SHIVAJI UNIVERSITY, KOLHAPUR

CENTRE FOR DISTANCE EDUCATION

Psychology

Semester-I & II
Paper-I & II

For

B. A. Part-I

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Psychology
B. A. Part-I

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Preface

Shivaji University, Kolhapur has revised syllabus in optional Psychology Paper-I & II for B. A. I class. The complementory book based on the prescribe syllabi "Introduction to Psychology" and General Psychology is hereby handed over to the students and teachers which gives us immense pleasure.

'Introduction to Psychology' and 'General Psychology' these and separates two parts of this book. Semester-I Paper-I is carrying 'Introduction to Psychology'. It includes four units. They are, Introduction to Psychology, Biological Bases of Behaviour, Sensation and Perception and Motivation. While 'General Psychology' is for Semester-II Paper-II includes four units, they are, Emotion, Learning and Memory, Intelligence and Personality.

It is hoped this book will assists the students of Distance Education, teachers, regular mode students, and readers in general.

As a part of Distance Education scheme conducted by Shivaji University Hon. Vice-Chancellor, Dr. N. J. Pawar, has inspired and guided for 'Self-Instructional Material' (SIM). We are greatful to the precious help of Registrar Dr. D. V. Muley, Director of College and University, Dr. A. B. Rajage, Dean of the Sociel Sciences Prin. Dr. J. S. Patil, Director of Centre for Distance Education Dr. A. R. Bhosale, Member of B.O.S. in Psychology, all authors of this book and all other administrative staff of the centre.

All the contributer-authors have written their units paying particular attention to communicate the subject to the students, teachers and redears in general.

We are also thankful to Dr. R. K. Adsul, Chairman, B.O.S. in Psychology for his Co-operation and guidance.

Dr. B. A. Naik
Mahavir Mahavidyalaya, Kolhapur
Editor

B. A. Part-I

SIM IN PSYCHOLOGY

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Each Unit begins with the Objectives of the Section -

Objectives are directive and indicative of :

1. what has been presented in the Unit and
2. what is expected from you
3. what you are expected to know pertaining to the specific Unit once you have completed working on the Unit.

The self check exercises with possible answers will help you to understand the Unit in the right perspective. Go through the possible answer only after you write your own answers. These exercises are not to be submitted to us for evaluation. They have been provided to you as Study Tools to help and keep you on the right track as you study the Unit.

B. A. Part - I

INTRODUCTION TO PSYCHOLOGY

Paper - I

Semester-I

Unit - 1 : Introduction to Psychology

Unit - 2 : Biological Bases of Behaviour

Unit - 3 : Sensation and Perception

Unit - 4 : Motivation

Semester - I : Unit - 1

Introduction to Psychology

1.0 Objectives

1.1 Introduction

1.2 Subject Explanation

1.2.1 Definition of Psychology (Modern)

1.2.2 Goals of Psychology

1.2.3 Perspectives of Psychology

1.2.4 Psychology in Modern India

1.2.5 Study Methods in Psychology

(a) Naturalistic Observation

(b) Experiment

1.3 Key words and meanings

1.4 Summary

1.5 Key to self study questions

1.6 Assignment for practice

1.7 Books for Reading

1.0 Objectives

After studying this unit you will be able to :

1. Understand the nature and definition of Psychology.
2. Know the goals of Psychology.
3. Know various perspectives of Psychology.

4. Understand the development of Psychology in modern India.
5. Know the study methods in Psychology.

1.1 Introduction

Psychology is a basic and applied science. Psychology as a science it deals with human and animal behavior. Psychologists do study people, but they study animals too. What makes and people and animals tick is what goes on inside their bodies and brains as well as what they do.

In this unit we will discuss the definition (Modern) of psychology, goals of psychology, perspectives of psychology, psychology in modern India and various study methods in psychology.

1.2 Subject Explanation

1.2.1 Definition of Psychology (Modern)

'Psychology' word comes from Greek word 'Psukhe' and 'logus'. 'Psukhe' means soul and 'logus' means reason or science. Today modern meaning of 'Psukhe' is mind and 'logus' is science. On this base earlier psychology was called as a science of soul. Today psychology is become a science as Physics, Botany, Chemistry, Biology etc. The subject matter of psychology is behavior. In Psychology now a days human behavior and mental processes are studying scientifically.

Modern definition of Psychology

"Psychology is the scientific study of behavior and mental processes.''

In this definition behavior, mental processes and scientific concepts are important. Behavior includes all of our outward actions and reactions, such as talking, facial expressions and movements. Behaviour includes anything a person or animal does that can be observed in some way. Mental processes refer to all the internal, covert activity of our minds, such as thinking, feeling, learning, and remembering. The mental processes are called cognitive processes. Why scientific? To study behaviour and mental processes in both humans and animals, psychologists have to observe them systematically and objectively. By using scientific methods, psychologists are able to find answers to questions about the nature of human behaviour and thought processes.

In short modern definition of Psychology focuses on :

1. Basically Psychology is a science, and
2. Psychology studies behaviour and mental processes by using scientific methods.

Questions for Self-study - 1

M. C. Q.

1. Psychology is basic and ……. science.
   (a) natural *(b) theoretical* *(c) applied* *(d) scientific.*
2. Psychologists do study people, but they study ……..... too.
   (a) birds *(b) animals* *(c) insects* *(d) pets.*
3. Psychology word comes from …….. word psukhe and logus.
   (a) English *(b) Russian* *(c) French* *(d) Greek.*
4. Today the subject matter of psychology is …… .
   (a) invisible *(b) nonscientific* *(c) behaviour* *(d) soul.*
5. The mental processes are called ……. processes.
   (a) Cognitive *(b) Scientific* *(c) Physiological* *(d) Social.*

1.2.2 Goals of Psychology

Every Science has its goals. Psychology is also a science. It has also some grals In physics, the goals are concerned with how the physical word works. In astronomy the goals are concerned with to chart the universe and understand both how it come to be and what it is becoming. In Psychology, there are four goals. The aim of these goals is to uncovering the mysteries of human and animal behaviour. The goals of psychology as follows :

1. Description / To describe : What is happening?

First goal of psychology is to understanding anything is to give is a name or label. Description involves observing a behaviour and noting everything about it : what is happening? where it happens? to whom it happens? and under what

circumstances it seems to happen? For example, a teacher might notice that a young girl in his second-grade classroom is behaving oddly. She is not doing her homework, her grades (works) are slipping badly, and she seems to have very negative attitude toward school and study.

Through this description a girl we will get a picture of that girl's behaviour. What she is doing. The description of what she is doing gives a starting place for the next goal : Why is she doing it ? The goal of the description provides the observations of behaviour.

2. Explanation : Why is it happening ?

To find out why the girl student is doing all these things in school. The teacher of that school should ask the school counselor for counseling. Her parents might be asked to take her to a pediatrician to make sure that there is no any physical illness. In other words all are trying to explain girls behaviour. Finding explanation for behaviour is a important step in the process of forming theories of behaviour. A theory is a general explanation of set of observations of facts. The goal of the explanation will helps to Psychologists to build the theory.

Through this explanation it seems that this girl student is having dyslexia. Dyslexia means an inability to read at expected levels for a particular age and degree of intelligence. Then the next goal is prediction.

3. Prediction : When will happen again ?

Prediction means determining what will happen in the future. In the above example, the school counselor or psychologists would predict that this girl student will probably continue to do poorly in her schoolwork and a may never be able to reach her full learning potential.

Predicting behaviour is important; it enables psychologists to help people anticipate situations and learn how to express their feeling in manageable reasonable ways. But description and explanation are per requisites to predicting behaviour and helping people manage it.

4. Control : How can it be changed ?

Control, change, manage or the modification is fourth goal of psychology. But this goal has been some what controversial in the past. Some people hear the word

control and think brainwashing, but that is not the focus of this goal. The goal is to change a particular behaviour from an undesirable one to a desirable one. Such efforts also include attempts at improving the quality of life.

In the above example of the girl student, there are some learning strategies that can be used to help a child who has dyslexia (learning Disorder) improving reading skills (Aylward et al., 2003; Shaywitz, 1996). Counselors, Psychologists, Psychotherapists and educators would work together to search a training strategy which works best for this dyslexic girl.

In short the goals of Psychology are to describe, the basic components of behaviour to explain them, to predict them, and potentially to control or manage them. Not all psychologists or counselors will try to meet all four goals. In some cases, the main focus might be on description and prediction as it would be for a personality theorist who wants to know what people are like and what they might do in certain situations. They use description and prediction. Some psychologists are interested in description and explanations for observed behaviour. But experimental psychologists who design research to find explanations for observed behaviour. In this situation experimental Psychologists uses the description. Therapists, of course, would be more interested in control or modification. Although the other three goals would be important in getting to that goal.

These goals of Psychology have not really changed since the psychology's beginnings, but the methods of achieving them certainly have changed.

Questions for self-study - 2

M. C. Q.

1. What is happening? means …….. .
   (a) explanation *(b) prediction* *(c) description* *(d) control.*

2. Why is it happening? means …… .
   (a) prediction *(b) description* *(c) explanation* *(d) control.*

3. When will happen again? means …… .
   (a) description *(b) explanation* *(c) control* *(d) prediction.*

4. How can it be changed ? means …….. .
   (a) control *(b) prediction* *(c) explanation* *(d) description.*

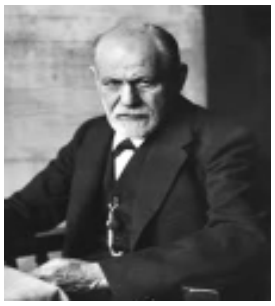
5. Therapist would be more interested in …… or modification.

(a) explanation (b) description (c) control (d) prediction.

1.2.3 Perspectives or approaches of Psychology :

Psychologists subscribe to many different perspectives or approaches in trying to analyze human behaviour. These perspectives have been developed over time across the history of psychology and serve to orient researchers providing them with a frame of reference. A specific perspective to the study of behaviour is called school of psychological thought. In psychology we study human behaviour and mental processes. All perspectives are trying to explain human behaviour and mental processes. But no one perspective perfect to explain the causes of behaviour and mental processes. Through these effects psychologists have developed various perspectives in psychology. The various perspectives of psychology as follows :

1. Psychodynamic perspective : Psychodynamic is the theory and therapy based on the work of Sigmund Freud.



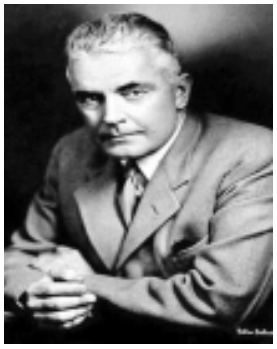
Dr.Sigmund Freud

Dr. Sigmund Freud (1856-1939) has developed the psychodynamic perspective. According to this perspective human behaviour is motivated by various internal energies and internal conflicts. Which are not easily accessible. We are not aware of all wishes, thoughts, feelings, conflicts and urges and yet they may directly influence our behaviour in various ways. These are called unconscious processes.

Unconscious mind concept has coined by Freud. Sexual dissatisfaction, unfulfilled motives, conflicts, wishes and destructive thoughts are suppressed in our unconscious mind. But these things are not visible.

Psychoanalytic theory assumes that maladjustment is a consequence of anxiety resulting from unresolved conflicts and forces of which a person may be unaware. Freud emphasized the idea that childhood experiences influence future adult behaviour and that sexual energy fuels day-to-day behaviour.

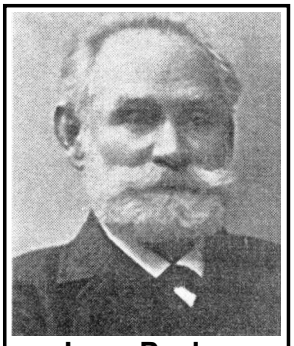
2. Behavioral Perspective : American Psychologist J. B Watson (1878-1958) challenged the functionalism as well as psychoanalysis, with his own science of behaviour, which is called behaviourism. Behaviourism is the science of behaviour



J. B. Watson

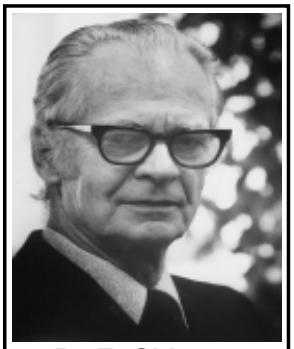
that focuses on observable behaviour only. Behavioural perspective rejects the mind or mental processes and emphasis only on observable and measurable behaviour. Thats why J. B. Watson is called the father of behaviourism. According to Watson for understanding the behaviour it is necessary to study the environment is which behaviour occurs. Our all behaviour depends on environment. Watson believed that if we control the environment, we can modify or change the behaviour and bring expected changes in behaviour.

Watson based a lot of his ideas on the work of Russian physiologist Ivan Pavlov. Pavlov, in his experimental work with dogs, had shown that a reflex such as salivation, which is normally produced by actually having food in one's mouth, could be caused to occurs in response to a totally new and formerly unrelated stimulus, such as sound of a bell. He would ring the bell, give the dogs food, and they would salivare. After several repetions, the dog would salivare to the bell before the food was presented a learned reflexive response. This process was called conditioning.



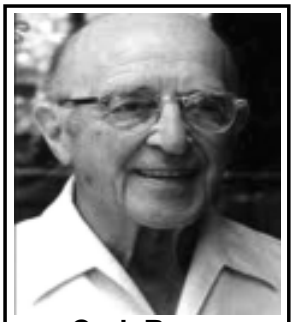
Ivan Pavlov

Watson believed that every human behaviour is learned. After Watson B. F. Skinner (1904-1994) systematically expended the behaviorism. He conducted served experiments on rat and Pigeons, and developed operant conditioning. In operant conditioning describes learning in which a voluntary response in strengthened or weakned, depending on its positive or negative consequences. For example a child who cries and rewarded by setting her his mothers attention will cry again in the future. Behavioral perspective focuses on how observable responses are learned, modified, and forgotten. It usually focuses on current behaviour and how it is acquired or modified rather than inherited characteristics or early childhood experiences. Behavioral perspective is still a major and important perspective in psychology today. It has also influenced the development of other perspectives, such as cognitive psychology.



B. F. Skinner

Abraham Maslow



Carl Roger

3. Humanistic perspective : This is new perspective in perspective in psychology which is know as third force in Psychology. The perspective is response to psychodynamic perspective and behavioral perspective. In the early to mid 1990s, psychodynamic perspective and behavioral perspective were dominant in psychology; Behaviorism was seen as a very 'mechanical' theory. In this theory stimulus goes in, response comes out, and what happens in the middle is of no interest. The environment determines behaviour and the individual has no control on it.

Humanistic perspectives focus is on people's ability to direct their own lives. Humanist held the view that people have "free will", the freedom to choose their own destiny. Abraham Maslow (1908-1970) and Carl Roger (1902-1987) are the founders of this perspective. They emphasized the human potential, the ability of each person to become the best person he or she could be. They believed that studying animals in laboratories could not lead a better understanding of this human potential for 'self actualization;' as Maslow called it – achieving one's full potential or actual self. In psychotherapy humanistic perspective is still very influential and popular.

4. Biopsychological perspective : Another new emerging perspective in psychology is biological perspective. Biological perspective is the study of the biological bases of behaviour and mental processes. In the biological perspective, human and animal behaviour is direct result of events in the body. Hormones, brain chemicals, tumors and diseases are some of the biological causes of behaviour and mental events. For example, due to biological cause schizophrenia occurs.

5. Cognitive perspective : This is a major force in Psychology which is emerged in 1960s. Cognitive psychology focuses on how people think, remember, store, and use information. Earlier Gestalt psychologists were supported to study of mental processes of learning. So, cognitive psychology was not a new perspective. The development of computers, the work of Piaget with children, Chomsky's analysis of Skinner's views of language, and discoveries in biological psychology stimulated

an interest in studying the processes of thought. Cognitive psychology focuses on memory, intelligence, perception, thought processes, problem solving, language and learning.

6. Sociocultural perspective : This perspective focuses on the relationship between social behaviour and culture. This is another modern perspective in psychology. Sociocultural perspective is a combination of social psychology and cultural psychology. Social psychology is the study of groups, social roles, social actions, and relationships. Cultural psychology is the study of cultural norms, values and expectations.

The sociocultural perspective reminds people that how they and other's behave is influenced not only by the particular culture in which they live. For example in a classic study Darley and Latane (1968) found that the presence of other people actually lessened the chances that a person in trouble would receive help. This term is called "diffusion of responsility.'' Diffusion of responsibility is a tendancy in which people feel that someone else is responsible for taking action when others are present. Can we apply this conclusion for other culture? sociocultural perspectives tries to answer this question.

7. Evolutionary Perspective : This perspective focuses on the biological bases for universal mental characteristics that all humans share. This perspective explains general mental strategies and traits. Such as why we lie, how attractiveness influences mate selection, why fear of snakes is so common, and why people like music and dancing among many others.

Charles Darwin (1809-1882) first suggested evolutionary theory. In this perspective, the mind is seen as a set of information-processing machines, designed by the same process of natural selection. Which allow human beings to solve the problems we faced in the early days of human evolution the problems of the early hunters and gatherers. Evolutionary psychologists would view the human behaviour of not eating bitter taste substances as an adapting behaviour that evolved as early humans came into contact with such bitter plants. Those who ate the bitter plants would die, while those who spit them out survived to pass their genes on to their offspring, who would pass the genes on to their offspring, and so on, until after a long period there is an entire population of humans that naturally avoid bitter-tasting substances.

Questions for Self-Study – 3

M. C. Q.

1. All perspectives of psychology are trying to ..... behaviour and mental processes.

   (a) explain *(b) extend* *(c) control* *(d) predict.*

2. Dr. Sigmund Freud developed ……. perspective.

   (a) behavioral *(c) humanistic*

   (b) psychodynamic *(d) social.*

3. Unconscious mind concept has coined by ……. .

   (a) Maslow *(b) Freud* *(c) Jung* *(d) Adler.*

4. …… is called the father of behaviourism.

   (a) Freud *(b) Maslow* *(c) Watson* *(d) Pavlov.*

5. After Watson …….. extended the behaviourism.

   (a) Pavlov *(b) Skinner* *(c) Rogers* *(d) Freud.*

6. 'Free Will' is related with ……. perspective.

   (a) Cognitive *(c) Humanistic*

   (b) Behavioural *(d) Sociocultural.*

7. …… Perspective was a major force in psychology which is emerged in 1960s.

   (a) Humanistic *(b) Evolutionary* *(c) Cognitive* *(d) Behaviouristic.*

8. ..... perspective is combination of social psychology and cultural psychology.

   (a) Humanistic *(b) Cognitive* *(c) Sociocultural* *(d) Evolutionary.*

9. Darley and Latane coined the concept ……. .

   (a) Free will *(c) unconscious mind*

   (b) Diffusion of responsibility *(d) Conscious mind.*

10. …….. first suggested evolutionary theory.

    (a) Maslow *(b) Darwin* *(c) Rogers* *(d) Watson.*

1.2.4 Psychology in Modern India

University of Calcutta introduced psychology first in modern India. Sir Brajendra Nath Seal drew a first syllabus for experimental psychology in 1905. In 1916 Dr. N. N. Sengupta started first psychology department in India. He was its first chairman. Professor Girindra Shekhar Bose succeeded Sengupta. He was closely associated with Dr. Sigmund Freud and founded the Indian psychiatric society in 1922, which started publishing its journal 'Samiksha' in 1947. Professor Girindra Shekhar Bose was awarded the first Ph.D in psychology for his work on repression. This department started an applied psychology wing in 1938. Patna and Mysore universities also started courses in psychology. Dr. M. V. Gopalswami who trained at London University with Spearman the English psychologist, headed the department at Mysore. H. P. Maitri started the Institute of psychological research and services at Patna University. Professor S. M. Mohsin provided leadership at Patna and a large number of psychologists were trained.

In India early focus of Psychological research was in the area of experimental psychology, psychoanalysis, and psychological testing. Many new departments were started in 1960s. During this time various applied areas of psychology received boost in institutes of management, teacher training, defense, child development and communication studies.

In 1925 Indian Psychological Association (IPA) was founded and launched Indian Journal of Psychology (IJP). Lumbini Park Mental Hospital (LPMH) was founded at Calcutta in 1940. Psychology wing of Defense Research was established in 1945, which became part of the Defense Science Organization of India (DSOI). In 1962 National Institute of Mental Health and Neurosciences (NIMHANS) was opened at Bangalore. Indian Academy of Applied Psychology (IAAP) was established in 1962. The major event in psychology was establishment of a hospital for mental diseases at Ranchi. In 1968 India Association of Clinical Psychologists (IACP) was founded and in 1989 and the National Academy of Psychology (NAOP) was founded as a new professional body.

Today, psychology has greatly expanded it's scope. Now psychology is doing not only study of cognitive processes, procedural justice, personality processes, motivational and emotional processes and human development. But also poverty, prejudice and discrimination, socialization and morality, healing, health and well being.

Question for Self-Study – 4

M. C. Q.

1. University of …….. introduced psychology first in modern India.
   (a) Patna (b) Mysore (c) Calcutta (d) Delhi.

2. ……. drew a first syllabus for experimental psychology in 1905.
   (a) H. P. Maitri
   (b) Dr. N. N. Sengupta
   (c) Sir Brajendra Nath Seal
   (d) Dr. M. V. Gopalswami.

3. ……. started first psychology department in India in 1916.
   (a) Dr. N. N,. Sengupta
   (b) Dr. M. V. Gopalswami
   (c) H. P. Maitri
   (d) Professor Girindra Shekhar Bose

4. Indian psychiatric society stated its Journal …….. in 1947.
   (a) Manus Samiksha
   (b) Samiksha
   (c) Mental health
   (d) Depression.

5. …….. was awarded the first Ph. D in psychology for his work on repression.
   (a) Dr. N. N. Sengupta
   (b) Dr. M. V. Gopalswami
   (c) Sir Brajendra Nath Seal
   (d) Professor Girindra Shekar Bose.

6. Lumbini Park Mental Hospital (LPMH) was founded at …….. in 1940.
   (a) Patna (b) Calcutta (c) Mysore (d) Bangalore.

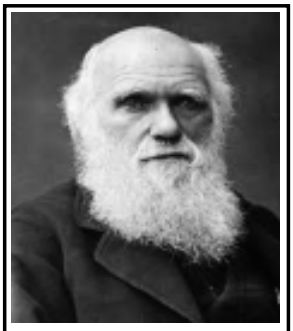
7. National Institute of Mental Health and Neuro science was opened at ……..... in 1962.
   (a) Patna (b) Bangalore (c) Calcutta (d) Mysore.

1.2.5 Study methods in psychology

Psychologist uses various study methods to study human behaviour and mental processes. These methods are naturalistic observation, laboratory observation, surveys, case studies, correlations and the experiments. Let us look more closely naturalistic observation and experiment method in detail.

(A) Naturalistic Observation :-

This type of observation is commonly used in the field of research. In this observation it is seen while the incident is happening. In naturalistic observation, the investigator observes some naturally occurring behaviour and does not intervene in the situation. Jane Goodall went to the area where chimpanzees lived and watched them, how they eat, play, mate, and sleep in natural situations.



Jane Goodall

Naturalistic observation is often applicable where experimentation is impossible. This method is often useful in psychology and can be applied with great ease in studies of public opinion, the effects of advertisement and other mass communication system on consumer preferences and many other social problems and even in determining the role of such factors as heredity and environment. With the help of this method we observe peoples in their workplaces, homes or on playgrounds. For example, if someone wanted to know how adolescents behave with members of the opposite sex in a social setting, that researcher might go to the mall or Superbazar.

Advantages :

1. Naturalistic observation allows researchers to get a realistic picture of how behaviour occurs.
2. Clarity in observation, facts are recorded as it happens naturally.
3. Conclusions of this method are more applicable to daily life.

Disadvantages

1. Observer bias in one of the disadvantage of this method. Observer bias is a tendency of observers to see what they expect to see. This bias happens when the observer doing the observing has a particular opinion about what he or she is going to see or expects to see. To reduce observer bias 'blind observer' way is useful. In blind observer researcher don't know what the research problem is and, therefore, have no preconceived notions about they should see. Instead of one observer to have more observers, so that the various observations can be compared.

2. Animals or peoples who know they are being watched will not behave normally any way, in a process called “observer effect”. So observer should remain hidden. Using one-way mirrors, we can avoid observer’s effect.

3. Each naturalistic situation is unique and unlike any other. Observations that are made at one situation way not hold true for another time even if the situation is same. Because observer have no control on the situation.

Though there are disadvantages of naturalistic observation. This is useful method to observe direct human behaviour. This method applicable where experiment is impossible.

(B) The Experiment :-

To determine the cause of our behaviour experimental method is helpful. In this method researcher manipulate the variable they think is causing some behaviour while holding all the other variables that might interfere with the experiments results constant and unchanging. In this way, if they get changes in behavior, they know that those changes must occurred due to the manipulated variable. Experiment is a key aspect of experimentation method. Experiment is an observation under controlled situation.

The Variables : There are three types of variables known as (1) Independent variable (IV), (2) Dependent variable (DV) and (3) Constant variable (CV). The name for the variable that is manipulated in any experiment is the independent variable. The response of the participants that is measured is known as dependent variable. Those variables which are kept constant in experiment is known as constant variable.

The Groups : Researchers want to find that the children who watch the violent cartoon are aggressive, but how would they know if their aggressive behaviour was caused by the cartoon or was just the natural aggressive level of those particular children or the result of particular time of day they were observed. Some variables interfere with other variables. Such type of variable should be controlled by researchers.

For this purpose researcher uses experimental group and control group. The name given to the group that gets the independent variable is the experimental group. This group receives experimental treatment where IV is manipulated. The other group does not get any type of treatment or IV manipulation is called controlled group. Violent cartoon watching group is experimental group and nonviolent cartoon

watching group is controlled group. If researchers were to find that both the group that watching the violent cartoon and the group that watches the nonviolent cartoon were equally aggressive, they would have to assume that the violent content didn't influence aggressive behaviour at all.

Importance of Randomization : Random assignment is a process of assigning subjects to the experimental or control groups randomly, so that each subject has an equal chance of being on either group. This a best way of controlling extraneous variables.

Experimental Hazards : The placebo effect and the experimenter effect.

There are some problems in any experiment. These problems way occur in people instead of animals. Because people one often influenced by their own thoughts about what is going in an experiment. For example in early stages of Alzheimer's disease new drug can improve memory of Alzheimer people. Does this drug really helps to improve memory? Researcher wanted to check this problem. So they would get a sample who are in the early stages of the Alzheimer, and divided them into two groups. One group has given drug and then test for improvement. Here test of memory was taken before and after the administration of the drug. This is a experimental group. Another group does not given the drug. This is a control group. In this experiment drug is independent variable and measure of memory improvement is the dependent variable.

Placebo effect is the phenomenon in which the expectations of the participants in a study can influence their behaviour. In medical research, the control group subject's has given harmless drug which is substitute for the real drug. Such as sugar pill or an injection of salt water. This substitute is called the placebo. It there is a placebo effect in experiment, the control group will show changes in the dependent variable even though the participants in that group received only a placebo.

Experimenter effect : Another way that someone's expectations about the out came of the experiment can influence the results. Experimental effect in the tendency of the experimenter's expectations for a study to unintentionally influence the results of the study. This effect happens in experiment. When experimenter is giving some clues about the responses of the subject in experiment. Body language, tone of voice or even eye contact of the experimenter can affect on subject's responses. This type of the behaviour of the experimenter causes to change the subject's responses in experiment is called experimenter effect.

Single blind and double blind studies : To control placebo effect and experimenter effect various ways are used in experiment. First way is single blind study. In this study subjects don't know whether they are in the experimental group or in the control group. In this situation subjects are blind to the treatment they receive.

For long time single blind study was used in psychology. But Robert Rosenthal and Lenone Jacobson (1968) did research on students. In this research they found that, when teachers were told some students had a high potential for success and others a low potential, the students showed significant gains or decreases in their performance on standardized tests depending on which potential they were supported to have. Students have been selected randomly and randomly assigned to one of the two groups high and low. Their performances on the test were affected by the attitudes of the teachers concerning their potential. This study and similar studies after it highlighted the need to have the experimenter be 'blind' as well as the participants in research. So in a 'double-blind study, neither the participants nor the person or persons measuring the dependent variable know who got what.

Merits of the experiment :-

1. This is the most scientific and accurate method and it meets all the criteria of the scientific method.
2. Experimenter controls the experimental situation due to that we will get objective information.
3. Repetition which allows to do experiment again and again to verity the conclusions.
4. Possible to establish cause and effect relationship between variables.
5. Clarity and objectivity in conclusions.

Demerits of the experiment :-

1. It is not possible to control all the factors of experiment.
2. Sometimes conducting an experiment is dangerous on human being e. g. due to surgery on brain what affects on behaviour. There subject may get in dangerous situation.

3. Conclusions drawn under experimental situation are artificial. These conclusion we can't apply it to natural situation.

4. Some events such as, war, flood, bomb blast, revolution etc. can't studied through experiment.

5. Some times subject do not co-operate for experiment.

6. Some experiments are time and money consuming.

Questions for Self-study – 5

M. C. Q.

1. ……. Went to the areas where chimpanzees lived and watched them.
   (a) Jane Goodall *(c) Rogers*
   (b) John Watson *(d) Freud.*

2. …… observation is often applicable where experimentation is impossible.
   (a) Systematic *(b) Naturalistic* *(c) Experimental* *(d) Interview.*

3. Observer ……. Is one of the disadvantages of observation method.
   (a) fault *(b) bias* *(c) error* *(d) control.*

4. Each naturalistic situation is …… and unlike other.
   (a) equal *(b) unique* *(c) united* *(d) divided.*

5. The name for the variable that is manipulated in any experiment is the …….. variable.
   (a) dependent *(b) independent* *(c) constant* *(d) neutral.*

6. ……. group receives experimental treatment.
   (a) Controlled *(c) Experimental*
   (b) Non experimental *(d) Survey.*

7. For long time …….. blind study was used in psychology.
   (a) double *(b) single* *(c) neutral* *(d) blank.*

1.3 Key Words and Meanings

- **Psychology** : Scientific study of behaviour and mental processes.
- **Behaviour** : Includes anything a person or animal does that can be observed in some way.
- **Mental Processes** : Refers to all the internal, covert activity of our minds, such as thinking, feeling, learning, and remembering.
- **Theory** : Is a general explanation of a set of observations of facts.
- **Dyslexia** : An inability to read at expected levels for a particular age and degree of intelligence.
- **Prediction** : Determining what will happen in the future.
- **Psychoanalysis** : The theory and therapy based on the work of Sigmund Frend.
- **Behaviourism** : The science of behaviour that focuses on observable behaviour only.
- **Biopsychological perspective** : Perspective that attributes human & animal behaviour to biological events occurring in the body, such as genetic influences, hormones, and the activity of the nervous system.
- **Cognitive perspective** : Modern perspective that focuses on memory, intelligence, perception, problem solving and learning.
- **Socio-cultural Perspective** : Perspective that focuses on the relationship between social behaviour and culture.
- **Evolutionary perspective** : Perspective that focuses on the biological bases of universal mental characteristics that all humans share.

- **Observer bias** : Tendency of observers to see what they expect to see.
- **Experiment** : Observation under controlled situation.
- **Independent variable** : In an experiment that is manipulated by experimenter.
- **Dependent variable** : Variable is an experiment that represents the measurable response or behaviour of the subjects in the experiment.
- **Experimental Group** : Subjects in an experiment who are subjected to the independent variable.
- **Control Group** : Subjects in an experiment who are not subjected to the independent variable and who may receive a placebo effect.
- **Placebo Effect** : The phenomenon in which the expectations of the participants in a study can influence their behaviour.
- **Experimental Effect** : Tendency of the experimenter's expectations for a study to unintentionally influence the results of the study.
- **Single blind study** : Study in which the subjects do not know if they are in the experimental or the control group.
- **Double blind study** : Study in which neither the experimenter nor the subjects knows if the subjects are in the experimental or control group.

1.4 Summary

Psychology is the scientific study of behaviour and mental processes. Description, explanation, prediction and control of behaviour are the goals of psychology.

Psychodynamic, behavioural, humanistic, cognitive, biopsychological, socio cultural and evolutionary perspectives explain the human behaviour.

University of Calcutta introduced psychology first in modern India. In 1916 Dr. N. N. Sengupta started first psychology department in India. Professor Girindra Shekhar Bose was awarded the first Ph. D. in psychology. Patna and Mysore Universities started courses in Psychology. Today, psychology has greatly expended its scope in all over India.

Psychologist uses various study methods to study human behaviour and mental processes. Naturalistic observation and experiment are the most useful methods in Psychology. Observation under controlled situation is called experiment.

1.5 Key to Self-study Questions

Questions for Self-study -1

1. (c) *2. (b)* *3. (d)* *4. (c)* *5. (a).*

Questions for Self-study -2

1. (c) *2. (c)* *3. (d)* *4. (a)* *5. (c).*

Questions for Self-study -3

1. (a) *2. (b)* *3. (b)* *4. (c)* *5. (b)*
6. (c) *7. (c).* *8. (c)* *9. (b)* *10. (b).*

Questions for Self-study -4

1. (c) *2. (c)* *3. (a)* *4. (b)* *5. (d)*
6. (a) *7. (b).*

Questions for Self-study -5

1. (a) *2. (b)* *3. (b)* *4. (b)* *5. (b)*
6. (c) *7. (b).*

1.6 Assignment for practice

(a) Short Notes :-

1. Definition of psychology (modern).

2. Goals of psychology.

3. Psychology in modern India.

4. Naturalistic observation.

(b) Answer the following questions.

1. Define psychology. Explain the goals of psychology.

2. Describe various perspectives of psychology.

3. Discuss the experiment.

4. Explain naturalistic observation.

1.7 Books for Reading.

1. Ciccarelli, S. K. and Meyer, G. E. (2008). *Psychology*, south Asian Edition, Indian subcontinent adaption, 2008, published by Dorling Kindersley (India) Pvt. Ltd. License of person Education Company Ltd.

2. Feldman, R. S. (2005). *Understanding Psychology*, 6th edition, New Delhi : Tata McGraw Hill Publishing Company Ltd.

3. Lefton, L. A (1991). *Psychology*, 4th ed, Allyn and Bacon.

4. Morgan, C. T.; King, R. A.; Weisz, J. R. and Schopler, J. (1986). *Introduction to Psychology*, 7th ed, McGraw-Hill Book Company.

5. *Psychology*, B. A. I, Published by Shivaji University, Kolhapur as a SIM Book.

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Semester - I : Unit - 2

Biological Bases of Behaviour

2.0 Objectives

2.1 Introduction

2.2 Subject Content

2.2.1 The Neuron

2.2.2 The Synapse

2.2.3 Neurotransmitters

2.2.4 The Central Nervous System (CNS)

2.2.5 The Peripheral and Autonomic Nervous System

2.2.6 Endocrine Glands

2.3 Key words and meanings

2.4 Summary

2.5 Key to self-study questions

2.6 Assignment for practice

2.7 Books for Reading

2.0 Objectives

This chapter aims to help students to understand –

- What are the structures and functions of neurons?
- How the internal communications within the body take place?
- How different parts of nervous system control our behavior?

- How the different parts of brain relates to our behavior, emotions and cognitions?

- In what way the neurotransmitters and hormones affect our behavior, emotions and mental processes?

2.1 Introduction

We are always curious about how the brain function? What cause us to behave, feel and think the way we think?

We interact with our environment through the help of specialized sense organs and the brain tissues. The presence of any stimulus (physical energy of the object) around us leads to the stimulation of our sense organs. After the physical energy received by the sense organ, it is converted into neural energy through the process of transduction. This neural energy is carried to the brain through neural paths. The brain interprets the received information and decides the specific response which is call 'behavior'. The brain sends orders to the specific organ or muscle for action. Responding to the stimulus involves the 'receptor-effector mechanisms'. Thus, behavior can be considered as a response to environmental stimuli. The involvement of 'receptor-effector mechanisms' in producing behavior is called 'biological bases of behavior'. For example, if we have blinks our eyes the signal should be created in the brain.

The brain and specialized brain tissues have evolved through the million years which enable us to perform several complex behaviors such as driving a car, solving a puzzle, painting, writing, etc. Our biological structure plays an important role in deciding our behavior. This has been evident from the cases of people whose brain cells are destroyed due to accident, illnesses or drugs.

This unit provides the information to the students about different parts of neurons and their functions, the process of carrying information from neuron to neuron, structure of nervous system and their role in helping us to adjust to our environment. Further, this unit will help the students to understand how the parts of brain, neurotransmitters and hormones affect our behavior, emotions and cognitive processes.

2.2 Subject Content

2.2.1 The Neuron

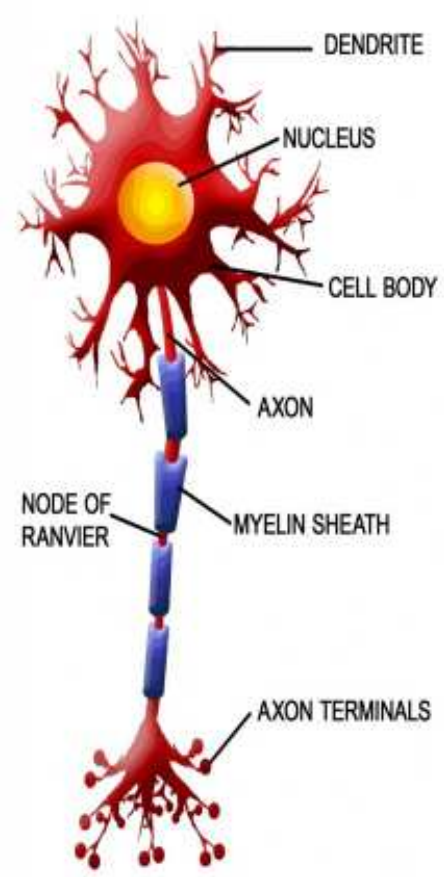
Nervous system is an extensive network of specialized cells that carries information to and from brain and spinal cord to all parts of the body. In other words, nervous system includes the nerves that carry information about the environmental activity to the brain and spinal cord and it also involves nerves that carry orders from brain and spinal cord to various muscles and glands. This structure and functioning of nervous system in relation to our behavior and learning is studied in one of the branch of life sciences known as 'neuroscience'. Since the nervous system is a complex structure, its functioning can be better understood by understanding its building block. Ramon Y. Cajal, a doctor specialized in studying the slides on brain tissue, was first to theorized that nervous system is made up of individual cells.

Neurons are specialized cells in the body. They are specialized in transmitting the information from body parts to brain and vice versa. They have the ability to communicate with each other and transmit the information to long distances. They receive the information from the environment and relay the messages to muscles and glands. The messages travels through the neuron are electronic in nature. There are nearly 12 billion neurons in human nervous system. Neuron varies in there types, shapes, size, composition and function. A neuron that runs from the spinal cord down may be few feet long whereas neurons in the brain are microscopic. In mammals, more than 200 types of neuron were identified. They vary in their size and shape and depending on their location and function. It is estimated that there are more than 1 trillion (100 billion) neurons in our body.

Different types of neuron i.e. sensory neurons, motor neurons, interneuron, etc. have structure that is more or less similar. Neuron has three main parts: dendrites, cell body and axon.

Structure and Functions :-

1. The cell body : Sphere or a pyramid like structure of the neuron is called the 'cell body'. The cell body contains nucleus that incorporate the hereditary material that nourish the neuron and keep it alive. The hereditary material in the nucleus decides how the neuron will function. The cell body passes the message received from dendrites to axon. It also decides whether or not neuron should fire depending on the inputs from other neuron.



Source: http://www.interactive-biology.com/3247/the-neuron-external-structure

Figure 2.1 : Structure of neuron

2. The dendrites : The name dendrites mean 'branches'. The structure of dendrites is similar to the twisted branches of a tree. The dendrites receive signals (information/messages) from other neurons (as many as 10,000 neurons) and do the preliminary processing of these information or messages.

3. The axon : The word is derived from Greek word 'axle'. To the opposite side of dendrites a long, slim, tube like extension is called an 'axon'. The axon varies in their length. In adult human, length of axon may vary from four-thousandths of an inch to 3 feet. They end in small bulges or branches called 'terminal buttons' or 'axon terminals', which sends the message received by the dendrites to other neurons, muscles and glands.

The protective fatty layer around the axon is called 'myelin sheath'. Myelin sheath of the neuron in central nervous system (CNS) is made up of a special form of glial cells called schwann cell. Functions of myelin sheath includes (i) insulating the neuron, (ii) protecting axon of neuron from damage, (iii) increasing the speed of the transmitting messages and (iv) preventing signals in adjacent cells from the interfering with each others. Neural impulse jumps between the myelin sheath sections where axon is available at the nodes which increase the traveling speed on nerve impulses. The disease called 'multiple sclerosis' damages the myelin sheath which leads to loss of sensation, weakness, paralysis, and lack of coordination or vision problems.

In peripheral nervous system, bundles of myelin coated axons travel together in cable are called 'nerves'. There are 43 pairs of peripheral nerves in human; one nerve in each pair is on the left side whereas other is on right side of the body. Most of the nerves either enter or leaves the spinal cord. But 12 pairs of nerves in the head, called the 'cranial nerves' are directly connected to the brain.

Glial Cell :-

Glial cells are other types of specialized cells in the brain. The word glial is derived from Greek work which means glue. However, their function is more than just glue. Functioning of glial cell is important for the effective functioning of neurons. Glial cells decide which neural connections will get stronger or weaker in long run. Thus, they play vital role in learning and formation of memories.

Other functions of 'glial cell' are as follows -

- To hold the neuron to its place
- To provide nutrition to the neurons
- To insulate neurons
- To protect the brain from toxic agents
- To help the neuron to repair their damage
- To remove cellular debris when neuron dies
- To communicate chemically with each other and with neurons

NEW RESEARCH

For the years it was believed that damage or injuries to neurons are irreversible. However, recent research on animals has generated some hope regarding the possibility of regenerating the neuron. The research by Canadian neuroscientist showed that the immature brain cells of mice can give rebirth to new neurons which have potential to divide and multiply. This process is called 'neurogenesis'. Stem-cell research has revealed that physical exercise, effortful mental activities and stimulating environment can promote the production and survival of new cells; whereas aging and stress are the factors that inhibit the production of new cells. Further, addiction to nicotine can kill these new cells. Stem cells from adults are difficult to survive compared to embryonic stem cells. Embryonic stem cells are more useful as they can differentiate in any type of cells i.e. from neuron to kidney cells. Scientists have been able to reprogram the skin cells to become stem cells. These stem cells are called 'induced pluripotent stem (IPS)'. Like embryonic stem cells, IPS cells are also capable of giving rise to all types of cells. However, further research is needed to study their effectiveness. One comparative study have shown that embryonic stem cells made more than 1000 times more desired cells than did the IPS cells. Researchers in the area of stem cells hope that transplanted stem cells will help the people to recover from various disease of brain (such as Parkinson's disease) and damage to spinal cord and other organs of the body.

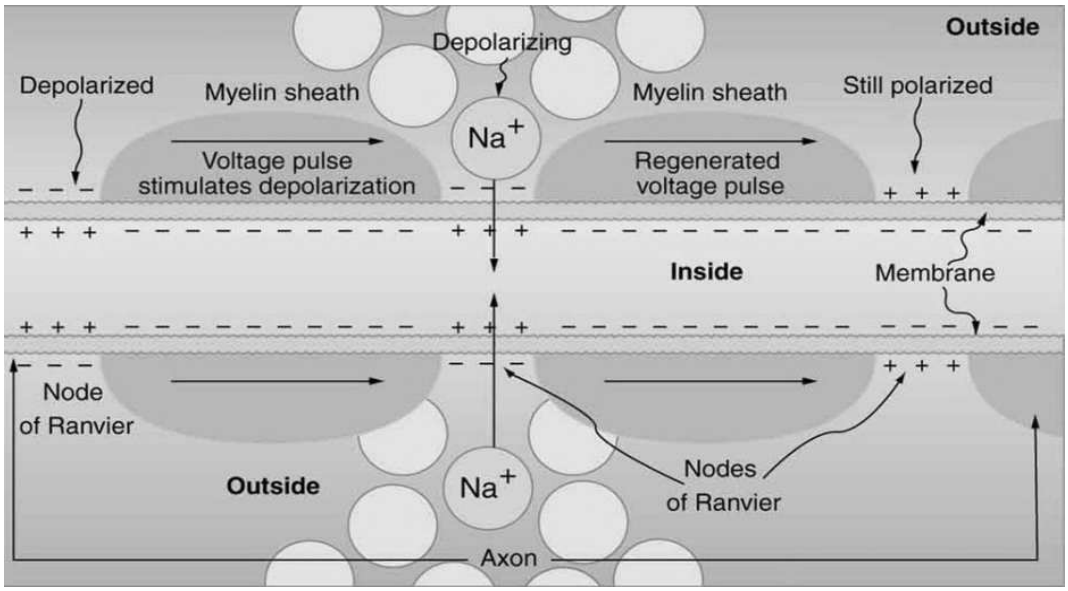
Other side of this condition is that researchers in this field are facing resistance from antiabortion activists.

The Nerve Impulse

Transmission of message from neuron to other neurons, muscles and glands is called 'nerve impulse'. Generally, nerve impulse travels in one direction as if we are travelling on one-way street. The route of nerve impulse begins with the dendrite, the cell body, the axon through the synapse to the dendrites of adjacent neurons.

Neurons follows 'all-or-none principle' while working, that is, either they fire or they don't. There is no in-between stage. Like a tube which is either 'on' or 'off' it can't be in the mid-situation. Once the voltage is reached at certain threshold neurons will fire and if it not reaches to this level they will not fire. At any given moment a single neuron may receive thousands of inhibitory or excitatory messages from other neurons.

At any given moment what the neuron will do depends on the average effect of all messages received from other neurons. And whether or not the message will reach to the final destination depends on types of neuron are firing, their numbers and their locations rather than depend to how strongly the individual neurons are firing. Like pulling the trigger hard does not make the bullet travel faster.



Source: http://cnx.org/content/m42352/latest/Figure_21_07_05a.jpg

Figure 2.2 : Nerve Impulse

In a resting state i.e. when neuron is not firing, it has negative electrical charge of about -70 millivolts (1 millivolt = $1/_{1,000}$ volt). This negative charge is caused by the presence of more negatively charged ions (an atom that is negatively charged) in semiliquid solution of the inside of the cell and positively charged sodium ions outside the cell. The positively charged sodium ions are too big to enter the cell membrane and the negatively charged ions are too big to get outside because the cell membrane openings are too small. Thus, the inside of the neuron is negatively charged when it is at rest. However, as the opposite attracts each others, the sodium ion will cluster around the cell membrane. When the neuron is resting it is called 'resting potential'.

When the neuron gets stimulated by the other neuron i.e. the dendrite of the neuron receives the message, the cell membrane open up special gets one after the other. Due to which positively charged sodium ion enter inside the neuron in at rate

as high as 100 million ion per second and negatively charged ions get outside. Thus, the inside of the neuron become positive and outside of neuron is negatively charged. This reversal of electrical charge is known as 'action potential' which intern cause electrical current or impulse. After the impulse has passed through particular section of the axon, positive ions are passed through this section, its charge returns to negative, while action potential continues to travel along the axon.

After the action potential a neuron doesn't fire immediately as the cell membrane of that region doesn't allow the positive ions to enter inside for a few milliseconds. However, if the neuron has to fire immediately it requires stronger stimulation than when the neuron had reached its normal resting state.

New Research

In the last decade, neuroscientists have discovered new type of neuron known 'mirror neuron'. These types of neuron are fired when person enacts a particular action and even when they observe another person carrying out same action. New research suggested that mirror neuron may help in explaining our capacity to understand others intentions (predicting what they will do). Few scientists have suggested that root of empathy and language development lies in mirror neuron.

Neuron differs in terms of the speed of nerve impulse travelling and the frequency with which it fires. The speed of travel of nerve impulse along an axon is depends on the size of axon and the thickness of myelin sheath. The travelling speed of impulse for the axon with small diameters is about 2 miles per hour and for longer and thicker axon the average speed can be more than 225 miles per hour. In unmyelinated (without myelin sheath) axon action potential in each point in gives rise to new action potential at the next point. But in myelinated action potential jumps from one nod to another due to which the nerve impulse travels faster. Nerve impulse in the babies travels slowly than older children and adults because myelin sheaths on their axons are not yet fully developed. Some neurons are capable of firing as many times as 1000 times per seconds.

2.2.2 The Synapse

Neuron communicates with each other and with muscles and glands in

electrochemical language. However, they do not touch each other directly. The minuscule space between the axon terminal of one neuron and dendrites of another neuron is called ‘synaptic cleft’. The space involving the axon terminal of one neuron, cell body or dendrites of another neuron and synaptic cleft is called a ‘synapse’. The axon of a neuron may have thousands of terminals and single neuron can have synaptic connection with many other neurons. Thus, the communication link between neurons in the nervous system may run into the trillions or even the quadrillions.

For communication between the neurons it is important to send the nerve impulse across synaptic cleft. This is possible when transmitting neuron release the molecules of chemical substance known as ‘neurotransmitters’ from its synaptic vesicles (tiny sacs in the tip of the axon terminals) into the synapse. The neurotransmitter molecules fit into receptor sites of receiving neuron dendrites as a key fits a lock. This can either have excitatory or inhibitory effect on receiving neuron depending on which receptor sites are activated. If the effect is excitatory then the receiving neuron will fire (pass the nerve impulse ahead); if the effect is inhibitory then the probability that receiving neuron will fire is minimum. Process of inhibition is important in because uncontrolled excitation in nervous system can lead to convulsions. Further, inhibitory process allows us to sleep and coordinate our movement.

Effects of neurotransmitters are of two types – excitatory and inhibitory. Excitatory effect of neurotransmitter makes it more likely that the receiving neuron will fire and an action potential continues to travel. The inhibitory effect results in prevention of decrease in the likelihood that the receiving neuron will fire. At any given time the dendrites of neuron receives thousands of excitatory and inhibitory messages. When excitatory messages are more than inhibitory messages the receiving neuron will fire, but when inhibitory messages are more than excitatory messages the receiving neuron will not fire; it will remain in resting state.

Effective communication between the neurons can occur only when the neurotransmitters are removed from synapse; because presence of neurotransmitter in synapse can cause constant stimulation or inhibition. This condition can be achieved by deactivation of the neurotransmitters by enzymes and process called ‘reuptake’ in which the terminal buttons reabsorb the neurotransmitters from synapse. Like the liquid is absorbed the sponge.

2.2.3 Neurotransmitters

Neurotransmitters are the chemical substance released by neuron from its synaptic vesicles. Neurotransmitters are chemical couriers that carry massage across the synapse. More than hundreds of chemical have been found to act as neurotransmitters. Neurotransmitters can be found in the brain, the spinal cord, the peripheral nerves and in certain glands. Depending on its level, location and the type of receptor it bonds with they can affect of our mood, memory and wellbeing. The same neurotransmitter can have excitatory and inhibitory effects depending on the area of the nervous system in which it is produced.

Hyper or hypo release of neurotransmitter can lead to harmful effects on our physical, emotional and psychological development. Still, it is difficult to establish the relationship between neurotransmitter abnormality and physical or behavioural abnormality because each neurotransmitter plays multiple roles and functions of different neurotransmitters often overlap. Sometime disorders can also results in neurotransmitter abnormalities. Even the food that we eat affects the secretion of neurotransmitters in our brain.

Brief description of different neurotransmitters is given below -

1. ***Serotonin :*** It regulates sleep, appetite, sensory perception, temperature regulation, pain suppression and mood. Abnormal production of serotonin is associated with impulsivity, depression, suicide, aggression and coping with stress.
2. ***Dopamine :*** It involves in voluntary movement, attention, learning, memory, emotion, pleasure or reward, and response to novelty. Underproduction of dopamine is responsible for the tremors and rigidity in persons with Parkinson's disease. Overproduction of dopamine causes symptoms of schizophrenia such as hallucination.
3. ***Acetylcholine (ACh) :*** It is found throughout the nervous system. It is involved in every move we do because it transmit messages related to skeletal muscles. It is associated with muscle action, cognitive functioning, memory and emotion. Diminish production of this neurotransmitter may leads to Alzheimer disease.
4. ***Norepinephrine :*** The release of norepinephine associated with increased heart rate and the slowing of intestinal activity during the stress, learning, memory, dreaming, waking from sleep and emotion.

Table 2.1: Summary of Neurotransmitters and their effects.

Sr. No.	Name of Neurotransmitter	Location	Effects	Functions	Associated disorders
1.	Serotonin	Brain, spinal cord, Gut	Inhibitory	• sleep, appetite, sensory perception, temperature regulation, pain suppression and mood	Anxiety, mood disorder, insomnia, Autism.
2.	Dopamine	Brain (Hypothalamus)	Inhibitory or excitatory	• Pleasure and reward, voluntary movement, attention, learning, memory	Parkinson, Symptoms of Schizophrenia (Hallucination), Depression, Drug Addictions
3.	Acetylcholine (ACh)	Brain, spinal cord, Neuromuscular joints	Excitatory – in brain and ANS Inhibitory - eleswhere	• Movements of skeletal muscles • Cognitive functioning	Alzheimer
4.	Norepinephrine	Adrenal medulla	Excitatory and inhibitory	• increased heart rate and the slowing of intestinal activity during the stress • learning, memory, dreaming, waking from sleep & emotion.	Anxiety, depression
5.	GABA	Brain, spinal cord	Mainly inhibitory	• Eating, aggression, sleeping. • Reduction of anxiety &tension	Sleep and eating disorders
6.	Glutamate	Brain, spinal cord, PNS	Excitatory	• Memory and learning	Sclerosis
7.	Endorphin	Brain, spinal cord	Excitatory – in hypothalamus Inhibitory - eleswhere	• Pain suppression • Elevation of mood (pleasure)	Experience of pain reduction.

5. ***GABA (gamma-amino butyric acid)*** : It is an inhibitory neurotransmitter found in both the brain and spinal cord. It involves in varieties of behavior ranging from eating to aggression. Abnormal level of GABA can lead to sleep disorder, eating disorder and convulsion disorder such as epilepsy. The tranquilizer valium and alcohol are effective because they permit GABA to operate effectively.

6. ***Glutamate :*** It is an excitatory neurotransmitter in the brain. It is released by about 90% the brain neurons. It plays important role in memory. In Multiple sclerosis immune cell increase the secretion of glutamate.

7. ***Endorphins :*** It is a class of neurotransmitters that involved in pain reduction and elevation of mood. The exertion and the pain involved in long run may stimulate the production of endorphins.

The Nervous System

Our nervous system is made up of billions of neurons which are interconnected and specialized in transmitting the messages. Each neuron can be connected to 80,000 other neurons and the total number of possible neural connections within the brain is around 10 quadrillion (1 followed by 16 zeros). Thus, the structures formed by neurons are complicated.

The functions of nervous system are to gather and process the information, produce the response to stimuli, and coordinate the working of different cells. We are able to do complex activities such as dancing, driving, writing, etc. only because of our nervous system. In human, nervous system has been divided into two main parts, namely the central nervous system and peripheral nervous system.

2.2.4 The Central Nervous System (CNS)

The central nervous system (CNS) consists of the brain and the spinal cord. It receives processes, interprets and stores sensory information such as touches, smells, sounds, tastes, and so forth. It also sends out the messages to muscles, glands, and internal organs.

(a] Brain

Brain is a major part of the CNS; it is most complex and delicate structure of human body. It controls and regulates all parts of our body. It helps in coordinating

various activities we do in our day to day life. Brain helps is various simple activities such walking, talking, etc. to various complex activity such as thinking, planning decision making, etc.

Brain is basically divided into three parts –

1) The brain stem and cerebellum
2) The limbic system
3) The cortex

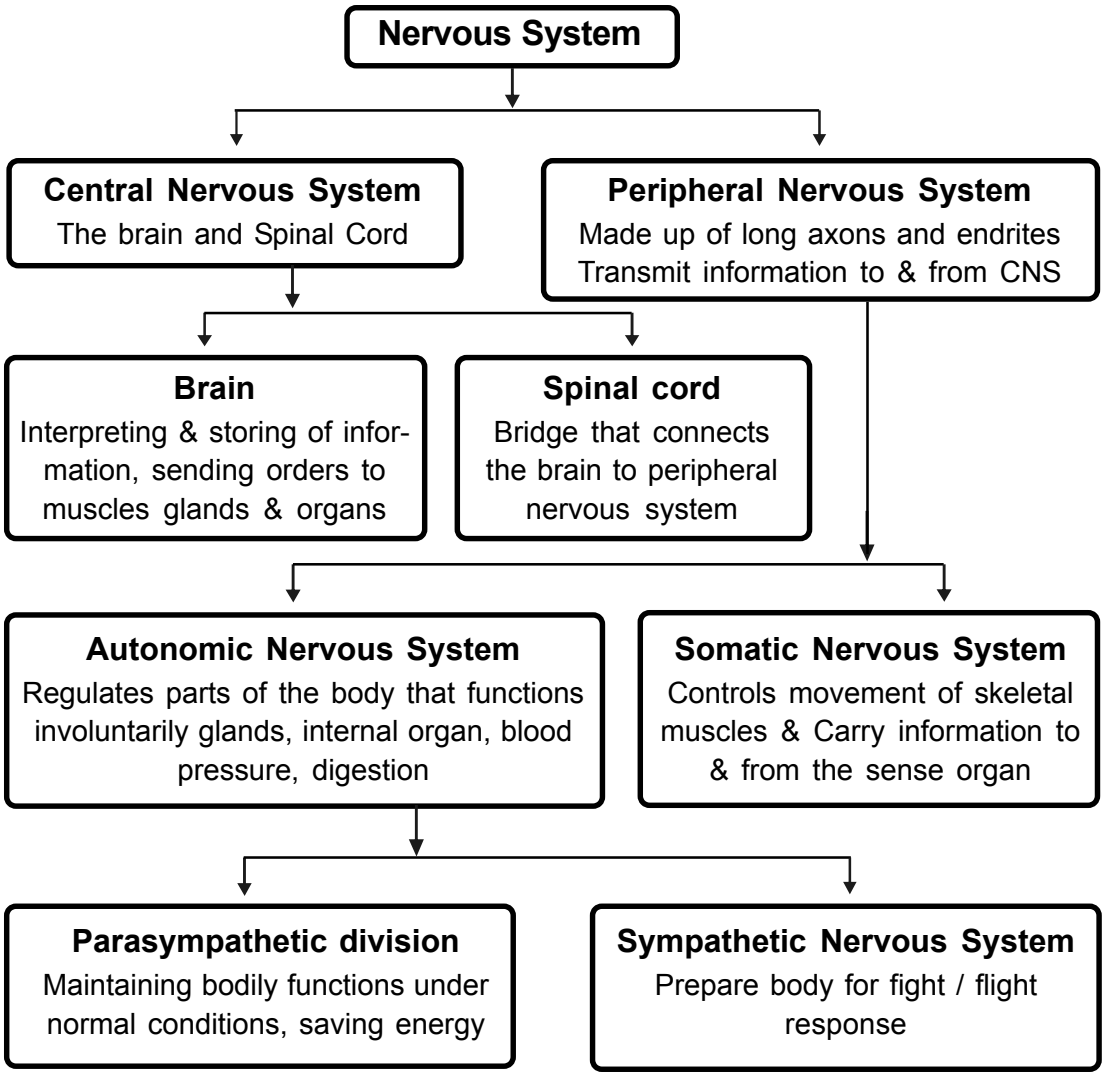


Figure 2.3 : Structure of Human Nervous System

1. The Brain Stem and Cerebellum

The major role of the brain stem is to regulate various processes needed for our survival e.g. breathing, palpitation, heartbeats, waking, sleep, etc. The brain stem is further divided into three substructures –

(i) Medulla Oblongata : it is a part of the brain in which nerves coming from different parts of brain come and cross each other. This part of the brain stem is a bridge between the spinal cord and the brain. It is two inches long structure which is located at the top of the spinal cord. It regulates functions such as breathing, swallowing, heartbeats, etc. which are essential for our survival as human being.

(ii) Pons : Pons means bridge. This spongy and soft substructure is located above medulla oblongata. It plays major role in sleep, dreaming, coordinating in motor activities and activities of right and left part of the brain.

(iii) The Reticular formation : Clump of nerve cells or fibers. Neurons in this region are responsible for helping the person to decide which stimuli to be attended or ignored, for e.g. stimulus in environment such as rubbing of cloths, noise of vehicles, etc. to take immediate actions when necessary. Damage to this part of brain can lead to ADHD in children and adults.

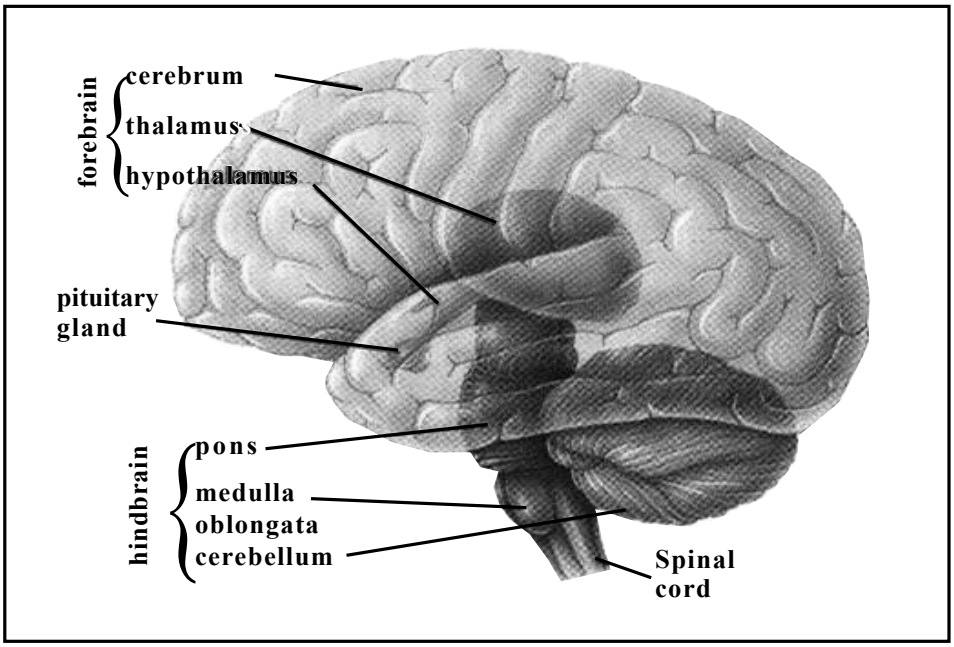


Figure 2.4 : The structure of human brain.

(iv) Cerebellum : Cerebellum is the word borrowed from Latin word which means *little.* It is situated at base of skull and looks like a small brain. It helps in various voluntary and involuntary movements of our body. It coordinates voluntary functions like walking, diving, writing, etc. Human learnt reflexes are also present in cerebellum. The damage to this area of brain stem can lead to serious disease called 'spinocerebellar degeneration' in which person is unable to take the spoon to its mouth which is very crucial for one's survival.

2. Structure under the Cortex

The word limbic means marginal. This structure is located in inner margin of upper brain. It is involved in learning, memory, motivation and emotions. Studies have shown that damage to limbic system can leads to irregular memories, hallucinations, epileptic syndrome, etc. Limbic system involves thalamus, hypothalamus, hippocampus, and amygdala.

i) Thalamus : Thalamus plays important role in proper functioning of sensory information. It is the relay station where the information coming from different senses organs such as eyes, nose, ears, etc. is first interpreted before it is send to proper cortex. The damage to this region can cause loss of total or partial sensations.

ii) Hypothalamus : It is very mall but extremely powerful region. It is located just below the thalamus. It is divided into two parts posterior and anterior portion. Posterior portion helps in regulation of sympathetic nervous system and anterior helps in regulation of parasympathetic nervous system. It is also helps in maintaining bodies 'homeostasis' (bodies equilibrium). It regulates our basic needs such as hunger, thirst, sleep, sex, emotion like satisfaction, anger, pleasure, resentment, guilt, etc. Hypothalamus also controls the pituitary gland, master gland that controls all other glands. So the ultimate regulation of hormones is controlled by hypothalamus.

iii) Hippocampus : Hippocampus is the Greek word which means 'seahorse'. It is located within the temporal lobe of each hemisphere. It plays vital role in forming the long term memories. The electrical stimulation of this part can produce memory or dreamlike experience. Researchers have shown that the right paraheippocampal gryus, located along the side of right hippocampus, is more active when a person is planning a travel root. Thus, people with damage to hippocampus forget the root to their home, where they kept the keys, etc.

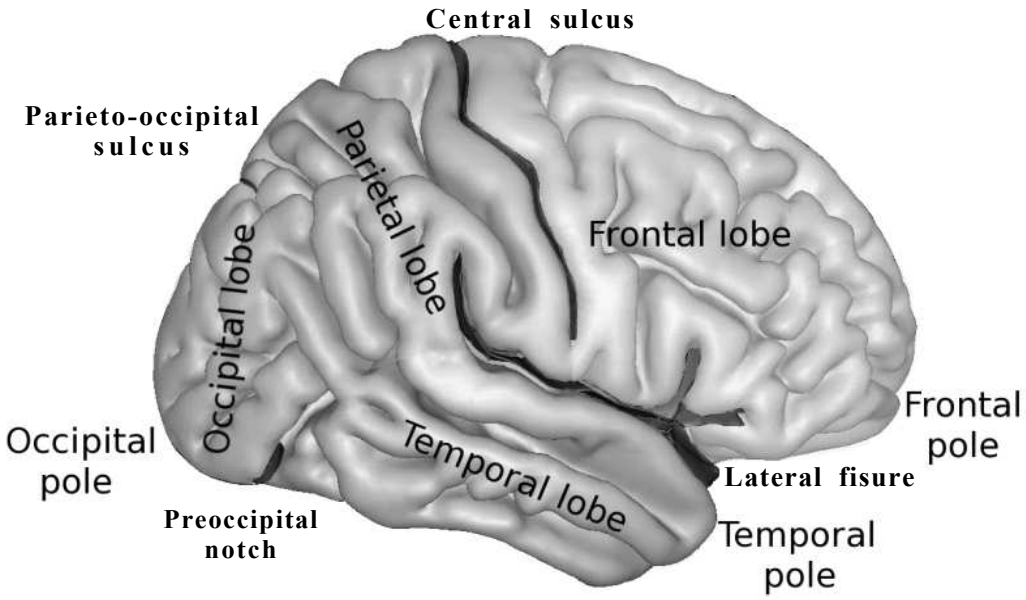
iv) Amygdala : It is almond like structure located near hippocampus. This region is responsible for feared responses and memory of fear. The damage to this region can lead to the 'Kluver-Bucy syndrome' in which animals and humans does not experience fear or fail to give fear responses in presence of fearful stimuli such as snack, fats car, etc.

Cerebrum

This region is the largest and most prominent part of the brain. It represents upper most layer of the brain. This region contains center that regulates higher cognitive and emotional functioning. Cerebrum helps us in organizing actions, creating images, symbols, association, memories and fantasies.

Cortex

This part of the brain is located just below the skull. It is the upper most part of cerebrum. This one tenth inch thick layer of the brain is made up of tight bunches of neuron's axon and bundles of neural nets. It appears to be grayish pink because tightly pack neural bodies are gray and small blood vessels appear pink. It is very



Source : http://upload.wikimedia.org/wikipedia/commons/4/46/LobesCaptsLateral.png

Figure 2.5 : Cortical lobes

much visible as it is made up wrinkles. The wrinkle of cortex allows much of a larger area of cortical cells to exist in the small space inside the skull. As we grow the brain increase is size and complexity as number of wrinkles increases. This increase in wrinkles is called 'corticalization' which is also considered as real measure of intelligence.

Lobes and their specialties –

It is divided into two halves i.e. right and left hemisphere, each controls the opposite side of the body. The right hemisphere controls the left side of the body and the left hemisphere controls right side of the body. These two hemispheres are interconnected with each other with 'corpus callosum', a bundle of large many sensory and motor fibers. Corpus callosum coordinates between two hemispheres. By looking at its deep wrinkles at its surface; each hemisphere is divided into four sections called 'lobes' each play different functions. They are called 'crotical lobes'.

Frontal lobe

- It is located in front of fissure of Rolando (central fissure) and above fissure of sylvius.

Functions –

- It involves in sustaining and functioning of higher level of cognitive activities such as thinking, planning, decision making, etc.
- It initiates and controls various voluntary activities.
- It controls and inhibits autonomic and emotional responses such as fear, anxiety, etc.
- It also facilitates coordination of psychomotor activities.
- Damage to this area affects our personality and behavior adversely such as speech and intellectual impairment. People with the damage to this area get stuck while doing mental tasks.

Parietal lobe

- It is located in both the hemispheres behind the fissure of Rolando.

Functions –

- Coordinating between sensory and motor inputs
- Comprehending and coordinating the stimuli at tridimensional level.
- Interpreting the words and sounds
- Activities related to touch sensations
- Damage to this area can cause difficulties in reading, writing and in short term memory and a condition called 'tactile agnosia', characterized by inability to interpret the information received from touch sensation.
- Due to the damage to the parietal lobe in right hemisphere person will lose the ability to be aware of the functioning of the left side of body.

Temporal lobe

- It is located below the fissure of sylvius lying just inside the two temples.

Functions –

- Auditory sensations
- Processing of auditory sensations such as sounds, words, etc.
- Shortage of verbal and visual memory
- Control of tactile and olfactory sensations which helps us in recognizing the taste of different foods
- Retrieving the needed information from memory
- Damage to this region of the brain results in 'auditory agnoria' – inability to recognize or interpret the meaning of sounds
- Damage to the 'Wernicke's area' of temporal lobe in left hemisphere can lead to difficulties speech and comprehending the written language.

Occipital lobe

- The term occipital refers to rear part of the brain.
- It is located at rear and bottom of each cerebral hemisphere.

Functions –

- This lobe contains primary visual cortex which processes the visual information received from eyes.
- The visual association area helps in identifying visual information and making sense of it.
- It contains memories for visual stimuli and color orientation.
- The damage to this part of the brain results in difficulties in differentiating objects from other object based on the visual inputs received from the eyes.
- Impairment to this region can lead to difficulties in color and shape perception.

In sum, each cortical lobe performance specialized function and damage to these areas either due to illness or accidents can cause dysfunctions in activities performed by the affected area.

b] Spinal cord

Spinal cord is a pencil size thick collection of bundles of neurons and supportive tissues running from the base of the brain down the center of the back. It is protected by a column of bones. Spinal cord acts as a bridge between the brain and the parts of the body below the neck. It connects the brain with rest of the body.

Spinal cord is capable of producing some simple form of behaviors on its own without taking help from the brain. For example, when our hand touches the hot thing we immediately withdraw our hand back even before the brain had a chance to register this information. Such behaviors are known as ‘spinal reflexes’. These reflexes are automatic and involuntary response to the incoming stimulus.

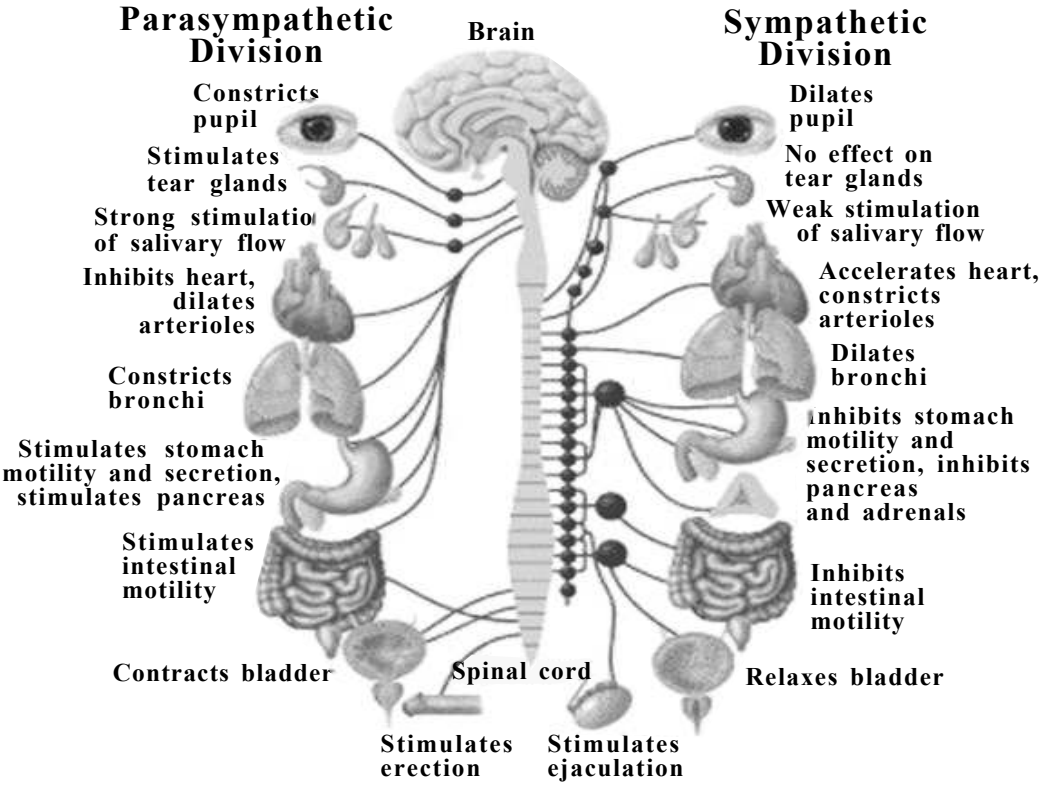
The neural circuits underlying many spinal reflexes are linked to neural pathways that run to and down the spinal cord, to and from the brain. Because of these connections, reflexes can sometimes be influenced by thoughts and emotions. E.g. erection in men, a spinal reflexe that can be inhibited by anxiety or distracting thought is initiated by erotic thoughts or voluntary delay of ejaculation in men.

Three types of neurons are involved in reflexes. Sensory neurons transmit the message from different parts of the body to the CNS; motor neurons carry the orders (messages) from nervous system to muscles and glands; and interneuron connects sensory neuron with motor neuron; carry the messages between these two neurons. Damage to spinal cord leads to 'quadriplegia', a condition in which the voluntary muscle movements below the neck is lost and 'paraplegia', a condition in which the voluntary muscle movements below the lower part of the body is lost.

2.2.5 The Peripheral and Autonomic Nervous System

The peripheral nervous system (PNS) branches out from the spinal cord and the brain and reach to the extremities of the body. It encompasses all parts of nervous system outside the brain and spinal cord. It is made up of neurons with long axon and the dendrites. It handles the inputs and outputs of CNS. In the PNS, sensory nerves carry messages from special receptors in the skin, muscles, and other internal and external sense organs to spinal cord, which send them to the brain. These nerves keep us in touch with the world around us and also with the internal activities of the body. Motor neurons carry orders from CNS to muscle, glands, and internal organs. They enable us to move, cause glands to contract and secrete hormones.

The PNS has two divisions, the somatic (bodily) nervous system and autonomic (self-governing) nervous system. Both of which connects the CNS with the sense organs, muscles, glands and other organs. The somatic nervous system is sometime called the skeletal nervous system. It consists of nerves that are connected to sensory receptors and also skeletal muscles that permit voluntary movements. When we are reading, writing, turning the lights on or off our somatic nervous system is active.



Source : http://samleahey.com/wp-content/uploads/2011/05/ANS-Anatomy.jpg

Figure 2.6 : Functioning of sympathetic and parasympathetic division of Autonomous Nervous System

The autonomic nervous system (ANS) regulates the involuntary movements of blood vessel, glands and internal organs such as the bladder, stomach, lungs, and heart. This division plays crucial role during emergency. The ANS is further divided into subsystems – the sympathetic nervous system and the parasympathetic nervous system. These two systems work together but in opposite direction. The sympathetic division of ANS prepares the body for action in stressful situation and 'flight or fight' response. Autonomic nervous system mobilizes bodies' energy. This system is stimulated under stressful situation and when this system is activated heart rate and blood pressure increases, breathing become faster and deeper, sweating, pupil dilation. An activation of parasympathetic division of ANS enables the body to conserve and store the energy by slowing the things down i.e. heart rate and blood pressure comes to normal condition, breathing become regular.

2.2.6 Endocrine Glands

There are many glands in our body. Glands are the organs of the body that secretes chemical which affect our behavior. They also influence the functioning of the nervous system. Glands are generally grouped into two types- duct glands and ductless glands. Glands that have ducts or tiny tubes that carry their chemical into bloodstream are called 'duct glands'. They are also known as 'exocrine'. Salivary gland, sweat gland, tear gland, etc. are the examples of duct glands.

Ductless glands are found in various parts of our body. These glands are called ductless glands because they do not have ducts or tube to carry their substance. The chemical secreted by ductless glands mix directly into bloodstream. Ductless glands are also known as 'endocrine glands'. The chemical secreted by these glands is called 'hormones'. Thus, hormones are chemicals that circulate through the blood and regulate the functioning and growth of the body. Endocrine glands are chemical messengers which carries messages to different parts of body. Although, the endocrine system is not part of the brain, it is closely linked to the hypothalamus. Other functions of hormones involve promoting bodily growth, helping in digestion, regulating metabolism, etc.

Characteristics of Endocrine Glands

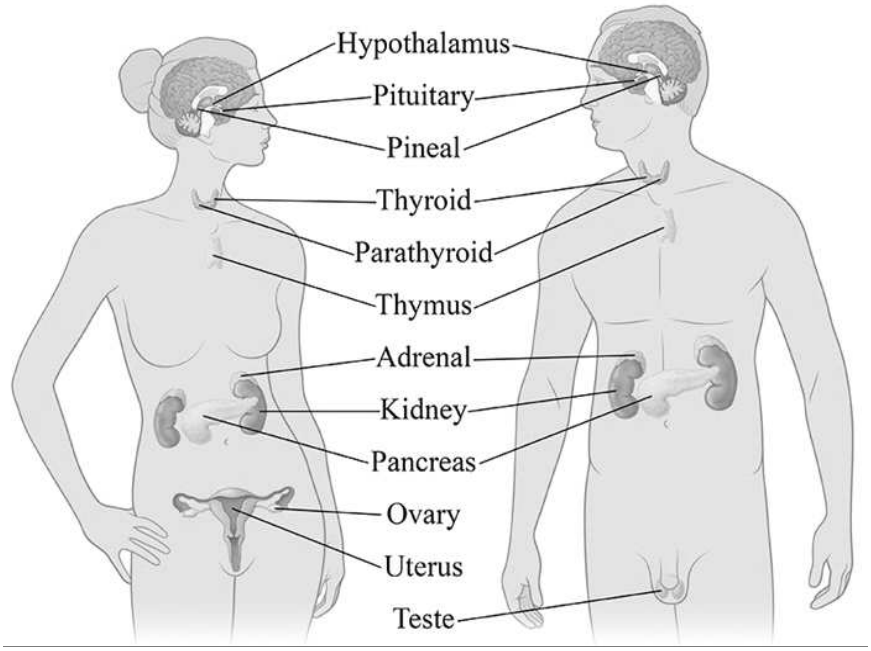
- Due to the absence of duct to carry their secretion, these glands are called 'ductless glands'.
- Chemical secreted by these glands in known as 'hormone' which directly mix into the bloodstream.
- Hormones are very specific in influencing their target organ.
- It helps in maintaining bodily homeostasis.
- Activities of endocrine glands are controlled by autonomous nervous system.
- Effect of hormones takes longer time to exert their effect that the effect of the ANS.
- Excess or too less secretion from these glands have adverse effect on our emotions and behavior.

Information about glands and their hormones with their function is presented below –

1. The Pituitary Gland :-

This gland is located in the brain just below the hypothalamus. Thus, the function of pituitary gland is regulated by the hypothalamus. The weight of this gland is approximately 57 grams. Hypothalamus controls all other endocrine glands through pituitary glands. The pituitary gland is also called 'master gland' because it controls the functioning of the rest of endocrine system. The functioning of this gland involves in controlling the level of water and salt in the body, controlling the growth of bones and muscles and regulating protein and carbohydrates. Growth hormone secreted by this gland plays important role in deciding the height of the person. Extremely short people and tall ones have pituitary gland abnormality.

Anterior part of this gland produces 6 hormones each have diverse actions. For example, the hormone known as 'somatotrophin' regulates physical growth through the development of cells and bones. Deficient secretion of this hormone can cause physical and sexual retardation. In adults, hypo secretion of this hormone can lead to 'impotence' in male and sexual coldness in females. Hyper secretion of somatotropin



Source: http://www.hormone.org/~/media/Hormone/Images/Endo%20101/RGB%20Image%20for%20Site.jpg?h=550&w=701

Figure 2.7 : Locations of Endocrine Glands

results in excessive physical growth. Person with this condition may have height more than 8 to 9 feet's. However, the life span of these people is less and they don't have children.

The posterior region of this gland secrets two hormones namely, 'antidiuretic' and 'oxytocin'. The antidiuretic hormone increase water retention in the kidney. The oxytocin is at the root of many life satisfactions and pleasure. The oxytocin also cause onset of labor and facilitates the nurturing of newborn offspring (the ejection of milk during the pregnancy). This hormone contributes to the development of human relationship through promoting attachment and trust.

2. The Pineal Gland :-

The pineal gland is about the size of a 'pea'. It is located deep within the brain. The hormone released by this gland is called 'melatonin'. Through this hormone pineal gland helps in regulating our daily biological rhythms and promotes sleep. Changes in temperature around us affect the secretion of melatonin; secretion of melatonin increases as the temperature increases and vice versa. Thus, we feel sleepy and relaxed when darkness spreads and we become active as sunrises and temperature increases. Melatonin also regulates the growth of body and reproductive function.

3. The Thyroid Gland :-

This gland is located in the lower portion of the neck. The hormone released by this gland is known as 'thyroxin'. Approximate weight of this gland is 20 to 40 grams. Thyroxin regulates metabolic rate and growth of our body. Too much or too less secretion of this hormone can cause behavioral abnormalities. In childhood hypo secretion of thyroxin can lead to 'cretinism', a condition characterized by physical and intellectual retardation. Under secretion of thyroxin can result in neurological, cardiovascular, renal and respiratory disorders. Hypo secretion of thyroxin in adults can leads to 'myxoedima', a clinical syndrome of hypothyroidism. This condition is characterized by overweight and sluggishness. Over secretion of thyroxin can leads to 'grave' disease which makes us more energetic, irritable and active. It can cause loss of weight, hypertension and overanxiety.

4. The Parathyroid Gland :-

This gland is located below the thyroid gland. Their size and shape is larger

than the thyroid gland. Approximate weight of this gland is 140 grams. This gland release 'parathormone' which regulates level of calcium and phosphate in the body. The damage to this part can result in neural disorder called 'tetany' characterized by fear of water, muscle and spasm. Person with this condition experience muscular spasm of hands, feet and jaw bones. Their bones become weak and they experience aches and pains.

5. Pancreas :-

This gland is located in middle part of the body. The hormones secreted by pancreas are 'insulin' and 'glucagon'. The secretion of insulin is important for maintaining the blood sugar level. Too less secretion of insulin can lead to disease called 'diabetes', whereas excess secretion of it can result in hypoglycemia, condition characterized by low blood sugar. Hypoglycemia can lead to overweight because person with this condition feel hungry all the time.

6. The Adrenal Gland :-

This gland is situated above each kidney. Each adrenal gland has two parts – adrenal cortex and adrenal medulla. All hormones secreted by the adrenal gland are called 'corticoids'. The adrenal medulla is an inner part of adrenal gland that secrets two hormones - adrenaline (epinephrine) and noradrenaline (norepinephrine). These hormones are involved in emotions and stress. They are also secreted under other conditions such as heat, cold, pain, injury, burn and physical exercise and in response to some drugs such as caffeine and nicotine. Under secretion of these hormones can result in Adison's disease, a syndrome characterized by fatigue, loss of appetite and sleep, anemia and darkening of skin, etc.

The adrenal cortex, an outer part of adrenal gland, produces three types of hormones i.e. aldosterone, cortisol and sex hormone. Production of aldosterone regulates balance of sodium and potassium in the blood. Cortisol is associated with increase blood sugar level, growth, metabolism, development, immune functioning and the body's response to stress.

Imbalance in these hormones results in –

- Imbalance in metabolism of carbohydrates and salt.
- Cushing syndrome – characterized by obesity, excessive growth of hair, diabetes and hypogonadism of gonads.

- Excessive androgen causes masculinization in adult women and excessive estrogens cause feminization e.g. enlargement of breast in adult men.
- Excessive secretion of sex hormones can lead to premature sexual development in children.

7. The Gonads :-

The gonads are the sex glands. Glands producing sex hormones in female is called 'ovaries' and in male it is called 'testes'. There are three main types of sex hormones occur in both male and female in different amount after puberty. 'Androgens' or 'testosterone' are important male sex hormones produced mainly by the testes but also by ovaries and adrenal glands. This hormone is associated with sexual maturity in male. Secretion of androgens leads to physical changes in males during puberty such as deepening of voice, facial and chest hairs. Androgen regulates bone growth and changes related to sex drive. Testosterone also influences sexual arousal in both sexes.

Oestrogens and progesterone are mainly produced in the ovaries but also in the testes and the adrenal glands. Oestrogen is associated with onset of menstrual cycle, development internal reproductive structure and emergence of and growth of secondary sex characteristic such as breast and pubic hairs. Progesterone contributes to the growth and maintenance of the uterine lining in preparation of fertilized egg and nourishing the embryo during the early stage of prenatal development.

Table 2.2 : Summary of endocrine glands, hormones and their effect.

Sr. No.	Name of the gland	Location	Hormone/s secreted	Their effect
1	Pituitary / master gland	in the brain just below the hypo-thalamus	***Anterior -*** somatotropin ***Posterior -*** antidiuretic, oxytocin	• Controls growth, repro-duction, lactation. • Regulates protein, car-bohydrates and fats for metabolism
2	Pineal	deep within the brain	Melatonin	• Regulates growth and reproduction. • Regulates biological rhythms and promotes sleep.

3	Thyroid	in the lower portion of the neck	Thyroxin	• Controls metabolism and growth. • Under and over secretion leads to 'cretinism', 'myxo-edima', loss of weight, hypertension and overanxiety.
4	Parathyroid	in the neck near thyroid glands	Parathomone	• Regulates level of calcium and phosphorous. • Abnormal secretion results in 'tetany' and weakening of bones
5	Adrenal	just above the kidney	***Adrenal cortex –*** aldosterone, cortisol & sex hormone ***Adrenal medulla –*** adrenaline, noradrenaline	• Regulates sex growth, body functions. • Imbalance leads to 'Adison's disease', Cushing syndrome
6	Gonads	***Male –***testes ***Female -*** ovaries	***Male –*** androgens, testosterone ***Female –*** oestrogen, progesterone	• Development of secondary sex characteristic and growth. • Regulation of menstrual cycle. • Maintenance of pregnancy
7	Pancreas	in a fold of the duodenum	Insulin, glucagon	• Regulates blood sugar level·Storage of glucose

In sum, the endocrine glands do influence our behavior. However, they do not function independently rather they are controlled by different parts of the brain.

2.3 Key words and meanings

- **Sensory Neuron:** Neurons that transmit the message from different parts of the body to the CNS.
- **Motor Neuron:** Neurons that carry the orders (messages) from nervous system to muscles and glands.

- **Interneuron :** Neurons that connects sensory neuron with motor neuron and carry the messages between these two neurons
- **Synaptic cleft :** The minuscule space between the axon terminal of one neuron and dendrites of another neuron.
- **Synapse :** The space involving the axon terminal of one neuron, cell body or dendrites of another neuron and synaptic cleft.
- **Peripheral Nervous System :** It includes all parts of nervous system outside the brain and spinal cord. It is made up of neurons with long axon and the dendrites.
- **Autonomous Nervous System :** The branch of the peripheral nervous system that regulates the involuntary movements of blood vessel, glands and internal organs such as the bladder, stomach, lungs, and heart.
- **Sympathetic Nervous System :** The division of the autonomous nervous system prepares the body for action in stressful situation and 'flight or fight' response and mobilizes bodies' energy.
- **Parasympathetic Nervous System :** The division of ANS enables the body to conserve and store the energy by slowing the things down i.e. heart rate and blood pressure comes to normal condition, breathing become regular.
- **Gland :** The organs of the body that secretes chemical which affect our behavior.
- **Duct Gland :** Glands that have ducts or tiny tubes that carry their chemical into bloodstream; also known as 'exocrine'.
- **Ductless Gland :** Glands that does not have ducts or tube to carry their substance and their substance mix directly into bloodstream. These glands are also known as 'endocrine glands'.
- **Hormones :** The chemical secreted by endocrine glands.
- **Neurotransmitters** : The chemical substance released by neuron from its synaptic vesicles. Neurotransmitters are chemical couriers that carry message across the synapse.

2.4 Summary

Our reaction to the environmental stimuli is decided by our nervous system which is made up of specialized cells called neuron. There are three different kinds of neurons. Sensory neuron receives the information from the environment and they send this information to the spinal cord and the brain; motor neuron carries the commands from brain to muscles, glands and different organs; whereas interneuron facilitates the communication between sensory and motor neuron. Neuron has three main structures viz., the cell body, the dendrites and the axon, each perform different functions. Glial cells are other type of specialized cells that hold the neuron to its place. They also help neuron function effectively by providing nutrition and by protecting them from toxic agents or by repairing their damage. Neurons follow all or none principle i.e. they fire or they don't fire.

Neurons get activated when positively charged sodium ion enters inside the neuron and negatively charged ions get outside. This phase is called action potential. When the inside of the neuron is negatively charged and outside is surrounded by positively charged ions neuron doesn't get fired. Thus, this state is called as 'resting potential'.

Neurons are not connected to each other directly. The minuscule space between the axon terminal of one neuron and dendrites of another neuron is called 'synaptic cleft'. The space involving the axon terminal of one neuron, cell body or dendrites of another neuron and synaptic cleft is called a 'synapse'. Neurons communicate with each other and with muscles and glands in electrochemical language. Neurotransmitters facilitate the communication between the neurons. Researchers have identified more than hundreds of chemical that act as neurotransmitters. Effect of neurotransmitters depending on its level, location and the type of receptor it bonds with.

Neurotransmitters mainly perform two functions – excitatory and inhibitory. When neurotransmitter leads to activation of the receiving neuron it is known as 'excitatory effect' and when it decrease the chance that neuron will fire it is called as 'inhibitory effect'. Nervous system is made up of billions of interconnected neurons. Nervous system gather and process the information, produce the response to stimuli, and coordinate the working of different cells. Nervous system is divided into two main parts, namely the central nervous system and peripheral nervous system.

The central nervous system is made up of the brain and the spinal cord. The peripheral nervous system has two divisions – somatic nervous system and autonomic nervous system. Somatic nervous system controls movement of skeletal muscles and carry information to and from the sense organ. The autonomic nervous system regulates parts of the body that functions involuntarily glands, internal organ, blood pressure, digestion. The autonomic nervous system is further divided into two parts – sympathetic and parasympathetic. Sympathetic division prepares the body for flight/fight response. Parasympathetic division maintains the bodily functions under normal condition.

Glands also have their effect on our emotions and behavior. Duct gland/exocrine such as salivary gland, sweat gland, tear gland have ducts or tiny tubes that carry their chemical into bloodstream. The secretions of endocrine/ductless glands mix directly into bloodstream. The pineal, pituitary, pancreas, etc. are the endocrine glands. The chemical secreted by these glands is called 'hormones'.

Questions for self-study

❒ **Select the write answer and fill in the blanks.**

1. ……. is the building block of nervous system.
   (a) glial cell (b) neuron (c) brain (d) spinal cord
2. *…….. receives the information from an environment.*
   (a) motor neuron (c) sensory neuron
   (b) interneuron (d) glial cell
3. …… contain the hereditary material that nourishes the neuron.
   (a) cell body (b) dendrites (c) axon (d) synapse
4. The protective fatty layer around the axon is called …… .
   (a) glial cell (c) axon terminals
   (b) cell body (d) myelin sheath
5. Neuron follows …… principle.
   (a) fire at the same time (c) pleasure
   (b) all-or-none (d) general

6. Over secretion of …….. can leads to symptoms of schizophrenia.
   (a) dopamine *(c) norepinephrine*
   (b) serotonin *(d) GABA*

7. Alzheimer disease is result of under secretion of ……. neurotransmitter.
   (a) dopamine *(c) GABA*
   (b) Acetylcholine *(d) Glutamate*

8. Secretion of …… neurotransmitter cause reduction of pain sensation.
   (a) Glutamate *(c) GABA*
   (b) Endorphin *(d) dopamine*

9. Damage to …… cause ADHD in children and adults.
   (a) Pons *(c) Reticular formation*
   (b) Cerebellum *(d) Thalamus*

10. Voluntary actions are controlled by ……..part of the brain.
   (a) Pons *(c) Reticular formation*
   (b) Cerebellum *(d) Thalamus*

11. Pituitary gland function under the control of …… .
   (a) Hippocampus *(c) Hypothalamus*
   (b) Thalamus *(d) Cerebellum*

12…….. is responsible for feared responses and memory of fear.
   (a) Thalamus *(b) Thalamus* *(c) Pons* *(d) Amygdala*

13. Left and right hemispheres are connected with each other by …… .
   (a) corpus callosum *(c) synapse*
   (b) cerebellum *(d) Reticular formation*

14. Thinking, planning, decision making, etc. are the functions of ……. lobe.
   (a) parietal *(c) frontal*
   (b) temporal *(d) occipital*

15. Wernicke area is located in …….. lobe.
(a) parietal (b) temporal (c) frontal (d) occipital

16. Visual cortex is located in …….. lobe.
(a) parietal (b) temporal (c) frontal (d) occipital

17. Reflects actions are controlled by …… .
(a) neuron (b) spinal cord (c) brain (d) hormones

18. Involuntary functions such as heart beats, breathing, etc. are controlled by ……. nervous system.
(a) central (c) sympathetic
(b) autonomous (d) parasympathetic

19. ……. nervous system prepares the body for action in stressful situation and 'flight or fight' response.
(a) central (b) autonomous (c) sympathetic (d) parasympathetic

20. Chemicals secreted by endocrine glands are known as …….. .
(a) neurotransmitters (c) nerve impulse
(b) hormones (d) exocrine

21. Somatotrophin hormone is secreted by …… gland.
(a) pancreas (b) adrenal (c) thyroid (d) pituitary

22. ……. is also called as 'master gland'.
(a) pituitary (b) pineal (c) pancreas (d) thyroid

23. The hormone released by pineal gland is …… .
(a) thyroxin (b) oxytocin (c) melatonin (d) insulin

24. Insulin is secreted by …… gland.
(a) pituitary (b) pineal (c) pancreas (d) thyroid

25. …….. is male sex hormone.
(a) adrenaline (c) testosterone
(b) progesterone (d) parathomone

2.5 Key to self-study questions

1. (a),	2. (c),	3. (a),	4. (d),	5. (b),
6. (a),	7. (b),	8. (b),	9. (c),	10. (b),
11. (c),	12. (d),	13. (a),	14. (c),	15. (b),
16. (d),	17. (b),	18. (d),	19. (c),	20. (d),
21. (d),	22. (a),	23. (c),	24. (c),	25. (c).

2.6 Assignment for practice

Q. 1 : Write Short Notes.

1. Neuron
2. Synapse
3. Neurotransmitters
4. Frontal lobe
5. Occipital lobe
6. Autonomic nervous system
7. Pituitary gland
8. The gonads

Q. 2 : Write the answers for following questions.

1. Describe the structure and function of neuron.
2. Explain the different types neurotransmitters and their effect on our behavior.
3. Discuss the role of endocrine system in affecting our behavior.
4. Describe the structure and function of central nervous system.

2.7 Books for Reading

1. Ceccarelli, S. K., & Meyer, G. E. (2008). *Psychology.* New Delhi: Dorling Kindersley (India) Pvt. Ltd.

2. Feldman, R. S. (2005). *Understanding Psychology* (6th Edition). New Delhi: Tata McGraw Hill Publishing Company Ltd.

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5. Morgan, C. T., King, R.A., Weiss, J.R., & Schopler, J. (2000). Introduction to Psychology (7th Edition). New Delhi: McGraw Hill Publishing Company Ltd.

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Semester - I : Unit - 3

Sensation and Perception

3.0 Objectives

3.1 Introduction

3.2 Subject Explanation

3.2.1 Sensation

(A) What is Sensation?

(B) Sensory Thresholds

3.2.2 Perception

(A) Definition of Perception

(B) Gestalt Principles of Perception

3.2.3 Factors Influencing Perception

3.2.4 Applications : Make a list of your experienced illusions

3.3 Key words and meanings

3.4 Summary

3.5 Key to self-study questions

3.6 Assignment for Practice

3.7 Books for Reading

3.0 Objectives

After studying this unit,

1. We can understand the meaning of sensation.
2. We can explain sensory thresholds.
3. We can explain the definition of perception.

4. We can understanding Gestalt principles of perception.
5. We can explain factors influencing perception.
6. We can understand how illusions takes place in our daily perception.

3.1 Introduction

All knowledge of the glories world is ultimately obtained through our sensory experience. We see the size and shape of trees, birds, buildings amd animals etc. We feel warmth and cold. We taste food. We smell odours. This shows how all knowledge and experience, in fact the entire life process begins with same particular sensation.

In this unit we will discuss sensation, perception, Gestalf Principles of perception, factors influencing perception and applications.

3.2 Subject Explanation

3.2.1 Sensation

Seeing picture, hearing song, touching flower etc. are different kinds of mental experiences that accompany an activity of the eyes, ears and skin. Which are the sense organs. The mental experiences connected with their activity are known as sensory experiences. Sensations are assumed to be perfectly to be simple and primitive physical processes. We can say that sensation is a primary and basic passive mental state resulting from the impact of an external stimulus on a sense organ. The sensation is depend upon the sensory quality.

In a new born infant the consciousness is practically non-existent and the impressions on the dense organ give rise to absolutely pure sensation. The infant feels that something is going but he unable to understand what it is but the grown up person quickly interprets the meaning of the sensation which then become perception. An infant may have only the sensation because of loud sound but it cannot know what is it?

(A) What is Sensation?

A physical feeling of perception resulting from something that happens to or comes in to contact with body.

Sensation is a type of feeling picked up by one of the five sense.

A particular feeling or effect that our body experiences a particular feeling or experience that may not have a real.

(B) Sensory Thresholds

Any Sensory system must have the ability to detect varying degree of energy in the environment. This energy can take the form of light, sound, chemical or mechanical stimulation. How much of a stimulus is necessary for you to see, hear taste, smell or feel something? How far away from a brewing coffeepot can you be and still detect the smell or coffee? Researchers studying the links between the physical properties of stimuli and persons experience of them. For example, an experiment might examine the relation between the rate at which a light flashes and a participants ability to see individual flashes.

Absolute Threshold : One way to study thresholds is to assume that there is an absolute threshold or minimum amount of energy that a person can detect. When the energy of a stimulus falls below this absolute threshold. We cannot detect its presence, when the energy of the stimulus rises above the absolute threshold. We can detect the stimulus.

An experiment with a clock that ticks will help you understand the principle of absolute threshold. Put the clock on a table and walk for enough across the room so that you no longer hear it ticking. Then gradually move towards the clock. At some point you will begin to hear it ticking. Hold your position and notice that occasionally the ticking fades and you may have to move forward to reach the threshold. People have different thresholds.

Absolute thresholds is the point at which an individual detects a stimulus 50 percent of the time.

Approximate absolute thresholds for five senses.

Subliminal Perception : The ability to detect information below the level of conscious awareness. An experiment by Carol Fowler and her colleagues (1981) provides some evidence that people can process information beneath their awareness. In this study a world was shown on a screen so rapidly that the participants could not tell what they were seeing. Subsequently they were shown two worlds (such as hotel & book) and asked which was most like the subliminally presented world lodge. The participants answered most questions correctly. More recent research has verified

that people's performance is affected by stimulus that are too faint to be recognized at a conscious level.

Questions for Self - Study – 1

M. C. Q.

1. ..... is a type of feeling picked up by one of the five senses.
   (a) Sensation *(c) Attention*
   (b) Perception *(d) Motivation.*

2. ..... threshold is the point at which an individual detects a stimulus 50 percent on the time.
   (a) Average *(c) Constant*
   (b) Absolute *(d) None of these.*

3. An experiment with a clock that ticks will help to understand the principle of ..... threshold.
   (a) Unconstant *(c) Absolute*
   (b) Constant *(d) None of these.*

4. ..... the ability to detect information below the level of conscious awareness.
   (a) Subliminal perception *(c) Hight perception*
   (b) Depth perception *(d) Weight perception.*

3.2.2 Perception

(A) Definition of Perception

Perception is a mental process by which we get knowledge of the external world. We receive innumerable impression through the sense organs. We pick some of these and organize them into units which convey some meaning. This process of converting a sense impression in to a meaningful situation is called perception. Though perception is thus a transformation of crude sensation into organized patterns, no very elaborate process of construction is involved. Perception is instantaneous. It is an immediate awareness of object simply stated a meaningful sensation is called perception.

- "Meaningful sensation is nothing but perception. To understand the meaning of sensory impressions called perception. So,

  Perception = Sensation + Interpretation."

- Woodworth

- "A person gives meaning to his sensation with the help of past experience and memory. That meaningful sensation is called perception."

- Tichner

In short perception is the impression made by an object, through processes of a sensory organ and the control nervous system. Besides this interaction between the sensory and control nervous system processes perception involves an interpretation given to these impression by the individual.

Nature of Perception

When we try to interpret sensation of a stimulus we will get meaning. Which we call as perception. In short meaningful sensation is a perception. Perception the brain's process of organizing and interpreting sensory information to give it meaning. Following are certain characteristics of perception. Which helps in understanding the nature of perception.

1. Perception need Sensation : Sensation is primary stage of perception a sensation begins with sensory receptors. Receptors are specialized cells that detect and transmit stimulus information to sensory nerves and the brain without sensation we cannot reached the stage of perception. Vision, hearing, touch, taste and smell are the five most basic and commonly senses.

2. Perceptions needs past experiences : Our sensory organs take lot of experience in everyday life. The past experience stored in our memory with the help of these impressions we can try to understand a particular stimulus. If we are unknown to a particular past experience in our memory. So we will unable to interpret such stimulus. So the perception does not happen.

Perceptions needs past experience in everyday life we get experiences about so many things like temple, animal, tree, etc. when these things comes in front of us. We can set immediately meaning to them with the help of past experience for example. When you meet your friend. Who was your classmate immediately you get recollects about his nature, hobbies and past experience with him even after 20-25 years.

3. Perceptions has Emotional Aspects : Emotion is the most important aspects of perception, perception process is associated with emotional factors. When we experienced any object then emotions related to that particular stimulus get activated. For example when we experience any stimulus our emotion like happiness, sorrowfulness etc. get activated for exp. When we meet friends who always help us then the perception of a friend give pleasure.

4. Perception is Organizational Process : As we interact with and adapt to the world. The brain and the nervous system receive and transmit sensory input, integrate the information received from the environment and direct the body, motor activities we gain knowledge about an object through our brain. While perceiving, the individual has a tendency to organize different elementary sensation, different sensation are organized together e.g. when we took experience of mango fruit. It means we took smell of mango fruit with nose. We touch it with skin. We saw it with eyes, we taste with tongue then we organized all this sensation and gives meaning to it. In this way perception is organizational process.

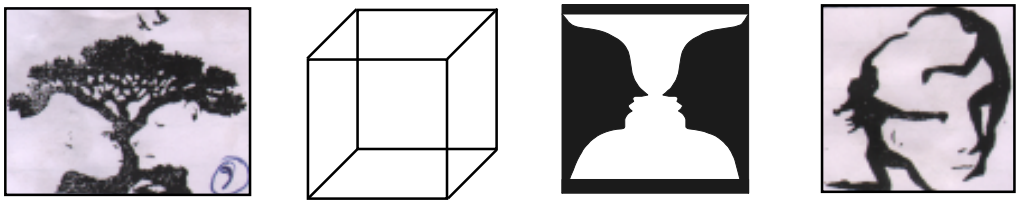
5. Perception is Symbolic Process : Perception is based on past experiences. Past experiences stored in our memory in the form of images. symbols, marks, and impressions etc. When our sensory organs get stimulated sensation transferred towards brain through nervous system and activated our past experiences which stored in the form of impressions for take example when we see apple immediately impression about colour, shape, smell, taste of apple recollected.

6. Individual differs in Perception : Perceptual differences is commonly formed in children and adults. The organization of experience in a brain is differs in individuals. The same situation has been found to be perceived quite differently by people coming from different ground for exam. Perception of different student about same teacher may be differs some students have perceived the teacher as a kind person and some students have perceived same teacher as a strict and disciplined person. Because perception about same teacher is differ in individual.

(B) Gestalt Principles of Perception

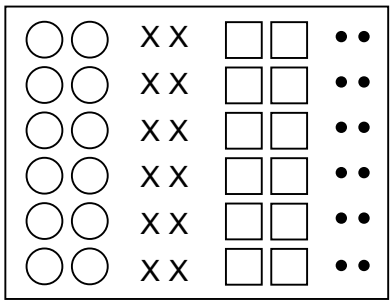
'Gestalt' is a German word its meaning is “good form” or “good figure” which fit well with the focus of studying whole patterns rather than small pieces of them. Gestalt principles are based on the idea that people have a natural tendency to force patterns onto whatever they see. Following are some of the basic principles of this tendency to group objects and perceive whole shapes.

What are the Gestalt principles? Figure- ground relationship - refer to the tendency to perceive objects or figures as existing on same background people seem to have a preference for picking our figures from backgrounds even as early as birth and this is the first visual ability to reappear after a cataract patients regains sight. The illusions in the following figures are reversible figures.

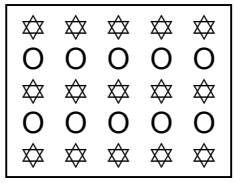


(1) (2) (3) (4)

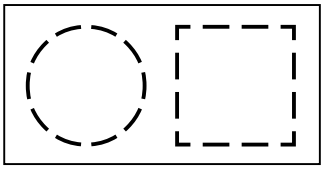
Figure 3.1 : We look some important principles



1. Proximity or nearness : A simple rule of perception is the tendency to perceive objects that are close to one another as part of the same grouping a principle called proximity. In this figure we perceived that dots and squires of figures arranged close to each other are easier to be grouped and perceived as a figure.

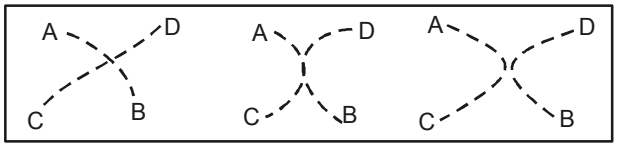


2. Similarity : Similarity refers to the tendency to perceive things that looks similar as being part of the same group. The school children wears uniforms that are the same colour. We reorganization the students school by their uniform. Object which are similar in appearance are easier to be grouped together if two type of figure are used namely circles and stars the circles will be combined together more easily.

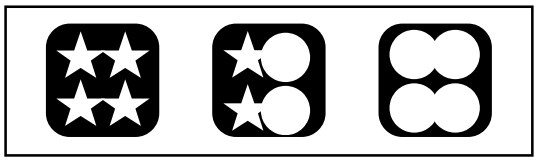


3. Closure : Closure is the tendency to complete figures them are incomplete in class teacher draw a series of curved line, spaced a inch or so a part in a circular pattern on the board. When students are asked. What they see they spontaneous say “a circle”. But it is not a circle at all just curved lines laid out in a circular formation. The brain fills in the spaces between the arcs to perceive a circle.

4. Continuity : Continuity helps the perception by yielding the pattern more readily. A continuous line or row of figure is more effective and more easily perceived then a discontinuous line or a broken row.



5. Common Region : Similarity would suggest that people see two groups stars and circles. But the background defines a visible common region and the tendency is to perceive three different group.



Questions for Self - Study - 2

M. C. Q.

1. …….. is nothing but perception.
   (a) Meaningful *(c) Attention*
   (b) Sensation *(d) None of these.*
2. Meaningful …….. is called perception.
   (a) Motivation *(b) Sensation* *(c) Memory* *(d) None of these.*
3. Perception is …….. process.
   (a) Eucotional *(b) Mental* *(c) Social* *(d) Spiritual.*
4. ……. Is symbolic process.
   (a) Perception *(b) Sensation* *(c) Learning* *(d) Forgetting.*
5. The organization of experience in a brain is …….. in individuals.
   (a) Differs *(b) Same* *(c) Opposite* *(d) None of these.*

3.2.3 Factors Influencing Perception

Human perception of the world is depend upon culture and misinterpretations of cues. Following factors can influence perception.

1. Perceptual Sets and Expectancies :-

The perception is depend upon the mental set. Our mental set always influence on perception. Peoples tendency to perceive things a certain way because their

previous experiences or expectations influence them is called perceptual set or perceptual expectancy. Expectancies can be useful in interpreting certain stimuli theory can also lead people down the wrong path.

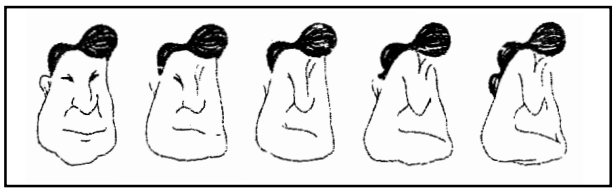


Fig. 3.2

This figure 3.2 is best example of perceptual set. Look at the drawing in the middle. What do you see? Now look at the drawing on each end. Would you have interpreted the middle drawing differently if you had looked at the drawing on the man or the kneeling women first.

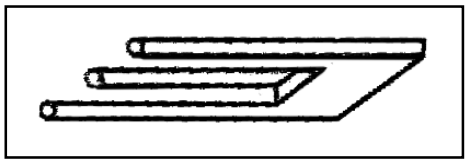
The way in which people interpret what theory perceive can also influence that perception. People can try to understand that perceive by using information that already have. But if there is no existing information that relates to the new information. Theory can look at each feature of what they perceive and try to put it all together in to one whole.

2. Top-down Processing :-

The use of pre-existing knowledge to organize individual features into a united whole. A jigsaw puzzle is easier to put it together if there is a picture of the finished puzzle to act as a guide. It also helps to have worked the puzzle before-people who have done that already know what it's going to look like when it's finished. In the field of perception this is known as top-down processing.

3. Botton-up Processing :-

The analysis of the smaller features to build upto a complete perception.



If the puzzle is one the person has never worked before or if that person has lost the top of the box with the picture on it, he would have to start with a small section, put it together and keep building up the sections and the recognizable picture appears. This analysis of smaller features and building up a complete perception is called bottom-up processing.

4. The Devil's Trident :-

This figure is often called the "devils trident". Europeans and North Americans insist in making this figure three dimensional, so they have trouble looking at it – the figure is impossible if it is perceived in three dimensions. But people is mere "primitive" native cultures have little difficult with seeing or even reproducing this figure because they see it as a two dimensional drawing, quite literally a collection of lines and circles rather than a solid objects.

Questions for Self - Study - 3

M. C. Q.

1. …….. is a German word its meaning is good form.
   (a) Gestalt (b) French (c) Organization (d) Russian.
2. …….. the tendency to complete figures that are incomplete.
   (a) Closure (b) Similarity (c) Nearness (d) None of these.
3. …….. the tendency to perceive things that look similar each other as being part of the same group.
   (a) Similarity (b) Nearness (c) Closure (d) Disclosure.
4. ……. Influence on perceptual set.
   (a) Eucotional (c) Moral set
   (b) Mental set (d) Previous experience.

3.2.4 Applications : Make a list of your experienced illusions

Muller-Lyer Illusion : One of the most famous visual illusion is the Muller-Lyer-illusion. In the above figure the distortion happens when the viewer tries to determine it the two lines are exactly the same length. They are identical, but one line looks longer than the ether. This illusions is powerful because most people live in a world with lots of building. Buildings have corner when a person is outside a building the corner of the building is close to that person. While the walls seen to be morning away. When the person is inside a building the corner of

the room seems to move away from the viewer while the walls are coming closer. In the illusion the line with the angles facing inward is like the outside of the building, and the one with the angles facing outward is like the inside of the room in their minds, people “pull” the inward facing angles towards them like the outside corners of a building and they make the outward facing angles “stretch” away from them like the inside corner of the room.

The Moon Illusion : When this moon is high in the rights sky it will still be the same size to the eye as it is now. Nevertheless, it is perceived to be much larger when on the horizon. In the sky there are no objects for comparison, but on the horizon objects such as this tree are seen as being in front of a very large moon.

3.3 Key words and meanings

- **Sensation :** Feeling picked by one of the five senses.
- **Perception :** Meaningful sensation is a perception.
- **Absolute threshold :** The point at which a stimulus can just be picked up by the sense organs.
- **Subliminal :** Below threshold of conscious perception.
- **Illusion :** A mistake in perception due to physical reason.

3.4 Summary

All knowledge of the world is obtained through our sensery experience. Sensation is a type of feeling picked up by one of the five senses. Meaningful sensation is called perception. Perception need sensation. Perception is organizational process. Some principles influence on perception like proximity, similarity, clouser, centinuity, common region, perceptual sets and expectancies are also influencing perception.

3.5 Key to self-study questions

Questions for Self - Study - 1

1. *Sensation.*
2. *Absolute.*
3. *Absolute.*
4. *Subliminal perception.*

Questions for Self - Study - 2

1. *Meaningful sensation.*
2. *Sensation.*
3. *Mental.*
4. *Perception.*
5. *Differs.*

Questions for Self - Study - 3

1. *Gestalt.*
2. *Closure.*
3. *Similarity.*
4. *Previous experience.*

3.6 Assignment for Practice

(A) Short Notes.

1. Sensation.
2. Factor Influencing perception.
3. Nature of perception.

(B) Answer the following questions.

1. Define Sensation. Explain sensory thresholds.
2. Define perception & describe Gestalt principles of perception.
3. Discuss factor influencing on perception.

3.7 Books for Reading

1. Ceccarelli, S. K, Meyer, G. E. (2006), *Psycology*, South Asian Edition, Indian Subcontinent Adaptation 2008. Published by Dorling Kindersley (India) Pvt. Ltd. License of Pearson's education Company Ltd., New Delhi.

2. Santrok, J. W. (2006), *Psychology Essentials*, Tata McGraw-Hill publishing company limited.

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Semester - I : Unit - 4

Motivation

4.0 Objectives

4.1 Introduction

4.2 Subject Explanation

4.2.1 Definition of Motivation

4.2.2 Maslow's Hierarchy of Needs

4.2.3 Physiological Motives

4.2.4 Social Motives

4.2.5 Applications : Techniques of Resolving Frustration

4.3 Key Words and Meanings

4.4 Summary

4.5 Key to Self-study Questions

4.6 Assignment For Practice

4.7 Books For Reading

4.0 Objectives

After studying this unit you will be able to,

1. Understand the nature and definition of motivation.
2. Understand the Maslow's hierarchy of needs.
3. You will know the nature and types of physiological motives.
4. You will know the nature and types of social motives.
5. You will learn techniques of resolving frustration.

4.1 Introduction

The root of the human behaviour is motivation. Without motivation we can't behave. That's why motivation is important determinant of human behaviour. We behave, eat, drink, act due to motivation. So, what are the motives behind the human behaviour? How we fulfil these motive ? What will happen if we fail to fulfil these motives? Psychologists has tried to find out answers of these questions. In this unit we are going to learn definition of motivation, Maslow's hierarchy of needs, nature and types of physiological and social motives, and techniques of resolving frustration.

4.2 Subject explanation

4.2.1 Definition of Motivation

The term motivation literally means to move or the activate. In this sense, anything that is responsible for internal or external activity may be called as motivation. Motivation can be defined as the process that gives behaviour its energy and its goals. In another words motives are inferences from behaviour. For example, we might observe that a student works hard at almost every tasks that comes along; from this, we might infer a motive to achieve.

Motivation is the process by which activities are started, directed, and continued so that physical or psychological needs or wants are met.

- Petri (1996)

Motivation is any general condition internal to an organism that appears to produce goal-directed behaviour.

- Lefton L. A. (1985)

Motivation concept comes from the Latin word 'movee', which means "to move". Motivation is that "moves" people to do the things they do. There are different types of motivation. Needs, wants, drive, incentive, ambitions, goal and aspiration these all words are synonyms to motivation. The root of the behaviour is motivation. It supply the energy for behaviour. If we observe carefully the definition of motivation there and some basic characteristics of motivation.

1. Motivation promotes human behaviour.

2. Motivation directs human behaviour.
3. Motivation is an internal energy.
4. Motivation gives energy to fulfil goals.
5. Motivation is the root of the behaviour.

Questions for Self - Study – I

1. The term motivation literally means to move or to ……..…… .
   (a) activate *(b) motivate* *(c) promote* *(d) select.*
2. Motives are inferences from ..... .
   (a) emotion *(b) behaviour* *(c) learning* *(d) memory.*
3. Motivation concept comes from the ..... word.
   (a) French *(b) Latin* *(c) English* *(d) Russian.*
4. ..... is that moves people to do the things they do.
   (a) Action *(b) Learning* *(c) Memory* *(d) Motivation.*
5. The root of the ..... is motivation.
   (a) inference *(b) learning* *(c) behaviour* *(d) motivation.*
6. Motivation is an internal ..... .
   (a) energy *(b) swing* *(c) rapport* *(d) communication.*

4.2.2 Maslow's Hierarchy of Needs

Humanistic psychologist Abraham Maslow (1980) proposed hierarchy of needs. According to Maslow there are several levels of needs that person must strive personality fulfilment. According to Maslow, the point that is sheldon reached at which people have sufficiently satisfied the lower needs and achieved their full human potential.

These needs include deficiency needs and growth needs. Deficiency needs are needs of the body, such as need for food or water, where as growth needs are for desires like having friends or feeling good about oneself. For a person to achieve self actualization, which is the highest level of growth needs, the primary, basic needs must be fulfilled. Figure 4.1 shows the Maslow's hierarchy of needs as a

pyramid. In this pyramid most basic needs for survival one at the bottom and the highest needs are at the top of the pyramid. This type of ranking of the needs (motives) is called hierarchy of needs.

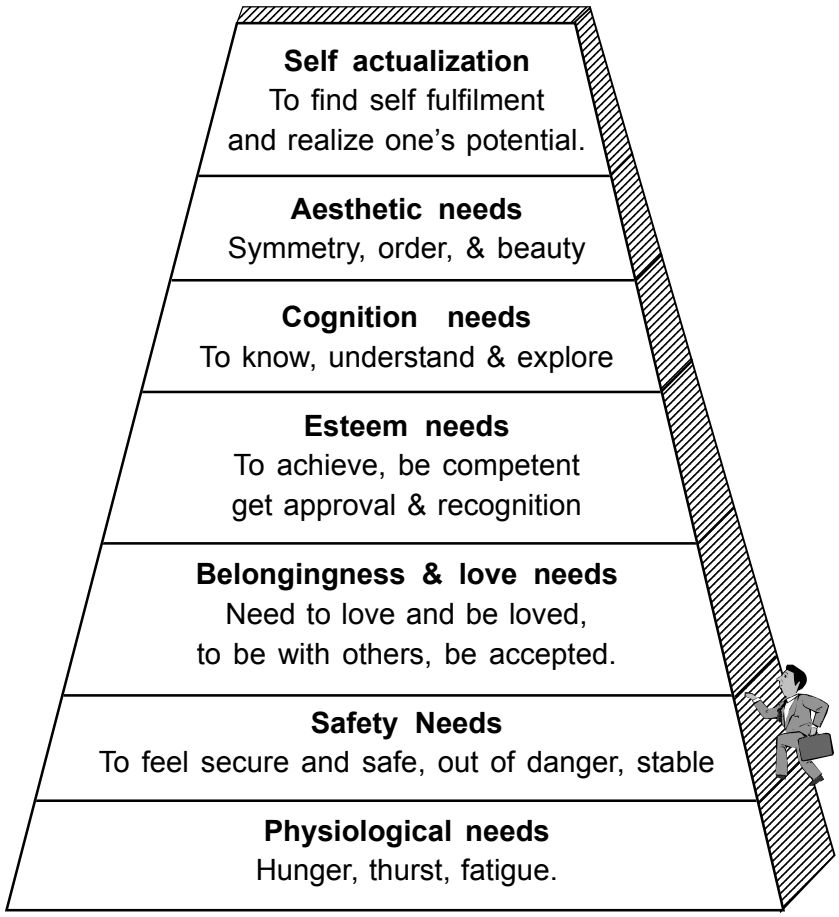

Fig. 4.1 Maslow's Hierarchy of needs

At the bottom level of the pyramid consists physiological needs such as food, mater and rest. Once those needs are net, safety or security becomes important and involves feeling of secure. Belongingness and love are the needs for friends and companions as well as to be accepted by others, and self esteem is the need to feet that one has fulfil something good or earned the esteem of others. Above the esteem needs on the hierarchy come the cognitive needs or the need to know and understand the world. Above the cognition needs are the aesthetic needs, which include the need for order and beauty and are typical of artistic people. Once all

these needs are met, it is possible to be concerned about self-actualization needs. Self-actualization is the point that is sheldon reached at which people have sufficiently satisfied the lower needs and achieved their full potential.

In this hierarchy Maslow (1971) added a higher need called transcendence above the self-actualization needs. Transcendence involves helping others to achieve their full potential. People move up the Pyramid as they go through life, gaining wisdom and the knowledge of how to handle many differed situations. But a shift in life's circumstances can result in a shift down to a lower need.

Cross-cultural studies suggests that the order of needs of the hierarchy does not always hold true for other cultures, particularly those cultures with a stronger tendency than the culture of the U. S. To avoid uncertainty, such as Greece and Japan. In those countries security needs are much stronger than self actualization need in determining motivation.

Questions for Self - Study – 2

1. ..... proposed hierarchy of needs.
   (a) Freud *(b) Jung* *(c) Adler* *(d) Maslow.*

2. ..... needs are the needs of body.
   (a) Growth *(c) Cognition*
   (b) Development *(d) Deficiency.*

3. Self-actualization is the highest level of ..... needs.
   (a) growth *(c) cognition*
   (b) deficiency *(d) safety.*

4. At the bottom level of the hierarchy of needs are . ..... needs.
   (a) social *(c) cognition*
   (b) physiological *(d) aesthetic.*

5. Above the esteem needs are the ..... needs.
   (a) aesthetic *(b) cognition* *(c) social* *(d) physiological.*

6. Maslow added a higher need called ..... need.
   (a) developmental *(c) transcendence*
   (b) satisfactory *(d) transformation.*

4.2.3 Physiological Motives

We can think of the fundamental drives as those which originate from the bodily needs of the individual. These drives may arise from external stimuli, tissue needs, or hormonal substances in the blood. The behaviour they motives is subject to learning.

Physiological needs are also called primary needs, basic needs, or biological needs. Biological motives are, to a large extent, rooted in the physiological state of body. Hunger, thurst, sex, need for oxygen, sleep or rest, temperature control and avoidance of pain are the physiological motives. It person is not fulfilling these needs then they may die. Some important physiological needs as follow.

[A] Hunger Motive

Now a day eating habits of people have become a major concern and a frequent topic of news programs, talk shows, and scientific research. There are countless pills, supplements, and treatments to help people eat less and others to help people eat more. Eating is not only a basic survival behaviour, not it is also a form of entertainment for many.

❒ Physiological Components of Hunger

Why do we eat food ? What are the causes of hungry ? There are so many factors are involved in the hunger motivation. Cannon (1912) believed that stomach contractions caused hunger and that the presence of food in the stomach would stop the contractions and appears the hunger motivation. Oddly enough, having an empty stomach is not the deciding factor in many cases. Although the stomach does have sensory receptors that respond to the pressure of the stretching stomach muscles as food is piled in and that send signals to the brain indicating that the stomach is full (Geliebter, 1988), people who have had their stomachs removed still get hungry (Janowitz, 1967).

❒ The role of the Hypothalamus

The hypothalamus has long been considered important in the regulation of hunger motivation. Hypothalamus has two separate areas, controlled by the levels of glucose and insulin in the body, which appear to control our eating behaviour.

1. The ventromedial hypothalamus (VMH) is involved in stopping the eating response when glucose levels go up (Neary et. al., 2004). The ventromedial hypothalamus is located to the front and centre of the hypothalamus. In one study, rats whose VMH areas were damaged would no longer stop eating they ate and ate until they were quiet overweight (Hetherington and Ransons on, 1940).

2. The lateral hypothalamus (LH) is located on the side, is called the lateral hypothalamus (LH). This part of the brain is considered to be an excitatory region for hunger motive. When LH works that time insulin level goes up (Neary et. al, 2004). Damaged to this area caused rats to stop eating. Rats would eat only if force fed and still lost weight under those conditions (Anand and Brobeck, 1951; Hoebel and Teitelbaum, 1966).

❒ Weight set point and Basal rate

Some researchers (Leibel et al, 1995; Nisbett, 1972) believe that the hypothalamus affects particular level of weight that the body tries to maintain, called weight set point. Injury to the hypothalamus does raise or lower the weight.

Metabolism and exercise play a part in the weight set point. Some people have faster metabolism and others have slower. Faster metabolism people can eat large amount of food without gaining weight, and slower metabolism people may eat a normal or even less than normal amount of food and still gain weight (Bouchard, et. al; 1990). Regular, moderate exercise also helps offset the slowing of metabolism and the accompanying increase in the weight set point (Tremblay et. al., 1999)

The rate at which the body burns energy when a person is resting is called the basal metabolic rate (BMR) and is directly tied to the weight set point.

Age Range (Yrs.)	10-18 yrs.	19-30 yrs.	31-60 yrs.	61-80 yrs.
Female (5 ft. 6")	1770	1720	1623	1506
Male (6 ft.)	2140	2071	1934	1770

Table 4.1 : Average Basal Metabolic Rates (BMR)

Table 4.1 shows the changes in BMR of a men and women as age increases from 10 years to 80 years. If a person's BMR decreases the person's weight set point (WSP) increases. In this table notice that the BMR decreases the begins to decline. It the eating habits of the teenage year's are maintained, excessive weight gain is not for behind. If you would like to calculate your own BMR simply type "basal metabolic rate calculator" into your web search engine and you will get your BMR.

❒ Social components of Hunger

Some social factors influence hunger. People so many times eat when they are not hungry. Convention of eating breakfast, lunch, and dinner at certain time, these factors affects hunger. Convention is result of classical conditioning. Our body becomes conditioned to respond with the hunger reflex at certain times of the day; through association with the act of eating, those times of the day have become conditioned stimuli for hunger. When a person has taken a late breakfast will still feel hungry at noon, simply because of the clock says it's time to eat. People also respond to the appeal of food from friends and relatives.

Culture factors and gender also play a part in determining hunger and eating habits. In one study men and women from U. S. were more likely to eat while watching T.V. or movies than Japanese men and women (Hawks et. al., 2003). Food can also be used when people are under stress to escape from whatever is unpleasant (Dallman et. al., 2003). Meats preferred in one culture may be rejected in another culture.

❒ Maladaptive eating problems

It would be nice if people all over the world are just the amount of food that they needed and were able to maintain healthy, normal weight. Unfortunately this is not happening. Due to this there are some eating disorders.

1. Obesity : Obesity is a condition in which the body weight of a person is 20 percent or more over than the ideal body weight for the person's height. Heredity is significant factor in obesity. It there is a history of obesity in a particular family, each

2. Anorexia Nervosa : Is a condition in which a person reduces eating to the point that a weight loss of 15 percent below expected body weight or more is the result. Hormone secretion becomes abnormal. The heart muscles become weak

and heart rhythms may alter. Other physical effects of anorexia include diarrhea, loss of muscle tissue, loss of sleep and low blood pressure.

Anorexia is a disorder in which a person becomes significantly underweight yet feel fat and is fearful of becoming obese. This eating disorder develops in adolescence, and is nine time more common in females than in males.

Some anorexics will eat in front of others but then forces themselves to throw up or take large doses of laxatives. They have extremely distorted body images, seeing fat where others see only skin and bones. Rejection of sexual maturity, sexual abuse, perfectionism with a desire control as many aspects of one's life as possible, and family disinfection etc. psychological factors are the causes of anoxexia (Abraham, & Liewellyn Jones, 2001; Mitchell, 1985).

Hospitalization, supportive psychotherapy, behavioural therapy, group therapy, and family therapy is useful in treating anorexia.

3. Bulimia : A disorder characterized by repeated episodes of overeating followed by vomiting or using laxative. Most individuals with bulimia are women in their late teens or twenties who like those with anorexia, are preoccupied with food, fearful or becoming overweight and experiencing depression or anxiety (Hinz and Williamson, 1987).

Bulimic will eat, and eat to excess family member has a risk of becoming obese. Even high protene food, meat, ice-cream, spicy and fast food, relaxed life style, no exercise, and uncontrolled eating invites obesity. Developed countries get stronger economies and their food supplies become stable, the rates of obesity increases quickly (Barsh et al; 2000). In market foods become more varied, attractive and desirable as well, and an increase in variety is associated with an increase in eating beyond the physiological need to eat (Raynor and Epstein, 2001). Dining out includes fast food and soft drinks increases obesity (Chon et al., 2004). Due to follow western cultural lifestyles, negative aspects such as obesity of those lifestyles also increase.

Metabolism slows down as people age 30. People are not changing eating habits of their youth, as they earn more income people also often increase the amount of food they consume, there by assumming a weight gain that many lead to obesity. U.S has the highest rate of obesity in the world (Friedman, 2000; Marik,

2000; Mokda et al., 2001). Binging on huge amounts of food, hospitalization, drug therapy, psychotherapy and cognitive therapy is useful in treatment of bulimia.

[B] Thirst Motive

Thirst is another important physiological motive. Thirst, besides physiological factors is also influenced by a wide verify of stimulus factors. We, many a times, drink water or cold drink or other liquid not only to satisfy our thirst, but also for wide variety of other reasons.

The homeostatic mechanisms of the body play an important role in regulating the fluid level of the body and in maintaining its water balance. Thirst motivation and drinking are mainly triggered by two conditions of the body 1) loss of water from body cells and 2) reduction of blood volume. When water is lost from our body fluids, water leaves the anterior of the cells, thus dehydrating them. In the anterior, or front of the hypothalamus are nerve cells called osmoreceptors, which generate nerve impulses when they are dehydrate. These nerve impulses act as a signal for thirst and drinking. Thirst triggered by loss of water from the osmoreceptors is called as cellular – dehydration thirst thats why the hypothalamus seems to function as a drinking centre. For example, a drop of salt water injected into the hypothalamus will cause a water satiated animal to start drinking again. Injection of pure water will cause a thirsty animal to stop drinking. Drinking is also monitored by certain receptors that are found in the mouth, stomach, intestine etc, which indicates that enough water has been consumed.

[C] Sex Motive

Sex motive is another very important motive which is classified as a physiological motive. But besides its physiological base it also has social and psychological base. Sex motive is considered physiological/biological because hormones and neural structures play an important role in eliciting sexual drive. Sex motive is social because it involves other people and provides, according to many, the basis for social groupings in higher animals including man. Sex motive is powerfully regulated by social pressures and religions beliefs. Sex is psychological in the sense that it is an important part of our emotional lives, it can provide intense pleasure, but it can also give us agony and involve us in many difficult decisions. Sex drives are an important for the survival of the species.

Hormones play an important role in influencing our sexual behaviour. These hormones are responsible for the body changes at puberty. In girls estrogens hormones causes the development and feminine characteristics. While androgen hormones in boys causes the development of masculine characteristics. These hormones play an important role in adult sexuality. Nude pictures, blue films, hot scenes, sexy films and books stimulates sex motives. In western culture premarital and extramarital sexual behaviour is allowed but in Indian culture it is not permitted.

Questions for Self - Study – 3

1. Physiological needs are called ..... needs.
   (a) social *(b) primary* *(c) personal* *(d) cognitive.*
2. The hypothalamus has long been considered important in the regulation of ..... motivation.
   (a) sex *(b) hunger* *(c) sleep* *(d) achievements.*
3. Adolescence have a very ..... BMR.
   (a) low *(b) high* *(c) average* *(d) very high.*
4. ..... is a disorder in which a person becomes significantly under weight.
   (a) Bulimia *(b) Depression* *(c) Aggression* *(d) Anorexia.*
5. In girls ..... hormones are responsible for the development of feminine characteristics.
   (a) estrogens *(b) androgen* *(c) sperm* *(d) thyroid.*
6. In boys ..... hormones are responsible for the development of masculine characteristics.
   (a) thyroid *(b) androgen* *(c) sperm* *(d) estrogens.*

4.2.4 Social Motives

Social motive is an internal condition that directs people toward establishing relationships with others and feeling about themselves. These social motives energy from a gradual is an arousal condition involving feeling about affiliation, aggression, power, rejection, autonomy, exhibition and avoidance are the social motives. Social motive shapes personality. Some important social needs we are going to learn.

1. Achievement Motive / Need for Achievement

Most psychologists agree that people's need for achievement gives rise to

some of the strongest social motives. The need for achievement causes people to strive for bigger and better accomplishments need for achievement is a social need that directs a person to strive constantly for excellence and success. Research indicates that a person's home environment during childhood is important in establishing these needs.

Need for achievement was one of the first social motive to be studied in detail by McClelland and Atkinson. People in whom the need for achievement is strong seek to become accomplished and to improve their task performance. They are task oriented and prefer to work on tasks that are challenging and on which their performance can be evaluated in some way, either by comparing in with other people's performance. Achievement motivation can be seen in many areas of human endeavour-on the job, in school, in home making, or in athletic competition.

1. The source of Achievement motivation through observation learning children adopt many characteristics of the model (Parents) including the need of achievement. The expectations parents have for their children are also said to be important in the development of achievement motivation Eccles (Parsons, 1983). Parents who expect their children to work hard and to strive for success will encourage them to do so and praise them for achievement directed behaviour.

2. Achievement motivation and behaviour the degree to which people with strong underlying achievement motivation show achievement oriented behaviour depends n various factors. Fear of failure which inhibit the expression of achievement behaviour (Atkinson, 1964; Atkinson & Birch, 1978). According to Atkinson high achievement motivated people prefer to work o moderately challenging tasks which promise success. They don't like to work on very easy tasks, where there is no challenge so on satisfaction of their achievement needs; nor do they like very difficult tasks, where there is no challenge so on satisfaction of their achievement needs; nor do they like very difficult tasks, where the likely hood of their success in low. People in high achievement motivation are likely to be realistic in the tasks and these people are successful.

3. Achievement motivation and society. Achievement motivation is related to a societies economic and business growth (McClelland, 1961, 1972).

4. Researchers have found that a high need for achievement and economic growth of the society is related.

2. Aggression Motivation

Aggression is another social motive. Aggression is any behaviour whose goal is to harm or injure another person or thing. Most aggressive acts are not physical. Person may attempt to harm someone verbally, through gossip, rumour, or through a gesture. Aggression abounds in everyday life, on an international level is acts of war, and on an intimate level between friends. Most psychologist consider that most aggressive behaviours are learned. According to Albert Bandura (1971,1973) aggressive behaviour can be established or eliminated through observational learning. Bandura aggressive instincts but learn aggression by seeing others exhibiting aggressive behaviours; a person's family, subculture, or the mass media may provide aggressive models.

❒ Instrumental and Hostile Aggression

Hostile aggression has an its goal harming another person; in instrumental aggression (Buss, 1961, 1966), the individual uses aggression as a way of satisfying some other motive. Hostile aggression is any form of behaviour directed toward the goal of harming or injuring another living being who is motivated of void such treatment (Boron, 1977).

Aggression can be physical or verbal, active or passive, direct or indirect (Buss., 1961). Frustration compliance unpleasant or anserine environmental conditions, presence of weapons and negative evaluation of another person etc are the causes of aggression.

❒ Controling Human Aggression

Punishment, catharsis, nonaggressive models learning, and by using behavioural therapies we can lessen or reduce aggressive behaviour.

Questions for Self-study – 4

1. ..... motives shapes personality.

   (a) Physiological (b) unconscious (c) Social (d) Personal.

2. Need for achievement was one of the first social motive to be studied in detail by ..... .

   (a) Maslow (b) Roger (c) McClelland (d) Freud.

3. ..... motivation is related to a society's economic & business growth.

   (a) Aggression (b) Affiliation (c) Power (d) Achievement.

4. ..... aggression has an its goal harming another person.

   (a) Instrumental (b) Hostile (c) Verbal (d) Nonverbal.

5. Aggression can be physical or verbal, active or passive, ... or indirect.

   (a) hostile (b) direct (c) nonverbal (d) power.

4.2.5 Applications : Techniques of Resolving Frustration

We are trying to fulfil our motives but the course of motivation does not always run smoothly. Things happen that proved us from reaching goals toward which we are driven or pulled. Frustration is the condition of blocking of behaviour directed toward a goal. This is a negative experience for us. Which brings anxiety, fear, stress, anger, depression, and interiority complex. Due to this we loose our happiness from our lines. Environmental causes personal limitations and motivational conflicts are the causes of frustration. Though is life full of conflict and the frustration arising them. We have to learn various techniques to resolve this conflicts and frustration. Some techniques are

- Set your goals objectively.
- Set your preferences of goals.
- Recognise hurdles of goal fulfilment.
- Communicate positively.
- Give incentives to your work.
- Identity your abilities, thoughts and emotions.
- Think positively and rationally.
- Keep it in your mind that, each and every problem has a remedy or solution.

By using this type of techniques we can reduce our frustration. So friends if you are having any techniques of resolving frustration. Make list of them. Do practice of these techniques. Really you can reduce and resolne your frustration.

4.3 Key Words and Meanings

- **Motivation :** Is the process that gives behaviour its energy and its goal.
- **Maslow's Hierarchy of needs :** According to Maslow there are several levels of needs that person must strive to meet before achieving the highest level of personality fulfilment.
- **Deficiency needs :** Those need of the body, such a need for food or water.
- **Growth needs :** Those needs one for destines like having friends or feeding good about oneself.
- **Transcendence :** Involves helping others to achieve their full potential.
- **Self-actualization :** Is the point that is Sheldon reached at which people have sufficiently satisfied the lower needs & achieved their full potential.
- **Weight set point :** The hypothalamus affects particular level of weight that the body tries to maintain, called weight set point.
- **Basal metabolism rate :** The rate at which the body burns energy when a person is resting is called the basal metabolism rate.
- **Obesity :** Is a condition in which the body weight of a person is 20 percent or more over than the ideal body weight for the person's height.
- **Anorexia Nervosa :** Is a condition in which a person reduces eating to the point that a weight loss of 15 percent below expected body weight or more is the result.
- **Bulimia :** A disorder Characterized by repeated episodes of overeating followed by vomiting or using laxative.
- **Social motives :** Internal condition that directs people toward establishing relationships with others & feeling about themselves.

- **Achievement motivation :** Is a social need that directs a person to strive constantly for excellence & success.
- **Aggression :** Any behaviour whose goal is to harm or injure another person thing.
- **Frustration :** Is the condition of blocking of behaviour directed toward a goal.

4.4 Summary

Motivation is a cause of our behaviour motivation means to more or to energize or to activate. We one having physiological motives and social motives.

Maslow proposed hierarchy of needs through pyramid. In this he categorised deficiency needs & growth needs. Physiological needs are primary needs. We have to fulfil these needs. Hunger, thirst and sex motives are the physiological motives. Achievement and aggression motives are the social motives. Physiological motives are inborn and social motives are learned.

Hunger motivation may be initiated when blood levels or rates of use of nutrients fall below a certain set point. Hypothalamus regulates our hunger motivation. Thirst motivation is another physiological motive. Body cells water level goes down that time we feel thirstily. Hypothalamic more captors regulates our thirst motivation.

Sex motivation depends, to a large, degree on sex hormones. The activation of sexual motives in humans, however seems to be controlled more by external stimuli & learning than by sex hormones.

Social motives such as achievement and aggression are learned motives. The need for achievement is a motive to accomplish things and to be successful in performing tasks. Need of achievement is related with economical growth of the society. Aggression is another social motive hostile and instrumental aggression our the types of aggression. Through various psychotherapy we can lesser or reduce aggressive behaviour.

Frustration is the condition of blocking of behaviour directed toward a goal each and every person is having experience of frustration. By using various techniques we can lessen or reduce frustration.

4.5 Key to Self - Study Questions

Questions for Self - Study – 1

1. (a), 2. (b), 3. (b), 4. (d), 5. (b), 6. (a).

Questions for Self - Study – 2

1. (d), 2. (d), 3. (a), 4. (b), 5. (a), 6. (c).

Questions for Self - Study – 3

1. (b), 2. (b), 3. (b), 4. (d), 5. (a), 6. (b).

Questions for Self - Study – 4

1. (c), 2. (b), 3. (d), 4. (b), 5. (b).

4.6 Assignment For Practice

(A) Short Notes.

(i) Maslow's Hierarchy of Needs

(ii) Hunger motive

(iii) Thirst motive

(iv) sex motive

(v) Achievement motivation.

(vi) Aggression motivation.

(B) Answer the following Questions.

(i) Define motivation, Describe Maslow's Hierarchy of needs.

(ii) What is motivation ? Explain Physiological Motives.

(iii) Describe social motives.

4.7 Books for Reading

1. ***Ciccerelli, S. K., Meyer, G. E.*** (2006). Psychology, South Asian Edition, Indian subcontinent Adaptation, 2008, published by Dorling Kindersley (India) Pvt. Ltd; Licensees of Pearson Education in South Asia.

2. ***Feldman, R. S.*** (2005). Understanding Psychology, 6th edition, New Delhi : Tata McGraw Hill Publishing Limited.3. Lefton, L. A. (1985), Psychology, 3rd edition, Allyn and Bacon.

3. ***Morgan C. T.; King R. A.; Weiss, J. R. and Schopler, J.*** (1986). Introduction to Psychology, 7th edition, New Delhi : McGraw Hill Book Company.

4. ***Myers, D. G.*** (1989). Psychology, 2nd edition, New York : Worth Publishers, IUE.

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B. A. Part - I

GENERAL PSYCHOLOGY

Paper - II

Semester-II

Unit - 1 : Emotion

Unit - 2 : Learning and Memory

Unit - 3 : Intelligence

Unit - 4 : Personality

Semester - II : Unit - 1

Emotion

1.0 Objectives

1.1 Introduction

1.2 Subject Explanation

1.2.1 Definition of Emotion

1.2.2 Elements of Emotion

1.2.3 Theories of Emotion

1.2.4 Applications – Being Happy

1.3 Key words and meanings

1.4 Summary

1.5 Key to Self - Study Question

1.6 Assignment for practice

1.7 Books for Reading

1.0 Objectives

The study aims at –

1. Understand the definition and forms of emotion.
2. You will know the components of emotions.
3. You will know the physical expression through emotional experience.
4. You will know the theories of emotions.
5. You will learn happiness cultivation in your personal life.

1.1 Introduction

Emotional prosperity is as important as emotional experience in human life. If an emotion remains in the mind of an individual for long, it may be pleasant or unpleasant, makes that individual alienated. Emotions are both constructive and destructive. Constructive use of positive and negative emotion can bring prosperity into human life. But the predicative psychologists like Watson and skinner didn't explain the terms of emotion because that can not be observed.

A person experiences so many emotions in the daily life, sometimes gets angry or sometime becomes unconscious on happiness, sometimes shames, sometimes hesitates, sometimes becomes emotional and acts like an animal sometimes exercises one's everything for the sake of lovable.

The human life will become futile if happiness, love, sympathy, fear etc. emotional experiences disappear from his life. Therefore anger, rage, hatred etc. emotions should be expressed, provided that their expression shouldn't be destructive misbehaviors causes anger.

Let's see what are the emotions of anger, rage, hatred. What is its form? What are its internal component? Principles related to different emotions and how in personal life happiness is increased and cultivated.

1.2 Subject Explanation

1.2.1 Definition of Emotion

The word 'Emotion' is derived from the Latin word 'to move'. Different definitions of emotion are given as,

1. Ciccerelli and Mayer (2007) :–

'Emotion is feeling aspect of consciousness characterized by a certain physical arousal a certain behavior that reveals the feeling to the outside word and an inner awareness of feelings.'

2. Woodworth :–

'Emotion many be defined as a striped up state of an individual.'

3. Duffy (1962) :–

Emotion may be defined as just a matter of the degree to which a person or animal is aroused or stirred up.

1.2.2 Elements of Emotion

Different touching moments are created by emotions in human life. A human being gets inspiration, instructive elements like sensation, thinking and memories are important. Emotion motivates interrelation behavior. Emotions are converted into action. Behaviour gets motivated. The function of motion is both advocative and magistrative.

There are three components of emotion.

A] The Physiology of emotion :–

When a person experiences an emotion, there is an arousal created by the sympathetic nervous system. The heart rate increases breathing becomes more rapid, muscle strain increases, mouth may become dry etc. changes take place natural changes take place in our nervous system. Following physical changes may occur in emotional state of mind.

i) **Rise in heartbeats and blood pressure :** The speed of heartbeat depends on how specific time. Surprise, fear, sadness accelerates the speed of heartbeat and blood pressure. Due to which the blood supply contains oxygen and glucose reach speedily to the concern organs unnecessary carbon gas is also emitted fastly which increases heartbeats.

ii) **Breathing :** Accelerated breathing supplies enough oxygen to the blood and muscles in the body carbon dioxide gas is taken out due to exhalation. Due to fear, anger, emotional experiences the oxygen needed for combustion of sugar inside the body is taken in fastly. At the same, carbon dioxide is released from the body. It increases the excavation speed. This up and down in breathing pattern is measured with the help of Neumograph.

iii) **Contraction and relaxation of muscle :** When there are no strong emotional experiences all muscle in the body are relaxed. But when there are strong emotional experiences. Muscles of hands and legs get

contracted the whole body gets ready to face anything as well as attack enemies. The strain of muscle are measured with the help of Electromyograph.

iv) **Size of eyes :** Emotional experience and eye movements have close relationship. Tears , tears of joy, tears of sorrow are the realization of emotional experiences emotion can be identified from the size of eyes, their contraction and relaxation.

To goggle, pop, revolve, shut, any turn of eyes show change in emotion.

v) **Salivation :** Due to emission production of saliva decreases. At the same wateriness also decreases. Saliva starts thickening and digestion faces obstacles speed in the operation of digestive juices decreases. Anger and fear get intermingled. At the same time, energy required for saliva production diverts towards stimulated muscles.

vi) **Chemical changes in blood :** Fear, anger, rage, worry these emotions are expressed when the emotional expressions like fear, anger, rage, worry, overwhelms the sugar level in blood raises sugar is required to energies stimulated muscle. Blood contacts get changed due to the presence of E pintriyed and Noepinfrayed glands.

vii) **Skin electric resistance :** High emotional experiences badly affects the skin. Its colour changes into white particularly the face becomes white and body sweats. These changes occur due to the blood supply to the stimulated muscles through the skin. Skin glands act fastly which causes sweat, which can be measured by Galvanometer.

viii) **Brain :** Which part of the brain is related with brain? Amigdal is related with the emotional of fear and expression. Functions of emotion depend upon which part of the brain has been injured.

Emotion even work differently depending on which side of the brain is involved. It is found that negative feeling such as sadness, anxiety, and depression seem to be function of primarily the left hemisphere of the brain. In the most recent study electrical activity of the brain is tracked using an electroence-photograph(EEG).

When anxiety and depression were high, so was the activity on the left side of the brain. But when anxiety and depression were reduced, activity levels dropped in the left hemisphere and increased in the right hemisphere.

B] The behavior of emotion :–

How do people behave when in the grip of an emotion? There are facial expression, body movements and action that indicates to others how a person fears. Frowns, smiles and sad expression combine with hand gestures, turning of one's body and spoken words to produce an understandings of emotions.

i] Facial expression : Facial expressions can vary across different cultures, although some aspects of facial expression seem to be universal. See figure given ahead.

Figure 1.1 : Facial expressions of emotions. Facial expression appears to be universal. For example their faces are interprets as showing – (a) Anger (b) Fear (c) Disgust (d) Happiness (e) Surprise (f) sadness by people of culture all over the world although the situation that cause these emotions may differ from culture to culture, the expression of particular emotions remains strikingly the same.

With the help of eyes, nose, eye brows, forehead we express emotions. they are mentioned in the following table

Facial organs	Changes in muscles	Emotions
Eyes	Eyes filled with tears Wide eyes Small eyes	Sadness Rage, anger untruth, hate.
Eye brows	Raises and gets back eye brows	Surprise Wonder
Forehead	Frowns on forehead	Nervousness
Nose	To sneer	Hate

Charles Darwin (1898) was one of the first to theorize that emotions were a product of evolution and therefore universal all human being, no matter what their culture would show the same facial expression because of facial muscles evolved to communicate specific information to an lookness. Ekman and Friesen (1969,1971) studied the people from Japan, Europe, America cultures. They found in their research that these people can consistently recognize at least seven facial expressions like anger, fear, disgust, happiness, surprise, sadness and contempt. Although the emotions and related facial expression appear to be universal, exactly when, where, and how an emotion is expresses may be determined by the culture.

ii) **Change in voice :** According to emotions, there are up and downs in the speech. Speech becomes melodious while expressing while expressing love speech vibrates while expressing anger. Ups and downs in speech are used to express different emotional expressions.

iii) **Body language :** Movements of hands, legs, head, neck, show ones emotional expressions. Their positive and negative movements show happy or sad mood of the human beings.

C] Subjective Experience :–

Third component of emotion is interpreting the subjective feeling by giving it a label- anger, fear, disgust, happiness, sadness, shame, interest and so on. For example for some students the examination is fearful while for others it may be challenging and interesting. Another way of labeling this component is to call it the

'cognitive component' because the labeling process is a matter of retrieving memories of previous similar experiences, perceiving the context of the emotion and coming up with a solution a label.

How a person consider his emotions depends on his oral and cultural background. A research has shown that Japanese students considers their emotions socio-friendly while American students considers it as ego.

Questions for Self - Study - 1

M. C. Q.

1. An individual's …… state of mind is an emotion.
   (a) inclusive (b) excited (c) development (d) exclusive.
2. In …… emotional experience speed of heartbeats, increases.
   (a) fear (b) happiness (c) sadness (d) anger.
3. Emotions have emerged from evolution is told for the first time by ……... .
   (a) Darwin (b) Friesen (c) Ekman (d) Jung.
4. Due to …… experience, emotion has been given a label.
   (a) individualistic (b) social (c) rigorous (d) cultural.
5. ……... organ of brain is connected with fear.
   (a) Amygdala (b) occipital lobe (c) temporal lobe (d) frontal lobe.

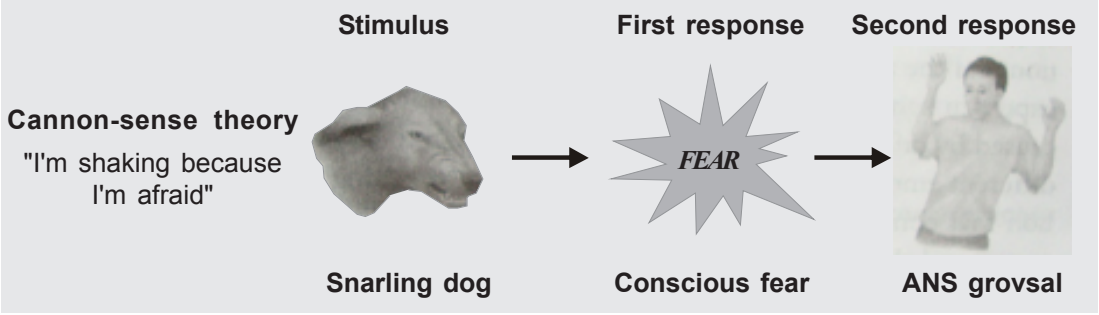
1.2.3 Theories of Emotion

Every incident gives emotional experience. It also makes physical changes. In some incidents physical changes. In some incidents physical changes take first and then emotional changes. But in some other incidents emotional changes takes first and then physical changes takes place. In some emotional theories physical changes have been given the importance. At the same, in some theories psychological instructive procedures have given the importance.

According to Cannon sense theory a particular emotion led first to a physical reaction and then to a behavior one. For example – seeing a snarling dog in ones path causes the feeling of fear, which stimulates the body to arousal, followed by behavior act of running people are aroused because they are afraid.

See the following figure –

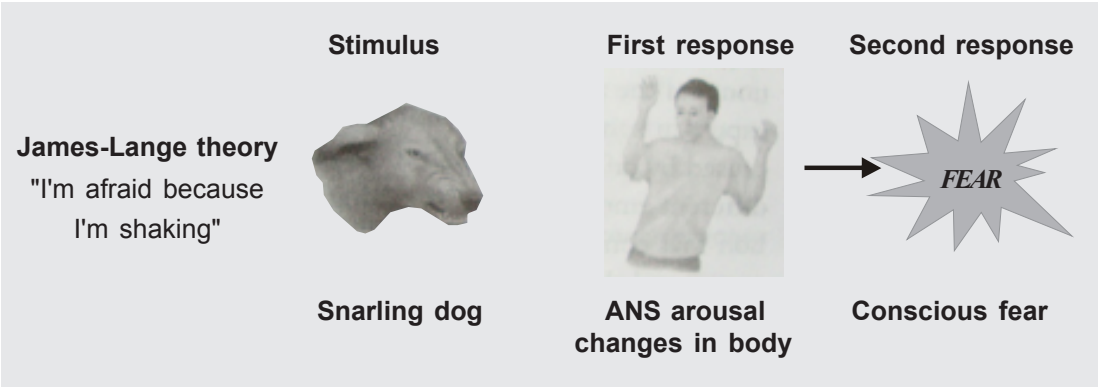
Cannon sense theory “I am shaking became“



Cannon sense theory of emotion- In thecommon sense theory of emotion, a stimulus (snarling dog) leads to an emotion of fear which then leads to bodily arousal. (in this case indicated by shaking)

1. James - Lange’s Theory of Emotion :–

William James who was the founder of functionalist perspective in the early history of psychology disagreed with the early viewpoint. He believed that the order of the component of emotions was quite different.



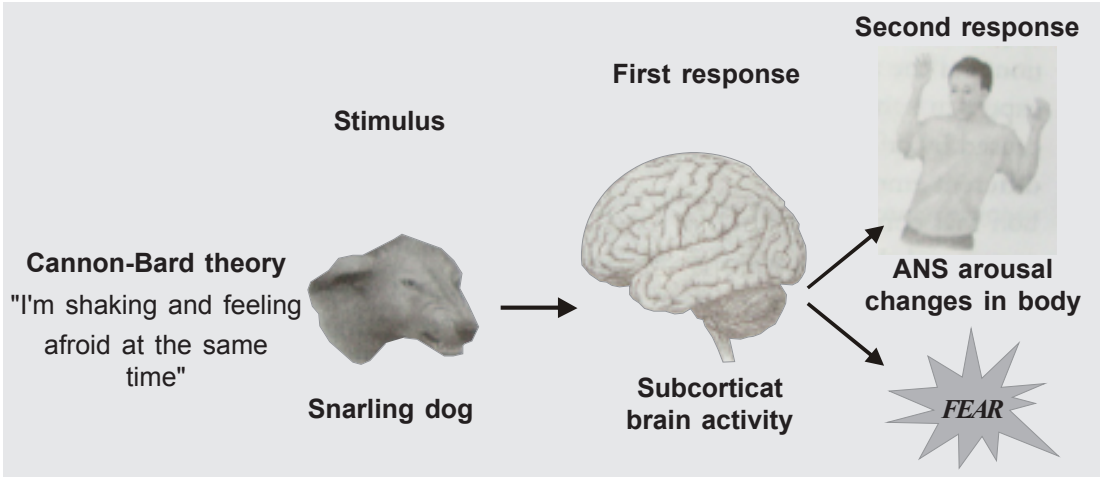
According to American psychologist William James (1884). We run by seeing a snarling dog because we fear. In this theory stimulus of some sort produces a physiological reaction. This reaction, which is arousal of ‘ fighter, flight ’ sympathetic nervous system wanting to run produces bodily sensation such as increase heart rate, dry mouth and rapid breathing. James and Lange believed that the physical arousal led to the labeling of the emotion. Simply put, “I am afraid because I am

aroused" " I am embarrassed because my face is red " "I am in love because my heart rate increases when I look at her or him'.

What about people who have spinal cord injuries that prevent the sympathetic nervous system from functioning? Although James-Lange would predict that these people should show decreased emotion is no longer there, this does not in fact happen. Several studies of people with spinal cord injuries report that these people are capable of experiencing the same emotions after their after their injury as before, sometimes even more intensely.

2. Cannon - Bard :–

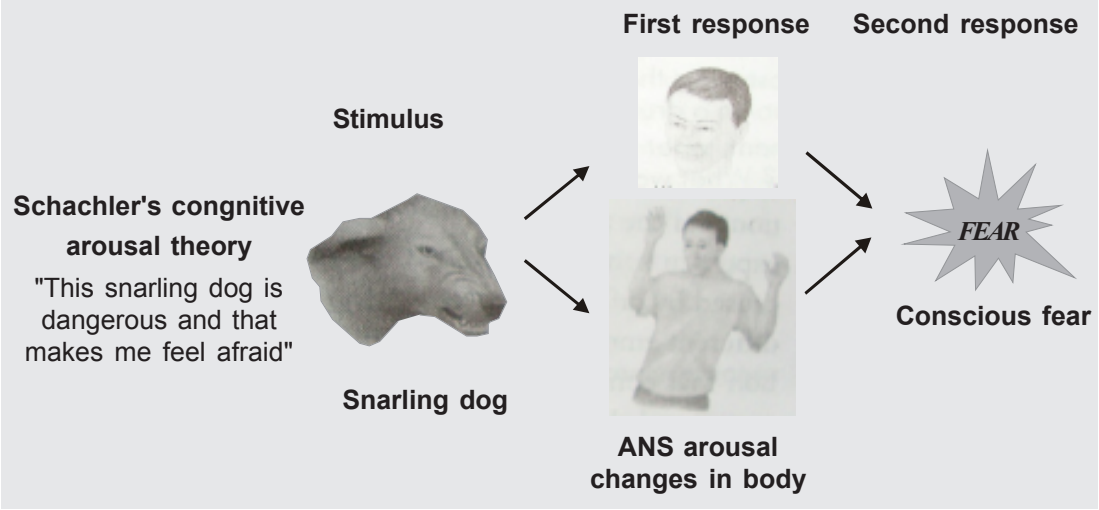
Physiologists Walter Cannon (1927) and Philip Bard (1934) theorized that the emotions and physiological arousal occur more or less at the same time Cannon, an expert in sympathetic arousal mechanisms, did not feel that physical changes caused by different emotions were distinct enough to allow them to perceived as different emotions. Bard expanded on this idea by stating that the sensory information that comes into the brain is sent simultaneously, to both the cortex and the organ of the sympathetic nervous system. The fear and the bodily reaction are, therefore experienced at the same time- not one after the other "I'm afraid and running and aroused !" (see fig.).



3. Schachter – Singer's Theory :–

Stanley Schachter and Jerome Singer (1962) proposed their cognitive arousal theory. They proposed that, two things have to happen before emotion

occurs : physical arousal and the labeling of the arousal based on the clues from the surrounding environment. These two things happen at the same time, resulting in the labeling of the emotion (see fig.).



For example, if a person comes across a snarling dog while taking a walk, the physical arousal (heart racing, eyes opening wide) is accompanied by the thought (cognition) that this must be fear. Then and only then will be the person experience the fear emotion. In other words, “I am aroused in the presence of scary dog; therefore, I must be afraid." Evidence for this theory was found in what is now a classic experiment, described in the classical studies in psychology section.

Schachter and Singer designed an experiment to test their theory that emotions are determined by an interaction between the physiological state of arousal and the label or cognitive interpretation, that a person places on the arousal. Male student volunteer were told that they were going to answer a questionnaire about their reactions to a new vitamin called suproxin. In reality, they were all injected with a drug called epinephrine. The volunteers were divided into four groups. Their progress were as follows –

Group 1 – (informed group) injection causes physical arousal in the form of increased heartbeat rate, rapid breathing and a reddened facewas told to the volunteers.

Group 2 – (misguide group) injection causes headache, etching was told to these volunteers.

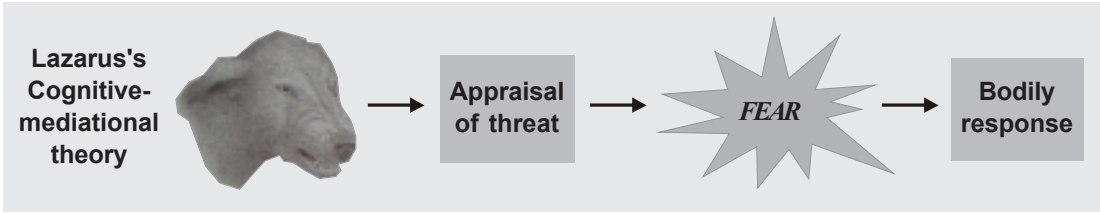
Group 3 – (uninformed group)injection doesn't cause anything was told.

Group 4 – (controlled group) only distilled water was injected which doesn't cause anything.

From the above, misguided and uninformed group volunteers were asked to describe their own emotions. Volunteers who had been exposed to the 'angry' man interpreted their arousal symptoms as anger whereas those exposed to the "happy" man interpreted their arousal as happiness. In all cases, the actual arousal was the epinephrine and the physical symptoms of arousal were identical. The only difference between two groups of participants was their exposure to the two different contexts.

4) Lazarus cognitive meditational theory :–

In Lazarus (1991) opinion, the most important aspect of any emotional experience is how the person interprets or appraises the stimulus that causes the emotional response to that stimulus.



For example, remember the person who encountered a snarling dog while walking through the neighborhood. According to Lazarus the appraisal of the situation would come before both the physical arousal and the experience of emotion. If the dog is behind a sturdy fence, the appraisal would be something like 'no threat'. The most likely emotion would be annoyance and the physical arousal would be minimal. But if the dog is not confined, the appraisal would more likely be 'danger threatening animal' which would be followed by an increase in arousal and the emotional experience of fear.

Not everyone agrees with this theory, of course some researchers believe that emotional reactions to situation are so fast that they are almost instantaneous, which would leave little time for a cognitive appraisal to occur first (Zajonc, 1998).

Which theory is right? Human emotion are so incredibly complex that it might not be out of place to say that all of the theories are correct to at least some degree.

Questions for Self - Study - 2

M. C. Q.

1. According to ..... theory, brain first experiences physical changes and later on emotional changes.
   (a) Cannon - Barel *(c) Schchter - Singer*
   (b) Jameslange *(d) Lazarus.*

2. According to ..... theory emotional and physical situations takes place simultaneously.
   (a) Cannon *(c) Carl Lange*
   (b) Schachter *(d) Lazarus.*

3. Williom James and ..... proposed emotional theory.
   (a) Cannon *(c) Carl Lange*
   (b) Schachter *(d) Lazarus.*

4. Walter carion and ..... proposed emotional theory.
   (a) Philip Bard *(c) Carl Lange*
   (b) Williom James *(d) Lazarus.*

5. Stanley Schachter and Jarom Singer proposed ..... theory.
   (a) hypotlamic *(c) stimulative*
   (b) cognative *(d) sensitive.*

6. Physical awareness and emotional experience ..... before situation exist.
   (a) cognitive *(c) emotional*
   (b) physical *(d) social.*

7. Cannons and Bards theory is called as ..... .
   (a) sudden *(c) sensitive*
   (b) cognitive *(d) perceptive.*

1.2.4 Application- Being happy

Emotion is one of the important factor in human life. Humans are intelligent, but some things which do not happen with intelligence are done with power of

emotion. Behind every work of human being there is emotion. Emotions keep human on top level.

But control on emotion is necessary, otherwise you will face lot of problems in life, Physical, psychological problems may occur. One emotion that is probably nearest and dearest to most people is happiness, a state of well-being and contentment that is much to be desired. a view point that recommends shifting the focus of psychology away from the negative (abuse, anxiety, depression all the things that can go wrong) to a more positive focus on strengths wall being, and the pursuit of happiness.Myers (1993) lists 10 suggestions for becoming happier that are based on his many years of research;

1. Realize that enduring happiness doesn't come from success : Money, power and fame do not guarantee happiness. If people don't have wealth, they may be miserable, unhappy circumstances, but the revers is not necessary true; Money really doesn't buy happiness. Psychiatrists and clinical psychologists often have very wealthy, successful people as clients.

2. Take control of your time : people who feel in control and their lives lives by good time management skills are also happier people. Setting goals and breaking those goals down into steps can help a person see progress on daily basis. Make list and cross off items as they are finished.

3. Act Happy : Put on a happy face when people smiles, it releases chemicals that make them better and when they frown, the opposite occurs. Think happy, talk happy, act happy, and you will be happier.

Seek work and leisure activities that engage your skills; doing things that are challenging without over whelming can result in more happiness in both work and leisure activities. There can be more happiness in tending ones garden than in taking a world tour.

4. Join the "movement "movement : exercise, particularly aerobic exercise, will not only help you to feed better and look better physically, but also it relieves depression and anxiety. Get moving and get happier.

5. Give your body the sleep it wants : Sleep deprivation is bad for the mind, body and the mood. Sleep-deprived people are crabby where as people who have time to sleep and rest adequately are typically happier.

6. Give priority to close relationships : A good social support system just can't be beat friends offer support and help to get you through the bad times. Take time to nurture friendship and relationships.

7. Focus beyond the self : not only do happy people help other people more readily,but also they are happier for doing so. Helping others make people feel good.

8. Keep a gratitude Journal : writing down the positive things that you have, such as a good thing that happened today, the friends you saw, and things that you did and enjoyed, also boost a sense of wellbeing.

9. Nurture your spiritual self : People with a strong sense of faith also tend to be happier. Communities based on shared belief systems about faith provide a good support system. These communities can also give a person a sense of purpose and provide hope during times of stress. People involved in these communities also tend to help others too.

1.3 Key words and meanings

- **Emotions :** Emotions is the feeling aspect of consciousness characterized by a certain physical arousal, a certain behavior that reveals the feeling to the outside world ,and an inner awareness of feelings.
- **Physical changes :** when a person gets some emotional experience, his sympathetic nervous system stimulates.
- **Rules of Exhibition :** It is the way to control the social circumstance.
- **Cognitive awareness theory :** before getting emotional experience two things – physical awareness and labeling the awareness on the basis of contemporary suggestions.

1.4 Summary

Emotion is the, 'feeling' aspect of consciousness and includes physical behavioral, and subjective components. Their differences of opinion in the psychologists on how emotions are created James Lange, Cannon Bord, Schachter Singer and Lazarus have proposed their theories in this regard. For being happy in, David Myers has made ten suggestions.

1.5 Key to Self - Study Questions

Questions for Self - Study - 1

1. *Simulative*
2. *Fear*
3. *Darwin.*

Questions for Self - Study - 2

1. *Cannon - Bard*
2. *Carl Lange*
3. *Schachter Singer*
4. *Philip Bard*
5. *cognitive*
6. *cognitive*
7. *Sudden.*

1.6 Assignment for practice

(A) Write short notes on :-

1. Physical experience through emotional expression.
2. Emotional expression.
3. Personal experiences of emotion.
4. James – Lange theory.
5. Cannon - Bard's theory.
6. Schachter Singer's theory.
7. Lazarus's theory.

(B) Answer the following questions.

1. Define Emotion. Explain physical keys.
2. Explain in details definition of emotion and its expression.
3. Write on various theories of emotion.
4. Explain Schachter Singer's theory of emotion.

1.7 Books for Reading

1. **Ciccerelli, S. K., and Meyer, G. E.** (2006). *Psychology*, south Asian edition Indian cubconfinent adaptation 2008. Published by Dorling Kindersley India pvt. Ltd. Page No.- 378 to 388.

2. **Feldman, R. S.** (2005). *Understanding Psychology*, Tata McGraw Hill Publishing company Ltd. New Delhi. (Page – 342 to 355).

3. **Ciccerelli, S. K., and Meyer, G. E.** (2005). *Mansasashatra Translator* – Amruta Oak , Shobhana Abhyankar, Shila Golwilkar – Manasshastrta Daxin Asia Aavrutti parson education, ink 2008 (Page No. 119 to 131).

4. **Pandit, R. V.,** *Manasshastrachi Multatve*, Nagpur Vidya Prakashan, (Page No-75 to 91).

5. **Pandit, R. V., Kulkarni, A. V., and Gore, C. V.,** *Saamanya Manasshastra*, Pimpalpure & Co. Publishers, Nagpur (Page No. 222 to 241).

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Semester - II : Unit - 2

Learning and Memory

2.0 Objectives

2.1 Introduction

2.2 Subject Explanation

2.2.1 Definition of Learning

2.2.2 Theories of Learning

2.2.3 Operant Conditioning

2.2.4 Definition of Memory Process

2.2.5 Types of Memory

2.2.6 Application : Techniques of Improving Memory

2.3 Key words and meaning

2.4 Summary

2.5 Key to Self - Study Questions

2.6 Assignment for Practice

2.7 Books for Reading

2.0 Objectives

After studying this chapter, you will be understand following concepts :-

1. Define Learning.
2. Understand types of Learning.
3. Get the information of Classical conditioning and to understand the importance of classical conditioning.

4. Describe the operant conditioning experiment and explain its characteristics.
5. Understand the Process of Memory.
6. Understand how information is process from sensory memory to S.T.M. and L.T.M.
7. Understand types of Memory.
8. Learn how to store information into L.T.M.

2.1 Introduction

❒ **Definition And Nature :-**

In day to day life we learn so many things. We learn something how to do it is called learning. The term learning is one of those concepts whose meaning is crystal clear until one has to put it in actual words. “Learning is when you learn something” A more suitable definition is learning is any relatively permanent change in behaviour brought.

2.2 Subject Explanation

2.2.1 Definition of Learning

Different Psychologists has given different definitions of learning such as –

1. **Gilford :** Slowly changes takes place in the pattern of behaviour is called learning.
2. **Woodwarth :** Learning is any action which brings development and make the different nature of his experience and environment.
3. **Murphy :** Learning is a combination of behaviour and eruption.
4. **Ruch :** Learning is a process which brings changes in behaviour and environment while reacting to surrounding.
5. **Morgan, King, Weg and Scopler (1984) :** Learning can be defined as any relatively permanent change in behaviour that occurs as a result of experience.
6. **Gates :** Changes in behaviour through experience is called learning.

All above definitions indicates that learning brings changes in behaviour that occurs as a result of practice or experience. These definitions gives more emphasis on the changes in behaviour which brings due to practice or experience. Also these changes are relatively permanent.

❒ Characteristics of Learning :-

- Learning brings changes in behaviour.
- Practice and experience has greater importance in learning.
- Changes in behaviour are relatively permanent.
- Behavioural as changes are modified.
- Establishment of stimulus response association.

About by experience or practice. What does relatively permanent mean? And how does experience change what we do? The relatively permanent refers to the fact that when people learn anything, some part of their brain is Physically changed to record what they have learned. This is actually a process of memory, for without the ability to remember what happens, people cannot learn anything. About the part of experience or practice. Remember about the past experience that you did something that caused you a lot of trouble are you going to do it again? Of course not. You don't want to experience that trouble again. So you change your behaviour to avoid the troublesome consequences. This is how children learn not to touch to burning lamp. And when person does something which gives a lot of pleasure, that person is more likely to do that something again. This is another change in behaviour.

In short learning can be defined as any relatively permanent change in behaviour that occurs as a result of practice or experience. This definition gives more emphasis on changes in behaviour which bring due to practice or experience.

2.2.2 Theories of Learning

❒ Classical conditioning :-

Ivan Pavlov who was a Russian Physiologist was studying the digestive system in his dog, for that purpose he built a device that would accurately measure the amount of saliva produced by the dogs when they were fed a measured amount of food. Normally when food is placed in the mouth of any animal, the salivary glands

automatically starts releasing saliva to help with chewing and degustation. This is normal in both animals and human. The food causes a particular reaction, the salivation. A stimulus can be defined as any object, event or experience that causes a response, the reaction of an organism. In Pavlov's experiment the food is the stimulus and salivation is the reaction.

Ivan Pavlov

❒ **Pavlov and The Salivating Dogs :-**

While Pavlov was studying with his dog about the digestive system he noticed that his dogs began salivating when they were not supposed to be salivating. Some dogs would start salivating when they saw the lab assistant bringing their food, others when they heart clatter of the food bowl from the kitchen and still others when it was the time of day they were usually fed. Pavlov spent rest of his career studying what eventually he termed classical conditioning, learning to make a refit response to a stimulus other than the original, natural stimulus that normally produces it.

❒ **Elements of Classical conditioning :-**

Pavlov eventually identified several key elements that must be present and experienced in a particular way for conditioning to take place.

Some of the Important concepts in Classical Conditioning :-

❒ **Unconditioned Stimulus (U.S.) :-**

The original, naturally occurring stimulus is called the unconditioned stimulus. The term unconditioned means unlearned or naturally occurring. This is the stimulus that ordinarily leads to the reflex, involuntary response. In the Pavlov's dogs the food served is the unconditioned stimulus.

❒ **Unconditioned Response (U.R.) :-**

The reflex response to the unconditioned stimulus is called the unconditioned response. It is unlearned and occurs because of genetic wiring in the nervous system. For example in Pavlov's experiment the food given to the dogs is the UCS and the Salivation to that food is the UCR.

❒ **Conditioned Stimulus (C.S.) :-**

Pavlov determined that almost any kind of stimulus could become associated with the unconditioned stimulus. If it is paired with the UCS often enough. In his original study for example the sight of the food dish itself become a stimulus for salivation before the food was given to the dogs. Every time they got food at this point the dish was called a neutral stimulus.

❒ **Conditioned Response (C.R.) :-**

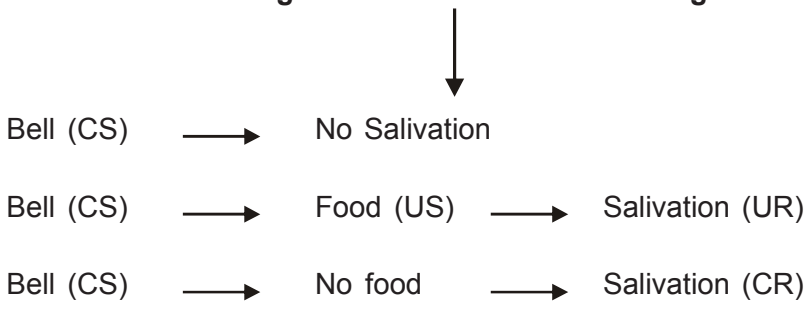
The response that is given to the CS is not usually quite as strong as the original conditioned response but it is essentially the same response. However because it comes as a response to the conditioned stimulus, it is called the conditioned response (CR) or sometimes the conditioned reflex.

Ivan Pavlov's Classical conditioning Experiment :-

The whole idea of classical conditioning is not as complex as it sounds, that gets. Pavlov did a classic experiment in which he paired the ringing of a bell with the presentation of food to see if the dogs would eventually salivate to the sound of bell. Since the bell did not normally produce salivation, it was the neutral stimulus before any conditioning took place. The repeated pairing of the C. S. and U. S. is usually called acquisition, because the organism is in the process of acquiring learning. The following chart of how each element of the conditioning relationship worked in Pavlov's experiment.

In the following chart notices that the responses CR and UR are the same that is salivation. They simply differ in what are the response to. An unconditioned stimulus (US) is always followed by a an unconditioned response and a conditioned stimulus is always followed by a conditioned response.

Figure of Classical conditioning



❒ Stimulus Generalization :-

Pavlov discovered very early in his work that if he conditioned an animal to salivate at the sound of a bell, it would also salivate to other types of sounds such as sound of buzzer or the beat of metronome. In other words the animal tended to generalize the conditioned response to other stimuli that were somewhat similar to the original conditioned stimulus. Pavlov also found that the strength of the response to the similar sound was not as strong as to the original one, but the more similar the other bell tone was to the original bell tone the more similar the strength of the response was as well. The tendency to respond to a stimulus that is only similar to the original conditioned stimulus is called stimulus generalization.

❒ Stimulus Discrimination :-

Discrimination is the process of learning to make one response to one stimulus and a different response or no response to another stimulus. Of course, Pavlov did not give the dogs any food after the similar bell sounded. The only got food following the correct CS. It didn't take long for the dogs to stop responding to the fake bell sounds altogether. Because only the real CS was followed with food, they learned to tell the difference or discriminate, between the fake bells and real one, a process called stimulus discrimination. Stimulus discrimination occurs when an organism learns to respond to different stimuli in different ways.

❒ Extinction :-

Any acquired response can be eliminated. This is so with a conditioned response too. When Pavlov had stopped giving the dogs food after the real CS dogs gradually stopped salivating to the sound of the bell. When the bell (CS) was repeatedly presented in the absence of US the salivation CR stopped this process called extinction.

❒ Spontaneous Recovery :-

After extinguishing the conditioned salivation response in his dogs Pavlov watched a few weeks putting the bell away. There were no more training sessions and the dogs were not exposed to the bell's ringing in that time at all but when Pavlov took the bell back out and rang it, the dogs all began to salivate, although it was a fairly weak response and didn't last very long. This brief recovery of the conditioned response proves that the CR is still in there somewhere. It isn't dead

and gone, it's just suppressed or inhibited by the lack of an association with the unconditioned stimulus of food. As time passes, this inhibition weakness, especially if the original conditioned stimulus has not been present for a while in spontaneous recovery the conditioned response can briefly reappear when the original CS returns, although the response is usually weak and short-lived.

2.2.3 Operant Conditioning

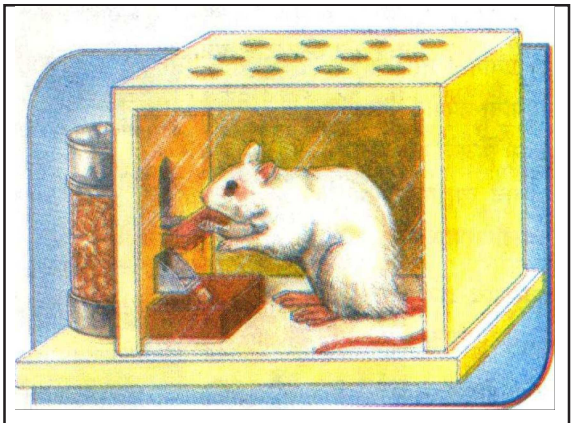
There are two kinds of behaviour that all organisms are capable of doing involuntary and voluntary.

Classical conditioning is the kind of learning that occurs with reflexive, involuntary behaviour. The kind of learning that applies to voluntary behaviour is called operant conditioning and it is both different from and similar to classical conditioning.

❒ **Thorndike's Experiment : (Frustrating cats : Thorndike's puzzle BOX and the law of effect) :-**

Edward Thorndike (1874-1949) was one of the first researchers to explore and attempt to outline the laws of learning voluntary responses, although the field was not yet called operant conditioning. Thorndike placed a hungry cat inside a "puzzle box" from which the only escape was to press a lever located on the floor of the box. Which is how in the following figure.

Cats definitely do not like being confined as anyone who has ever tried to stuff one into a travel box will know and there is a dish of food outside the boss, so the cat is highly motivated to get out. Thorndike observed that the cat would move around the box, pushing and rubbing up against the wall in an effort to escape Eventually the cat would accidently push the lever, opening the door. Upon escaping the cat was fed from a dish placed just outside the box. The lever is the stimulus, the pushing of the lever is the response, and the consequence is both escape and food.



Skinner Box

The cat did not learn the connection between the lever and the escape right way. After a number of trials in a box like this one, the cat took less and less time to push the lever to deliberately open the door, it had, made an association between pushing the lever and opening the door. Each time the cat rubbed and pushed at the part of the box that had led, to freedom and food, more quickly.

❒ Law of Effect

On the basis of this research Thorndike developed the **law of effect**. If a response is followed by a pleasurable consequence it will tend, to be repeated, if a response is followed by, an unpleasant consequence will tend not to be repeated (Thorndike, 1911). This is the basic principle behind, learning voluntary behaviour.

❒ Operant Conditioning

Operant conditioning means another type of conditioning. This theory shows that here learning process is something different than classical conditioning. B.F. Skinner conducted many experiments on Rat. He notice that operant conditioning takes place in different manner and in different situation that the classical conditioning. The name operant conditioning is given because the response is instrumental in producing reinforcement. The credit of this operant conditioning theory goes to B.F. Skinner. B.F. Skinner argued that creating pleasant consequences that follow specific form of behaviour would increase the frequency of behaviour. But if the consequences are unpleasant the behaviour is likely to be repeated. This phenomenon is known as the law of effect, is fundamental to operant conditioning.

B.F.Skinner (1904-1990)

Operant Conditioning Experiment

B. F. Skinner has conducted many experiments on rat in this experiment he used an apparatus called Skinner Box. This is a simple box with lever at one end. A hungry rat is placed in the box. After a short time the rat gets restless and moves about. When it happens to press the lever, a pallet of food is released. It continuous to move about and again by chance

presses the lever ultimately, it notices the pallet of food. When it drops in the place, and cats it. Afterwards it presses the lever rapidly and eats every pallet which is delivered. Now Rat learned that by pressing the lever it will get food. If he presses the lever he will get the food otherwise not. Here rat learns to operate the instrument and pressing the lever for obtaining food.

❒ The Concept of Reinforcement :-

According to Skinner reinforcement means anything that when following a response, causes that response to be more likely to happen again. This means that reinforcement is a consequence that is in some way pleasurable to the organism, which relates back to Thorndike's Law of Effect. The pleasurable consequence is what is in it for the organism the reward, so to speak.

Going back to Thorndike's puzzle box research what was in it for the cat? We can see that the escape from the box and the food that the cat received after getting out are both reinforcement of the lever pushing response. Every time the cat got out of the box it got reinforces for doing so. In Skinners view this reinforcement is the reason that the cat learned anything at all. In operant conditioning reinforcement is the key to learning.

❒ Primary Reinforcer :-

An reinforces that is naturally reinforcing by meeting a basic biological need such as hunger thirst or touch. A reinforcer such as candy bar that satisfies a basic need like hunger is called a primary reinforces. Examples would be any kind of food (hunger drive) liquid (thirst drive) or touch (pleasure drive) infants toddlers, preschool age children and animals can be easily reinforced by using primary reinforcers.

❒ Secondary Reinforcer :-

Any reinforce that becomes reinforcing after being paired with a primary reinforce such as praise, tokens or gold stars. Secondary reinforcers get their reinforcing power from the process of classical conditioning. After all the pleasure people feel when they eat or drink is a reflex response and any reflect can be classically conditioned to occur to a new stimulus.

❒ **Positive and Negative Reinforcement :-**

Reinforcers can differ in the may they are used. Most people have no trouble at all understanding that following a response with some kind of pleasurable consequence (like a reward) will lead to an increase in the of likelihood of that response being repeated. But many people have trouble understanding that the opposite also true. Following a response with the removal or escape from something unpleasant will also increase the likelihood of that response being repeated. Reinforcement does not always mean reward.

Getting money for working is an example of positive reinforcement, the reinforcement of a response by the addition or experience of a pleasurable consequence such as reward, or a pat on the back. That one everyone understands. But avoiding or scolding by lying about one's behaviour is an example of negative reinforcement. Negative reinforcement is the reinforcement of a response of an unpleasant stimulus. Because the behaviour result in avoiding an unpleasant stimulus (the scolding) the likelihood that the person will behave that way again is increased just as positive reinforcement will increase a behaviour's likelihood.

Questions for Self - Study - 1

❒ **Complete the following sentence by choosing correct alternative.**

1. …….. is called father of operant conditioning.
   (a) Pavlov (b) Thorndike (c) Skinner (d) Watson.
2. Operant conditioning experiment was conducted on ……. animal.
   (a) Dog (b) Rat (c) Horse (d) Cat.
3. ..... is the process of learning to make response or no response to another stimulus.
   (a) Stimulus Discrimination (c) Extinction
   (b) Generalization (d) Reinforcement.
4. ..... conditioning principles are used for behaviour modification.
   (a) Classical (b) Operant (c) Observational (d) Trial and error.
5. Getting money for working is an example of ..... reinforcement.
   (a) Negative (b) Positive (c) Neutral (d) Zero.

6. …….. is called father of Classical conditioning.

(a) Skinner (b) Pavlov (c) Bandura (d) Watson.

7. In Pavlov's experiment ..... was the conditioned stimulus.

(a) Food (b) Bell (c) Light (d) Metronome.

8. Classical conditioning experiment was conducted an ..... animal.

(a) Cat (b) Rat (c) Dog (d) Monkey.

9. Permanent change in behaviour is called ..... .

(a) Memory (b) Learning (c) Attention (d) Sensation.

10. ..... proposed trial and error method.

(a) Thorndike (b) Maslow (c) Wound (d) Watson.

2.2.4 Definition of Memory Process

Memory is a process but it also has a place in the brain. Memory may be defined as an active system that receives information from the senses, organizes and alters it as it stores and then retrieves the information from storage. In short memory as the process by which we encode, store and retrieve information. Memory is also defined as the retention of information over time through encoding, storage and retrieval.

There are several different models shows that how memory works and these all models involve the same processes that is getting the information into the memory system, storing it there and getting it back out.

❒ **Encoding :-**

The first stem in the memory system is to get sensory information (sound, sight etc.) into a form that the brain can use, this process is called encoding process. Encoding is a set of mental operations that people perform on sensory information to convert that information into a form that is usable in thebrain storage system. For example, when people hear a sound, their ears turn the vibrations in the air in to neural messages from the auditory nerve, which makes it possible for the brain to interpret that sound.

Encoding refers to the process by which information is initially recorded in a form usable to memory.

❒ **Storage : Keeping it in :-**

The next step in the memory process is storage in which the information is hold for some period of time. This period of time will actually be of different length, depending on the stage of memory being used. For example in one stage of memory people hold on to information just long enough to work with it. About 20 seconds or so. In another stage of memory. People hold information more or less permanently.

❒ **Retrieval (Getting it out)**

The main problem of people is retrieval that is getting information which already stored in memory.

2.2.5 Types of Memory

1. Sensory Memory

Sensory memory is the first stage of memory, the point at which information enters the nervous system through the sensory system- eyes, ears and so on. Think of it as a door that is open for a brief time, looking through the door one can see many people and objects, but only some of them will actually make it through the door itself. Sensory memory is a kind of door onto the world.

Information is encoded in to sensory memory as neural messages in the nervous system. As long as those neural messages are travelling through the system, it can be said that people have memory for that information that can be made available if needed. In sensory memory information can be held for a very brief time in the sensory channels themselves. This storage function of the sensory channels is called the sensory register. Most of the information briefly held in the sensory register is lost, what experiences have been briefly stored simply disappears from the register. However me pay attention to and, recognise same of the information in the sensory register, when we do this the attended to information is passed on to short term memory for further processing, sterling conducted certain experiments which have shown that the visual sensory holds information for up to 1 second, while the auditory register holds information up to 4/5 seconds.

❒ Iconic Sensory Memory :-

Icon is the Greek word for “image” iconic memory was studied in several classic experiments by George Sperling (1960) creating such type of images means it is the beginning of memory process. Sperling had found in his early studies that if he presented a row of letters using a machine that allowed very fast presentation, his subjects could only remember about for or five of the letters, no matter how many has been presented.

❒ Duration of Iconic Memory :-

In real life information that has just entered iconic memory will be pushed out very quickly by new information a process called masking (Cown, 1988). Research suggest that after only a quarter of second old information is replaced by new information.

❒ Echoic Sensory Memory :-

The other type of sensory memory is echoic memory, or the brief memory of something a person has heard. A good example of echoic memory is the “what?” Phenomenon. You might be reading or concentrating on the television and your parent, or friend walks up and says something to you, you sit there for a few seconds and then say “What?” Yes I am coming or whatever comment is appropriate. You diden’t really process the statement from the other person as he or she said it you heard it but your brain didn’t interpret it immediately. Instead it took several seconds for you to realize that 1) Something was said 2) it may have been important and 3) you’d better try to remember what it was. If you realize all this within 4 seconds you will more than likely to be hear an echo of the statement in your head, a kind of instant reply.

Echoic memory’s capacity is limited to what can be heard at any one moment and is smaller than the capacity of iconic memory although it last longer about 2 to 4 seconds (Schweickort, 1993)

❒ Short Term Memory (STM) :-

Information moves from sensory memory to the next stage of memory called short term memory whatever information is received from sense organs will be held for very brief time. The duration of S.T.M. is not more than 15 to 30 seconds, afterward the information disappears from the S.T.M. for that purpose process of

selective attention is important S.T.M. is considered as a small compartment of memory where the capacity of this compartment is very brief. When a person is thinking activity about some information, that information is said to be conscious. It can also be said to be in S.T.M. the memory system in which information is held for brief periods of time while being used.

Another way to think about S.T.M. is a working memory. This term emphasizes the fact that S.T.M. is not only a "box" into which information is placed but is a working active system that processes the information it consists at any given moment.

George Miller (1956) wanted to know how much information humans can hold in STM. If any one time he used a memory test called the digit span test, in which a series of numbers is read to subjects in the experiment who are then asked to recall the numbers in order. Each series gets longer and longer, until the subject cannot recall any of the numbers in order. In this experiment they found that the capacity of S.T.M. is about seven items or pieces of information, plus or minus two items or from five to nine bits of information Miller called this the "magical number seven, plus or minus two." Research has shown that S.T.M. lasts from about 12 to 30 seconds without rehearsal (Atkinson & Shiffrin, 1968; Brown, 1958; Peterson and Peterson, 1959). After that, the memory seems to rapidly decay or disappear.

❒ Long Term Memory (LTM) :-

The third stage of memory is long term memory the system into which all the information is placed to be kept more or less permanently. In terms of capacity LTM is unlimited (Baharick, 1984; Barnyard and Grayson, 1996).

The capacity of L.T.M. is unlimited. Generally learning treces are not disappear these traces are strew in L.T.M., As for duration the name long term says it all. There is physical change in the brain itself when a long term memory is formed. This physical change is relatively permanent. That means many of the memories people have stored away for a long, long time- even since childhood are probably always there. That does not mean people can always retrieve those memories. The memories may be available but not accessible, meaning that they are still there, but for various reasons people cannot get to them. Although many long term memories are encoded as images, sounds, smells and tastes, in general L.T.M. is encoded in meaningful form, a kind of mental storehouse of the meanings of words, concepts, smells and tastes involved, in these events have some sort of meaning attached to them that gives them enough importance to be stored long term. If S.T.M. can be

thought of as a working surface or desk, then L.T.M. can be thought of as a huge series of filing cabinets behind the desk, in which files are stared in an organized fashion according to meaning.

Types of Long Term Memory (LTM)

1. Procedural Memory :-

Memories for skills that people know how to do, like tying shoes and riding a bicycle are a kind of L.T.M. called procedural memory. Procedural memories also include emotional association's habits and simple conditioned reflexes that may or may not be in conscious awareness. Procedural memory is often called implicit memory because memories for these skills, habits and learned reflexes are not easily retrieved in to conscious awareness. The fact that people have the knowledge of how to tie their shoes.

2. Episodic Memory :-

Episodic memory refers memories of what has happened to people, each day, certain birthday's anniversaries that were particularly special, childhood events and so on are called episodic memory, because they represent episodes from their lives unlike procedural and semantic long term memories, episodic memories tend to be updated and revised more or less constantly. You can probably remember what you had for break fast today, but what you had breakfast two years ago on this date is not possible to remember. Episodic memories that are especially meaningful such as the memory of the first day of school or your first date, are more likely to kept in L.T.M. (although they may not be as exact as people sometimes assume they are).

3. Semantic Memory :-

This is another type of L.T.M. The word semantic refers to meaning. So this kind of knowledge is the awareness of the meaning of words, concepts and terms as well as names of objects, math skills, and so on. This is also the type of knowledge that is used on game shows.

Semantic memory is another way of organizing information in L.T.M. All the information we have cannot neatly fit into conceptual hierarchies. A semantic network is less systematic and consists of modes representing concepts, joined together by pathways that link related concepts.

2.2.6 Application : Techniques of Improving Memory

Psychologists have suggested some of techniques by which we can improve memory, these techniques are :-

[A] Effective Study Habits :-

According to the nature of leaving material, our capacities and study habits we have to select suitable learning methods.

1. Distributed Practice v/s Massed Practice :-

This is especially important in studying academic material where it is better to distribute the studying into different periods of time rather than studying in one setting. If you devote five hours to studying a lesson you would be better off studying for one hour on five different occasions than studying for five hours on one occasion.

2. Part v/s Whole Method :-

Part method is better for learning a poem by separate stanza and learn it by making different parts of the poem. So that the whole poem will be remembered and stored for long-time. Whole method is better for learning a poem from beginning to end continuously. According to some psychologists part method is better and some believes that whole method is better method.

3. Recitation :-

After learning the study material you have to recite it and check how much you can remember and which part remembered and which cannot in recitation emphasis is given on rehearsal but rehearsal must be meaningful one.

[B] Attention :-

In memory process attention is most important. The magic of good memory hides in attention. Whatever you want to learn try to understand its meaning and content and concentrate fully on that material as a result your memory will improve. Along with attention individuals emotions are also important. For example, learning a favourite song, poem favourite actors dialogue can be remembered easily in short the learning material which gives pleasant experiences are given more emphasis.

[C] SQ3R Method :-

This is another method used for learning material. Here is S refers for survey Q refers for question, 3R means Read, Recite and Review. According to this method intitially lesson survey is important then ask the questions about it and find out the answers of that questions. Questioning improves your learning then you have to read the lesson carefully, then recite it and finally make review of the lesson. This method help to improve your memory.

[D] Mnemonics

❒ Visual imagery :-

Memory can be enhanced by the use of visual imagery using the link method and, the method of loci. The loci system works by having subjects encode items to remember with familiar places. Then association between the places and items are mode.

❒ Use acronyms and acrostic :-

Acronyms are a mnemonic strategy where words are made up from the first letters of a series of words, and those words encode more information. For example you might have remembered the colours in the light spectrum by using acronym VIBGYOR. VIBGYOR stands for Violet, Indigo, Blue, Green, Yellow, Orange and Red. Acrostics use chunking strategies for example, the poem –

Thirty days has September,

April, June and November,

All the rest have thirty one

Save February.

But in leap year twenty-nine.

It helps to remember the number of days in each month.

❒ Minimize Interference :-

Interference is a major cause of forgetting. For students it is thus important to conduct one last thorough review of the material as close to exam time as possible. This will prevent loss due to interference from the intervening activities.

❒ **Engage in deep processing :-**

It is important to understand the meaning or what is read if it is to be remembered. It is also to more useful to make the material personally meaningful.

❒ **Organize information :-**

Finally, keeping a list is also an encoding strategy. I keep a paper list as well as a computerised list. That nay I do not need to encode items; I just write them down. Keeping a list is a very efficient way of a remembering item, but you have to learn how to keep up with your list. If you lose your list, for example you could be in a lot of memory trouble.

Questions for Self - Study - 2

❒ **Complete the following sentence by choosing correct alternative.**

1. …….. memory is the first stage of memory.
   (a) S.T.M. *(b) L.T.M.* *(c) Sensory* *(d) Working.*
2. The duration of S.T.M. is ..... .
   (a) One year *(c) 15 to 20 seconds.*
   (b) Ten Months *(d) 20 miliseconds.*
3. ..... memory is a huge store house of information.
   (a) Sensory *(c) S.T.M.*
   (b) L.T.M. *(d) Working.*
4. Iconic memory was studied in several classic experiments by ..... .
   (a) George Sperling *(c) Miller*
   (b) Ebbinghaus *(d) Pavlov.*
5. George Miller used a memory test called ..... .
   (a) digit span test *(c) R.I.T.*
   (b) M.M.P.I. *(d) forgetting.*

2.3 Key words and meaning

❍ **Learning :** Any relatively permanent change in behaviour that occurs as a result of practice or experience.

- **Reinforcement :** Any event or stimulus that increases the probability of occurance of the response.
- **Unconditioned Stimulus :** Naturally occuring stimulus.
- **Unconditioned Reponse :** The reflex response to the unconditioned stimulus.
- **Conditioned Response :** The response that is given to the CS.
- **Memory :** An active system that retrieves the information from storage.

2.4 Summary

In psychology the concept of learning is used in broader meaning. Leaving means changes in behaviour and these changes can be measured. Learning is a process which is going continuously through life. We learn through different methods such of trial and error, observation, limitation, insight classical conditioning operant conditioning etc. Classical Conditioning is first and most important type. Ivan Pavlov conducted the experiment on dog. A kind of learning in which a previously neutral stimulus comes to elicit a response through it association with a stimulus that ntarually brigns about the response.

Operant Conditioning is found by B. F. Skinner. Operant conditioning means leaving in which as voluntary response is strengthened or weakened depending on its positive or negative consequences, the organism operates on its instruments in order to produce a particular result. Reinforcement is any event or stimulus, that when following a response, increases the probability that the response will occur against a rain forcer such as a candy bar that statistics a basic need like hunger is called Primary reinforce. A secondary reinforce such as money, however, gets its reinforcing properties from being associated with primary reinforces in the past secondary reinforce is any reinforce that becomes reinforcing after being paired with a primary rein forcer such as praise to kens or gold stars.

Memory is an active system that receives information from storage. There are several different models of how memory works; all of them involve the same three processes that is getting the information into the memory system, storing, it there and getting it back out. Encoding, storage and retrieval are the main processes of

memory. Three stage process of memory :- Information enters through the sensory system, briefly registered in sensory memory. Selective attention moves the information into S.T.M. where it is held while attention continuous. If the information receives enough rehearsal it will enter and be stored in L.T.M. psychologists has suggested different methods of improving memory, such as effective learning Attention, SQR. Also they suggested some memories such as visual imagery pegword method, method of Loci etc.

2.5 Key to Self - Study Questions

Questions for Self-Study – 1

1. *(c) Skinner.*
2. *(b) Rat.*
3. *(a) Stimulus Discrimination.*
4. *(b) Operant.*
5. *(b) Positive.*
6. *(b) Pavlov.*
7. *(b) Bell.*
8. *(c) Dog.*
9. *(b) Learning.*
10. *(a) Thorndike.*

Questions for Self-Study – 2

1. *(c) Sensory.*
2. *(c) 15 to 20 seconds.*
3. *(b) L. T. M.*
4. *(a) George sperling.*
5. *(a) digit Span test.*

2.6 Assignment for Practice

(A) Short Notes.

1. Characteristics of learning.
2. Stimulus Generalization.
3. Stimulus Discrimination.
4. Law of effect.
5. Primary Reinforcer.
6. Types of Memory.
7. Semantic memory.
8. L. T. M.
9. S. T. M.
10. Spontaneous Recovery.
11. Reinforcement.
12. Characteristics of Learning.

(B) Answer the following questions.

1. Describe the techniques of improving memory.
2. Explain Pavlov's classical conditioning experiment.
3. Explain operant conditioning experiment.
4. Describe different types of mnemonics.

2.7 Books for reading

1. **Ciccerelli, S. K., Meyer, G. E.** (2006). *Psychology*, South Asian edition Indian cubconfinent adaptation 2008. Published by Dorling Kindersley India pvt. Ltd. Page No.- 378 to 388.

2. **Feldman, R. S.** (2005). *Understanding Psychology*, Tata McGraw Hill Publishing company Ltd. New Delhi. (Page – 342 to 355)

3. **Hirave, Tadsare** (2013). *Psychology,* B. A. Part - I, Phadake Prakashan, Kolhapur.

4. **Lepton L. A.** (1990). *Mastering Psychology*, 2nd edition, Harried Bacon inc.

5. **Khatoon Najma** (2012). *General Psycology*, pearson publication.

6. B. A. I : *Psychology*, Centre for Distance Education, Shivaji University, Kolhapur.

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Semester - II : Unit - 3

Intelligence

3.0 Objectives

3.1 Introduction

3.2 Subject Explanation

3.2.1 What is Intelligence ?

3.2.2 Individual Differences in Intelligence

[A] Mental Retardation

[B] Giftedness

3.2.3 Theories of Intelligence

3.2.4 Nature versus Nurture Controversy

3.2.5 Measurement of Intelligence

3.2.6 Applications : Applying Emotional Intelligence in everyday life

3.3 Key words and Meaning

3.4 Summary

3.5 Key to Self-Study Questions

3.6 Assignment for Practice

3.7 Books for Reading

3.0 Objectives

1. To understand definitions and nature of intelligence.
2. To understand individual differences in intelligence.
3. To learn various studies of intelligence.
4. To know different concepts and techniques in measurement of intelligence.

3.1 Introduction

One day I had delivered a lecture before school teachers and parents. It was about how to develop intelligence of student through providing them nurturing environment. After the lecture, a mother of a student came to me and complained about school management for not giving admission to her second son who was mildly retarded. Was management right? Was it beneficial to admit such children in regular school? What about teachers[1] training and attitude development regarding schooling of these children? In India, the new law speaks explicitly about mainstreaming such students through regular schooling. But because of the misconceptions about low intelligence, even teachers are hesitated to deal with them. The misconceptions related to giftedness are also seen in our society. There is no appropriate mechanism even in the right to education act for separate schooling facilities for gifted students. In these conditions, one can realize the need for scientific understanding of the concept 'intelligence'. It will prove helpful in developing human potential.

3.2 Subject Explanation

3.2.1 What is Intelligence ?

Psychologists have defined intelligence in many ways. No single definition is absolutely agreed upon. Also, there are controversies in defining various aspects of intelligence. Following are few definitions given by different psychologists.

TABLE 1 : DEFINITIONS OF INTELLIGENCE

Researcher	Definition
Alfred Binet	It is the ability to judge and the faculty of adapting oneself to circumstances.
David Wechsler	It is the aggregate or global capacity to think rationally, to act purposefully and to deal effectively with environment.
Lloyd Humphreys	It is the ability of acquiring, storing and using information and conceptual skills in new contexts.
Howard Gardner	It is a potential for identifying problems and solving them effectively.

Researcher	Definition
Linda Gottfredson	The ability to deal with cognitive complexity and abstract ideas.
Sternberg & Salter	It is a goal-directed adaptive behavior.
Reuven Feuerstein	It is the unique propensity of human beings to change or modify the structure of cognitive Functioning in order to adapt to the changing demands of situations.

From the work of many researchers, two widely agreed definitions of intelligence are derived now. They are as follows.

1. Intelligence is defined as a very general mental capability that, among other things, involves the ability to reason, plan, solve problems, think abstractly, comprehend complex ideas, learn quickly and learn from experience.

- Mainstream Science on Intelligence (1994)
An editorial statement by fifty-two researchers

2. Intelligence is the ability to engage in various forms of reasoning, to understand complex ideas, to learn from experience, to adapt effectively to the environment and to overcome obstacles.

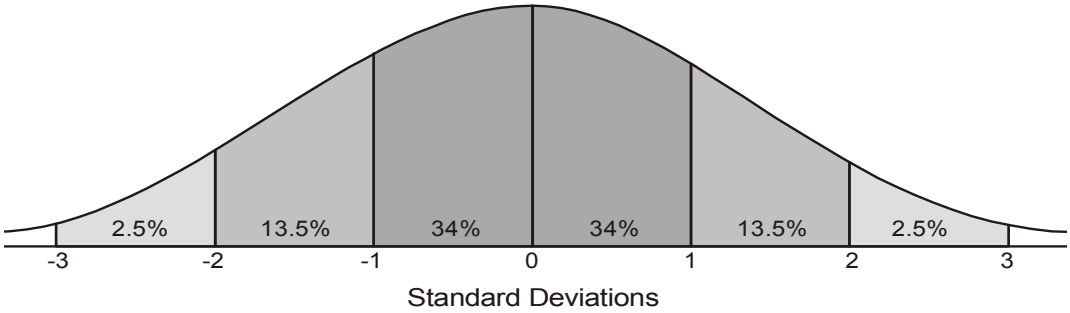
- A report by American Psychological Association (APA),
'Intelligence: Known and Unknown' (1995)

If we read above definitions carefully, we can understand that intelligence is not merely a bookish or academic skill but it entails broader capability of comprehending and adapting with surroundings. This intellectual performance may vary across time and context.

3.2.2 Individual Differences in Intelligence

Look at these statements in daily life : 'Dinesh has difficulty in solving simple arithmetic problems', 'Smita understands abstract concepts like equality, freedom, integrity easily', 'Ramesh is genius', 'Shaila has low intelligence'. These statements, though made by laymen, can be scrutinized scientifically. They may connote individual differences in intelligence. These differences are influenced by genetic as well as environmental factors.

FIGURE 1 : NORMAL DISTRIBUTION OF INTELLIGENCE



Psychologists have described how intelligence is spread among population with the help of Normal Probability Curve (See the above Bell Shape Curve). It suggests that approximately 68% population (middle dark area) possess normal intelligence (Intelligence Quotient ranges from 90 to 110). Nearly 13 to 14% population has higher intelligence (right side area) while 13 to 14 % population comes under lower intelligence category (left side area). Merely 2 to 2.5% population is described as mentally retarded (extremely left side area) while 2 to 2.5% are exceptionally good and genius (extremely left side area). For more detailed description, see the following table.

TABLE 2 : DESCRIPTION OF INTELLIGENCE ON THE BASIS OF I. Q.

Description of Intelligence	Intelligence Quotient (I. Q.)
Genius	140 and Above
Exceptional	120 - 140
Above Average	110 - 120
Normal / Average	90 - 110
Borderline	70 - 90
Mild Mental Retardation	50 - 70
Moderate Mental Retardation	25 - 50
Severe Mental Retardation	Below 25

3.2.2.1 Mental Retardation / Developmental Delay

Speaking in terms of intelligence quotient, person having 70 or below 70 I. Q.

is termed as mentally retarded. The I. Q. of mentally retarded people is significantly below (two standard deviations) the mean I. Q. on the normal distribution curve. Approximately 3% of the population lies in this category. The significant deficit in behavioral skills to adapt with the surrounding environment is observed in these cases. In contemporary world, the term 'Mentally Retarded' is discarded to protect the human rights of these individuals. The new terms 'Developmentally Delayed', 'Differently-abled' or 'Mentally Challenged' are now used.

Few definitions of Mental Retardation/Developmental Delay are given below.

It is the sub-average intellectual ability accompanied by significant deficits in adaptive behavioral skills necessary for independent daily functioning.

- American Association for Mentally Retarded People

It is the mental state which fully or partially blocks mental development of an individual.

- Rehabilitation Council of India

TABLE 3 : CLASSIFICATION OF MENTAL RETARDATION

(As given by American Psychiatry Association, 2000)

Classification	Range of I. Q. Score	Limitations in Adaptive Skills	Population Percentage
Mild	55-70	Can acquire basic independence and self-supporting skills through training. Can learn up to sixth standard.	90%
Moderate	40-55	With supervision they can live and work in sheltered environment. Can learn up to second standard.	6%
Severe	25-40	Under constant supervision, can learn to talk. Can perform basic self-care skills through training.	3%
Profound	Below 25	Even after long training periods, may learn very limited self-care skills. No schooling is possible. Require intensive care and supervision.	1%

Mental retardation is generally present from birth or infancy. It is behaviourally manifested through delayed or abnormal development, through difficulties in learning and through social adjustment problems. It delays the development of necessary independence and communication skills required in daily functioning. Having similar chronological age as that of others, the behavioural and cognitive skills of developmentally delayed persons are lagging behind (Smith & Mitchell, 2001).

Merely, the measure of I. Q. is not sufficient to diagnose developmental delay but one should look into the strengths and weaknesses of concerned person in following four areas.

1. Intellectual and adaptive behavior skills : Here, the ability to write, to read, to use language, to exhibit appropriate social skills like following rules and regulations in responsible manner are to be observed. Also, the adaptation with environment like skills at job or hygiene, to deal properly with money transactions etc. should be assessed.

2. Emotional and Psychological maturity : Proper care and educational recommendations are made on the basis of level of emotional maturity, characteristics of temperament and personality traits exhibited by developmentally delayed persons. The easygoing personality might require less attention and more facilitative environment than highly anxious persons who require more supervision.

3. Physical and Health conditions : The causes of physical and health conditions should be properly understood to treat these people effectively. For example, if severe malnutrition is the cause, it can be treated effectively so that intellectual and behaviour functioning can be significantly improved.

4. Environmental Consideration : Exposure to unhealthy physical environment is injurious to brain development. For example, eating paint chips leads to 'lead poisoning' (Lanphear et al., 2000). Exposure to polychlorinated biphenyls which are termed as PCBs and are used in transformers, capacitors, motors etc. as a dielectric and coolant fluids affects mental functioning (Darvill et al., 2000). Mercury exposure particularly during prenatal period (Grandjean et al., 1997) and other toxicants may also affect intellectual development. Lack of or little mental stimulation leads to perceptual deprivation and in turn, leads to inadequate brain development particularly during critical and formative years of infancy and childhood (Shah, 1991). Living in poverty conditions for longer period may produce mild retardation.

5. Biological and Genetic factors : Three most commonly seen biological factors responsible for delay hi development are *Fragile-X Syndrome, Down*

Syndrome and Fatal Alcoholic Syndrome. In fragile-X syndrome, thin and frail-looking area on twenty-third pair of chromosomes of male is observed. As children, these people experience mild developmental delay and it progresses towards severe or profound stages as they grow older (Dykens et al., 1994). Down syndrome people possess one additional chromosome on twenty-first pan- of chromosomes which causes mild to severe mental retardation. Their facial features look like Mongoloids. Fetal alcoholic syndrome is influenced by mother's alcohol addiction. It is the condition resulting from exposing a developing embryo to alcohol which leads to development delay of child (Oslon and Burger, 1997). Low level of supply of oxygen to baby during birth, damaging effects of diseases on fetus in the womb itself, use of drugs by mother, infections, diseases during childhood, accidents etc. are also the possible causes.

One should not forget however that developmentally delayed people have equal human rights as that of others and should be treated with dignity. They are equally responsive to love and affection as anyone else and need the same from others. Their warmth, compassion, friendliness should not be underscored because of deficits in intellectual capacity.

[A] Giftedness

Giftedness is an intellectual ability significantly higher than average. The gifted people are important for the progress of mankind. Their gifts should be nurtured properly through various educational and social mechanisms. These people are exceptionally intelligent and their I.Q. is above 130. Only two percent population comes under this category. If the I.Q. crosses 140 (less than one percent of the population), the persons are often called as *genius.* Some researchers prefer this word only when the person possesses exceptional intelligence with exceptional creativity (Kamphaus, 1993).

'Early ripe, early rot' was said about these people around the turn of 20th century. The young geniuses were assumed to lose their potentials early in life. But the later researches proved it as myth. The Stanford university psychologist Terman (1925) had carried out groundbreaking study on 857 boys and 671 girls having I. Q. from 130 to 200 as measured by the Stanford-Binet Intelligence Scale. He had demonstrated that these children were socially well adjusted and exhibited leadership skills. They were also more resistant to mental illnesses. Only few who have I. Q. of 180 and above had shown some problems in social and behavioral adjustments during childhood. These brightest children, popularly known as Termites,

earned more academic, occupational and financial success than their average peers (especially, men). It was also observed that those who were more successful have consistently exhibited higher sense of self than less successful gifted adults. The longitudinal study in United Kingdom having similar results was reported in the book *'Gifted Children Grown Up'* by Freeman (2001). Freeman focused on the influence of environmental conditions on gifted children. Pressuring them to achieve more at younger age, pressing them to appear earlier for examinations than their peers, poor living conditions may result in disappointment and unhappiness. Yet, another longitudinal study by Torrance (1993) found that these people were highly energetic, have shown clarity in purpose of life, liking towards their job and consistency in efforts. Thus, like 'genius fades away earlier* is a myth, *gifted people always succeed' is also a myth. There are temperamental as well as motivational factors which shape their destiny.

3.2.3 Theories of Intelligence

Though Terman's popular term I. Q. is used for measuring intelligence, psychologists have advocated different types and aspects of intellectual abilities. It led to development of various theories of intelligence.

A] Charles Spearman's Two-Factor Theory :

In 1904, British psychologist Charles Spearman used statistically advanced technique, factor analysis, and found out two factors in intelligence namely, the *g factor* (a term used by him to connote genera! factor) and *s-factor (specific factor).* General factor refers to logical reasoning and problem solving ability and is present in all types of intellectual functioning. S-factors are related with specific areas such as sports, music etc. and can be developed by special training and education in those domains. Many intelligence tests available in market measure *g-factor.* Spearman was criticized by others for oversimplifying the nature of intelligence.

B] Louis Thurstone's Primary Mental Abilities :

An American psychologist Thurstone had built a theory of intelligence in 1938, which is also known as seven-factor theory. After using factor analysis, he concluded that intelligence was not a single general ability but consists of seven different and independent abilities. They were so fundamental that he called them primary abilities. These abilities were :

1. **Associative memory :** Ability to relate different discrete information to have a meaningful unit.

2. **Numerical ability :** Ability to engage correctly and rapidly in different computational operations.

3. **Perceptual speed :** It involves accurate and rapid identification of visual details, differences and similarities.

4. **Reasoning :** Ability to find out principles and rules from individual instances.

5. **Spatial visualization :** Ability to visually and mentally rotate the abstract figures in two or three-dimensional space.

6. **Verbal comprehension :** Related to person's passive vocabulary. Multiple choice questions are used to assess it.

7. **Word fluency :** Related with person's active vocabulary. Free recall is used to assess it.

He had developed the battery of tests to measure these abilities. Later it was found that these abilities are not independent but correlated. Many psychologists also disagreed with the number of abilities.

C] Joy Guilford's Structure of Intellect :

He was psychologist of United States recognized for his psychometric study of intelligence. He proposed his theory on intelligence popularly known as Structure of Intellect (SI) in 1955. He explained three dimensions - content, operation and product - to describe 150 factors of intelligence (30 more abilities are added in 1980 and now the total number has become 180).

1. Content (5 types) :-

Content includes information like symbols, images, signs etc. required for thinking. There are five broad types of content.

(a) Visual **:** The concrete, real world information from environment perceived through seeing.

(b) Auditory **:** The concrete, real world information from environment perceived through hearing.

(c) Symbolic **:** Information perceived as signs or symbols which stand for something else. For example, numerals, alphabets, musical notes etc.

(d) Semantic **:** This content is related with ideas and meaning. It is abstract in nature.

(e) Behavioral **:** Here, the information is perceived as actions.

2. Operations (6 types) :-

Six operations are done on content which are explained by Guilford.

(a) Cognition **:** The ability to understand, to comprehend and to discover meaning.

(b) Memory recording **:** This ability is related with encoding information.

(c) Memory retention **:** This ability deals with the recall of the information.

(d) Divergent production **:** It is creative ability which generate multiple solutions to a problem.

(e) Convergent production **:** It is rule-following ability and is useful in general and daily problem solving where deductive method is used for a single solution to a problem.

(f) Evaluation **:** The ability to judge the consistency, accuracy and validity of information.

3. Products (6 types) :-

Doing specific operation on specific content results in one of the six specific products mentioned below. The increasing complexity is seen in their order.

(a) Units **:** It is a single items of knowledge.

(b) Classes **:** Sets of units sharing common characteristics.

(c) ***Relations*** **:** Linking of units in sequences, associations, analogies or as opposites.

(d) ***Systems*** **:** It is a network or structure having multiple interrelations among constituents.

(e) ***Transformations*** **:** It is the conversion or mutation of knowledge through changing perspectives.

(f) ***Implications*** **:** It is related with inferences, predictions, anticipation etc. of knowledge.

From the above description, we can find 5 x 6 x 6 = 180 intellectual abilities or factors. Each ability is related to a particular content with particular operation resulting in a specific product. Even these factors were found to be correlated and not independent in later research and so the model was criticized.

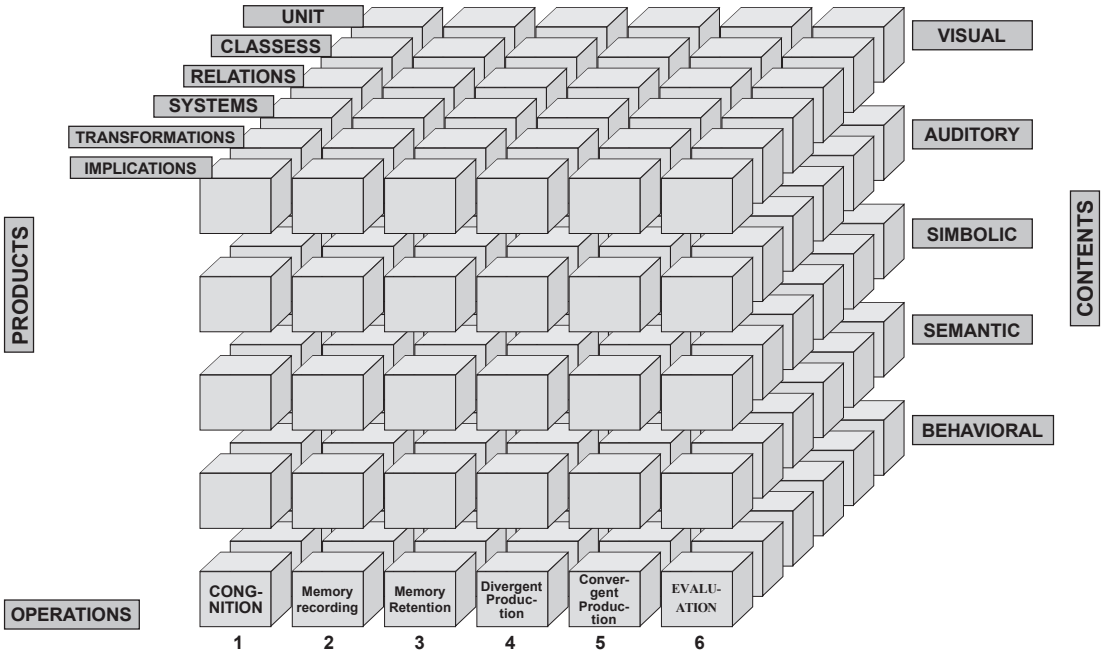


Figure 2 : Guilford's structure of intellect

D] Howard Gardner's Multiple Intelligence Theory :-

American Psychologist Gardner's theory was based on neuroscience. He was of the view that intelligence expressed in terms of quotient or numerical value

depicts incomplete picture of individuals abilities. Its description should be based on skills and abilities of individuals which are valued within different cultures. He believed that intelligences could be nurtured through efforts and schools should take initiative in identifying and grooming intelligences of students. According to him there are nine mutually exclusive types of intelligences exist in each individual with varying amount. They are described in following table.

Table 4 : Gardner's Multipple Intelligences

Type of Intelligence	Description	Type of Career
Verbal / Linguistic	Ability to use language and words effectively.	Orator, Writer
Musical	Ability to comprehend, create and present rhythm, musical notes.	Musician, Singer
Logico-Mathematical	Ability to think logically and solve mathematical problems.	Scientist, Engineer
Visuo-Spatial	Ability to perceive directions and comprehend two and three dimensional objects.	Navigator, Pilot,
Bodily Kinesthetic	Ability related with smooth and coordinated bodily movements.	Dancer, Sportnian
Interpersonal	Ability to comprehend others' emotions, moods and respond appropriately.	Manager, Psychologist
Intrapersonal	Ability to shape behavior through understanding one's own emotions and thoughts.	Expert in H. R. D.
Naturalistic	Ability to understand the nature's order and causal relation among factors.	Fanners, Biologist
Existentialists	Ability to find big picture of world, meaning of life and death	Philosopher, Thinker

One of the drawbacks of Gardner's theory is that no conclusive evidence are available yet.

E] Robert Sternberg's Triarchic Theory of Intelligence :

Robert Sternberg, an American psychologist defined intelligence in terms of selection and shaping of and purposive adaptation to one's real-world environments. According to him, intelligence should be successful. He suggested three different components.

1. **Analytical intelligence :** It refers to problem-solving abilities. The students having this intelligence are called as 'book smart'.

2. **Creative intelligence :** It refers to the ability to deal creatively with new situations using past experiences and current skills. These people have divergent thinking ability which help them to find original and innovative solutions to problems.

3. **Practical intelligence :** It refers to the ability to adapt to a changing environment. They use available information to maximize benefit and become successful. They are called as 'street smart'.

Unfortunately, the schooling system and many intelligence tests available in market focus excessively on only analytical intelligence. The students having analytical intelligence are overrated and other two intelligences are underrated.

It should not be forgotten that for big projects, all three components required and generally they are not found in one person. The collaboration is necessary from different people having different intelligences. Analytically intelligent person can analyze the project related information in statistical terms and at micro level. Creative person finds out novel and yet workable design. Practically intelligent person raises fund required for successful execution of the project.

F] Emotional Intelligence :

Emotional intelligence (EI) is defined as the ability to comprehend and manage one's own and others* emotions effectively. Many times we observe that the 'book smart* people are not as successful in life as expected. One should note that mere academic achievement or intellectual ability doesn't bring success in life. In reality, the effective understanding and management of emotions coupled with these abilities makes a person star performer (Persuad, 2001).

The first use of this term was appeared hi Wayne Payne's doctoral thesis titled 'A Study of Emotions : Developing Emotional Intelligence' in 1985. The first model of EI was introduced in 1990 by Salovey and Mayer and later it is popularized by Daniel Goleman from 1995 onwards. Emotionally intelligent people either avoid or appropriately manage the negative emotions such as anxiety, anger, impulsiveness etc. They are able to motivate self, show sensitivity and persist even in frustrating moments (Salovey & Mayer, 1990).

Peter Salovey and John Mayer (1990) defined Emotional Intelligence (EI) as the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions.

Goleman proposed and explained five components of EI.

1. Self Awareness : Ability to recognize and understand personal moods, emotions and drives and their effects on others.

2. Self-Regulation : Ability to control or redirect disruptive impulses, propensity to suspend judgment and to think before actions.

3. Internal Motivation : It is the passion to work for internal reasons and pursue goals with energy and persistence that goes beyond tangible benefits.

4. Empathy : It is one's vicarious experience of another's emotional experience. It is 'feeling[1] what other person feels.

5. Social Skills : Proficiency in managing relationships and building social networks based on common ground.

Mayer and Geher (1996) conducted one study on 321 participants whose self-reported Scholastic Aptitude Test (SAT) scores which relate to intelligence were high. They were asked to read the paragraphs written by non-participants and judge their emotions while writing. Their judgments were cross-checked by the writers. Those who recognized the emotions properly also scored high on empathy scale and low on defensiveness (tendency to move away from reality) measure. It has shown positive correlation between intelligence and emotional intelligence.

Though Mayer has introduced this concept, he himself has criticized the non-scientific writings in popular magazines and best-selling books on emotional intelligence. He does not agree with the notion that emotionally intelligent people

have unqualified advantage in life (See his online article for American Psychology Association).

3.2.4 Nature v/s Nurture Controversy

Are people born intelligent (heredity or nature) or do they acquire it through learning (environment or nurture) is a question debated since long time and tilt it is continue. To separate the role of genes from the role of surrounding environment require controlled experiments which are neither practical nor ethical. Only natural experiments can be done like the experiments carried out on identical twins. Identical twins come from one fertilized egg and share the same genetic inheritance. If they show different intelligence or other characteristics, it will be due to environment If they are brought up in different environments and still possess similar level of intelligence then it is said to be influenced by genetic factors. Another method is to compare their intelligence with fraternal twins who come from two different eggs, each fertilized by a different sperm. They have different genetic makeup. Identical twins and fraternal twins can be reared in similar environment or in different environment and the differences between their intelligence can be studied. It will give us a general idea about the influence of nature and nurture on intelligence. From different researches, it was observed that greater the degree of genetic relatedness, stronger is the correlation between IQ scores of these persons. But the correlation was never found to be 1.00 which suggested that genes alone may not be responsible for intelligence. It means that environment has to play its role in development of intelligence.

The recent research has shown that both heredity and environment play 50-50 percent role in development of intelligence (Plomin & DeFries, 1998). In case of Japanese Americans who are at the top of IQ ladder, intelligence was initially attributed to racial and genetic characteristics. But Neisser and others (1996) have shown that the intense focus on education and achievement by their culture has significantly influenced their intelligence.

3.2.5 Measurement of Intelligence

The idea of intelligence measurement was carried out first in France and then spread all over world. Let us see the history and few important Psychological tests for measuring intelligence.

A. Stanford - Binet Mental Ability Test :

Alfred Binet was French psychologist. At the start of the twentieth century, education ministry of French government had asked him to identify the students in school who were educationally lagging behind. It wanted to provide them remedial coaching to improve their learning. Binet, with the help of Theodore Simon, constructed first intelligence test in 1905 for this purpose. The test was intended to differentiate slow learners from fast learners.

The development of Stanford-Binet Intelligence Scale is briefly given below.

- **1905 :** First edition of Binet-Simon Intelligence Test in France.
- **1908 and 1911 :** New Versions of Binet-Simon Intelligence Test.
- **1916 :** Stanford-Binet First Edition by Terman in United States (Stanford is renowned university in U.S. where these efforts were taken place.)
- **1937 :** Second Edition by Terman and Merrill (Two forms L and M introduced)
- **1973 :** Third Edition by Merrill.
- **1986 :** Fourth Edition by Thorndike, Hagen, and Sattler.
- **2003 :** Fifth Edition by Roid.

The current fifth edition (SBS) is used for calculating the intelligence for the age group from 2 to 85 +. It is individually administered test. It comprehensively covers following five factors of cognitive ability.

1) Fluid Reasoning.
2) Knowledge.
3) Quantitative Reasoning.
4) Visual-Spatial Processing.
5) Working Memory.

Every new edition has shown improvement in precision and reliability. Efforts were also taken to increase its validity. It is the reason why this test is in use even today all over world.

Different concepts related to Intelligence :

1. **Basal Age :** It is the highest year level at which examinee passes all the subsets of age specific scale.

2. **Ceiling Age :** It is the lowest year level at which examinee fails all the subsets of age specific scale.

3. **Mental Age (M. A.) :** It is computed by addition of examinee's basal age and the number of months' credit received for passing each subset up to his/her ceiling age.

   In terms of Equation, MA = basal age + credit (until ceiling age)

4. **Intelligence Quotient (I. Q.) :** It is the ratio between mental age and chronological age (expressed in months). It was developed by Stern.

   In terms of equation,

   $$\textbf{I. Q.} = \frac{\textbf{M. A.}}{\textbf{C. A.}} \textbf{ x 100 (multiplied by 100 to avoid fraction.)}$$

5. **Deviation I. Q. :** It is the intelligence quotient which is statistically obtained to derive person's relative standing in his/her group, it was first introduced by Wechsler.

The concept of 'Mental Age' was introduced in Stanford-Binet test from 1908. The formula for Intelligence Quotient (I.Q.) was first developed by Stern and German psychologist Terman used it for the first time for calculating I.Q. from Stanford-Binet intelligence test in 1916.. In measurement of intelligence, when mental age and chronological age is same i.e. if the person is able to solve all subsets appropriate to his/her chronological age level only, his/ her I.Q. is termed as normal (*i.e.* in between 90 to 110). If he/she is not able to solve all subsets appropriate to his/her chronological age level, his/her I.Q. is below normal and if he/she can solve those subsets which are at higher end as that of his/her chronological age level, his/ her I.Q. is above normal. Basal Age and Ceiling Age are also taken into consideration while measuring intelligence. From third edition (1973) onwards, Deviation I.Q. was used to compare the individual score with the mean score for the individual's reference group and finding his/her relative place in the group.

Let us see an example of calculation of I.Q. in following table.

Basal and Ceiling Age of Individual	Intelligence Test for specific age group	How many subsets are solved correctly	Mental Age of the Individual	
			Year	Month
Basal Age	6 yrs.	All Subsets	6	0
	7 yrs.	4 Subsets	0	8
	8 yrs.	2 Subsets	0	4
Ceiling age	9 yrs.	None	0	0
Chronological Age = 6 years = 72 months			6 Yrs.	12 Months
I.Q. = M.A. / C.A. x 100 = 84 Months/72 Months x 100 = **117.6**		**Mental Age :** 7 yrs. + 12 Months = 84 Months		

B. Wechsler Adult Intelligence Scale (WAIS)

David Wechsler criticized the 1937 Binet scale for not incorporating non-intellective factors like fear of failure, level of confidence etc. They were closely related to overall score in intelligence though not the part of intelligence-related items. He was also of the opinion that Binet scale was useful in measuring intelligence of children and not much valid for measuring adult intelligence. He therefore developed his first Wechsler-Bellevue Intelligence scale in 1939. It is point-scale where credit is given for solving each item (Binet scale was age-scale where items were grouped according to age level. Only after 1986, point-scale was made available in it). Rather than single score, it allowed to measure individual's ability in a variety of content areas. It had both verbal as well as equivalent non-verbal i.e. performance scales. In performance scales, individual had to do something to show his/her ability. It reduced language, education and culture bias in testing. These non-verbal scales are especially useful for measuring intelligence of illiterates. This scale was revised in subsequent years. The brief history is given below.

- **1939 :** First Wechsler-Bellevue Interlligence scale (WBIS).
- **1955 :** Wechsler Adult Intelligence Scale (WAIS).
- **1981 :** Revised Wechsler Adult Intelligence Scale (WAIS-R).

- **1997 :** Wechsler Adult Intelligence Scale-III (WAIS-III).
- **2008 :** Wechsler Adult Intelligence Scale-IV (WAIS-IV).

The latest WAIS-IV version gives the General Ability Index (GAI). It consists of the Similarities, Vocabulary and Information subsets from the Verbal Comprehension Index and the Block Design, Matrix Reasoning and Visual Puzzles subsets from the Perceptual Reasoning Index. Four separate index scores representing major components of intelligence are also given. They are as follows :-

- **Verbal Comprehension Index (VCI) :** It covers similarities, vocabulary, information and comprehension.
- **Perceptual Reasoning Index (PRI) :** It covers block design, matrix reasoning, visual puzzles, picture completion and figure weight.
- **Working Memory Index (WMI) :** It covers digit span, arithmetic and letter-Number sequencing.
- **Processing Speed Index (PSI) :** It covers symbol search, coding and cancellation.

Wechsler has developed separate scales for children. The first edition of Wechsler Intelligence Scale for Children (WISC) was published in 1949. The fourth edition of WISC (2003) is available now in market. The first edition of Wechsler Preschool and Primary Scale of Intelligence (WPPSI) was published in 1967 which is called Baby Scale. The current third version is published in 2002. Wechsler's scales can be used individually as well as in groups and make use of Deviation I.Q.

There is no doubt that intelligence tests are useful but one should not forget that they are only studied estimate and do not give the whole picture of intelligence. The importance of the score should not be exaggerated which may spoil the career of individuals.

3.2.6 Applications : Applyiing Emontional Intelligence in Everyday Life

Mere intellectual ability is not enough to succeed in family, social and professional life. The key for effective living is to exercise emotional intelligence in

day-to-day encounters. It helps us to enhance physical and mental health, to perform better at work and to create and maintain healthy relations with others.

- To raise your emotional intelligence, exercise following skills regularly.
- Try to recognize your explicit as well as subtle emotions as clearly as possible and don't allow them to overwhelm you.
- Make use of non-verbal cues to understand others feelings and intentions and connect emotionally with them.
- Try to understand pattern of your negative response to stress and minimize it by using other constructive response patterns like relaxation, exercise etc.
- Keep humour and sporty spirit intact particularly in challenging situations.
- Look at conflict as an opportunity and use win-win strategy to resolve them.

3.3 Key Words and Meanings

- **Adaptation :** It is the ability to deal effectively with environment through available resources and behavioral skills.
- **Basal Age :** It is the highest year level, at which examinee passes all the subsets of age specific scale.
- **Ceiling Age :** It is the lowest year level, at which examinee fails all the subsets of age specific scale.
- **Deviation I.Q. :** It is the intelligence quotient which is statistically obtained to derive person's relative standing in his/her group.
- **Emotional intelligence :** It is defined as the ability to comprehend and manage one's own and others' emotions effectively.
- **Giftedness :** It is an intellectual ability exceptionally higher than average. In terms of I.Q., these persons possess I.Q. more than 130.
- **Intelligence :** It is a general mental ability which involves reasoning, planning, problem solving, abstract thinking, comprehending complex ideas, learning quickly from experiences and adapting to the environment,

Intelligence Quotient (I.Q.): It is the ratio between mental age and chronological age (expressed in months).

The equation is, I.Q. = (M.A. / C.A.) x 100 (multiplied by 100 to avoid fractions).

- **Mental Age :** It is computed by addition of examinee's basal age and the number of months' credit received for passing each subset up to his ceiling age.

  The equation is, M.A. = Basal age + Credit (until ceiling age)

- **Mental Retardation :** It is the sub-average intellectual ability accompanied by significant deficits in adaptive behavioral skills necessary for independent daily functioning. In terms of I.Q., these persons possess I.Q. less than 70.

- **Normal Probability Curve (NPC)** : It is a statistically derived curve which shows probable distribution of population on particular mental, physiological, social, economic etc. attributes.

Questions for Self - Study - 2

M. C. Q.

1. …….. is the right formula for intelligence quotient (IQ).
   (a) C. A. ÷ M. A. x *100* *(c)* C. A. ÷ M. A. ÷ *100*
   (b) M. A. ÷ C. A. x *100* *(d)* M. A. ÷ C. A. ÷ *100*

2. Concept of Mental Age is introduced in ……. for the first time.
   (a) 1905 *(b) 1908* *(c) 1916* *(d) 1939.*

3. ……. had first used the formula for I.Q.
   (a) Binet *(b) Stern* *(c) Weschler* *(d) Gardner.*

4. The model of Emotional Intelligence (EI) was first introduced by …… .
   (a) Goleman *(b) Gardner* *(c) Terman* *(d) Salovey-Mayer.*

5. Guilford has initially described …….. dimensions of intelligence.
   (a) 110 *(b) 150* *(c) 140* *(d) 220.*

6. Gardner has described ..... types of intelligence.
   (a) 7 *(b) 8* *(c) 9* *(d) 10.*

7. Street Smart people possess more of ..... intelligence.
   (a) Creative *(b) Practical* *(c) Emotional* *(d) Analytical.*

8. The range of intelligence quotient (I.Q.) for normal people is ..... .
   (a) 90 - 110 *(b) 50 - 70* *(c) 120 - 140* *(d) Below 25.*

9. People who possess ..... intelligence quotient (IQ) are supposed to be mentally retarded.
   (a) Below 70 *(b) 90 - 110* *(c) 120 – 140* *(d) Above 140.*

10. In fragile-X syndrome, X chromosome on ..... pair is fragile.
    (a) 20 *(b) 21* *(c) 27* *(d) 23.*

3.4 Summary

Intelligence is a general mental ability which involves reasoning, planning, problem solving, abstract thinking, comprehending complex ideas, learning quickly from experiences and adapting to the environment It is influemnced by nature i.e. genetic factors as well as nurture i.e. environment It is normally distributed among population. Mentally retarded people are at one end of the distribution while exceptionally intelligent and genius people are at the other end.

Different psychologists proposed different theories of intelligence. According to Spearmen, intelligence comprised of g-factor and s-factor while there are seven primary abilities of intelligence proposed by Thurstone, Guilford suggested 150 abilities initially and later expanded them to 180 whereas Gardner put forward nine types of intelligence. Triarchic theory of Stemberg and Emotional intelligence theories of Salovey-Mayer and Goleman are now-a-days very popular. Chronological age, mental age, basal age, ceiling age, intelligence quotient and deviation quotient are the concepts related with measurement of intelligence. Different tests and their version are developed by psychologists like Binet, Terman, Wechsler etc. for measuring intelligence. It is useful for choosing and succeeding in career.

3.5 Key to Self-Study Questions

1. M.A./C.A. x *100*

2. *1908*
3. *Stern*
4. *Salovey-Mayer*
5. *150*
6. *9*
7. *Practical*
8. *90-110*
9. *Below 70*
10. *23.*

3.6 Assignment for Practice

(A) Short Notes

1. Emotional Intelligence.
2. Normal distribution of intelligence.
3. Weschler's Adult Intelligence Test.
4. Giftedness.
5. Spearman's two-factor theory of intelligence.
6. Nature of Intelligence.
7. Nature v/s nurture controversy in intelligence.

(B) Answer the following Questions

1. Describe Stanford-Binet's intelligence test.
2. Illustrate the nature and importance of Emotional intelligence.
3. Define mental retardation. Explain its reasons.
4. Explain the following concepts related to intelligence : Chronological Age, Mental Age, Basal Age, Ceiling Age.
5. Describe Gardner's theory of intelligence.
6. Explain Guilford's 'Structure of Intellect' model.

3.7 Books for Reading

1. **Baron, R.** (2003). *Psychology,* South Asia, 5th Edition, Pearson Education Inc.

2. **Ciccarelli, S. K.,** & **Meyer, G. E.** (2013). *Psychology,* South Asia, 7th Edition, Pearson Education Inc.

3. **Feldman, R. S.** (2011). *Understanding Psychology,* India,10th Edition, McGraw-Hill Education (India) Pvt. Ltd.

4. **Wade, C. & Tavris, C.** (2006). *Psychology,* South Asia, 8th Edition, Pearson Education Inc.

5. **Weiten, W.** (2012). *Psychology : Themes and Variations,* United States, 9th Edition, Cengage Learning.

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Semester - II : Unit - 4

Personality

4.0 Objectives

4.1 Introduction

4.2 Subject Explanation

4.2.1 Definition of Personality

4.2.2 Sigmund Freud and Psychoanalysis

4.2.3 Trait Theories

4.2.4 Assessment of Personality

4.2.5 Application : Know your personality through 'SWOT' analysis

4.3 Key Words and Meaning

4.4 Summary

4.5 Key to Self - Study Questions

4.6 Assignment for Practice

4.7 Books for Reading

4.0 Objectives

After studying this chapter, you will be understand following concepts

1. Definitions of Personality.
2. Various theories of personality-mostly Sigmund Freud and Psychoanalysis, trait theories (Allport, Cattell, Big five etc.)
3. Assessment of Personality, Rorschach inkblot and TAT etc.
4. Finally application of SWOT analysis.

4.1 Introduction

The word “personality” originates from the Latin word ‘persona’ which means mask. It was rather a convention employed to represent or typify the characters in the theatre.

There are various confusions/misunderstanding about the concept and nature of personality. The concept of personality is a vary board and difficult to understanding, but we define personality in a very restricted manner, personality from point or view becomes identical to reputation and impression, in terms of physical appearance, clothing conversation and behaviour, our impression, how and individual affects other person with whom he or she come into contract is considered as the personality.

4.2 Subject Explanation

4.2.1 Definition of Personality

The term personality has been derived from the Latin word “persona”. “Persona’ means as a mask which the Greek dramatics used to wear before their faces when the worked on the stage, so personality means the effect which an individual leaves on the other people, some one describe the personality attracts other, But personality is vast and integrative concept. So, to understand personality we have to study the physical and psychological characteristics. No one can give the perfect definition of personality. Various researcher has been given a definition of personality. In this definition some most important definitions are as below :-

1. Allport (1937) : According to him “Personality is the dynamic organization within the individual of those Psychological systems that determine his unique adjustment to his environment.”

In this definition Psychological word is very important. Psycho (mental) system include attitude feeling, motivation, habits and physical systems includes the unique adjustment of individual to his environment, which is related to nervous system, various glands which are physical in nature.

2. Norman Munn : “Personality may be defined as the most characteristics integration of an individuals structures, modes of behaviour, interests, attitude, capacities, abilities and aptitudes.”

3. Mischel : "Personality as the distinctive pattern of behaviour (including thoughts and feelings) that characterize each individuals adaptation to the situation of his or her life.

Now-a-days one of the most important and latest definition of personality is a given by Cicerelli K. and Meyer G. According to Cicerelli and Meyer (2006) personality is the unique way which each individual thinks, acts and feels throughout life.

Above all these definition it is clear that personality is a very complicated and vast concept. Personality is a combination of physical and Psychological traits. There are differences in personality definitions, so many factors responsible for the organization of personality as home, school, friends, society etc.

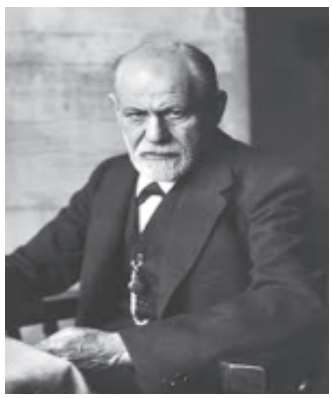
Questions for Self - Study – 1

❒ **Complete the following sentence by choosing correct alternative.**

1. …….. has developed definition of personality.
   (a) Freud (b) Allport (c) Ebbinghaus (d) Eysenk.
2. Cicerelli and Meyer has been given the definition of personality in ..... .
   (a) 1937 (b) 2006 (c) 2007 (d) 2010.
3. The term personality has been derived the …….. word.
   (a) Parshi (b) Latin (c) French (d) Turki.

4.2.2 Sigmund Freud and Psychoanalysis

Freud's cultural Background : Before the studying Freud's Psychoanalytic we have to know the cultural background of Freud, because the roots of theory is related to this background.



Sigmund Freud (1856-1938)

Freud is a founder of Psychoanalysis. Freud was born in the Austro Hungarian empire in 1856, Freud is having Jewish background. Freud moved to England to escape the Nazis. During this time, Europe was in what is commonely known as the Victorian age. Freud published various books as a 'The Psychopathology of everyday, (1901) one of the most important and very

famous book was 'Dream of Analysis'. This book is world-famous book. Freud's contribution in Psychology is very much so Freud is a father of Psychology.

Freud's Psychoanalytic Theory

There are main three sub parts of the therapy or approach.

1. The division of the mind :-

(A) The preconscious mind.

(B) The conscious mind.

(C) The unconscious mind.

Freud believed that mind is divided into three parts :-

Freud's conception of the Personality : This iceberg represents the three levels of the mind, The part of iceberg is visible above the surface is the conscious. Hidden deep below the surface is unconscious.

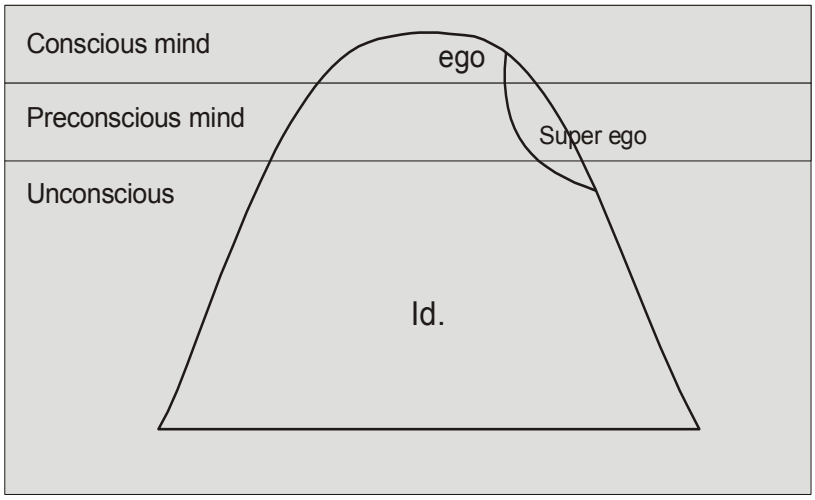


Figure No. 4.1

(A) The preconscious mind : According to Freud the preconscious mind is a level of the mind where all of the information, events concerns and thoughts that a person is not aware of at the movement are kept. Freud's preconscious mind is very much similar to long term money.

(B) The conscious mind : According to Freud the conscious mind is all of the things of which a person is aware at any given movement, conscious mind is a similar to short term memory. Freud's terms may be different, but these concepts are used by cognitive Psychologists to talk about memory.

(C) The unconscious mind : According to Freud there is a part of the mind that remains hidden at all times, surfacing only in symbolic form in dreams and in some of the behaviour people engage in without knowing why they have done so. According to Freud when a person makes a determined efforts to bring a memory out of the unconscious mind, it will not appear directly. Further Freud says that unconscious mind is the most important determining factor in human behaviour and personality.

2. The division of the personality :-

According to Freud's observations of his patients, that personality divided into three parts. These three parts of personality develop and interact with one another.

The three part of the Division of personality are as below :-

(1) Id.

(2) Ego.

(3) Super ego.

1. Id : According Freud's opinion 'Id' is the first and most important part of the personality. "Id is a Latin word that means it" 'Id' is completely unconscious, a moral part of the personality that exists at birth, containing all of the basic biological drive; hunger, thirst, self preservation and sex. Freud has given one example. He said that. "When these drives are active, the person will feel an increase in not only physical tension but also in psychological tension that Freud called 'libido', 'Libido means the instructional energy that may come in conflict' with the demands of a society's standards for behaviour. Id is depend upon 'pleasure principle'. Pleasure principle which the Id functions the immediate satisfaction of needs without regard for the consequence. The pleasure principle can be summed up simple as "If it feels good, do it".

2. Ego : The ego is the executive director of the personality. Ego is the second part of the personality that develops out of a need to deal with reality, mostly conscious rational and logical. The Ego word comes from the Latin word for 'I'. Ego is mostly conscious, far more original, logical and cunning than the Id. The ego works on the reality principle. Reality principle means which the ego functions the satisfaction of the demands of the Id only when negative consequence will not result. In a simple words "if it feel good, do it but only if you can get away with it."

3. Super Ego : This is the third and final part of the personality. Freud called it super ego. Super ego is moral centre of personality. The super ego develops as a preschool- aged child learns the rules, customer, and expectation of society. There are two parts of super ego first is ego ideal, and second is conscience.

1. Ego ideal is a kind of measuring device.
2. Conscience is the part of the personality that makes people feel pride when they do the right thing and guilt or moral anxiety.

The term conscience is a different word from conscious. They may look and sound similar but they represents totally different concept.

3. Stages of personality development :-

This is third and last theory of personality. Know as stages of personality development. According to Freud there are five stages of personality development as below.

(1) Oral Stage.

(2) Anal Stage.

(3) Phallic Stage.

(4) Latency Stage.

(5) Genital Stage.

1. Oral Stage *(Birth to about ages)* : This is first stage, first stage occurring in the first year of life in which the month is the erogenous zone and weaning is the primary conflict. The conflict that can arise here, according to Freud, will be over weaning that occurs too soon or too late can result in too little or too much satisfaction of the child's fixated adult personality, for example, overeating, drinking too much, chain smoking, nail biting, gum chewing and talking too much etc.

2. Anal Stage *(Age 1 to 3)* : The second distinct please of development is anal. In this stage happiness is associated with anus. During this period stimulation is focused on eliminative functions through either holding back or letting go of the body's waste material. In this stage due toilet training is necessary. If this training is not get property then the child may become cruel, indiscipline, aggressive etc.

In this stage there are two type personality.

(A) Anal expulsive personality : A person fixated in the anal stage who is messy destructive, and hostile.

(B) Anal retentive personality : A person fixated in the anal stage who is neat, fussy, stingy and stubbed.

Easy psychodynamic theory highlighted the importance of toilet training in the anal stage of Psychosexual development. A child in this stage was through to derive pleasure from learning to control his or her bodily functions. The ego also develops during this stage.

3. Phallic Stage *(3 to 6 years)* : According Freud children in the phallic stage develop a natural curiosity about sexual differences. In this child's erogenous one finally shifts to the genitals at the phallic stage the child discovers sexual feelings.

Oedipus complex : Freud essentially believed that boys develop both sexual attraction to their mothers and jealously of their father during this stage a phenomenon called Oedipus complex.

Electra Complex : Carl Jung proposed that the Oedipus be reserved only for male and that the complex in females, be termed the Electra complex.

Freud believed that the super ego develops as a result of indentifying with same sex parents.

4. Latency Stage *(6 to puberty)* : This is forth stage of Psychosexual personality development theories. In this stage children sexual feeling are repressed and developed in other ways. In this stage children grow and develop intellectually, physically and socially but not sexually. This is at which boys play with others boys, girls play only with girls and each thinks the opposite sex is pretty awful.

5. Gental Stage *(Adolescence and beyond of death)* : In this stage the pleasure point is sexual behaviour. The focus of sexual curiosity and attraction will become other adolescents or rock stars, movies stars and other objects of adoration. Hetrasexual attraction is the main characteristic of this stage.

Summary of Freuds Theory

Freud's Three parts of personality : Id, Ego, Super Ego.

- **Id :** Works on the pleasure principle.
- **Ego :** Works on the reality principle.
- **Super Ego :** Is the moral centre of personality.

Freudian stages of personality Development :- Personality develops in a series of Psychosexual stages.

- Oral Stage : Id dominant (Birth to about 1 year).
- Anal Stage : Ego develops (1 years to 3)
- Phallic Stage : Super ego develops (Age 3 to 5).
- Latency Stage : Period of sexual representative (Age 6 to Puberty).
- Genital Stage : (Sexual feeling – Adolescent to beyond).

Oedipus complex and Electra complexes. Create anxiety in the Phallic stage.

- Fixation : Occurs when conflicts are not fully resolved.

Questions for Self - Study – 2

❒ **Complete the following sentence by choosing correct alternative.**

1. ..... is the founder of psychoanalysis.
   (a) Aron Beck (b) Sigmund Freud (c) Roger (d) Adler.
2. According Freud there are ..... parts of mind.
   (a) Two (b) Three (c) Four (d) Five.
3. ..... is part of the personality present at birth and completely unconscious.
   (a) Id (b) ego (c) super ego (d) Non ego.
4. Ego is ..... of personality.
   (a) Common man (c) Executive director
   (b) Director (d) Principal.

5. The ego works on the ..... principle.
   (a) Reality *(b) Pleasure* *(c) Negative* *(d) Positive.*

6. ..... is moral centre of personality.
   (a) Id *(b) Ego* *(c) Super ego* *(d) Oedipus.*

7. ..... stage in which child discovers sexual feelings.
   (a) Anal *(b) Oral* *(c) Phallic* *(d) Genital.*

8. Age 6 to puberty period is know as a ..... period.
   (a) Oral *(b) Anal* *(c) Phallic* *(d) Latency.*

4.2.3 Trait Theories

Trait theories that endeavor to describe the characteristics that make up human personality in an effect to predict future behaviour.

A trait is a consistent, enduring way of thinking, feeling or behaviour and trait theories attempt to describe personality to term of a persons traits.

1. Allport Theories

Allport and his colleague H. S. Odbert (1936) literally scanned the dictionary for words that could be traits finding about 18,000 then paring that down to 200 traits after eliminating synonyms. Allport believed that these traits were literally wired into the nervous system to guide one's behaviour across many different situations and that each persons constellation of traits was unique.

Allport classified traits into three categories.

(1) Cardinal Traits.

(2) Central Traits.

(3) Secondary Traits.

1. Cardinal Traits : Traits which appear in most of the behaviour of the organism are called cardinal. According to Allport these type of persons are impressive in nature. These traits are given the name of historical persons for example – Mother Teresa, Jyotiba Phule etc.

2. Central Traits : These traits are found in common people. These Traits are the foundation of personality. They are related to behaviour. The number of there traits may be 10 to 12 in each person.

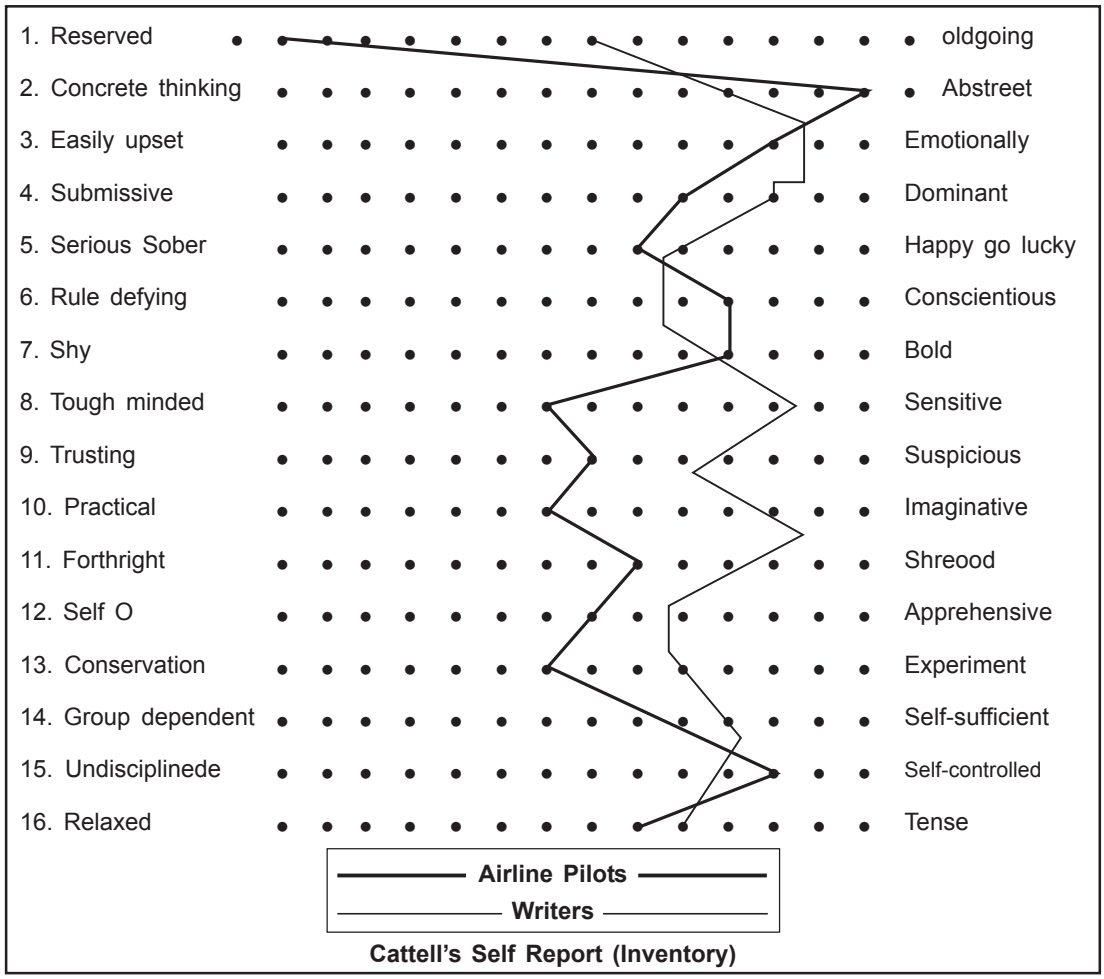
3. Secondary Traits : These traits are powerfully seen in some specific conditions. They are called as attitude. For example, some one like new motor car, ornaments and clothes etc.

2. Cattell's Theory of Personality :-

Raymond Cattell (1990) defined two types of traits as surface traits and sources traits.

(A) Surface Traits : Those traits are found by Allport representing the personality characteristics easily seen by other people.

(B) Source Traits : Are those more basic traits that underline the surface traits. For example, being a quiet, shyness surface traits related to the more basic source traits of introversion, a tendency to withdraw from excessive stimulation.



Cattell's Self Report (Inventory)

Cattell had used the statistical technique as a factor analysis. Cattell discovered 16 sources traits (Cattell, 1950, 1966) and although he later determine that there might be another seven source traits to make a total 23 (Cattell & Kline 1977), he developed his assessment questionnaires, the sixteen personality factor questionnaire (16PF) (Cattell, 1995) based on just 16 traits (see figure no. 2). These 16 source traits are seen as trait dimensions in which there are two opposite traits at each and with many possible degree of the traits along the dimension.

3. The Big Five : OCEAN or Five Factor model of personality.

The big five model of personality traits that describe five basic dimensions.

These five trait dimension can be remembered by using the acronym OCEAN in which each of the letters is the first letter of the five dimensions of personality.

1. Openness (openness to experiences) (O) : One of the five factors; willingness to try new thing and be open to new experiences. People who try to maintain the status-quo and he or she don't like to change things would score low on openness.

2. Conscientiousness (C) : The care a person gives to organization and thoughtfulness of others dependability. For example, these people always be late to important social events.

3. Extraversion (E) : This term first used by Carl Jung (1935). According to 'Jung' that all people could be divided into two personality type (1) extraverts, (2) Introverts.

(a) Extraverts : These people are out going and sociable.

(b) Intraverts : These people who prefer solitude and dislike being the centre of attention.

4. Agreeableness (A) : The emotional style of a person that may range from easygoing, friendly and likeable to grumpy, crabby and unpleasant.

5. Neuroticism (N) : These people are not stable in emotion, people who are excessive, worries, over anxious and woody would score high on his dimension.

Costa and McCrae said that these five traits are not interdependent.

Please see all information in below box.

The Big Five or The Five Factor model of personality		
High Score	**Factor**	**Low score**
Artistic, curious, creative	Openness (O)	Conventional, uncreative
Neat, ambitious, reliable	Conscientionousness (C)	lazy, careless etc.
Talkative, optimistic, sociable	Extraversion (E)	Reserved, alone
Helpful, trusting, good natured	Agreeableness (A)	Rude, iretable
Anxious, insecure, worrying	Neurotic (N)	Calm, secure, stable

Questions for Self - Study – 3

❒ **Complete the following sentence by choosing correct alternative.**

1. ..... classified traits in to three categories.
   (a) Freud *(b) Roger* *(c) Allport* *(d) Young.*
2. ..... defined two type of traits.
   (a) Roger *(b) Allport* *(c) Cattell* *(d) Binet.*
3. 16 PF developed by ..... .
   (a) Binet *(b) Cattell* *(c) Eysenek* *(d) Allport.*
4. Costa and McCrae developed ..... factor model of personality.
   (a) Two *(b) Three* *(c) Four* *(d) Five.*

4.2.4 Assessment of Personality

Assessment or measuring personality is a very complex phenomena. Many professional will not only use several different perspective but also several of the assessment techniques various methods and techniques are used for personality assessment but according to our syllabus or most important assessment methods are as below :-

(A) Interview.

(B) Projective Tests.

(A) Interview : An interview is a some therapist ask questions and note down the answers in a survey process is called interview.

Interview of personality assessment in which the professional asks questions to the client and allows the client to answer. Interview method most likely used by Psychoanalysis and Humanistic therapists.

There are two types of Interview. (1) Structured interview, (2) Unstructured interview.

1. Structured Interview : It is called a close interview. In this method the questions are in sequence. The nature of this interview is well planned and systematic.

2. Unstructured Interview - Open interviews : There is no sequence or questions are specific or order, open question – what is your name? or what is your favourite leader? etc.

There are some limitations in interview techniques :

(1) Interviewers themselves can be biased.

(2) If interviewer is prejudiced that affected on interview.

(3) Halo effect is a another problem in Interview techniques.

The interview is one of the most powerful method and if conducted properly it can provide valuable information which is not true of other techniques.

(B) Projective Tests : In personality assessment psychologist present ambiguous visual stimuli to the client and ask to the client to respond with whatever comes in their mind. Projective test can be used to explore one's personality, Projective test commonly used as a diagnostic tool to uncover problems in personality.

1. The Rorschach Inkblots Test :-

The Rorschach inkblots test is one of the most well-known projective test. Rorschach inkblot test is developed in 1921 by Swiss Psychiatrist Herman Rorschach. There are 10 inkblots, five in black ink on a white background and in colored inks on a white background.

People being tested are asked to look at each inkblot and simply say whatever it might look like to them. Using predetermined categories and responses comely given by people to each picture.

Rorschach inkblots test still frequently used to describe personality, diagnose mental disorders, and predict behaviour.

2. Thematic Apperception Test (TAT) :-

The TAT first developed in 1935 by Henry Murray and his colleagues (Morgan & Murray, 1935). TAT consist of 20 pictures all pictures are black and white that are shown to client. The client is asked to tell or write a story about the person or people in the picture, who are all deliberately drawn in ambiguous situation. Again the story developed by the client is interpreted by the psychoanalyst. There are only two of the more well-known projective tests. Other types of projective tests :–

(1) Sentence completion test,

(2) Draw A person and House-Tree person.

In the sentence completion test the client is given a series of sentences beginnings such as – I which my father or "Almost every day I feel." And asked to finish the sentence, and in Draw-A person and House Tree person the client is a asked to draw the named items.

Some problems in projective test –

(1) Projective tests are subjective.

(2) Projective tests are not having standard grading scales.

(3) Projective tests may sound some what out dated in today's world of MRIs and PETs scan.

But may practicing clinical psychologists and psychiatrists are still using Projective techniques.

Questions for Self - Study – 4

❒ **Complete the following sentence by choosing correct alternative given in the brackets.**

1. There are ..... type of the Interview.
   (a) 2 (b) 4 (c) 5 (d) 6.

2. ..... developed Rorschach inkblots Test.

(a) Murray *(c) Freud*

(b) Herman Rorschach *(d) Young.*

3. ..... developed TAT.

(a) Murray *(c) Freud*

(b) Herman Rorschach *(d) Adler.*

4.2.5 Applications : Know your personality through 'SWOT' analysis

A SWOT analysis is process to identify where you are strong and vulnerable, where you could defend and attack. The result of the process is plan of action or action plan. SWOT analysis can be performed on a product, on a service, a company or even on an individual.

SWOT is an acronym in which each of the letter is the first letter of one is a SWOT - Strengths, Weakness, Opportunities and Threats.

1. Strengths (S) –

- Positive tangible and intangible attributes, internal to a person.
- They are within the person's control.

2. Weaknessess (W) –

- Which are as might the person improve.
- Factors that are within an persons control that detract from its ability to attain the desired goal.

3. Opportunities (O) –

- What Opportunities exit in the environment, which will propel the person's grow? Identify them by their time frames.
- External attractive factors that represent the reason for a person to exist and develop.

4. Threats (T) –

- The person may benefit by having contingency plans to address them if they should occur.

- External factors, beyond person's control, which could place the persons mission or operation at risk. Classify them by their "serious" and "probability of occurrence".

Simple Rules for a successful SWOT analysis is as below :-

1. Be realistic about the strengths and weaknesses of you.
2. Be specific, and avoid gray areas.
3. Always analyze in relation to your competition.
4. Avoid unnecessary complexity and over analysis.
5. The analysis should distinguish between where you are today, and where you would be in the future.

In brief :-

- Strengths need to be maintained bait upon or leveraged.
- Weaknesses need to be remedied charged or stopped.
- Opportunities need to be prioritized, captured bait on and optimized.
- Threats need to be countered or minimized and managed.

A SWOT analysis can be very subjective, and two people rarely come up with the same final version of SWOT. Use SWOT as a guide and not as prescription.

4.3 Key Words and Meaning

- **Personality** : Personality is the unique way individual think, feel and act.
- **Id** : Is the first and most important part of personality. Id is having pleasurable principle.
- **Ego** : Is the executive director of personality. It is having realistic principle.
- **Super Ego** : Is the moral centre of personality.
- **Trait** : Is a consistent enduring way of thinking, feeling or behaviour.

4.4 Summary

"Personality is the unique way individual think, feel and act. We have to mostly focus on Freud's Psychoanalytic model of personality. Three part of the Psychoanalysis model. Division of mind, stages of personality development and divisions of personality in division of mind. Id is pleasure principle, ego is realistic, super ego is moral.

Stage of personality development : The personality develops through psychosexual stages. There are five stages (1) Oral stage (2) Anal Stage (3) Phallic Stage, (4) Latency and (5) Genital Stage.

Some another be kept as a odious complex- child-mother electro complex – Allports theory, Cattell theory and big five model of personality – and lastly we have discussed the assessment of personality interview method and projective methods. Rorschach inkblots test, Murray's Thematic Apperception Test. Then lastly know your personality by using SWOT analysis techniques.

4.5 Key to Self - Study Questions

Questions Self - Study – 1

1. (a) Allport *2. (b) 2006* *3. (b) Latin.*

Questions Self - Study – 2

1. Freud.
2. Two.
3. Id.
4. Executive director.
5. Reality.
6. Super ego.
7. Latency.

Questions Self - Study – 3

1. Allport *2. Catell* *3. Cattell* *4. Five.*

Questions Self - Study – 4

1. Two *2. Herman Rorschach* *3. Murray.*

4.6 Assignment for Practice

[A] Write Short Notes.

1. The Division of Mind.
2. The Division of the Personality.
3. Stages of personality development.
4. The five Factor Model of Personality.
5. Interview.
6. Projective Test.

[B] Answer the following questions.

1. Define personality and discuss the Sigmund Freud's Psychoanalytic model.
2. Explain the trait theories of Personality.
3. Discuss the assessment of Personality.
4. Describe the projective techniques.
5. Explain the Psychoanalytic model of personality in brief.

4.7 Books for Reading

1. **Ciccarelli, S. K., Meyer G. E.** (2008). *Psychology,* With a forward by Girishwar Misra, South Asian edition person, Dorling Kindersley, India.
2. **Hariharan, S., Sundararajan, N., Sharmugapriya, S. P.** (2008). *'Soft Skill',* Chennai, MJP Publishers.
3. **Alken, Lewis R., Alken Gary Growth Marnat** (2009). *Psychological Testing and Assessment,* Twelfth edition, Dorling Kindersley India.
4. B. A.-I, *Psychology* (2010). "Self Instructional Material" Shivaji University, Department of Distance Education, Kolhapur.