make-up is likely to be affected adversely.

2.1.3.2.6 Pathogenic families :

Pathogenic families such as families involved in antisocial, activities disrupted and disturbed families, broken homes produce permanent scares on the personality of the child.

Other psychological factors crucial for personality development are : rewards and frustrations, personal limitations, lack or abundance of resources, proper development of self, positive or negative outlook towards life, commitment or involvement, avoiding or facing reality, conformity or non-conformity, etc.

2.1.3.3 Socio-Cultural Factors :

Home, school, peer groups and society exert great influence in the development of personality. An infant's biological entity gradually gets socialized with the expansion in his social milieu.

Similarly, cultural factors also exert sufficient influence on the development of personality. Culture exerts a great influence in shaping not only the personality make, up but also in cultivating various types of values, sentiments, cognitive and affective life-styles, faith in ritualistic and customary activities. People belonging to various tribes have peculiar types of beliefs, faiths and customs and accordingly their personality is shaped. Some tribes are very docile while others are aggressive. This variation is because of the cultural differences in the emphasis on life style in different tribes.

2.1.4 Summary :

Personality is the "totality" of an individual that is physical, mental, and emotional aspects. Certain trait theorists like Allport and Cattell have explained personality in light of number of persistent traits. Personality is developed and affected in light of number of factors like biological, psychosocial and cultural. Understanding these determinants provides valuable

insights into human behaviour and individual differences, contributing to a deeper understanding of personality study.

2.1.5Keywords

Pathogenic families :

Pathogenic families such as families involved in antisocial, activities disrupted and disturbed families, broken homes produce permanent scares on the personality of the child.

Ductless glands :

The ductless glands secrets their hormones directly into the blood. These secretions produce profound effects in personality development. Each gland secretes either one or more than one hormones.

Discipline :

Discipline needs to be inculcated in the child judiciously. Inadequate discipline, harsh and overly severe discipline and inconsistent discipline may lead to many behavioural problems which are certainly not congenial to healthy personality development.

Ectomorphs : They are frail and slender, and are described as cerebrotonic. They are hypersensitive to pain, they love privacy, secretive and unsocial by nature.

Maternal deprivation :

Maternal deprivation might be due to separation from the mother and placement in the institution or lack of adequate "mothering" in home. The emphasis here is on lack of warmth and stimulation on the part of persons responsible for the child's rearing.

2.1.6 Long questions

Analyze the various factors that affect personality development.

How do biological factors contribute in shaping an individual's personality?

2.1.7 Short questions

Define personality

Identify three psychological factors that play a role in personality development.

2.1.8 References

Bhatia : General Psychology
Morgan : Introduction to Psychology
Rai : General Psychology.

B.A. PART-I PSYCHOLOGY
GENERAL PSYCHOLOGY

LESSON NO. 2.2 LAST UPDATED JANUARY 2023

Theories of Personality

Lesson Structure :

2.2.0 Objectives :

The objective of this lesson is to introduce learners to three major theories of personality: Freud's theory, Allport's theory, and Cattell's theory. The lesson covers the structural, dynamic, and developmental aspects of Freud's theory, exploring the id, ego, and superego. It also delves into Allport's focus on common and personal traits, and Cattell's statistical approach with 16 source traits. Learners will gain insights into the role of genetics and environment in shaping personality and understanding individual differences. The lesson aims to provide a foundational understanding of these theories for further studies in psychology and related fields.

2.2.1 Introduction :

A theory of personality consists of a set of assumption relevant to human behaviour alongwith the necessary implied empirical considerations. The theory should also be comprehensive and adequate for making predictions concerning a wide range of human

behaviour.

2.2.2 Freud's Theory :

Freud's theory of personality involves three inter-related aspects :

(i) structural;

(ii) dynamic; and

(iii) developmental.

2.2.2.1 Structural Aspect of Personality :

Personality is made up of three major systems; the id, the ego, and the superego. Each of these systems has its functions, properties, components, operating principles and mechanisms, but they interact so closely with one another that it is difficult to separate out their effects on human behaviour. Behaviour is nearly always the product of an interaction among these three systems.

Id :

The *id* is the most basic and original component. It is the matrix within which the ego and the superego become differentiated. It is the reservoir of all psychic energy. It is entirely unconscious. It comprises the whole of the psyche at birth. The ego and the superego develops out of it; throughout life, they depend upon the id as the source of psychic energy for their activities.

The goal of the id is immediate tension reduction, i.e., gratification of impulses. Thus, when a person experiences a biological need, such as hunger, this is felt as an uncomfortable state of psychological tension. The id operates to reduce this tension, and the pleasure obtained by this tension is the id's sole motivation. Freud called this the pleasure principle. The id demands immediate gratification and has no concern about external reality.

Ego :

In contrast to the id, the *ego* is concerned with, and aware of, objective reality. Ego tries to devise the realistic plans to satisfy the impulsive cravings of the id and is said to be governed by the reality principle. Ego wants to protect the organism (i.e., gratification of id impulses) while coping with the real world. If necessary, the ego will delay the organism's attempts at immediate gratification and pleasure, either because these attempts are likely to be unsuccessful or dangerous, or because greater gratification can be gained by waiting. The ego, therefore, is concerned with what is good and bad for the organism on the basis of reality concerns.

Super Ego :

The *super ego* is referred to as the "conscience" and is concerned primarily with moral ideals. These ideals are originally conveyed to the child by the parents; later by other authority figures and the rewards and punishments imposed by the society shape the development of superego. The super ego deals in absolute rules. Unlike the ego, which seeks compromise, the super ego strives for perfection. It does not function merely to postpone id impulses, it seeks to

blocks the path permanently.

Ideally, the id, ego and super ego work in harmony. The ego satisfies the demands of the id in a reasonable, moral manner approved by the super ego.

Thus, ego serves two harsh masters, the id and the super ego, by working a harmonious balance between them.

2.2.2.2 Dynamic Aspect of Personality :

The total energy at the disposal of the individual was named by Freud as the *psychic energy.* The source of this energy, of course, is the food consumed by the individual. This energy may be transformed from one state into another state but can never be lost from the total cosmic system.

Freud believed that the total id energy can be divided into two broad categories : life instinct (eros) and death instinct (thanatos). As drives, these are frequently expressed as sex and aggression. Freud believed that the human organism simultaneously wants to create and destroy, live and die. Freud called the energy that fuels the life instinct as *libido.* The life instinct serves the purpose of individual survival and racial propagation. Hunger, thirst and sex fall in this category. The death instinct performs its work much less conspicuously than the life instinct. For the reason, little is known about it, other than that it inevitably accomplishes its mission. Every person does eventually die, a fact that caused Freud to formulate the famous dictum "the goal of all life is death."

Sudden and unpredictable shifts of energy from one system to another (id, ego and superego) are quite common, especially during the first two decades of life. These shifts of energy keep the personality in a state of dynamic flux. Hence, the dynamics of personality denotes the interplay of the driving forces (id impulses) and the restraining forces (restrictions and blocks created by the ego and the superego). All the conflicts with the personality may be due to the opposition operating in these two sets of forces. Such conflicts, if not resolved, may eventually lead to anxiety. Freud recognized three types of anxiety : reality anxiety, neurotic anxiety, and moral anxiety.

The function of anxiety is to warn the person of impending danger. It is a signal to the ego that appropriate measures need to be taken otherwise if the danger persists it might be overthrown. Anxiety is a state of tension; it is a drive like hunger or sex. When anxiety is aroused, it motivates the person to do something. He or she may free from the threatening region, inhibit the dangerous impulses, or obey the voice of conscience. When the ego cannot cope with anxiety by rational methods, it has to fall back on unrealistic ones. These unrealistic methods adopted by the ego are known as *defense mechanisms* of the ego.

Under the pressure of anxiety, the ego is sometimes forced to take extreme measures to relieve the pressure. These measures are called defense

mechanisms. The principal defenses are repression, projection, reaction formation, f ixation and regression. The purpose to these defense mechanisms is to resolve frustrations, conflicts and anxieties.

2.2.2.3 Development Aspect of Personality :

Freud's model personality assumes that individuals develop in discrete, observable states. Successful progression from one stage to the next is an important determinant of adult mental health, Freud believed that the first few years of life are very important and decisive for the formation of personality.

Each stage of development during the first five years is defined in terms of the modes of reaction of a particular zone of the body. During the first stage, which lasts for about a year and half, the mouth is the principal region of dynamic activity. This is known as the oral stage which is followed by the development of driving and inhibiting forces around the eliminativefunctions, is called the anal stage that may last upto the next two years. This phase is succeeded by the phallic stage in which the sex organs become the leading erogenous zones. These stages, the oral, anal and the phallic, are called the pregenital stages. The child then goes into a prolonged latency period which may last until age 12 to 13 years. At puberty, we enter the last psycho sexual stage, which Freud called the genital stage. At this time our sexual impulses reawaken and are directed to the members of the opposite sex.

In Freud's development model of personality, greater emphasis has been placed upon infantile sexuality, i.e., satisfaction or frustration achieved from the erogenous zone during the infantile period. However, the final organization to personality represents contributions from all the five stages.

2.2.3 Allport's theory

Gordon Allport defined personality as " Personality is the dynamic organization within the individual of those psychophysical system that determine his unique adjustments to his environment." Certain aspects of this definition require special emphasis. The term "dynamic organization" emphasizes the fact that personality is constantly developing and changing, although at the same time there is an organization or system that binds together and relates the various components of personality. The term "psychophysical" indicates that personality is neither exclusively mental nor exclusively physical. The organization involves the operation of both body and mind, inextricably fused with each other. The word "determine"" refers to that personality is made up of determining tendencies that play

an active role in the individual's behaviours.

Allport is well known for his attempts to describe personality in terms of traits. According to Allport, no two persons are alike, no two individuals respond in the same way, even to identical stimuli. To study personality, Allport believed one must study the combination of traits that appear in each individual.

Allport divided traits into two types : common and personal. Common traits are those that can be used to characterize group of individual, such as "aggressive" to describe wrestlers and football players. Personal traits are specific to the individual and most often cannot be described in single word. Personal traits give individuality and uniqueness to personality.

Allport distinguished three levels of personal traits : cardinal, central and secondary traits. Cardinal traits are the most powerful and pervasive; they dominate a person's entire personality. For instance, if someone possesses the cardinal traits of "manipulativeness", then this person's action in a number of areas are habitually, characteristically and consitently manipulative. All individuals do not possess cardinal traits. Central traits influence much of our behaviour. They are thought of basically describing an individual - for instance, reliable, motivated, sociable, trustworthy. Secondary traits are highly specific and apply in certain situation. For example, an individual might be orderly and meticulous in the office but disorganized and messy at home.

In dividing traits into cardinal, central and secondary categories, Allport tried to arrange them hierarchically with respect to their influence on personality and behaviour. Thus, cardinal traits have the most pervasive influence over personality and behaviour, central traits are next, and secondary traits have the least influence.

Allport hypothesized that internal and external forces influence an individual's behaviour and personality, and he referred to these forces as genotypes and phenotypes. Genotypes are internal forces that relate to how a person retains information and uses to it interact with the world. Phenotypes are external forces that relate to the way an individual acceptshis or her surroundings and how others influence his or her behaviour.

Allport aimed to describe *individual* personalities. He was interested in those traits that made an individual different from others. He argued that the traits that were most common among all individuals were those that were least common among all individuals (personal traits). However, most of Allport's research centered on investigations into common traits.

2.2.4 Cattell's theory

Raymond Cattell proposed a more statistical and mathematical approach to the study of personality. His major concern was to reduce the vast number of traits to a more manageable list. He got out to identify a reasonable number of traits that could be used to describe all individuals and predict their behaviour. To accomplish this end, he used a sophisticated statistical technique known as *factor analysis.* Cattell eventually proposed

16 dimensions or factors which he considered to be sufficient to convey the underlying differences in personalities.

Cattell believed that this approach to personality could permit a prediction of what a person would do in a given situation. Once he could position a person according to 16 dimensions, he would attempt to predict many of that person's behaviours. Cattell called the 16 first-order dimensions the *source traits,* which he divided into different types, including ability *source traits* (i.e., intelligence), temperament *traits* (responsible for the level of emotionality), and dynamic *traits* (traits that motivate the individual, suchas curiosity). He believed that everyone possess the same source traits, but their degree differed from individual to individual.

Cattell also proposed that both heredity and environment determine personality. He considered some traits to be genetically transmitted and other to be environmentally produced.

Cattell's 16 source traits, which could be measured by his Sixteen Personality Factors (16 PF) test, along with the source traits index and the low/high score descriptions, are mentioned below :

Source trait Index	Low-Score Description	High-Score Description
A	SIZIA	AFFECTIA
	Reserved, Detached, critical,	Outgoing, warm-hearted,
	aloof, stiff	easy-going, participating
B	LOW INTELLIGENCE	HIGH INTELLIGENCE
	Dull	Bright
C	LOW EGO STRENGTH	HIGH EGO STRENGTH
faces	Emotionally less stable, easily	Emotionally stable, mature,
D	upset, changeable	reality, calm
	SUBMISSIVENESS	DOMINANCE
	Humble, timid, docile, accommodating	Assertive, aggressive, competitive, stubborn

F	DESURGENCY Sober, tacitum, serious	SURGENCY Happy-go-lucky, enthusiastic
G	WEAK SUPEREGO STRENGTH Expedient, disregards rules	STRONG SUPEREGO STRENGTH Conscientious, persistent
H	THRECTIA Shy, timid, threat-sensitive	PARMIA Venturesome, uninhibited, socially bold
I	HARRIA Tough-minded, self-reliant	PREMSIA Tender-minded, sensitive, clinging, overprotected
L	ALAXIA Trusting accepting conditions	PROTENSION Suspicious, hard to fool
M	PRAXERNIA Practical, "down-to-earth", concerned	Undisciplined AUTIA Imaginative, bohemian, absent-minded
N	ARTLESSNESS Forthright, unpretentious genuine socially clumsy	SHREWDNESS Astute, polished, socially aware
O	UNTROUBLES ADEQUACY Self-assured, placid, secure, complacent, serene	GUILT PRONENESS Apprehensive, self-reproaching insecure, worrying, troubled
Q_1	CONSERVATIMS OF TEMPERAMENT Conservative, respecting traditional ideas	RADICALISM OF TEMPERAMENT Experimenting liberal
Q_2	GROUP ADHERENCE Group-dependent, a "joiner" and sound follower	SELF-SUFFICIENCY Self-sufficient, resourceful,
Q_3	LOW SELF-SENTIMENT INTEGRATION	S HIGH STRENGTH OF SELF- SENTIMENT Controlled, exacting will power,

	follows on urges careless of social rules	socially precise, compulsive, following self-image
Q_4	LOW ERGIC TENSION Relaxed, tranquil torpid, unfrustrated, composed	HIGH ERGIC TENSION Tense, frustrated, driven, overwrought

Based on these 16 factors, he developed a personality assessment each dimension is scored over a continuum from high to low. For eg: your level of warmth describes how warm, caring and nice to others you are. If you score low on this index, you tend to be more distant and cold while a high score signifies you are supportive and comforting.

Eysebcks Type - Trait Theory : Eysenck a British Psychologist believes in biological basis of personality. He described human personality in terms of extroversion, introversion, neuroticism and psychoticism. He suggested that low level of cortical arousals led to etrovert personality type. Low level of cortical arousal means the person needs more and more of stimulation to get aroused. On the other hand introverts has a high level of cortical arousal which means even little stimulation is enough to arouse that is why they prefer to avoid parties, social gatherings etc. to minimise stimulations.

Hierarchy of behaviour organisation.

Specific responses at lowest level. eg. Blushing, crying, smiling etc.Habitual responses at second level eg. Habits of person.

Traits at third level eg. shy, active, outgoing etc.

The highest level is the organisation of traits into type :- eg. Introver,extrovert etc.

Types/Dimensions of Personality :

1. Introversion-Extroversion :

It refers to the degree to which people are socially outgoing or socially withdrawn. At one extreme are those who are active, thrill seeking andoutgoing etc. At other extreme are people who are passive, quiet andreserved etc.

2. Neuroticism vs. emotional stability :

It refers to the degree of control people have over their feelings. At one extreme lies the people who are neurotic. They are moody, touchy and quickly lose control. At the other extreme lie people who are calm, reliable and under control.

3. Psychoticism vs. sociability :

The third dimension of psychoticism indicates the traits of solitary, egocentric, hostility etc. These persons are opposed to accepted social norms while on the other extreme people with sociability are empathatic, less adventurous and bold.

2.2.5 Summary

This lesson in discusses three prominent theories of personality: Freud's, Allport's and Cattell's theory. Freud's theory encompasses the structural, dynamic, and developmental aspects of personality, with the id, ego, and superego as key components. Allport's focus is on common and personal traits, while Cattell employs factor analysis to identify 16 source traits. The lesson emphasizes the influence of genetics and environment on personality and the understanding of individual differences. By studying these theories, students gain a foundational understanding of personality concepts and their application in psychology and related fields. This comprehensive overview equips students with valuable insights into human behaviour and the complexities of individual personalities, laying the groundwork for further exploration in the subject.

2.2.6 Key Words

Id :

The *id* is the most basic and original component. It is the matrix within which the ego and the superego become differentiated. It is the reservoir of all psychic energy. It is entirely unconscious.

Ego :

In contrast to the id, the *ego* is concerned with, and aware of, objective reality. Ego tries to devise the realistic plans to satisfy the impulsive cravings of the id and is said to be governed by the reality principle. Ego wants to protect the organism (i.e., gratification of id impulses) while coping with the real world.

Traits:

These are specific to the individual and most often cannot be described in single word. Personal traits give individuality and uniqueness to personality.

Secondary traits :

These are highly specific and apply in certain situation. For example, an individual might be orderly and meticulous in the office but disorganized and messy at home.

2.2.7 Long questions

1. Discuss the key concepts of Freud's theory of personality.
2. Explain the concept of source traits and how Cattell used factor analysis to identify these traits.

2.2.8 Suggested Readings

Bhatia : General Psychology

Morgan : Introduction to Psychology

Assessment of Personality

Lesson Structure :

2.3.0 Objectives

In this lesson the students will be Appraised of the methods of assessment of personality. After reading this lesson students will be able to differentiate and understand subjective methods, Objective Methods & Projective Techniques in assessing the personality.

2.3.1 Introduction

Today, measurement of personality or assessment of personality has become

the important subject-matter of the study of psychology. It would be better to speak of assessing or judging personality rather than of measuring it because our main concern is to find out the progress an individual has made in personality development which is a very complex phenomenon. We evaluate personality because it helps us to know about the physical, emotional and social behaviour of the person. Another important aspect of personality measurement is to find out the extent of individual adjustment to environment, and to help and improve it as far as possible. Important methods that are employed in measuring and assessing the personality are as mentioned below :

1) Subjective Methods;
2) Objective Methods; and
3) Projective Methods.

2.3.2 Subjective Methods

In subjective methods, the subject is asked to evaluate himself and the individual looks at himself critically. Data is collected with the help of friends, associates and relatives. Some of the main subjective methods of measuring personality are given below :

2.3.2.1 Autobiography :

Autobiography is the story of the subject written by himself. It is a reliable record of past and present. In this method, the subject writes according to his adventures, experiences, interests and activities of his life. It is very economical and very useful to explore the personality of the person.

But this method has some drawbacks too. The person generally conceals his drawbacks and exaggerates his qualities. So, autobiographies are generally full of lies. Autobiographies may be full of irrelevant or insignificant things. The subject writes from his memory and from memory, we can't recall the same experience that we have felt. So, due to these drawbacks, this method has not proved very useful.

2.3.2.2 Case History Method :

In this method, the facts concerning the life of the subject are collected. Its aim is to get as much information as possible about the family history of the individual. The information about hereditary and environmental factors which influence personality development of the individual is collected. Through this method the person tries to study the social environment in which he has been brought up and in which he now lives, his physical condition, constitutional make-up and health, his education

and training, his habits attitudes and interests, his social and economic status his adjustment to things and people around him. With the help of this information, the history of the case is prepared and an attempt is made to find out the case of abnormalities in the personality.

This method, too, has some weaknesses. It is very difficult to collect data through case history. It is very laborious and time consuming task, Moreover, the successful use of case history needs for specialized training.

2.3.2.3 Interview Method :

The interview method is the most common used method for testing personality. It is a face-to-face relationship between interviewer and interviewee. It is largely used by staff selection board and public service commissions. Interviewer asks some questions to get information. In the words of Prof. Woodworth, "Interview is a technique by which the informationis obtained from a person through indirect type of question. The interviewer keeps observing as the aim how the person behaves, what hesitations he has and what his emotional responses are. The interview and the observation made reveal a lot about the person, e.g., his interest, attitudes,ambitions, aspirations, socialability etc.

But the method of interview is not scientific. It is subjective and needs very experienced examiners. Even the most experienced interviewers are not able to tell what makes the interview most successful. The results of the different interviewers cannot be compared. A successful interview depends on the intimate rapport between the interviewer and the interviewee, but this is not always easy to secure.

2.3.2.4 Questionnaire Method :

Questionnaire have been used extensively in the investigation of personality. Personality is frequently measured by questionnaires or a series of questions devised to test a particular trait. R.S. Woodworth was the first to use it and devised a 'Personal Data Sheet' in 1918 to determine emotional instability or neurotic tendency among soldiers. In the questionnaire method, a list of questions is drawn and the candidate is required to answer them. 'Yes' and 'No' are written in front of these questions and the student rules out the wrong answers and indicates the correct ones. It is self-report type of instrument. By classifying answers, it is possible to find out the type of problem the subject is facing and what he is doing to face it.

There are some difficulties in this method. It is not very dependable

method because often, the subjects conceal true facts and give wrong answers. Sometimes, the framing of the questions is such that examiners and the subject take their meaning differently. Inspite of these difficulties, this method has proved to be of tremendous value.

2.3.3 Objective methods

In objective methods, the psychologist does not depend upon subject's own statement, but the assessment of his behaviour, is made by judging the subject's overt behaviour as revealed to others. Objective methods depend in the objective data they are said to be scientific. Some of the objective methods are :

2.3.3.1 Rating Method :

(By this method, certain traits of personality are divided into several classes on the basis of varying degrees of a trait). By rating is meant the judgement of one person by another. The individuals are ranged into these classes by people who know them intimately. There are two types of scales that are employed :

(1) Relative rating scale :

In this method, personality is judged in relation to other persons on the basis of their performance in particular field.

(2) Absolute rating scale :

In this method, people are not judged in relation to others but they are judged on the basis of their purpose. Rating can be done by parents, friends, teachers, a board of interviewers, examiner and judges. There can be 3, 5, 7, 9, 11 point rating scales.

This method also has certain limitations. The competent and efficient staff is needed for successful results. This method has the element of subjectivity and the results has likelihood of being biased. Another difficulty is that upon observing a particular good or bad quality, we classify his personality as good or bad in other aspects of temperament too.

2.3.3.2 Situational Test :

In this test, as the name suggests, certain artificial situations resembling real-life situation are created and the candidates are placed in such situations and circumstances, and are asked to behave and act. Their behaviour and personality can be assessed by judging the reaction to these situations. These tests are usually employed for children. Generally, rating tests and situational tests are used together. Situation involving

cooperation, honesty and leadership can be created and the behaviour of the students can be judged and evaluated accordingly.

This method has limitation of artificiality. When artificial situations are created, the behaviour of the students also becomes artificial and we can not know how they will behave in natural conditions.

2.3.3.3 Performance Method :

The performance test was conceived by May and Hartshorne. In this method, the subject is taken to a place where several things are placed. The subject's task is to perform a variety of specific jobs and the quality of his personality is examined. Performance tests are used for carpenters and other kinds of skilled workers. Prof. Murphy said, "The performance tests refer to the art and the workmanship of a person.

2.3.3.4 Sociometric Technique :

With the help of this method, social traits of the subject can be judged. This technique can be used within a group whose members know one another, e.g., members of a class, club or factory. Every member is asked to select one or more than one member with whom he would like to study, work, eat, play, etc. The subject can give his first, second, or third choice. A graph of social relations can be prepared with the help of this information. This graphic picture of social relations is called a *sociogram.*

2.3.4 Projective techniques

The most popular and important method for the measurement of personality is the projection of wishes, thoughts, ambitions, fears, hopes and repressed desires on some external object. In this kind of test, material which may be interpreted in any of the different way is presented to the person for his interpretation. It is believed that the person tested will project his personality upon this material and thus, reveal what he is like by what he says. Frank S. Freeman has described the projective techniques in the following words :

A projective test is one that provides the people with a stimulus situation giving him a liberty to impose on it his own private needs and particular perception and interpretation. Projective techniques assess the total personality of the individual and not in piece-meals. Different persons give different responses to different stimulus situations. Each individual's response has to be analysed and interpreted according to set standard theory. Stimulus situations given are unstructured so that individual can give expression to his own ideas, views, wishes and desires. Some of the

important projective techniques are as follows :

2.3.4.1 Rorschach's Ink Blot Test :

This test was originally introduced by Swiss scientist & psychiatrist Hermann Rorschach in 1921. It is also called the ink-blot test named after this psychiatrist. It is one of the most useful techniques for the study of personality. The basis of this test is perceptual approach. This test consists of ten cards, each containing a rather elaborate ink-blot — five are multi- coloured and five are in black and white. The subject studies one blot at a time and tells what each blot resembles. There is no time limit for this test. These are shown for a second time and he is asked to point out the location as it serves to indicate whether the subject reacted to some particular thing. The criteria of scoring, analysing and interpreting the cards is whether the whole or part is seen, whether colour, texture, shading, form movement is seen, whether animals or human beings are seen.

If the individual sees the picture as a whole, then he is regarded as very intelligent and is expected to possess ability to synthesize. Breaking the blot into small, unusual detail is considered to be characteristic of compulsive people. Poor colour naming responses are considered to indicate lack of emotional control. Form indicates outlook. Texture and shadingresponses are interpreted as indicators of anxiety, feeling of inadequacy or depression. When colour is combined with form but form predominates, it is taken to indicate that the individual has a lively emotional life. Movement responses are inventive and introspective, while low movement responses indicate that the person is stubborn and practical minded. If the individual sees human beings, he is regarded as stable and if animals, he is regarded as unstable.

Besides the above analysis, facts like the time taken by the subject to react to the whole blot, the number of activities which he did and whether he did them normally or not, are also noted and observed. Rorschach test is widely used to classify abnormal subjects by finding their troubles. It is useful to find out the causes of anti-social activities of delinquents and other problematic children. It gives detail information regarding mental, emotional and social aspect of personality.

Psychologists do not agree about the value of these and projective techniques in general. Because the biggest difficulty in the ink blot test is that the description of the subject's reactions becomes quite subjective, their

interpretation is intuitive and lacks experimental verification. It is not suitable for children. It is time-consuming and laborious. It needs experts which are generally available.

2.3.4.2 Murray's Thematic Apperception Test :

Thematic apperception test is another kind of projective technique. Murray investigated the peculiarities of personality with the help of some pictures in 1935. In this test, there are 30 pictures showing different life situations out of these, 10 are meant for men, 10 for women and 10 for both. Twenty pictures are shown to each subject. The subject is asked to tell a story for each picture in the light of what has led to this incident ? What are the present condition of it ? What will be the future results? The subject by projection identifies himself with the characters in these pictures. Unknowingly, the subject express many of his hidden desires, wishes, interests, attitudes etc. He does not get time to think. Therefore, the story expresses his natural desires emotions, sentiments etc. On the basis of these stories, the psychologist analysis the personality of the subject and uncovers its unconscious content.

As in the Rorschach ink blot test, there is a lot of complexity in this test also. The personality investigation done by this method is not numerical but qualitative with possibility of great errors. But still, an experienced and skilful psychologist can use this method effectively to uncover the peculiarities of the personality of the subject.

2.3.4.3 Psychoanalytic Method :

Psychoanalytic method for measuring personality was devised be Freud and developed by Jung and Alder. It is true that unconscious factors are very powerful in determining and influencing human behaviour and personality, and a large part of our behaviour and the hidden pattern of our personality can be understood only when those unconscious factors can be revealed. Two types of techniques in this method for judging personality are more popular : Free-Association and Dream Analysis.

Free Association :

In this test, the person is asked to express freely whatever comes in his mind. The individual is called upon to put down every word that comesto his mind when another is spoken or read. From the responses of the person, the expert judges the nature and causes of repressions, frustrations abnormalities and mal-adjustments.

Dream Analysis :

In dream analysis, the subject describes his dreams. It supplements free association. During free association, the individual may fail to recall, or hesitate to express certain painful and embarrassing items. These are repressed and may be identified by interpreting individuals dreams. During sleep, the subject is relaxed and repressed ideas and wishes may slip into consciousness in the form of dreams. But they are disguised and their real meaning is expressed symbolically. By analysis of the dreams, the expert can discover the cause of frustrations, emotional conflicts complexes and mal-adjustment. After knowing the root-cause, the psychoanalyst informs the patient what is wrong with him and it is assumed, that the mere knowledge of the cause of this disorder proves benefits for the patient.

2.3.4.4 Sentence Completion Test :

In this method, the subject is given some incomplete sentences. In each case the beginning is given. The subject is asked to go through the list quickly and complete each sentence, e.g.,

(a) I do not like_____

(b) I am honest about_____

(c) I love_____

(d) I like music_____

(e) I hate_____

Sentence completion test is very helpful in giving indication of feeling and disliking towards things and people. It is easy to administer this test evento a large group. But the subject conceals things because he knows the nature of the response he is making. It's scope is limited because it can be administered only on fairly literate individuals.

2.3.5 Summary :

Hence there are various methods evolved for the assessment of personality. While assessing the personality a psychologist may apply one or all methods in the assessment and then the interpretation of the test results indicate the personality of an individual.

2.3.6 Key Words

Free Association :

In this test, the person is asked to express freely whatever comes in his mind. The individual is called upon to put down every word that comesto his mind when another is spoken or read. From the responses of the person, the expert judges the nature and causes of repressions, frustrations abnormalities and mal-adjustments.

Dream Analysis :

In dream analysis, the subject describes his dreams. It supplements free association. During free association, the individual may fail to recall, or hesitate to express certain painful and embarrassing items. These are repressed and may be identified by interpreting individuals dreams. During sleep, the subject is relaxed and repressed ideas and wishes may slip into consciousness in the form of dreams.

Autobiography :

Autobiography is the story of the subject written by himself. It is a reliable record of past and present. In this method, the subject writes according to his adventures, experiences, interests and activities of his life. It is very economical and very useful to explore the personality of the person.

Interview Method :

The interview method is the most common used method for testing personality. It is a face-to-face relationship between interviewer and interviewee. It is largely used by staff selection board and public service commissions. Interviewer asks some questions to get information.

Absolute rating scale :

In this method, people are not judged in relation to others but they are judged on the basis of their purpose. Rating can be done by parents, friends, teachers, a board of interviewers, examiner and judges. There can be 3, 5, 7, 9, 11 point rating scales.

2.3.7 Long questions

1. What are the three main methods of assessing personality?

2. Describe the concept of projective techniques and discuss any two projective tests.

2.3.8 Short questions

1. What are the two types of scales used in the Rating Method for personality assessment?
2. What do you understand by sentence completion test?

2.3.9 Suggested Readings

H.R. Bhatia : General Psychology
B.C. Rai : General Psychology
J.S. Walia : A Manual of Psychology

LESSON NO. 2.4 **LAST UPDATED JANUARY 2023**

MEASURES OF CENTRAL TENDENCY

Lesson Structure

2.4.0 Objectives :

In this chapter, we will discuss the following :

* meaning of measures of central tendency;
* different measures of central tendency;
* computation of mean;
* computation of median; and
* computation of mode.

2.4.1 Introduction :

Statistics has often been called as the "Science of Average". Whenever we have to deal with the data of mass character, the use of averages, types or measures of central tendency is essential. In order to reduce the complexity of data and to

make them comparable, it is essential that the various data which are being compared are reduced to one figure each. A figure which is used to represent a whole series should neither lie at the lowest extreme nor at the highest extreme

but should lie somewhere between those two extremes, possible in the centre. Such figures are called measures of central tendency. There are three averages or measures of central tendency in common use :

(a) the arithmetic mean;
(b) median; and
(c) mode.

2.4.2 ARITHMETIC MEAN (M) :

Mean may be defined as the sum of separate scores of other measures divided by their number. This is the most familiar and useful method used to describe the central tendency of a distribution of scores for any group of individuals, objects or events.

2.4.2.1 Calculating the Mean from Ungrouped Data :

For ungrouped data, the mean is calculated by dividing the sum of the scores by the total number of cases.

$$M = \frac{€X}{N}$$

2.4.2.2 Calculating the Mean from Grouped Data :

General Method :

In a frequency distribution where all the frequencies are greater than one, the mean is calculated by the following formula :

$$M = \frac{€fx}{N}$$

Example :

Scores	*Frequency (f)*	*Mid-point (X)*	*fx*
65-69	1	67	67
60-64	3	62	186
55-59	4	57	228
50-54	7	52	364
45-49	9	47	423
40-44	11	42	462
35-39	8	37	296
30-34	4	32	128
25-29	2	27	54
20-24	1	22	22
	N=50		$\sum fX = 2230$

$$M = \frac{\sum fX}{N} = \frac{2230}{50} = 44.6 \text{ (Ans.)}$$

Short-Cut Method :

This method saves time and labour in computation. It also makes the calculation work easier, particularly when one has to deal with a large amount of data. Let's calculate the mean from grouped data using the assumed mean method with a numerical example.

Suppose we have the following grouped data:

Class Interval	Frequency
10 - 20	5
20 - 30	8
30 - 40	12
40 - 50	6
50 - 60	9

Assume the mean to be 35 (you can choose any assumed mean that falls within

the data range).

Step 1: Calculate the deviation of each midpoint from the assumed mean.

Class Interval	Midpoint (X)	Frequency (f)	Deviation (d = X - Assumed Mean)
10 - 20	15	5	-20
20 - 30	25	8	-10
30 - 40	35	12	0
40 - 50	45	6	10
50 - 60	55	9	20

Step 2: Calculate the sum of (Frequency × Deviation) for all class intervals.

Sum of (f × d) = (5 × -20) + (8 × -10) + (12 × 0) + (6 × 10) + (9 × 20)
= -100 - 80 + 0 + 60 + 180
= 60

Step 3: Calculate the total frequency.

Total Frequency = 5 + 8 + 12 + 6 + 9
= 40

Step 4: Calculate the mean using the formula:

Mean = Assumed Mean + (Sum of (f × d) / Total Frequency)
= 35 + (60 / 40)
= 35 + 1.5
= 36.5

So, the mean of the given grouped data using the assumed mean of 35 is 36.5. Note

that the result is the same as when using the shortcut method, which means both

methods are consistent and yield the same answer.

2.4.3 MEDIAN :

It is the value of the middle item of a series when it is arranged in ascending or descending order of magnitude. It is the 50% point in the distribution. Thus, median is the score or value of that central item which divides the series into two equal parts. But it should be clearly kept in mind that the central item itself is not the median. Only the measure or value of the central item is known as median.

2.4.3.1 Computation of Median for Ungrouped Data :

In ungrouped data, two situations may arise.

When N is Odd :

When N (the number of data points) is odd, the formula to find the median for ungrouped data is:

Median = Value of the ((N + 1) / 2)th observation when the data is arranged in ascending order.

Let's solve a numerical example to find the median for ungrouped data when N is odd:

Suppose we have the following ungrouped data:

6, 8, 10, 12, 15, 14, 11, 9, 7

Step 1: Arrange the data in ascending order:

6, 7, 8, 9, 10, 11, 12, 14, 15

Step 2: Find the value of the ((N + 1) / 2)th observation:

N = 9 (since there are 9 data points)
((N + 1) / 2) = ((9 + 1) / 2) = 5

The value of the 5th observation is 10.

Step 3: The median is the value of the 5th observation, which is 10.

So, the median of the given ungrouped data is 10.

When N (the number of data points) is even, the formula to find the median for ungrouped data is:

Median = Average of the (N/2)th and ((N/2) + 1)th observations when the data is arranged in ascending order.

Let's solve a numerical example to find the median for ungrouped data when N is even:

Suppose we have the following ungrouped data:

15, 18, 10, 12, 14, 17, 16, 11

Step 1: Arrange the data in ascending order:

10, 11, 12, 14, 15, 16, 17, 18

Step 2: Find the values of the N/2 and ((N/2) + 1)th observations:

N = 8 (since there are 8 data points)
N/2 = 8/2 = 4
((N/2) + 1) = (8/2) + 1 = 5

The value of the 4th observation is 14, and the value of the 5th observation is 15.

Step 3: Calculate the median by taking the average of the 4th and 5th observations:

Median = (14 + 15) / 2
= 29 / 2
= 14.5

So, the median of the given ungrouped data is 14.5.

2.4.3.2 Computation of Median for Grouped Data :

If the data is available in the form of a frequency distribution, the calculation of median first requires the location of the median class. The following formula is used for this type of group :

When calculating the median for grouped data, you can use the following formula:

Median = L + [(N/2 - F) / f] × w

Where:
- L is the lower boundary of the median class (the class containing the median value).
- N is the total number of data points in the dataset.
- F is the cumulative frequency of the class before the median class.
- f is the frequency of the median class.
- w is the width of the class interval.

Let's solve a numerical example to find the median for grouped data:

Suppose we have the following grouped data:

Class Interval	Frequency
10 - 20	5
20 - 30	8
30 - 40	12
40 - 50	6
50 - 60	9

Step 1: Calculate the cumulative frequencies and the median class.

Cumulative Frequency (F) = 0 (for the first class)
Median Class = The class with (N/2)th observation = The class with (40/2)th observation = The class with the 20th observation, which is "30 - 40".

Step 2: Find the values needed for the formula.

N = Total number of data points = Sum of all frequencies = 5 + 8 + 12 + 6 + 9 = 40
f = Frequency of the median class = 12
w = Width of the median class interval = Upper boundary - Lower boundary = 40 - 30 = 10

Step 3: Plug the values into the formula and calculate the median.

Median = 30 + [(40/2 - 0) / 12] × 10
= 30 + [(20 - 0) / 12] × 10
= 30 + (20 / 12) × 10
= 30 + (1.6667) × 10

= 30 + 16.6667
= 46.6667

So, the median of the given grouped data is approximately 46.67.

2.4.4 MODE :

Mode is the most frequently occurring score. It is defined as the size of the variablewhich occurs most frequently.

2.4.4.1 Computation of Mode for Ungrouped Data :

It can be easily computed merely by looking at the data. Our task is to find out that score which is repeated the maximum number of times.

Example : Find out the mode from the following scores of students.

25, 29, 24, 25, 27, 25, 28, 25, 29

Solution : The score 25 is repeated maximum number of times.

Thus, value of the mode is 25.

2.4.4.2 Computation of Mode for Grouped Data :

In a frequency distribution score, the mode is calculated by the following formula.

Mode = 3 Median - 2 Mean

In the above example of Mean and Median, the values of Mean and Median for the same frequency distribution are :

Mean = 44.6

Median = 44.05

Mode = 3×44.05-2×44.6

= 132.15 - 89.2

= 42.95 (Ans.)

2.4.5 Importance of Measures of Central Tendency

Mean is the most preferred measure of central tendency as it is rigidly defined mathematically and is based upon all of the measures. Median is used when the exact midpoint of the distribution is wanted - 50% point. Mode is used when a quick approximate is wanted. So to conclude we can say that Mean is the most stable measure of central tendency as it is the center of gravity in the distribution, and each score contributes to its determination.

2.4.6 Summary

In this lesson, we explore different statistical tools used to summarize and describe data. The chapter covers the meaning and importance of measures of central tendency, namely the arithmetic mean, median, and mode. The arithmetic mean is defined as the sum of all scores divided by their count and is commonly used to represent the central value of a distribution. The median represents the middle value when data is arranged in ascending or descending order and is particularly useful when dealing with odd-sized datasets. On the other hand, the

mode is the most frequently occurring score in a dataset. The chapter also discusses the computation of measures for both ungrouped and grouped data. Additionally, the summary highlights the significance of each measure in data analysis.

2.4.7 Key Words

Mean

The mean is the average of the numbers. It is easy to calculate: add up all the numbers, then divide by how many numbers there are. In other words it is the sum divided by the count.

Median

In statistics and probability theory, the median is the value separating the higher half from the lower half of a data sample, a population, or a probability distribution. For a data set, it may be thought of as "the middle" value. The basic feature of the median in describing data compared to the mean (often simply described as the " average") is that it is not skewed by a small proportion of extremely large or small values, and therefore provides a better representation of a "typical" value.

Mode

The mode is the value that appears most often in a set of data values. Likethe statistical mean and median, the mode is a way of expressing, in a (usually) single number, important information about a random variable ora population.

Central Tendency

Central tendency is a descriptive summary of a dataset through a single value that reflects the center of the data distribution. Along with the variability (dispersion) of a dataset, central tendency is a branch of descriptive statistics. The central tendency is one of the most quintessential concepts in statistics.

2.4.8 Long Questions

1. Calculate the mean, median, and mode for the following ungrouped data:

10, 15, 20, 25, 30, 30, 35, 40, 45, 50

2. Find the mean, median, and mode for the following grouped data:

Class Interval	Frequency
10 - 20	5
20 - 30	8
30 - 40	12
40 - 50	6
50 - 60	9

You can use the appropriate formulas and methods discussed in the lesson to solve these numerical questions.

2.4.9 Short Questions

1. Define the term "Median" and explain its significance in statistics.
2. For the given dataset, 12, 14, 16, 18, 18, 20, 22, 24. Calculate the mean.

2.4.10 Suggested Readings

Garret, H.E. (1981), *Statistics in Psychology and Education.* Feffer and Simons Ltd. Bombay.

Guilford, J.P. & Fruchter, B. (1985). *Fundamental Statistics in Psychology and Education.* McGraw Hill, Singapore.

LESSON NO. 2.5 LAST UPDATED JANUARY 2023

MEASURES OF VARIABILITY

Lesson Structure

2.5.0 Objectives :

In this chapter, we will discuss the following topics :

* meaning of the measures of variability;
* different measures of variability;
* computation of range;
* computation of quartile deviation;
* computation of average deviation; and
* computation of standard deviation.

2.5.1 Introduction :

We have already studied the three measures of central tendency. The calculation of three measures of central tendency measures typical or representation of a set of scores as a whole. So, our next step is to find some measure of the variability of our scores. Out target is to find out simply the expected range of dispersion or variation above and below the average or central value for the given data. There are chiefly four measures for indicating variability or dispersion within the set of scores. They are :

(1) Range (R);
(2) Quartile Deviation (QD)

(3) Average Deviation (AD); and

(4) Standard Deviation (SD).

Each of the above measures of variability gives us the degree of variability or dispersion by the use of a single number, and tells us how the individual scores are scattered or spread throughout the distribution of given data.

2.5.2 Range (R) :

The easiest method for finding the measure of variability is by means of range. It is calculated by subtracting the lowest score in the series from the highest, or it is the difference between the values of the extreme items of a series. Thus, if we want to find out the degree of dispersion in the daily income of a person, all that we have to do is to find the highest and the lowest limit. Range may be absolute or relative. When we compare the range of two groups, we have to find what is known as the relative measure of range or coefficient of range. Symbolically, the following formula can be used for the measurement of range and its coefficient.

Range = $m_1 - m_0$

Coeff. of Range = $\frac{m_1 - m_0 m_1}{+ m_0}$

Example :

The following data relate to income of two groups in a week. Find out by the method of range in which income is more variable.

A - 14, 16, 18, 11, 7, 14, 12

B - 24, 29, 15, 23, 19, 23, 33

Solution :

Range of A = $m_1 - m_0 = 18\text{-}7 = 11$

Coeff. of Range of A = $\frac{18-7}{18+7} = \frac{11}{25} = 0.44$

Coeff. of Range B = $\frac{3.3-15}{33+15} = \frac{18}{48} = 0.37$

We find that absolute range in case of A is 11 and in case of B it is 18, but the relative measure reverses the position, and shows greater variability in case of A.

2.5.3 Quartile Deviation:

The quartile deviation or Q is one-half the scale between the 75th or third and 25thor first quartile in a frequency distribution. It is computed by the formula :

$$Q = \frac{Q_3 - Q_1}{2}$$

Where Q or 75th percentile is the third quartile on the score scale-the point

below which lie 75% of the scores, and Q_1 or 25th percentile is the first quartile on the score scale, the point below which lie 25% of scores. The formulas for finding out Q_3 and Q_1 are :

QD = (1/2) * [(n/4 - cf) / fq] * I

First Quartile (Q1): Q1 = L + [(n/4 - cf) / fq] * i

Third Quartile (Q3): Q3 = L + [(3n/4 - cf) / fq] * i

Where 1 = the exact lower limit of the interval in which the quartile fallsi = the length of the class-interval
cf = Cumulative frequency upto the interval which contains the quartile. fq = frequency of the interval containing the quartile.

Suppose we have the following grouped data:

Class Interval	Frequency (fq)	Cumulative Frequency (cf)
10 - 20	5	5
20 - 30	8	13
30 - 40	12	25
40 - 50	6	31
50 - 60	9	40

Step 1: Calculate the total number of data points (n).
n = Sum of all frequencies = 5 + 8 + 12 + 6 + 9 = 40
Step 2: Determine the position of the first quartile (Q1) and third quartile (Q3) in the dataset.
Q1 Position = (1/4) * n = (1/4) * 40 = 10
Q3 Position = (3/4) * n = (3/4) * 40 = 30
Step 3: Identify the class interval containing Q1 and Q3 based on their positions.
Q1 is in the class interval "30 - 40" (since 10 falls in the cumulative frequency range 13 - 25).
Q3 is in the class interval "40 - 50" (since 30 falls in the cumulative frequency range 25 - 31).
Step 4: Calculate the lower limit (L) and the length of the class interval (i) for both Q1 and Q3.
For Q1:
L = Lower limit of the "30 - 40" class interval = 30
i = Length of the class interval = Upper boundary - Lower boundary = 40 - 30 = 10

For Q3:
L = Lower limit of the "40 - 50" class interval = 40
i = Length of the class interval = Upper boundary - Lower boundary = 50 - 40 = 10
Step 5: Calculate the quartile deviation (QD) using the formulas.

For Q1:
Q1 = L + [(n/4 - cf) / fq] * i
= 30 + [(10 - 13) / 12] * 10

= 30 + [-0.25] * 10
= 30 - 2.5
= 27.5

For Q3:
Q3 = L + [(3n/4 - cf) / fq] * i
= 40 + [(30 - 25) / 6] * 10
= 40 + [0.833] * 10
= 40 + 8.33
= 48.33

Step 6: Calculate the quartile deviation (QD) using the formula:
Quartile Deviation (QD) = (Q3 - Q1) / 2
= (48.33 - 27.5) / 2
= 20.83 / 2
= 10.415

So, the quartile deviation for the given data is approximately 10.415.

2.5.4 AVERAGE DEVIATION (AD) :

Average deviation is the mean of the deviations of all the separate scores in the series taken from their mean. It is also called the Mean Deviation. The mean or average deviation is not a method of limits, but a method of average deviation in averaging deviations to find the MD or AD, no notice is taken of the signs, and all the deviations, whether plus or minus, are considered as plus. It is the simplest measure of variability that takes into account the fluctuation or variation of all the items in a series.

2.5.4.1 Computation of Average or Mean Deviation from Ungrouped Data :

In case of ungrouped data, average deviation is calculated by the formula :

$$\text{AD or MD} = \frac{\sum|x|}{N}$$

In this formula, the bars **||** enclosing the x indicate that signs are disregarded as calculating the sum and x is a deviation of a score from the mean (x=X-M). The use of this formula may be explained through the following example.

Example : Find the average deviation of the scores 15, 10, 6, 8, 11 of a series:

Solution :

Scores *X*	*Deviation from the mean* *x=(X-M)*	$\sum \|x\|$
15	15-10=5	5
10	10-10=0	0
6	6-10=-4	4
8	8-10=2	2
11	11-10=1	1
N=5		$\sum \|x\| = 12$

Mean = $\frac{15+10+6+8+11}{5} = \frac{50}{5} = 10$

Average Deviation or AD or MD = $\frac{\sum|x|}{5} = \frac{12}{5} = 2.4$ (Ans.)

2.5.4.2 Computation of Average Deviation from Grouped Data :

For Grouped data, AD can be computed by the formula :

AD or MD = $\frac{\sum|fx|}{N}$

Example :

Scores	*f*	*Mid-point (X)*	*fX*	*x=(X-M)*	*fx*
110-114	4	112	448	11.94	44.76
105-109	4	107	428	6.94	27.76
100-104	3	102	306	1.94	5.82
95-99	0	97	0	-3.06	0
90-94	3	92	276	-8.06	-24.18
85-89	3	87	261	-13.06	-39.18
80-84	1	82	82	-18.06	-18.06
N=18	$\sum fX=1081$				$\sum \|fx\| = 162.76$

M = $\frac{\sum fX}{N} = \frac{1081}{18} = 100.06$

M.D. or A.D. = $\frac{\sum|fx|}{N} = \frac{162.76}{18} = 9.04$ (Ans.)

2.5.5 STANDARD DEVIATION :

Standard deviation is the root-mean square deviation measured from the average or it is the square root of the arithmetic average of the squares of the deviations measured

from the mean. It is represented by the Greek letter sigma (σ.) Symbolically,

$$\sigma = \sqrt{\frac{\sum x^2}{N}}$$

Where X = individual score

M = Mean of the given set of scoresN =

Total number of the scores

x = Deviations of each score from the mean.

It is considered as the most stable and reliable measure of variability as it employees the mean for its computation.

2.5.5.1 Computation of Standard Deviation from Ungrouped Data :

SD can be computed from the ungrouped scores by the following formula :

$$\sigma = \sqrt{\frac{\sum x^2}{N}}$$

Example : Calculate SD for the following set of scores.

52, 50, 56, 68, 65, 62, 57, 70

Solution :

Scores (X)	*x(X-M)*	x^2
52	-8	64
50	-10	100
56	-4	16
68	8	64
65	3	9
62	2	4
57	-3	9
70	10	100
$\sum X=480$		$\sum x^2 = 382$

$$M = \frac{\sum X}{N} = \frac{480}{8} = 60$$

$N = 8$

$$S.D. = \sigma = \sqrt{\frac{\sum x^2}{N}} = \sqrt{\frac{382}{8}} = \sqrt{47.75} = 6.91 \text{ (Ans.)}$$

2.5.5.2 Computation of Standard Deviation from Grouped Data :

In case of grouped data, SD can be computed by the following formula :

$$\sigma = \sqrt{\frac{\sum fx^2}{N}}$$

Example :

Scores	*X (Mid-point)*	*f*	*fX*	*x=(X-M)*	*fx*	*fx²*
72-74	73	2	146	15.15	30.30	459.00
69-71	70	5	350	12.15	60.75	738.11
66-68	67	8	536	9.15	73.20	669.78
63-65	64	11	704	6.15	67.65	416.05
60-62	61	13	793	3.15	40.95	128.99
57-59	58	20	1160	0.15	3.00	0.45
54-56	55	14	770	-2.85	-39.90	113.72
51-53	52	11	572	-5.85	-64.35	376.45
48-50	49	9	441	-8.85	-79.65	704.90
45-47	46	4	184	-11.85	-47.70	561.69
42-44	43	3	129	-14.85	-44.55	661.57
		N=100	$\sum$ fx=5785		$\sum$ fx=551.70	$\sum$ fx²=4830.76

$$\text{Mean} = \frac{5785}{100} = 57.85$$

$$\text{S.D.} = \sqrt{\frac{\sum x^2}{N}} = \sqrt{\frac{4830.76}{100}} = 6.95 \text{ Ans.}$$

2.5.5.3 Calculation of S.D. by Short-cut method for Grouped Data :

The formula for computing by short - Method is :

$$\sigma = i \sqrt{\frac{\sum fx^1}{N} - \left[\frac{\sum fx^1}{N}\right]^2}$$

$\sum fx'^2$ = Sum of squared deviations taken from assumed mean multiplied by f.

$\frac{\sum fx^1}{N}$ = correction in units of class-Interval

i = length of the Class-Interval

Example :

Scores	*f*	*x*	*fx*	fx^2
72-74	2	5	10	50
69-71	5	4	20	80
66-68	8	3	24	72
63-65	11	2	22	44
60-62	13	1	13	13
57-59	20	0	0	0
54-56	14	-1	-14	14
51-53	11	-2	-22	44
48-50	9	-3	-27	81
45-47	4	-4	-16	64
42-44	3	-5	-15	75
	N = 100	$\sum fx^1 = -5$	$fx^{12} = 537$	

$$\text{S.D.} = i \sqrt{\frac{\sum fx^2}{N} - \left(\frac{\sum fx}{N}\right)^2}$$

$$= 3 \sqrt{\frac{537}{100} - \left(\frac{-5}{100}\right)^2}$$

$$= 3 \sqrt{\frac{537}{100} - 0.0025}$$

$$= \frac{3}{10} \sqrt{537 - 0.025}$$

$$= \frac{3}{10} \sqrt{536.75}$$

$$= \frac{3}{10} \times 23.17$$

$$= 6.25 \text{ (Ans.)}$$

2.5.6 Let us sum up

There are four measures to indicate the variability or dispersion within a set of measures. These are (1) the range, (2) the quartile deviation or Q, (3) the average deviation or AD and (4) the standard deviation or SD. Amongst the various measures of variability SD is considered to be the most appropriate index of variability as it has the greatest statistical stability.

2.5.7 Keywords

Range

The range, the difference between the largest value and the smallest value, is the simplest measure of variabilityin the data. The range is determined by only the two extreme data values.

Deviation

In statistics, deviation is a measure of difference between the observed value of a variable and some other value, often that variable's mean. The sign of the deviation reports the direction of that difference (the deviation is positive when the observed value exceeds the reference value).

Standard Deviation

Standard deviation is a measure of the amount of variation or dispersion ofa set of values. A low standard deviation indicates that the values tend to be close to the mean (also called the expected value) of the set, while a high standard deviation indicates that the values are spread out over a wider range.

Quartile Deviation

The Quartile Deviation (QD) is the product of half of the difference betweenthe upper and. lower quartiles. Mathematically we can define as: Quartile Deviation = (Q3 – Q1) / 2. Quartile Deviation defines the absolute measure of dispersion.

Variability

Variability refers to how spread scores are in a distribution out; that is, it refers to the amount of spread of the scores around the mean. For example, distributions with the same mean can have different amounts of variability or dispersion.

2.5.8 Long questions

1. What are the steps to calculate average deviation from grouped data?

2. How to find quartile deviation of a grouped data? Please explain with the help of hypothetical example.

2.5.9 Short Questions

Define the following

1. Standard deviation
2. Third Quartile

2.5.10 Suggested Readings

Garrett, H.E. (1981), *Statistics in Psychology and Education,* Vakils, Ferrer and SimonsLtd. Bombay.

Guilford, J.P. & Fruchter, B. (1985). *Fundamental Statistics in Psychology and Education.* McGraw Hill, Singapore.

B.A. PART-I PSYCHOLOGY
GENERAL PSYCHOLOGY

LESSON NO. 2.6 Last Updated January 2023

Graphical Representation of Data

Lesson Structure :

2.6.0 Objectives

In this chapter we will discuss about the graphical representations of data. Our focus will be on

* the different modes of graphical representation of data.
* graphical representation of grouped and ungrouped data.

2.6.1 Introduction

A graphical representation is the geometrical image of a set of data. It enables us to think of a statistical problem in visual terms. Understanding and interpretation of the collected statistical data is easier on visual scale.

2.6.2 MODES OF GRAPHICAL REPRESENTATION OF DATA :

Data is in the form of raw scores and is known as ungrouped data, and when it is organized into a frequency distribution, then it is referred to as grouped data. Separate modes and methods are used to represent these two types of data

ungrouped and grouped.

2.6.2.1 Graphical Representation of Ungrouped Data

For the ungrouped data the following graphical representative are made use of

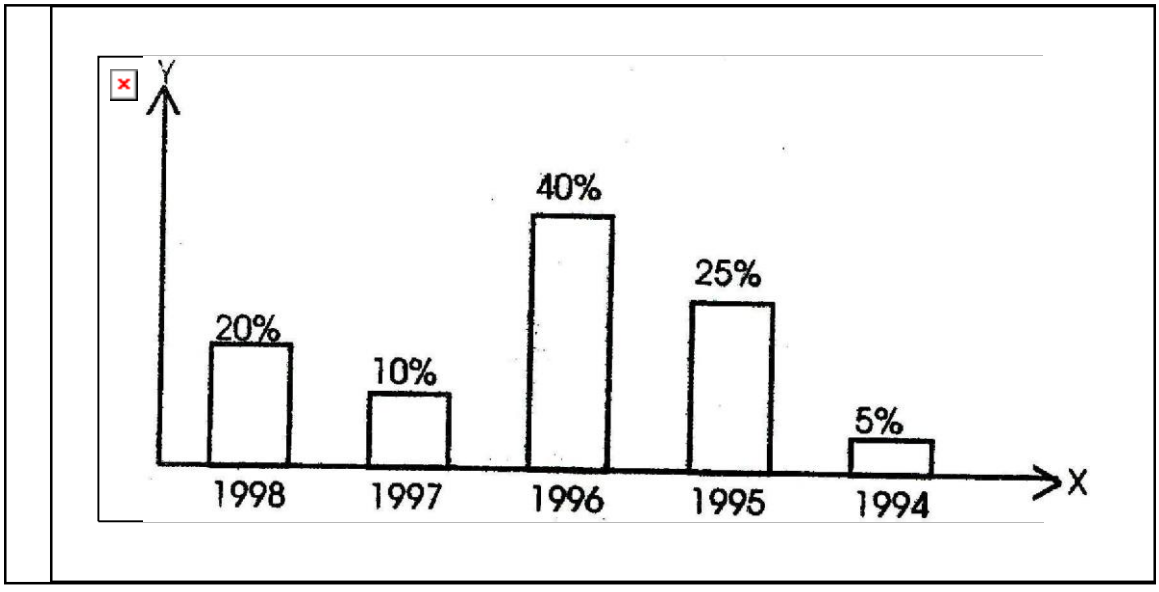
1. Bar graph or Bar Diagram.
2. Circle graph of Pie diagrams
3. Pictograms
4. Line graphs

2.6.2.1.1 Bar graph or Bar Diagram:

Here, the data is represented by bars. These diagrams are either vertical or horizontal. In the construction of both these forms, the lengths of the bars are kept proportional to the amount of variable or trait (cost, no. of individuals etc.) possessed. The width of the bar is not governed by any set rules. A space one-half of the width of a bar is left between two bars.

Examples :

Year	No. of Students	Percentage
1994	6	5
1995	30	25
1996	48	40
1997	12	10
1998	24	20



2.6.2.1.2 CIRCLE OR PIE DIAGRAM :

Here, the data is represented through the sections or portions of a circle. The name pie diagram is given to a circle diagram because in determining the circumference of a circle, we have to take into consideration a quantity known as 'Pie'.

The surface area of a circle is known to cover 2 or 360 degrees. The data thus, may be represented by 360 degrees, parts or sections of a circle. The total frequencies or value is equated to 360° and then the angles corresponding to component parts are calculated. After calculating these angles, the required sectors in the circle are drawn.

For example, we take the same data as in Fig. 1. then degrees may be calculatedas under :-

$$\frac{6}{120} \times 360 = 18°$$

$$\frac{30}{120} \times 360 = 90°$$

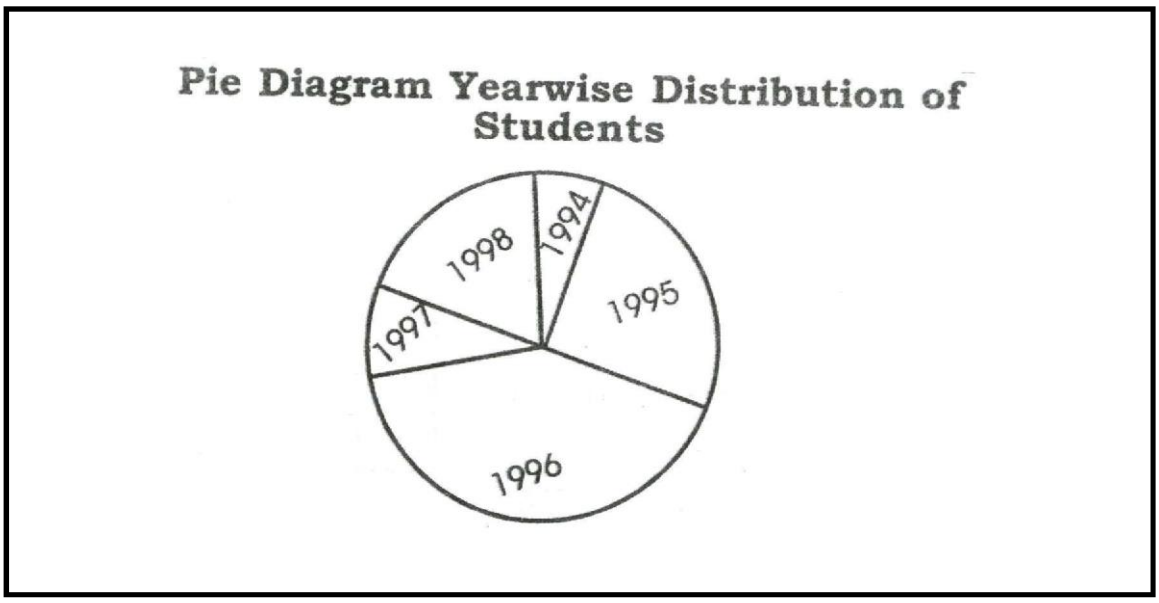
$$\frac{48}{120} \times 360 = 144°$$

$$\frac{12}{120} \times 360 = 36°$$

$$\frac{24}{120} \times 360 = 72°$$

Total = 360

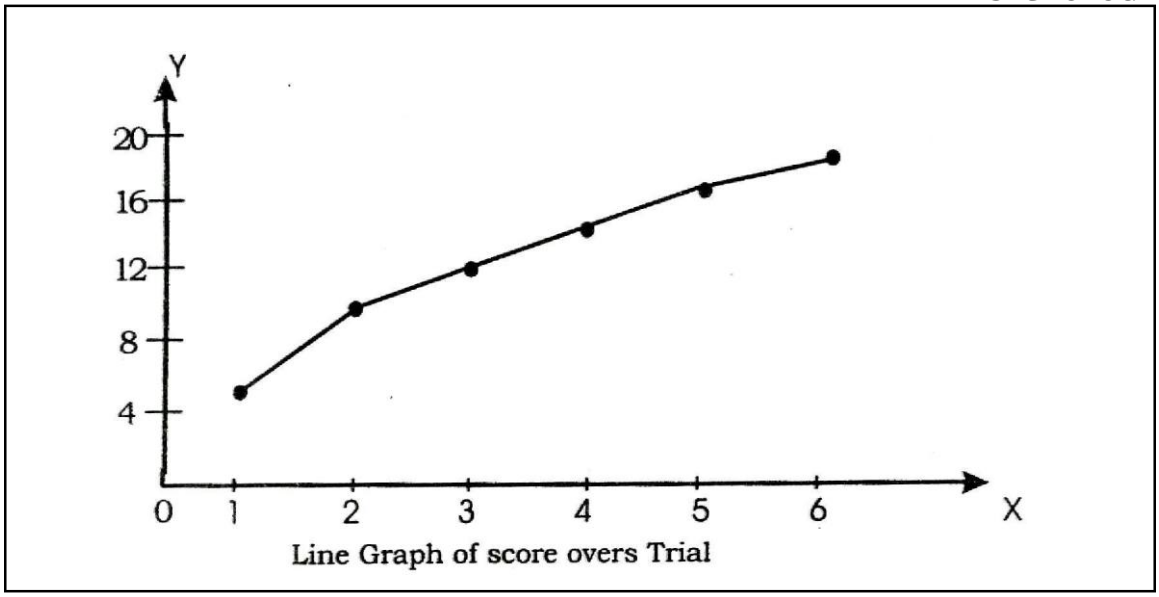
Total No. of Students = 120



2.6.2.1.3 LINE GRAPH : Line graphs are simple Mathematical graphs that are drawn on the graph paper by plotting the data concerning one variable on the horizontal x- axis and other variable of data on the vertical y-axis. With the help of such graphs, the effect of one variable upon another variable during an experimental or normaline study may be demonstrated.

Example :

Trial No.	1	2	3	4	5	6
Score	5	10	14	16	18	20



Line Graph of score overs Trial

2.6.3 Graphical Representation of Grouped Data

There are four methods of representing a frequency distribution graphically.

1. The Histogram
2. The Frequency Polygon
3. The Cumulative Frequency Graph
4. Ogive.

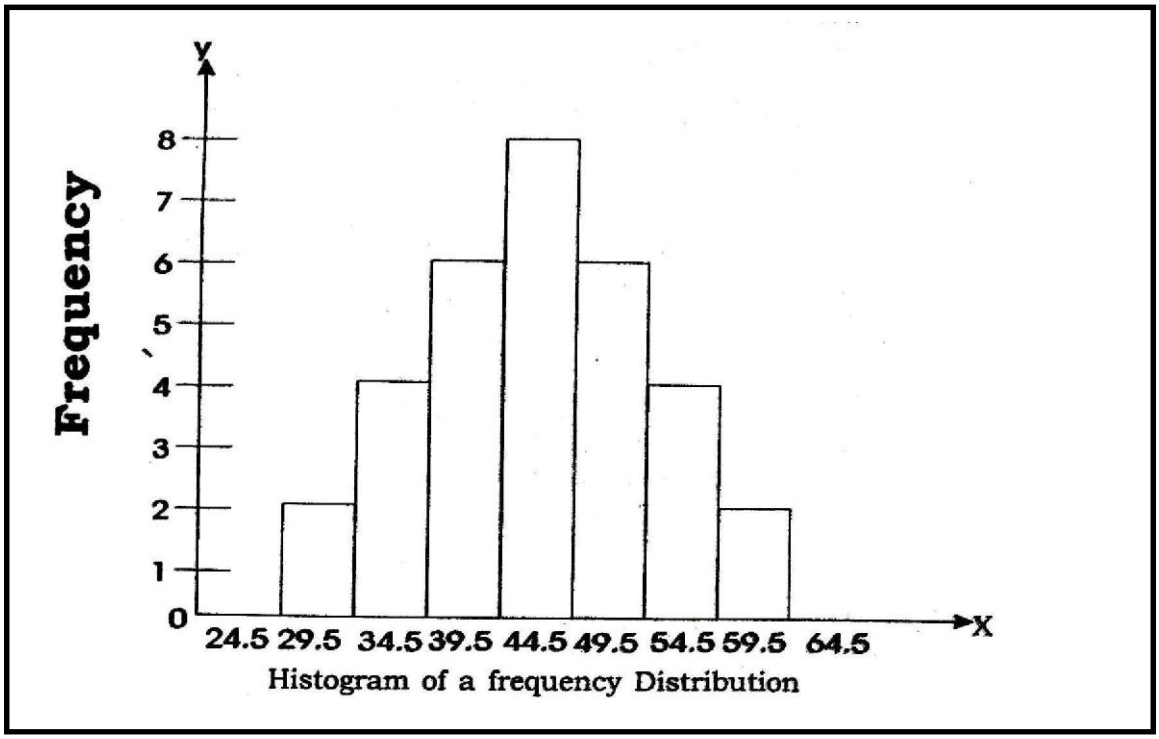
2.6.3.1 Histogram

A histogram or column diagram is essentially a bar graph of a frequency distribution. Important points to be remembered are as under -

1. The source in the form of actual class limits as 20.5-24.5 etc. should be written instead of 20-24 etc.
2. Two extra intervals - one below and other above the given grouped intervals or classes (with zero frequency) are taken. Then,
    1. The extra lower limit is plotted at the intersection of X-axis and Y-axis.
    2. Frequencies of the distribution are plotted on the Y-axis.

3. Each class or interval with its specific frequency is represented by a separate rectangle. The base of each rectangle is the width of the class interval (i) and the height is the respective frequency of that class or interval.

4. It is not necessary to project the sides of the rectangles down to thebase line.
5. Both X and Y-axis should not be too long or too short.



Histogram of a frequency Distribution

2.6.3.2 FREQUENCY POLYGON :

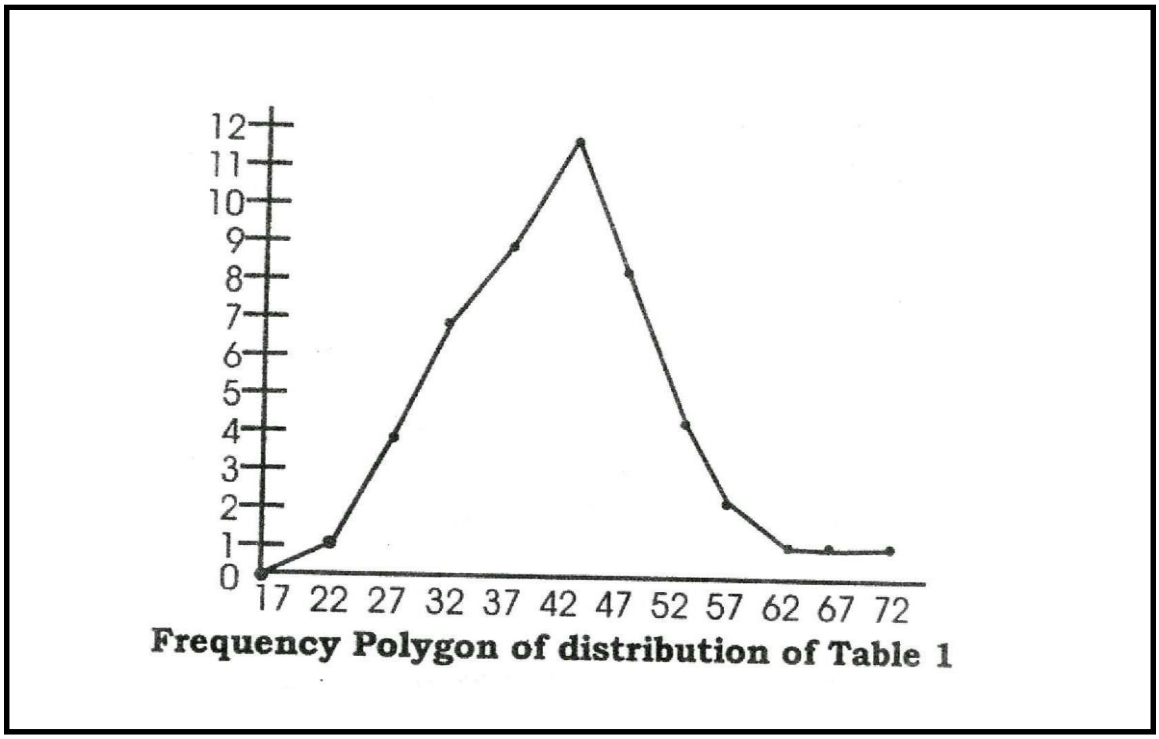
Frequency Polygon is a line graph for the graphical representation of the frequency distribution :

1. As in the histogram, two extra intervals or classes one above and the other below the given intervals are taken.
2. The midpoints of all the classes or intervals are calculated.
3. The midpoints are marked along the X-axis and the corresponding frequencies across the Y-axis by choosing suitable scales on both axis.
4. The various points obtained by plotting the mid-points and frequencies are joined by straight lines to give the frequency polygon.
5. For the approximate height of the figure and selection of X and Y units, heightmay be taken as 75% of the width.

Example :

Classes of Scores	Frequencies	Compulative frequency	Cum.% Frequencies
65-69	1	50	100.00
60-64	3	49	98.00
55-59	4	46	92.00
50-54	7	42	84.00
45-49	9	35	70.00
44-44	11	26	52.00
35-39	8	15	30.00
30-34	4	7	14.00
25-29	2	3	6.00
20-24	1	1	2.00

N=50



Frequency Polygon of distribution of Table 1

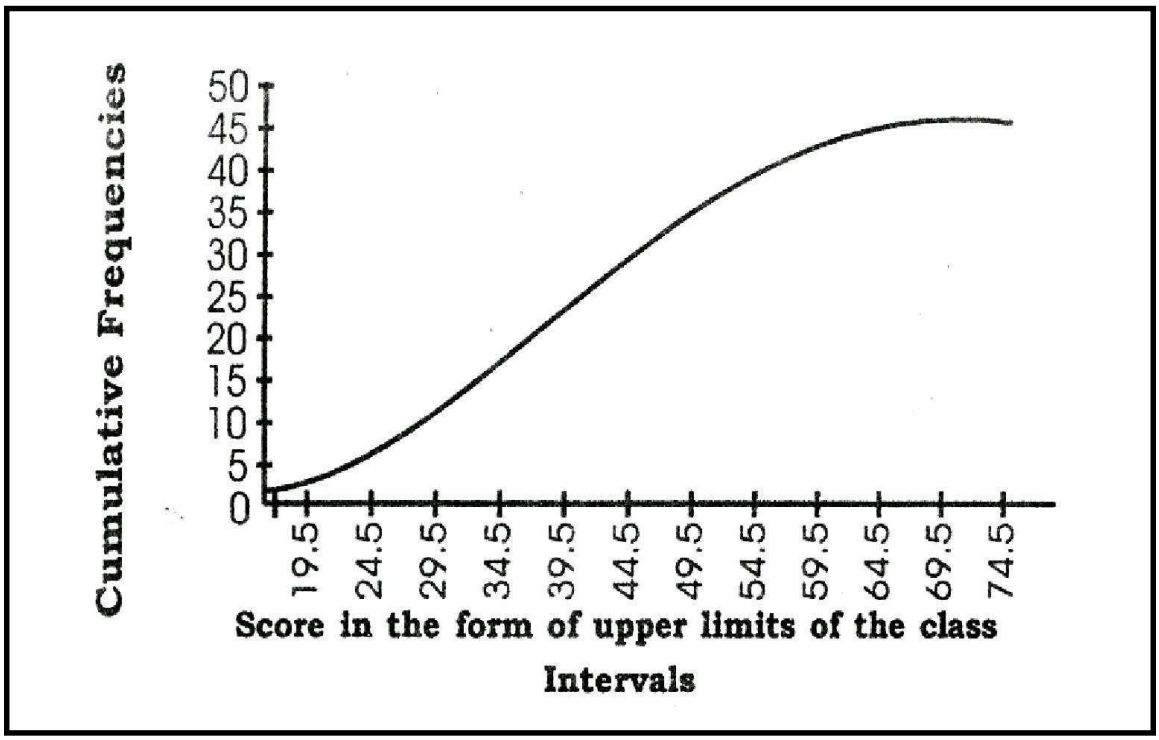
2.6.3.3 The cumulative frequency graph :

The data organized in the form of cumulative frequency distribution may be graphically represented through the cumulative frequency graph. It is actually a line graph drawn on graph paper by plotting actual upper limits of the class

intervals on the X-axis and the respective cumulative frequencies of these class intervals on the Y-axis. For the data given in Table 1.

1. First of all, we will calculate the actual upper limits of the class intervals as 24.5, 29.5, 34.5, 39.5, 44.5, 49.5, 54.5, 59.5, 64.5 and 69.5
2. For a simple frequency distribution table, the cumulative frequencies are first determined and written at the proper place against the respective class intervals.
3. Upper limits of the class intervals are plotted on the X-axis and respective cumulative frequencies on the Y-axis of the graph.
4. All the plotted points representing upper limits of the class intervals with their respective cumulative frequencies are then joined through a successive chain of straight lines resulting in a line graph.

For the purpose of plotting of the origin of the curve on the X-axis, it is customary to take one extra class interval with zero cumulative frequency and thus calculate the actual upper limits of this class interval for plotting on the X-axis. In this case, the upper limit will be 19.5 and shall be the starting point of the curve located on

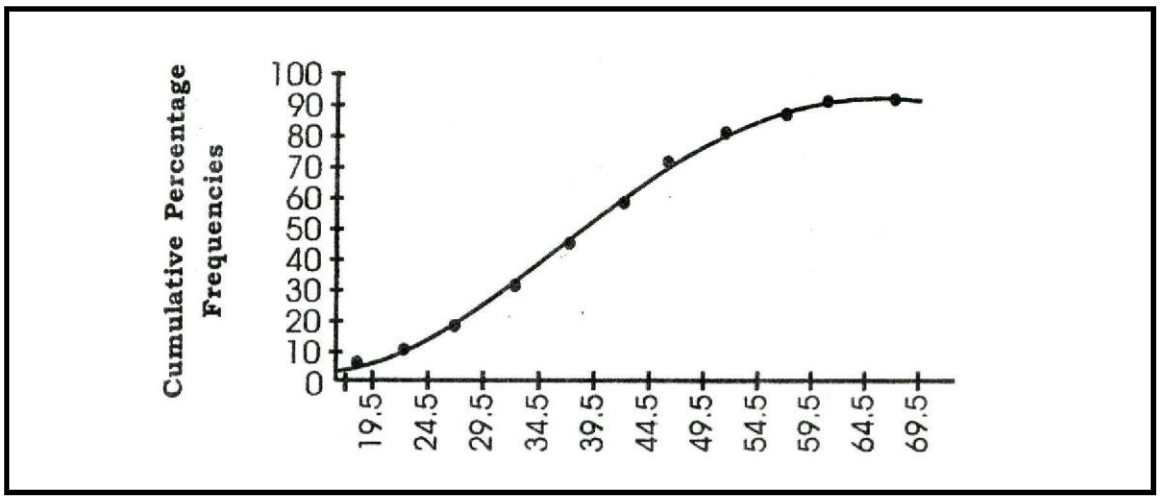


the "o" origin of the graph.

Fig. Cumulative Frequency Graph (Table)

2.6.3.3 Ogive or cumulative percentage frequency curve

Frequency curve is essentially a line graph drawn on a piece of graph paper by plottingactual upper limits of the class intervals on the X-axis and their respective



cumulativepercentage on the Y-axis.

Fig. Cumulative Percentage Frequency Curve of Ogive (Table 1)

Uses of Ogive :

1. The statistics like Median, Quartiles, Quartile Deviation, Percentiles etc. maybe determined quickly and accurately.
2. Percentile norms may be easily determined.

2.6.4 Summary

Analysis of data may be obtained from a graphic or pictorial treatment of the frequency distribution. Graphical representation of the numerical data seeks to translate numerical facts-often abstract and difficult of interpretation into more concrete and unerstandable form.

2.6.5 Key words

Line Graph : Line graphs are simple Mathematical graphs that are drawn on the graph paper by plotting the data concerning one variable on the horizontal x-axis and other variable of data on the vertical y-axis. With the help of such graphs, the effect of one variable upon another variable during an experimental or normaline study may be demonstrated.

Bar graph or Bar Diagram :

Here, the data is represented by bars. These diagrams are either vertical or horizontal. In the construction of both these forms, the lengths of the bars are

kept proportionalto the amount of variable or trait (cost, no. of individuals etc.)

possessed. The width of the bar is not governed by any set rules. A space one-half of the width of a bar is left between two bars.

Circle or Pie Diagram :

Here, the data is represented through the sections or portions of a circle. The name pie diagram is given to a circle diagram because in determining the circumference of a circle, we have to take into consideration a quantity known as 'Pie'.

Histogram:

A histogram is a bar graph-like representation of data that buckets a range of outcomes into columns along the x-axis. The y-axis represents the number count or percentage of occurrences in the data for each column and can be used to visualize data distributions.

Ogive:

An ogive also called a cumulative frequency polygon, is a type of frequency polygon that shows cumulative frequencies. In other words, the cumulative percents are added on the graph from left to right. An ogive graph plots cumulative frequency on the y-axis and class boundaries along the x-axis.

2.6.6 Long Questions

1. What are the different ways to graphically present grouped data?
2. Explain the various modes of graphical representation of data.

2.6.7 Short Questions

Define the following

1. Pie chart
2. Ogive

2.6.8 Suggested Readings

1. Garrett : Statistics in Psychology and Education.
2. S.K. Mangal : Statistics in Psychology and Education (1987). Tata McGraw-Hill

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